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MEDICINE IN EVOLUTION

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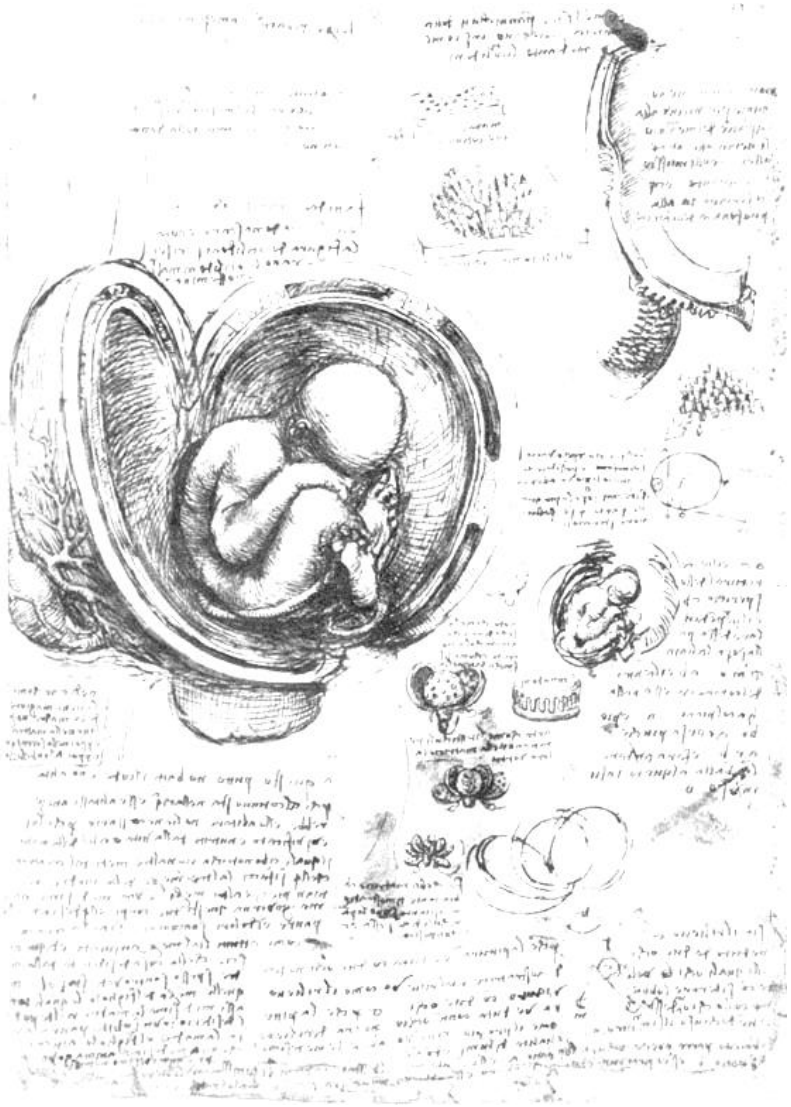

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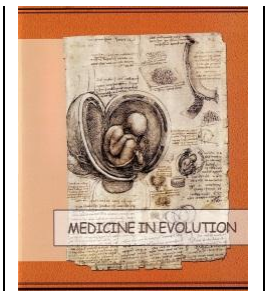

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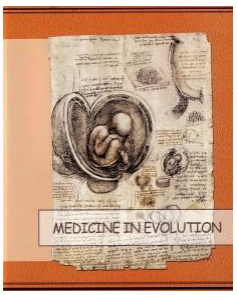
VISUAL ACUITY IMPROVEMENT IN PATIENTS DIAGNOSED WITH NONINFECTIOUS INTERMEDIATE UVEITIS TREATED WITH INTRAOCULAR TRIAMCINOLONE ACETONIDE



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Abstract

The aim of the study was to determine the effectiveness of intravitreal triamcinolone acetonide in improving the visual acuity, three months after treatment. The objectives of the study were to perform a baseline evaluation of the patients enrolled in the study, to perform intraocular injections with triamcinolone acetonide and to evaluate the best corrected visual acuity three months after the treatment. Fifty patients diagnosed with noninfectious intermediate uveitis were treated with intravitreal injection of four mg triamcinolone acetonide. The patients were divided into two study arms, twenty-three patients were subjected to intraocular injection with Triamcinolone acetonide, the rest, twenty-seven were subjected to intraocular injection with Triamcinolone acetonide and general cortisone administration. Best corrected visual acuity was determined three months after treatment. Globally, for all fifty patients, the mean ±SD visual acuity gain was 0.29 ±0.27 LogMAR. This study proves that intraocular cortisone administration has a positive effect on visual acuity that lasts for at least three months period.

Keywords: uveitis, triamcinolone acetonide, intraocular cortisone

INTRODUCTION

From antiquity, inflammatory reactions of the eye represented a challenge for ophthalmologists. Nowadays, the underlying mechanisms of this disease have become better understood and defined. Uveitis defines the inflammation of the uvea. The uvea represents the middle layer of the eye and includes the iris, ciliary body, and choroid. Uveitis is a serious diagnosis and represents an ophthalmic emergency needing urgent treatment to control the inflammation. Often, uveitis is associated with other general diseases [1]. Currently, different treatments options for uveitis have been studied, each of them with advantages and disadvantages. Uveitis may appear at any ages and principally affects young and middle age population (20-60 years) [2,3]. Depending on the period of activity, uveitis can be acute or chronic [4]. Some types of uveitis may recur, and episodes of active uveitis may be described. The prevalence of uveitis is 38–714 cases per 100,000 [5]. It causes 10% up to 15% of blindness cases in the modern world [6]. Triamcinolone acetonide is a synthetic corticosteroid that can be used topically, intra-articular and intraocular. Intravitreal Triamcinolone acetonide has been used to treat various eye diseases and has been found useful in reducing macular oedema [7,8].

Aim and objectives

The aim of the study was to determine the effectiveness of intravitreal triamcinolone acetonide in improving the visual acuity, three months after treatment. The objectives of the study were to perform a baseline evaluation of the patients enrolled in the study, to perform intraocular injections with triamcinolone acetonide and to evaluate the best corrected visual acuity three months after the treatment. [Book Antiqua, 11 point, normal, justified alignment].

MATERIAL AND METHODS

The present study is a retrospective, interventional, comparative assessment with consecutive enrolment of patients affected by non-infectious intermediate uveitis.

All subjects expressed in writing, prior to enrolment, their informed consent to be subjected to appropriate intermediate uveitis reduction techniques. The study was conducted between 2018-2020. The study received the Local Ethics Committee of the Clinic "Centrul Oftalmologic Prof. Dr. Munteanu" approval and was conducted in accordance with the Declaration of Helsinki and with the "International Standard of Good Clinical Practice (ICH-GCP E6 Step 4)".

Fifty patients diagnosed with noninfectious intermediate uveitis were treated with intravitreal injection of four mg triamcinolone acetonide. Before the treatment was initiated, all subjects were evaluated ocular and general. The patients were divided into two study arms, twenty-three patients were subjected to intraocular injection with Triamcinolone acetonide, the rest, twenty-seven were subjected to intraocular injection with Triamcinolone acetonide and general cortisone administration. Depending on the clinical condition of the 50 patients, they were assigned to one arm of the study. The criteria for applying the general treatment was a BCVA below 0.7 df. Thirty-eight (38) patients fell under the above-mentioned criteria. Eleven (11) patients refused the general (oral) treatment so they were given only the IVTA treatment. Consequently, 27 patients received, in addition to the intravitreal triamcinolone acetonide (IVTA) treatment, the general treatment. Twenty-three (23) patients received only the IVTA treatment. Best corrected visual acuity (BCVA) was determined three months after treatment.

Oral cortisone scheme. 27 patients with BCVA < 0.7 df (> 0.2 LogMAR) received oral cortisone treatment by following the scheme: 1 mg/kg body weight for 7 days, tapered weekly, up to ¼ pill during the last week of treatment.

Each patient received a single intravitreal injection of 4 mg triamcinolone acetonide. Local antibiotic drops were spread on and drops of oxybuprocaine 0.4% were administered. All injections were performed in the operating room. After topical disinfection with povidone-iodine, the sterile field and the lid speculum were applied. After 30 seconds another drops of 0.4% oxybuprocaine were administered. Injections were performed using 30-gauge needles through the inferotemporal pars plana, 4 mm from the limbus (Figure 1). After the injection, local antibiotic drops were instilled. A protective eye bandage was applied for a few hours after the procedure.

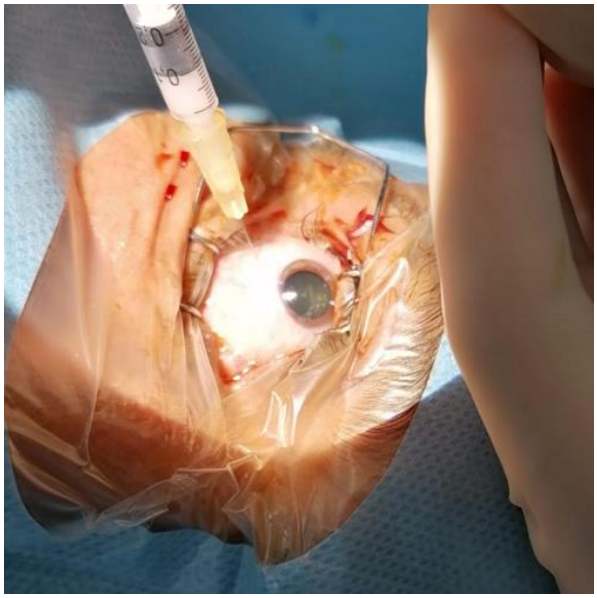

Figure 1. Intraocular injection technique

RESULTS

In the current study the BCVA values were collected by using decimal fractions. For correctness, the data will be converted, analysed, and presented in LogMAR scale.

The correct usage of visual acuity measurements in the sense of the mean, SD and other statistics is set to be in LogMAR units.

Table 1 presents the measured BCVA statistical results by treatment groups in LogMAR scale.

Table 1. BCVA at Baseline and 3 Months Follow-up by Treatment Groups (in LogMAR units)

TREATMENT GROUP	TIME	N	%	MEAN	SD	MEDIAN	MIN*	MAX*
IVTA Only Treatment	Before	23	46	0.24	0.17	0.15	0.70	0.05
	After	23	46	0.29	0.58	0.05	2.20	0.00
IVTA + General Treatment	Before	27	54	1.00	0.73	0.70	2.30	0.22
	After	27	54	0.19	0.11	0.15	0.40	0.00
ALL	Before	50	100	0.65	0.67	0.40	2.30	0.05
	After	50	100	0.23	0.40	0.15	2.20	0.00

Note: *MIN represents the worst vision and MAX the best vision

To evaluate the change in BCVA (LogMAR) from baseline to 3 months follow-up we performed Wilcoxon signed-rank tests for all patients and by treatment group. Results proved highly significant for all patients (Wilcoxon signed-rank test, $p < 0.001$). In the case of patients subjected to IVTA + General treatments, the results showed also high statistically significance (Wilcoxon signed-rank test, $p < 0.001$). Statistical significance was achieved also in the case of patients subjected only to the IVTA treatment, although it was only marginal (Wilcoxon signed-rank test, $p = 0.03$).

Figure 2 presents the BCVA (LogMAR) before and after treatment(s) for the ITVA + General Treatments group. There are high statistically significant differences between baseline and follow-up at 3 months (Wilcoxon signed-rank test, $p < 0.001$).

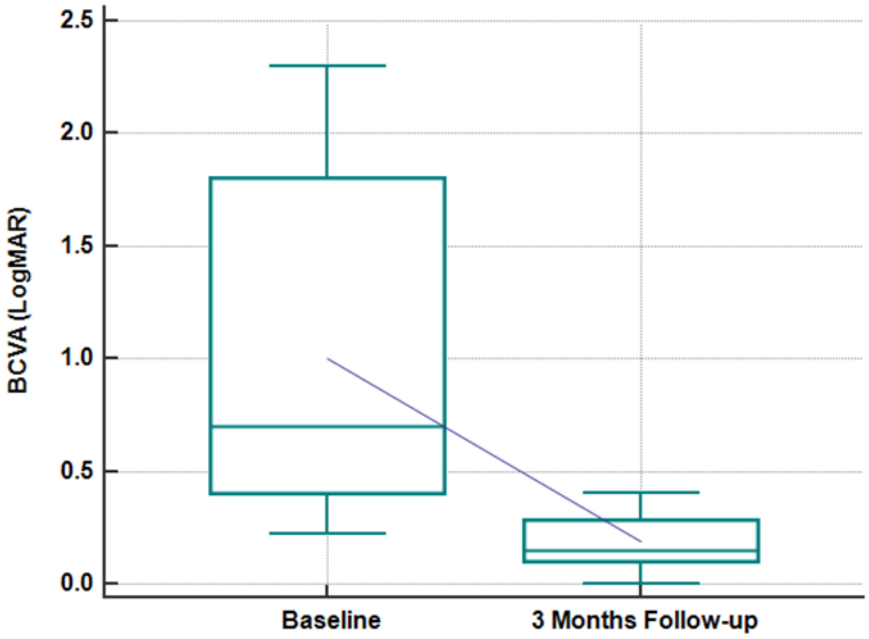

Figure 2. BCVA (LogMAR) for the IVTA + General Treatment Groups

Change in BCVA is statistically significant higher for the IVTA + General treatment group (0.45 ±0.24 LogMAR, Mean ±SD) than IVTA only group (0.12 ±0.19 LogMAR), demonstrated by a Wilcoxon-Mann-Whitney test ($p < 0.001$, median difference 0.30, 95%CI 0.48 - 0.19). Globally, for all 50 patients, the mean ±SD visual acuity gain was 0.29 ±0.27 LogMAR.

DISCUSSIONS

There are many different types of medication that can be administered intravitreally for the treatment of non-infectious intermediate uveitis, but it is difficult to differentiate the medication without comparative studies. Moreover, each drug has advantages and disadvantages in treating the disease. Consequently, each patient should receive an individual treatment scheme of the intravitreal medication. A risk/benefit and cost-effectiveness ratio should be considered when deciding between intravitreal and systemic therapies.

The study conducted by Kok et al. 65 eyes were evaluated. This was a retrospective noncomparative interventional case series. All patients were under systemic medication, corticosteroids, or immunosuppression. The purpose of the study was to evaluate the effectiveness of 4 mg IVTA in treating/reducing uveitic macular oedema, by determining their BCVA. Study duration ranged from 3-51 months; mean duration was 8 months. Baseline BCVA was 0.65 LogMAR, 0.25 in decimal fractions. BCVA after IVTA was 0.39 LogMAR, 0.4 in decimal, no BCVA changes in 16.9% of patients, at an average of 4 weeks (range, 1-30). The increase of visual acuity was higher if the duration of central macular oedema before intravitreal triamcinolone acetonide was < or = 12 months ($p = 0.006$) and if patients were < or = 60 years old ($p = 0.005$). Mean improvement of visual acuity after intravitreal triamcinolone acetonide was 0.26 (LogMAR) [9]. In our study, the mean ±SD visual acuity gain was 0.29 ±0.27 LogMAR.

As shown by our study and in accordance with international data, both types of cortisone administration have a positive effect on BCVA in patients with intermediate non-infectious uveitis that lasts for at least 3 months period [10].

CONCLUSIONS

In conclusion, both treatment groups showed statistically significant improvements in visual acuity from baseline to 3 months follow-up. There are marginal statistically significant differences between baseline and follow-up at 3 months (Wilcoxon signed-rank test, $p = 0.03$) for the IVTA only treatment group. There are high statistically significant differences between baseline and follow-up at 3 months (Wilcoxon signed-rank test, $p < 0.001$) for the IVTA + General treatments group. Recurrent IVTA injections may be necessary in the treatment of intermediate non-infectious uveitis due to its duration of action. In our country, the presented study represents a starting point in the research of non-infectious intermediate uveitis and can be continued with a larger number of treated eyes and a longer period of follow-up.

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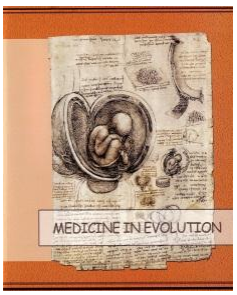
Neonatal auditory screening – essential public health measure



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Abstract

Aim and objective: Our Hospital is part of the National Program VI.1.5 "Prevention of hearing impairments through neonatal screening" from 2019.

This study aims to present a statistic obtained on the group of children tested by auditory screening in the period 2019-2020 in our institution.

Materials and methods: Between January 2019 and October 2020, 753 children aged between 0 months and 18 months were tested in our clinic. The testing consisted in determining the presence or absence of acoustic otoemissions (TOAE) with the SERA-Interacoustics equipment. The children were examined before testing according to a standard protocol. Only children with normal otoscopy and physiological tympanogram (type A curve) were selected for further testing. The test was performed respecting the conditions of environmental quiet, the children being in natural sleep.

Results: Testing the 753 children with acoustic otoemissions, we identified 20 children with profound neurosensory hearing loss, 2 children with moderate neurosensory hearing loss and 2 children with severe neurosensory hearing loss (these children did not have a diagnosis of genetic syndrome). These last 4 children received an indication for a hearing aid, while the rest (20) received an indication for a cochlear implant.

Conclusions: Auditory screening is essential in the early detection of hearing loss in the newborn. The diagnosis of hearing loss made in the first year of life allows the effective rehabilitation of the child. In this way the child manages to acquire the language, to integrate in the community and to develop harmoniously from both auditory and psychoemotional point of view.

Keywords: neonatal screening, pediatric deafness, acoustic otoemission, TOAE, ABR

INTRODUCTION

Our Hospital is part of the National Program VI.1.5 "Prevention of hearing impairments through neonatal screening" from 2019.

The history of the neonatal auditory screening begins in the 60s, when the audiological community became aware that the incidence of deafness in newborns is 1/1000 and that there are non-invasive tests that can detect this pathology from birth. In the past decade, universal newborn hearing screening has been widely adopted throughout North America, Europe (1),(2),(3),(4),(5),(6),(7),(8). For risk stratification, screeining protocols take into account the following risk factors for hearing loss: family history of permanent hearing loss, craniofacial abnormalities including those involving the external ear, congenital infections including bacterial meningitis, cytomegalovirus, toxoplasmosis, rubella, herpes and syphilis, physical findings consistent with an underlying syndrome associated with hearing loss, neonatal intensive care unit stay >2 days or with any of the following regardless of the duration of stay: assisted ventilation, ototoxic drug use, hyperbilirubinemia requiring exchange transfusion, extracorporeal membrane oxygenation (9),(10),(11),(12).

There are two screening tests that are used to detect hearing loss: recording acoustic otoemissions and screening ABR. How these tests are used can lead to different hearing screening protocols:

- AABR only—can be used in NICU and in well-infant nursery
- OAEs only—recommended for use in well-infant nursery
- OAE followed by AABR when the OAE is not passed—OAE screening is completed on both ears first, AABR is only done for those newborns that do not pass the OAE screen. If one or both ears do not pass the AABR, the infant is referred for outpatient diagnostic testing
- Both AABR and OAE—newborns must pass both an OAE and an AABR screening. The newborn who fails one or both screenings in one or both ears, is referred for outpatient diagnostic testing. The most precise but also the most expensive protocol (13),(14)

The importance of early diagnosis of hearing loss is supported by the fact that verbal auditory rehabilitation is possible only with the help of neural plasticity, a process that we benefit fully in the first years of life.

The child with hearing loss, with a late diagnosis, is much more difficult to rehabilitate. The degree of disability may have an important emotional impact and may have consequences on the quality of social life (15),(10),(16),(17).

Aim and objectives

This study aims to present a statistic obtained on the group of children tested by auditory screening in the period 2019-2020 in our institution.

Abbreviations:
TOAE – transient acoustic otoemissions
ABR – auditory brain response
ASSR-auditory steady state response
NICU-neonatal intensive care unit

MATERIAL AND METHODS

Between January 2019 and October 2020, 753 children aged between 0 months and 18 months were tested in our clinic. The testing consisted in determining the presence or absence of acoustic otoemissions (TOAE) with the SERA-Interacoustics equipment. The children were

examined before testing according to a standard protocol. The protocol included otoscopic examination and tympanometry with a 1000 kHz probe for the children. Only children with normal otoscopy and physiological tympanogram (type A curve) were selected for further testing. Children with external / middle ear malformations who will form the working group for another study were excluded from the study. Children with inflammatory diseases of the middle ear and pathological tympanogram were treated and after remission of the acute episode, were audiologically retested.

The TOAE test was performed respecting the conditions of environmental quiet, the children being in natural sleep.

Children without risk factors for deafness, having auto-emissions present will return to control only if necessary, the national protocol recommending a reassessment before starting school.

Children with or without risk factors for hearing loss, who had absent acoustic otoemissions on the first postpartum test, were examined on the second test and with screening ABR until the age of 6 months, in order to be able to schedule the diagnostic tests (ABR and ASSR) and to confirm the possible diagnosis of hearing loss no later than the age of 6 months.

Children with risk factors for hearing loss are evaluated every 6 months until the age of 2, according to the national protocol. In these cases, even in the constant presence of otoemissions, screening ABR is performed at least once during the evaluations. This attitude is meant to discover those cases of auditory neuropathy that initially manifest with the presence of acoustic otoemissions, but with a pathological ABR threshold.

The screening ABR is also performed in conditions of environmental quiet and relaxation of the child (natural sleep) taking care of all aspects related to the methodology (choosing olive to ensure tightness, proper skin degreasing, checking electrode impedances). To perform this test, Natus equipment was used, with the possibility of testing at 4 intensities: 30 dB, 35 dB, 40 dB, 45 dB.

RESULTS

The study group included 753 children. Of these, 250 (33,2%) presented in the anamnesis risk factors for deafness, and 503 (66,7%) did not present risk factors for hearing loss.

We diagnosed 49 (6,5%) children with pathological hearing tests (TOAE refer, ABR screening refer to 45 dB). Profound neurosensorial hearing loss was confirmed in 20 children, and severe or moderate neurosensory hearing loss was observed in 4 children. 10 children (under 6 month of age) are still being diagnosed with scheduled follow-up tests with ABR and ASSR. 15 children came out of our records probably by addressing other territorial centers.

In the subgroup formed by children with risk factors for deafness (250), 20 (8%) had pathological TOAE and screening ABR.

In the subgroup of children without risk factors for NHS (503), 29 (5,76%) showed pathological TOAE and screening ABR.

A special group consists of 15 children diagnosed with genetic syndromes: Down syndrome (5 pacients), Myhre syndrome (1 patient), oculo-dental syndrome (1 patient), Duchenne distrophy (1 patient), Antley Bixler syndrome (1 patient), Binder syndrome (1 patient), sindrom Wolf Hirhhorn (1 patient), 4 patients with possible genetic abnormalities, but no confirmation yet. Children with Down syndrome presented with moderate hearing loss in 3 cases, 2 cases of normal hearing. In the case of one of the unspecified genetic syndromes and in the case of Antley Bixler syndrome we identified deep and severe neurosensory hearing loss. Another case of unspecified genetic syndrome (with bilateral

anophthalmia) presented a severe neurosensory hearing loss, with possible auditory neuropathy.

In the case of the patient with Myhre syndrome, we identified a moderate neurosensorial hearing loss associated with chronic serous otitis, for which the child was scheduled for the insertion of aerators, as well as the 3 children with Down syndrome.

DISCUSSIONS

This study shows that patients with perinatal risk factors for hearing loss, in our case 33% of the group, should be tested by audiological screening, because their risk of developing hearing loss is higher than in the category of children who do not have perinatal risk factors. In our case, in the group of children with risk factors 8% presented pathological screening tests, compared to 5% in the group of those without risk factors.

Of the total number of patients with screening tests with pathological results (6.5%), the majority were subsequently diagnosed with deep neurosensory hearing loss, only 4 children presenting with moderate or severe neurosensory hearing loss.

Patients with genetic pathologies form a category at risk of developing hearing loss, in our case 5 patients out of a total of 15, more precisely 30% were subsequently diagnosed with hearing loss.

The use of tympanometry with a 1 Hz probe helps in the evaluation process, to select the cases in which the presence of serous otitis is present, especially frequent in the cases of children diagnosed with genetic syndrome.

The incidence of hearing loss in our group is higher than in the study conducted by Cianfrone et al. (18), This difference is probably due to the difference between the study populations, our group being considerably smaller.

There are limitations of the screening protocol, more precisely there is a risk that mild hearing loss (below 30 dB) will not be identified and also, progressive hearing loss in children without risk factors, examined only with TOAE at birth, can be diagnosed later with delay. Also, in the case of auditory neuropathy, children may initially have TOAE present, thus escaping the diagnosis of hearing loss. Consequently, we established that in our protocol we should also use ABR screening in children with risk factors for hearing loss, at least once during follow-up evaluations, even if the TOAE result is ”pass” bilaterally (13).

CONCLUSIONS

Auditory screening is a procedure that has shown over time that false-positive rates, indicating the proportion of normally hearing children who are referred for diagnostic testing, are reported to be between 2% and 4% in most UNHS programs, with well-established programs reporting rates of 0.5% to 1.0%. Comparatively, the false-positive rates for newborn thyroid screening are approximately 2% (9),(19),(20).

It is essential that national hearing screening programs work everywhere in order to identify children at risk for hearing loss. Early verbal auditory rehabilitation of children, offers them the chance to develop and integrate into society, increasing their quality of life.

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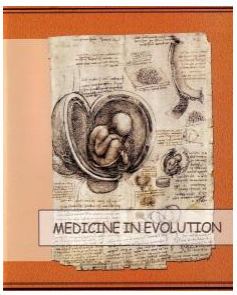
The impact of lifestyle and demographic factors on semen parameters



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Abstract

Aims and objectives: To identify the possible associations between semen parameters and different demographic or lifestyle factors with known roles in fertility.

Material and methods: The present retrospective study has taken place over a period of 12 months and has included 876 male patients who have presented themselves for fertility medical testing in a Fertility Center. They provided semen samples which were analysed through the use of semen analysis, according to the World Health Organisation (WHO) standards, providing basic information about spermatogenesis.

Results: Some significant statistical correlations were observed between different sperm parameters and demographic and lifestyle factors.

Conclusions: The present study shows that age, the number of abstinence days, obesity, smoking, some medical condition like varicocele or genetic factors,, as well as correct patient sample collection and analysing methods can greatly influence the different diagnostics decisions, on the basis of the sperm analysis, with different significations regarding the masculine fertility prognostic.

Keywords: Semen analysis/lifestyle/male factor/smoking/fertility

INTRODUCTION

Fertility represents the capacity of a healthy couple to reproduce through normal sexual activity (1). Today, on a world scale, infertility affects approximately 15% of couples that are of reproductive age (2) and in approximately 20-50% of cases, the medical reasons are of a masculine nature (3). There are a number of tests that try to establish the reference values for semen function evaluation. The World Health Organisation (WHO) has elaborated many editions of the manuals that define the optimal parameters of spermatogenesis, as dysregulations of the semen functions represent a major factor of masculine infertility (4).

The semen analysis is a laboratory standard test which offers basic information about spermatogenesis, sperm production and sperm quality, and some information about the secretory activity of the anexe glands and the potency of the masculine genital tract, it being the simplest masculine fertility test (5).

Aim and objectives

The objective of this study has been to identify the possible associations between some semen parameters and demographic or lifestyle factors, with a known role in fertility.

MATERIAL AND METHODS

Study Population: The present retrospective study has taken place over a period of 12 months and has included 876 male patients who have presented themselves for fertility medical testing (semen analysis) in a Fertility Center.

Semen parameters evaluated: semen volume, sperm cell concentration/ml, sperm cell concentration/ejaculate and the progressive motility.

The variables used in testing correlations were: the months of the year, the season, the number of abstinence days, age, some associated risk factors, the presence of varicocele, smoking, genetic factors and some associated infections.

The concentration and motility of sperm cells has been evaluated using the Makler counting chamber (Sefi Medical Instruments Ltd., Israel), especially conceived for evaluating the concentration and motility of sperm cells.

Determining the morphology of sperm cells has been done with the help of the May-Grünwald and Giemsa staining methods which have an affinity for the cellular components.

Normal and abnormal semen parameters

The semen parameter values have been fitted according to WHO2010 (4), and have been taken into account for a correct evaluation of the sperm (6):

- *semen concentration* represents the number of sperm cells present in a volume of semen (per millilitre). The total number of sperm cells is referring to the number of sperm cells present in the entirety of the ejaculated material and is obtained by multiplying the concentration of sperm cells with the total volume of semen (7).
- *sperm cell motility* represents the speed with which the sperm cells are travelling; the speed with which they progress is directly linked with their chance of generating a pregnancy; *progressive motility:* represents the actively moving sperm cells, linearly or in a circle, no matter their speed.
- *sperm morphology (the shape of the sperm cells)*: sperm can be considered normal if they present an oval shaped head and a long, slim and straight tail. Any other potential shapes are considered abnormal (4).

Statistical data analysis

In this study, statistical data analysis and graphical representations have been accomplished with the help of the SPSS 20 program (Statistical Package for the Social Sciences, IBM Corp.). A $p < 0.05$ was considered to indicate a statistically significant

difference. During the study, apart from descriptive variable analysis (average, median, modal value, standard deviation, minimum and maximum), taking into account the type of data obtained and the end goals of the study, the Kruskal-Wallis H, Mann-Whitney U Tests and the Spearman Correlation Coefficient have also been used.

RESULTS

The average age of the participants has been 33.66 years, with a minimum of 17 years and a maximum of 69 years. The most frequently met age was 34 years, and the predominant group was the 31-35 years of age (32.42%) followed by the 36-40 years of age (31.85%). The samples have been collected in all seasons, in approximately equal percentages: 23.5% in winter, 26.9% in spring, 24.4% in summer and 25.1% in autumn.

Following this study, it has been noticed that 80.4% of the patients have presented a normal semen volume acording to WHO.

Sample collection was made taking into account the average number of abstinence days (4.23 days), therefore keeping in line with the international recommendations for testing (the required 2-7 days of abstinence between intercourse)(4).

Over 79% of patients have presented a normal semen concentration, while from the rest of 21%, 14.5% have been diagnosed with oligozoospermia (low sperm concentration) and 6.1% with azoospermia (the absence of sperm cells in the semen sample). Approximately half of the patients have presented sperm progressive motility dysfunctions, therefore 51.4% had the diagnosis of astenozoospermia (low progressive motility). According to sperm morphology, for 17.9% of the subjects, the diagnosis of teratozoospermia (abnormal sperm shape morphology) has been chosen.

From the subjects of this study, 10.2% have presented associated risk factors. The presence of the varicocele has been noticed in a percentage of 3.4% of the subjects and in an extremely small number of patients, the presence of associated genetics factors has been observed.

For the analysed patient samples, the identification of correlations between different variables and studied semen parameters has been attempted.

The season in which semen sample collection has taken place

The Kruskal-Wallis H Test has been applied due to the abnormal distribution of the variables that express the semen volume, semen concentration, total semen concentration/ejaculate and progressive motility. No significant statistical relationship between the season when the samples were collected and any of the parameters has been observed ($p > 0.05$).

Age of the patients

A significant statistical correlation, negative, but of a very low intensity, has been observed between age and semen volume (rho = -0.095; $p = 0.005$).

Apart from this, age does not seem to significantly influence any other studied parameter; no significant statistical correlations have been identified. It can be affirmed that as one ages, a drop in semen volume can be observed (**Fig.1**).

The number of abstinence days

In order to determine the relationship between the number of abstinence days and different semen parameters, the Spearman Correlation Coeficient has been employed (**Fig.2**).

The presence of significant statistical correlations has been observed between the number of abstinence days, on one side and the semen volume (rho = 0.163; $p < 0.001$), semen concentration (rho = 0.148; $p < 0.001$), total semen concentration/ejaculate (rho = 0.204; $p < 0.001$) and sperm cell morphology (rho = 0.102; $p = 0.003$), on the other side. Alternatively, no significant statistical correlations have been observed between the number of abstinence days and progressive motility (rho = 0.019; $p = 0.591$).

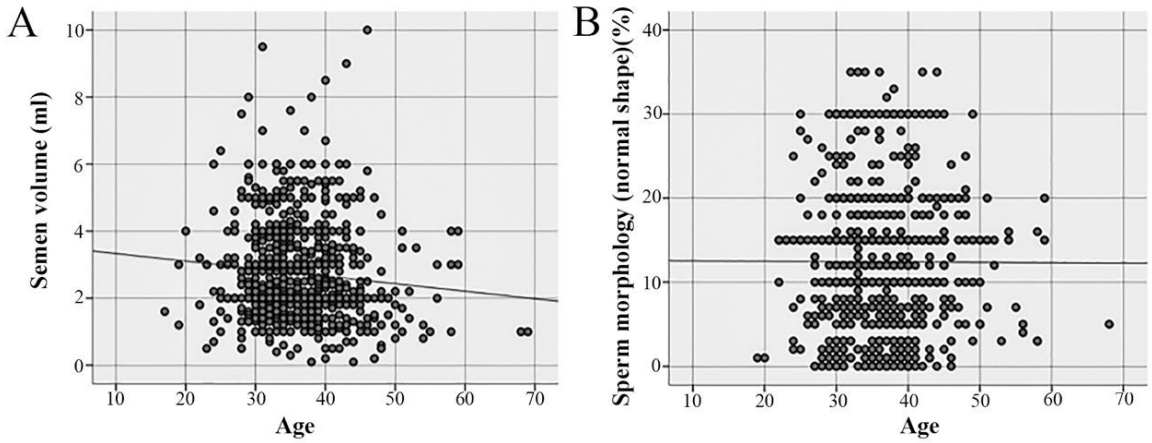

Figure 1. The relationship between age and different semen parameters. A) Semen volume (ml); B) Sperm morphology (normal shape)(%)

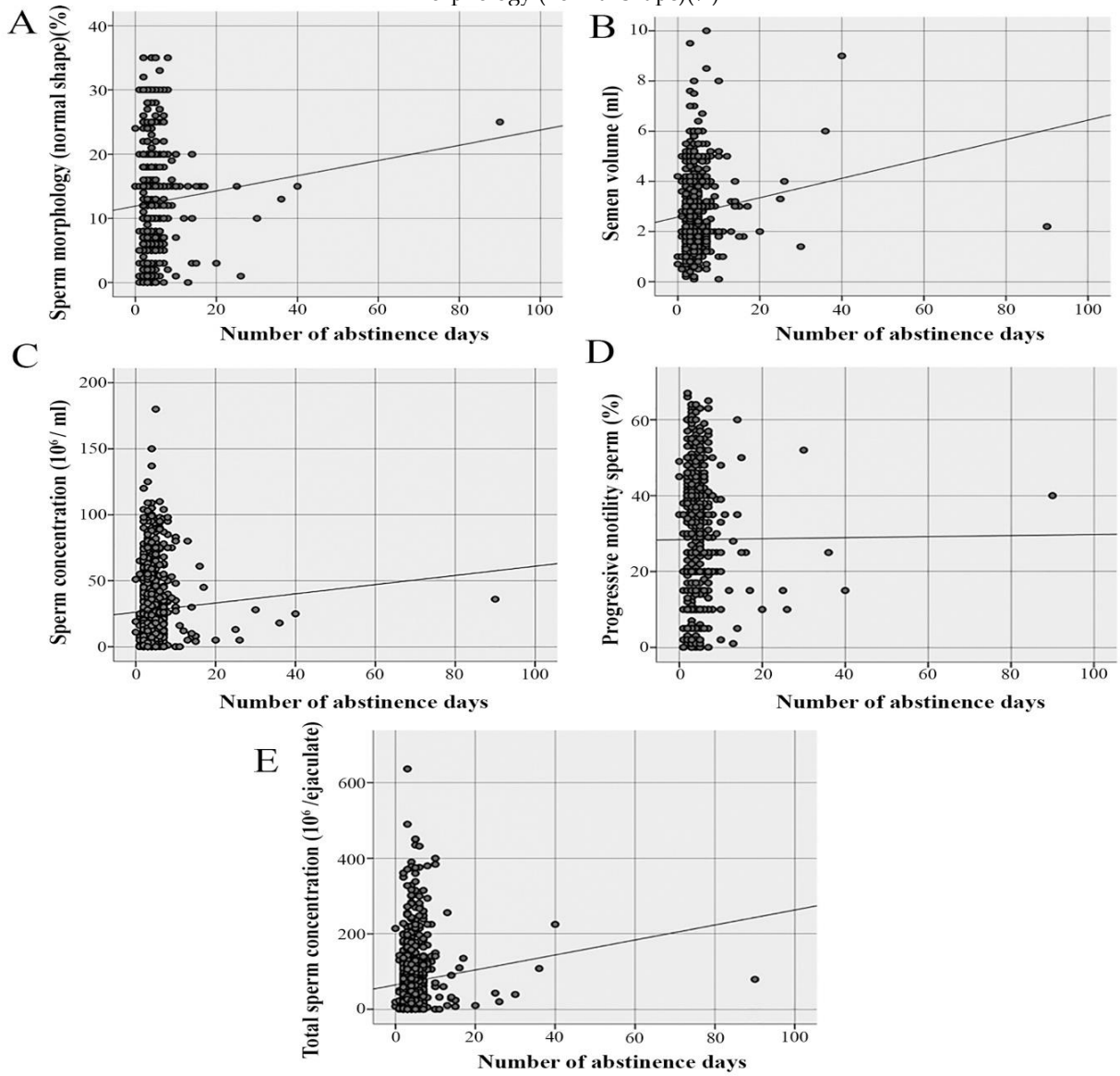

Figure 2. Relationship between the number of abstinence days and different semen parameters. A) Sperm morphology (normal shape)(%); B) Semen volume (ml); C) Sperm concentration (106 / ml); D) Progressive motility sperm(%); E) Total sperm concentration (10^6 /ejaculate)

Lifestyle and the presence of risk factors

Only 89 patients have presented risk factors (10.2% from the studied total); the majority (80.9%) presented obesity, 9% had diabetes, 6.7% had testicular afflictions and 3.4% had consumed recreational drugs.

Between risk factors and the studied semen parameters, no statistically significant relationships have been noticed. A very small effect of the risk factors on semen volume has been observed ($U = 30462$; $p = 0.043$; $r = 0.06$), as well as on semen concentration ($U = 29697$; $p = 0.019$; $r = 0.08$) and total semen concentration/ejaculate ($U = 27881.5$; $p = 0,002$; $r = 0.07$). In all cases, the presence of risk factors has led to decreases in semen characteristics.

Varicocele

Semen concentration and total semen concentration/ejaculate is significantly lower in the case of patients that present a varicocele. The measure in which the varicocele affects the semen concentration ($r = 0.11$) and the total semen concentration ($r = 0.09$) is very reduced. The presence of normal sperm cells is significantly lower in patients with this affliction, while the measure in which it affects their morphology is still very reduced ($r = 0.09$).

Smoking

According to the results of the statistical analysis, smoking does not have a significant effect over the morphology of sperm cells ($U = 1240.5$; $p = 0.054$; $r = 0.17$). However, smoking does have a statistically significant effect over semen concentration ($U = 1408$; $p = 0.014$; $r = 0.21$), total semen concentration/ejaculate ($U = 1331$; $p = 0.005$; $r = 0.25$) and progressive motility ($U = 1162$; $p = 0.018$; $r = 0.22$), through increasing these parameters.

DISCUSSIONS

Keeping in line with other published works, the differences in parameters and diagnostics on the basis of the semen analysis can be due to the differences in geographical zones, lifestyles, workplaces and environmental factors (8).

In our study, a decrease in sperm cell motility has been noticed, in 46.81% of the smoking patients. These results are backed by other examples from literature which have identified a decrease in sperm cell motility and concentration (9).

Cigarette smoke contains a high number of compounds recognised as carcinogenic and mutagenic factors. In spite of this, the toxicity of the many constituents of cigarette smoke has not been properly evaluated for its effect over sperm cells. Even though the effect of smoking over sperm cell dysfunctions has been observed a long time ago, the mechanism through which tobacco smoke affects sperm cells still remains misunderstood (10). On the other hand, some studies do show that the effect of nicotine can lead to a decrease in sex hormones which in turn influences the seminal parameters, but this hipothesys is still being investigated (11).

Testing statistical correlations between different parameters and variables has shown that no significant differences exist, depending on the month of semen collection. According to another study (12), an increased concentration of sperm cells, a better motility and morphology have been noticed in patients that have undertaken a semen analysis in spring, compared to the other seasons. This discrepancy could be explained by the different geographical zones, where changes in temperature could lead to seasonal variations in semen analysis results.

The presence of significant statistical correlations between the number of abstinence days and semen volume, semen concentration, total semen concentration/ejaculate have been observed. It could be inferred that as the number of abstinence days grows, the values of the previously mentioned parameters also grow, as well as the number of morphologically normal sperm cells. These data are in accordance with other available studies, which have also registered an increase in seminal parameters values as the number of abstinence days

grows (13, 14). Contrary, an increase in the percentage of sperm DNA (deoxyribonucleic acid) fragmentation has also been observed in longer periods of abstinence, a fact that is associated with reactive oxygen species (ROS) and a reduced fertility capacity (15).

Speaking about age, it can be affirmed that as men grow older, a decrease in semen volume takes place. Between age and all the other parameters, no statistically significant correlation has been found. The results of this study are in accordance with previously published works which have also proved that age does not exert an influence over the majority of the seminal parameters, with the exception of the semen volume in older individuals (16). Opposed to our data, according to another published study, a decrease in all seminal parameters values has been found in all patients over 45 years of age (17).

Regarding semen volume, semen concentration, total semen concentration/ejaculate and progressive motility, their values do not significantly differ according to certain risk factors. There is, however, a very small effect of the presence of these factors (no matter their type) over the mentioned parameters. In our study, the presence of obesity and varicocele leads to a decrease in the characteristics regarding semen quality and the total/ejaculate semen concentration, leadind to a cause of potential masculine infertility.

Our results are backed-up by other available studies that have analysed the correlation with the masculine body mass index (BMI) and have found that there is a decrease in seminal parameters with gaining weight. This because a high masculine BMI is associated with reduced plasmatic concentrations of globulin which binds the sex hormone (SHBG) testosterone and with a concomitant rise of the plasmatic concentrations of follicular hormone(FSH). Low levels of testosterone and high levels of FSH have been associated for a long time with subfertility (18) and a reduction in the number of sperm cells through the interruption of the negative feedback loop of the hypothalamic pituitary gonadal axis (19). In addition, the damaging effect of heat which results from the increase in scrotum adiposity has been associated with a reduced motility of sperm cells and an increased fragmentation of sperm DNA (20), and also an increase in the oxidising stress of semen (21).

Other authors have observed a lower concentration of sperm cells, a lower rate of progressive motility, but also of abnormal morphology in patients and compare the semen analysis with before and after the surgical treatment of the varicocele, noting a significant improvement of some parameters, posttreatment (22). The varicocele represents an abnormal dilation of the testicular veins (the pampiniform plexus) at scrotum level and can be a cause of infertility (23). The scrotum is a temperature regulator for the testicles and the varicocele can determine an increase in temperature at this level and can affect spermatogenesis (24, 25). The varicocele is also associated with the deterioration of semen DNA and can affect the patency of the efferent ducts or the epididymis channel, which can affect the maturing of the sperm cells in the epididymis and can lead to motility disorders (26).

In our study, we have identified that the presence of genetic factors has a statistically significant effect on semen concentration, total semen concentration/ejaculate and progressive motility, but the size of the effect is extremely reduced. These parameters are reduced in patients that present certain genetic factors. Azoospermia has been identified in 6% of patients and this can be due to genetic anomalies (8), certain hormonal dysregulations, varicocele or testicular torsion (27). In addition, the percentage of normal shaped sperm cells is reduced in patients which present these factors, coming also in correlation with other studied works (8).

CONCLUSIONS

There are a series of factors that can influence significantly semen parameters along with deciding different diagnostics on the basis of the semen analysis, with implications in the evaluation of the masculine fertility prognostic. Morphological sperm cell defects can be influenced by diverse variables and are in most cases irreversible, being the result of the

effects of environmental factors or pathologies of the masculine genital tract. These can induce epigenetic modifications which can partially explain the variations in sperm cell parameters, especially regarding volume, concentration, motility and morphology.

The results of the present study can be affected by the following limitations that need to be mentioned: Firstly, limitations regarding population selection: the samples came from patients that have contacted a Fertility Centre and therefore, any attempt to extrapolate the results to the general population can be invalidated. On the other hand, the retrospective examination of data can include possible methodological variations between different operators. Therefore, future prospective analysis and the use of standardised evaluation equipment that can automatically analyse semen samples will be able to provide much more robust evaluations in this domain.

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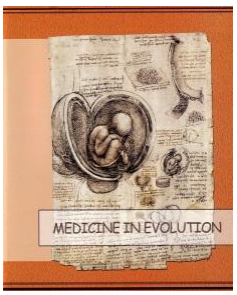
Treating obstructive sleep apnea - the role of nasal and oropharyngeal surgery



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Abstract

Background: Sleep disorders are a family of pathologies that have gain a lot of visibility in the recent years due to the fact that more and more people are diagnosed with such problems. The high incidence of risk factors especially obesity, nicotine and alcohol abuse and the modern and fast way of life have made the incidence of sleep disorders to rise. Otolaryngologist have always tried to be in the front line of treating sleep disordered breathing spectrum like upper airway respiratory syndrome or obstructive sleep apnea. Treating sleep disorders is a daunting task due to the fact that the mechanism of sleep disorders still puzzles doctors all over the world. Patients with sleep disorders are complex patients and should be evaluated in a multidisciplinary team for a correct approach to the disease.

Methods: We present our experience in diagnosing and treating 45 patients with sleep breathing disorders specifically obstructive sleep apnea and the results we have obtained after surgical interventions were performed.

Results: Many patients with sleep disorders especially obstructive sleep apnea are treated with continuous positive airway pressure without being informed of surgical options. Although CPAP is considered the gold standard in treating obstructive sleep apnea the advances in technology have made surgical options to have similar results if done correctly.

Conclusion: Patients with sleep breathing disorders are complex patients that need to be assessed in a multidisciplinary team. Surgical options can alleviate symptoms and improve both subjective and objective parameters and can improve the overall quality of life. Treating sleep disorders is necessary due to the fact that left untreated they can pose serious problems for the patient and can even have fatal consequences.

Keywords: sleep, surgery

INTRODUCTION

Sleep disorders have gained a lot of popularity in recent years due to the more increasing number of patients that are diagnosed yearly. There is a small group in this vast and complex family of disorders that has caught the attention of otorhinolaryngologist, sleep breathing disorders. This group is formed by three entities that have in common the obstruction partial or complete of the upper airway causing sleep disturbances. These entities: snoring, obstructive sleep apnea and upper airway resistance syndrome are sometimes intertwined.

Obstructive sleep apnea is characterized by a partial or incomplete collapse of the upper airway during sleep causing arterial desaturations, while the upper airway respiratory syndrome has the same symptoms, sleep fragmentation seen on sleep studies as for obstructive sleep apnea but without arterial desaturations.

Epidemiology

Obstructive sleep apnea is defined as an apnea/hypopnea index of more than 5 an hour.In the Wisconsin Sleep Cohort the prevalence of obstructive sleep apnea was 24% in men and 9% in women with ages ranging from 30 to 60 years of age [1]. But the fact obstructive sleep apnea is one of the most underdiagnosed disease could mean that those numbers could be higher than expected. The raise in obesity around the world the increased number of people who smoke drink alcohol and use sedatives could mean a raise in the incidence and prevalence of sleep disorders and especially obstructive sleep apnea.

Signs and symptoms.

Sleep breathing disorders can have a lot of signs and symptoms but the problem with these are that sometimes they can be easily overlooked by both patients and doctors. They are usually classified in daytime symptoms and nighttime symptoms. Nighttime symptom are comprised of snoring, apneas and dyspnea. It's important to understand that many of these nighttime symptoms are unknown to the patient and this is where a correct history is of outmost importance and has to be done with the participation of a spouse if possible. Other nighttime signs and symptoms are bruxism, dry mouth or even drooling. Daytime symptoms are usually are recognized by the patient but sometimes are not given any attention. They range from fatigue, morning headaches, sexual dysfunction and can even get to excessive daytime sleepiness, neurocognitive impairment and mood and personality changes. All of this affect the quality of life of the patient. It is thus important to know and recognize these symptoms and explain to the patient the possibility of having a sleep disorder.

Diagnosis.

As mentioned before one of the most important aspect of diagnosing sleep disorders is a correct approach to history taking. Sometimes patients will ignore or underestimate the importance of some symptoms especially like fatigue or daytime sleepiness. The doctors should always ask for these particular signs and symptoms of there is a suspicion of sleep disorders. Bedpartners should also be asked for symptoms where that is possible. Questionnaires like Epworth, STOP-BANG, Berlin, Stanford have proven their importance in assessing the subjective way the patients feel and are used routinely in patient with sleep disorders.

A complete ENT examination is mandatory for locating the possible site of obstruction. A clinical examination including an endoscopy of the upper airway is the key part of the ENT examinations and attention must be given to the most frequent sites of obstructions. The examination of the oral cavity is also of great importance in assessing the tonsils and the position of the soft palate. One of the setbacks of the ENT examination is the fact that usually it is done in a state of wakefulness that changes the behavior of the anatomical structures. Sleep endoscopy should be performed on a regular basis to complete the ENT examination.

As for imaging CT scanning or MRI have both provided valuable insight sleep breathing disorders although no protocols or guides mention the regular use of them in diagnosing sleep breathing disorders.

The ENT examination is an important step in diagnosing and especially treating sleep breathing disorders assessing the topographic diagnosis of the obstruction. Although highly suggestive the ENT examination is not enough for diagnosing sleep breathing disorders.

The sleep study via a polysomnography is the gold standard in the diagnosis of sleep disorders, having the capacity to differentiate between different entities.

Treatment

Treating sleep disorders especially obstructive sleep apnea is a complex task and many studies have shown the advantages and disadvantages of different treatment choices. There are three important directions in treating obstructive sleep apnea. First is the conservative treatment that usually aims at weight loss, sleep position and other risk factors like nicotine and alcohol abuse or the use of sedatives. The second major way of treating obstructive sleep apnea is by using positive pressure devices considered to be the standard treatment [2] that although have the best results patient compliance is usually low. The third way is by surgical intervention. Surgical treatment of obstructive sleep apnea has gained a lot of recognition in the last 20 years and the advances made in both technique and equipment lowered the complications and increased the success rates.

MATERIAL AND METHODS

We decided to evaluate the performance objective and subjective, of two of the most common used surgical interventions used for treating obstructive sleep apnea uvulopalatopharyngoplasty (UPPP) and septoplasty with turbinate reduction. Figure 1 represents enlarged tonsils, while Figure 2 represents a deviated septum and hypertrophic turbinates Our evaluation consisted of 45 patients with a confirmed diagnosis of obstructive sleep apnea and were referred to our specialty for surgical treatment.

Patient history was taken with emphasis on the most common signs and symptoms and each patient underwent a complete ENT examination and the surgical approach was elected in accordance with the endoscopic findings. As for all admissions in the ENT clinic all patients signed the informed consent and assessed their daytime sleepiness using a visual analog scale (VAS) with a range from 0 to 10, 0 no daytime sleepiness and 10 excessive daytime sleepiness. Patient data was collected before the surgery and 6 months after surgery and consisted in general data like body mass index (BMI), sex, age and specific data like the result of the sleep study apnea hypopnea index, mean oxygen saturation and the results of the visual analog scale. The 45 patients were divided in 2 groups 27 for UPPP and 18 for septoplasty and turbinate reduction depending on the surgical intervention. Before surgery all patient underwent a preanesthetic examination, blood tests and all underwent surgery under general anesthesia. All of the measurements were introduced in a Excel database and then analyzed using a statistical analysis software.

Figure 1. Enlarged tonsils

Figure 2. Deviated septum and hypertrophic turbinates

RESULTS

Out of the 45 patients 30(66%) were males and 15(33%) females. The mean age was 40.55 (range 32-51) and as for the age specifically for each gender the mean age for males was 40.8 and 40 for females.

As for the most important risk factors found the mean body mass index was 28.40 (27.92 for females and 28.94 for males). Smoking was present in 70% of the patients and alcohol in 35%. The results of bot preoperative and postoperative measurements are synthetized in Table 1.

We also measured the BMI 6 months after surgery to observe if people lose or gain weight. The mean BMI before surgery was 28.40(±3.08) and We observed that there were no significant changes in the BMI after surgery in our group. This was also a positive thing because the results could be attributed only to surgical effects on our patients. The best results concerning AHI and oxygen saturation we found in the UPPP group while in the septoplasty and turbinate reduction although some improvements were seen they were not significant. As for how patient assessed their daytime sleepiness, we observed that although the best result on a sleep study was seen in UVPP group patients seem to feel better after septoplasty and turbinate reduction.

Table 1. Results of preoperative and postoperative evaluation of AHI (apnea hypopnea index), O_2(oxygen saturation), VAS (visual analog scale) Mean scores with standard deviation

	UPPP		**SEPTOPLASTY-TURBINATES**	
	Initial	6 months	Initial	6 months
MEAN AHI	29.0(±10.3)	22.8(±7.9)	14.83(±2.3)	13.11(±2.1)
MEAN O_2%	93.8(±1.8)	95.6(±1.5)	94.6(±1.4)	95.0±(1.2)
MEAN VAS	7.4(±1.1)	6.2(±1.1)	7.8(±1.4)	6.4(±1.2)

DISCUSSIONS

Surgical treatment of obstructive sleep apnea is still controversial mostly because surgical outcomes are hard to back by randomized controlled trials. Comparing the surgical results rates to those of the positive pressure demonstrate that surgical success rate is sometimes variable. The variability of the success rate depends on a plenitude of aspect ranging from the level of obstruction, patient characteristics to the type of surgery and experience of the surgeon. In a study by Lin et all [3] only 25% of patients have a uni-level obstruction. obstructive sleep apnea is a complex disease and the knowledge that multi sites of obstruction can maintain airway obstruction in sleep is a factor for thinking of multilevel

surgery is sometimes needed especially for patient that can't or wont use positive pressure devices. Riley et all [4] determined that multilevel surgery can reach success rates up to 95%.

Nasal surgery in obstructive sleep apnea is also been debated for a long time and many studies have shown that results are sometimes unsatisfactory. In a prospective study done by Sufioglu et all [5] on 31 patients demonstrated that although improvements in snoring daytime sleepiness and subjective complaint occurred there were no significant differences between preoperative and postoperative AHI values. Thus, is important to tell our patient the reality of nasal surgical procedures and what they can objectively expect from them. But nasal obstruction is one of the most important factors for positive pressure device failure and Nakata et all [6] demonstrated that nasal surgery can result in a significant decrease in nasal resistance and raise the compliance to CPAP.

UPPP was first introduced in 1981 by Fujita and was considered for a long time as a quintessential procedure in treating obstructive sleep apnea. A study by Kham et all [7] showed that only 24% of patients achieved an AHI of 5 or less and 33% an AHI of 10 or less. Elshaug[8] also reported on the success rate 16.1% and 34.1% respectively.But recent advances both in understanding and treating obstructive sleep apnea have changed the way we manage this disease. Using an only surgical procedure as a definitive treatment is now known not to have the desired results and also changes in how a successful outcome is defined in respect to treating obstructive sleep apnea.

In recent years with the more increasing use of drug induces sleep endoscopies a lot of studies have demonstrated the role that the epiglottis plays in obstructive sleep apnea. It is considered that 12-30% have a complete collapse of the epiglottis. [9-10] Hybášková et all [11] showed use of drug induced endoscopy changed the surgical plan in 60.8% of the patients. Azarbarzin et al [12] showed that endoscopic studies reveal that epiglottic collapse renders patients at higher risk of failed oral appliance therapy and can even worsen the obstructive sleep apnea with CPAP use.

CONCLUSIONS

Surgical treatment for obstructive sleep apnea although not a cure can decrease the mortality and morbidity of the disease and improve the overall quality of life. It remains controversial in the sense that success rates depend on a lot of factor like surgical technique, patient characteristic and surgeon experience. It also depends on the correct assessment of the patient and electing the best method for that patient in particular. The understanding that multiple sites of obstruction can occur in the same patient has given rise to the concept of multilevel surgery especially in patient that are uncompliant or can't use CPAP. One should also keep in mind that dealing with the obstructive sleep apnea patient is a daunting task and a multidisciplinary evaluation of the patient is mandatory.

CONFLICT OF INTEREST

The authors have no conflict of interest.

CONRIBUTION OF AUTHORS

All authors have equally contributed to this work

ETHICAL APPROVAL

All procedures performed in this study were in accordance with the ethical standard of the institution and with the 1964 Helsinki declaration and its later amendments

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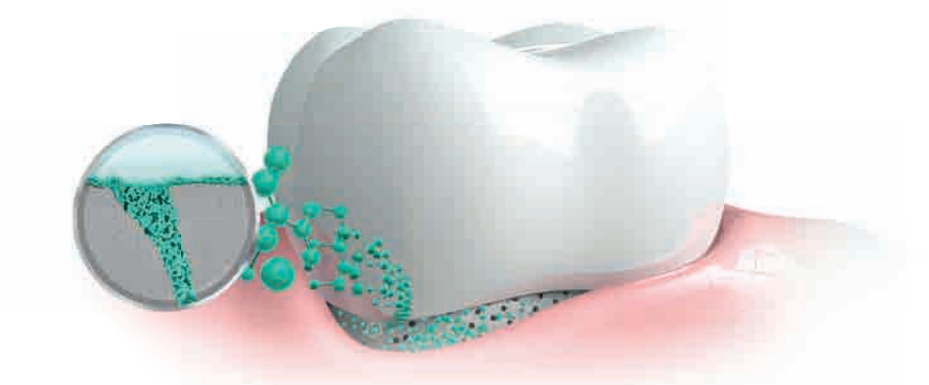
Noul elmex®SENSITIVE PROFESSIONAL cu tehnologia PRO-ARGIN

Calmarea **imediată* și de durată** a durerii din sensibilitatea dentară[1,2]



- În contact cu saliva, se formează un strat bogat în calciu, care obturează instant[1,*] tubulii dentinari deschiși
- Stratul rămâne intact în timp, chiar după expunerea la acizi, asigurând calmarea de durată a durerii din sensibilitatea dentară[2,3]

93% dintre pacienți confirmă calmarea durerii din sensibilitatea dentară[4]

93% dintre pacienți — confirmă reducerea hipersensibilității dentinare[4]

91% dintre pacienți — apreciază recomandarea medicului stomatolog[4]

Calmarea imediată* a durerii din sensibilitatea dentară[1]

Calmarea imediată* și de durată începe cu recomandarea dumneavoastră**

*Pentru calmare imediată, aplicați direct cu degetul pe dintele sensibil și masați ușor pentru 1 minut;
**Doar în legătură cu pasta de dinți

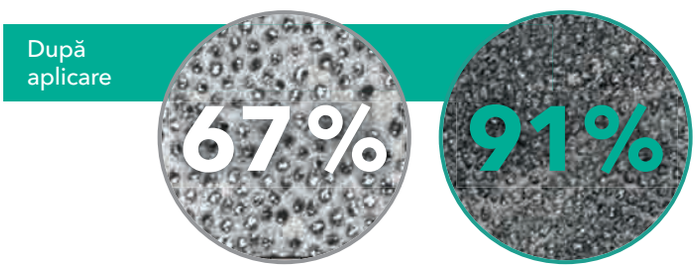
Referințe: 1. Nathoo S, et al. J Clin Dent. 2009;20(Spec Iss):123 –130; 2. Docimo R, et al. J Clin Dent. 2009;20(Spec Iss): 17– 22.; 3. Report Deon Hines-0003, 2016; 4. Studiu Ipsos cu privire la utilizarea produsului elmex® SENSITIVE PROFESSIONAL Repair & Prevent, efectuat în Polonia, rezultate după 2 săptămâni de utilizare, cu 325 de participanți (2017).

elmex® SENSITIVE PROFESSIONAL realizează obturarea superioară a tubulilor dentinari în comparație cu tehnologiile concurente[1,2,*]

Studiul 1[1,*]

Tehnologia cu fluorură de staniu/ fluorură de sodiu

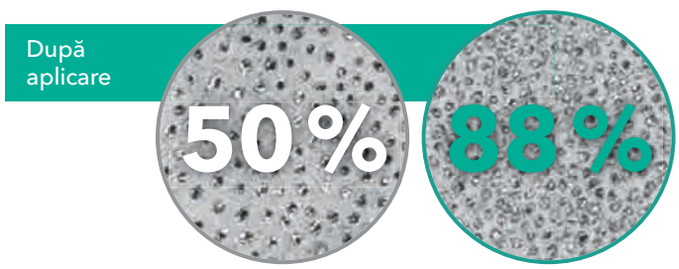
Tehnologia PRO-ARGIN



Studiul 2[2,*]

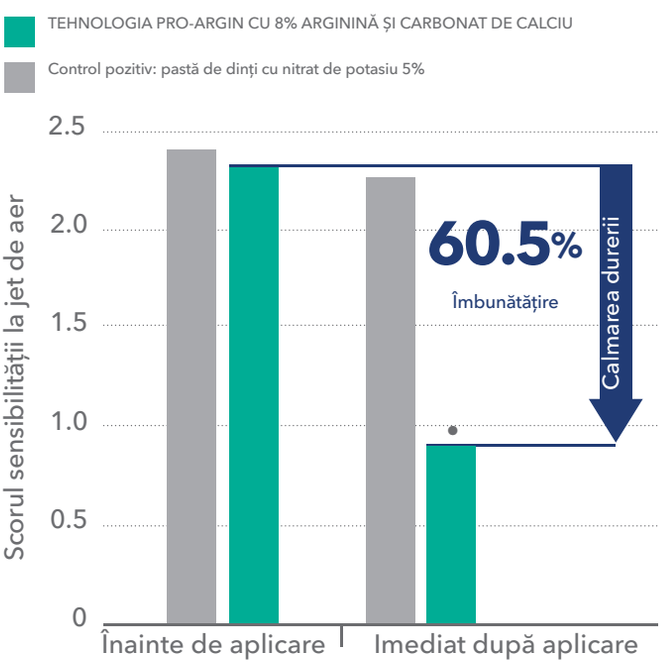
Tehnologia Novamin/ fluorură de sodiu

Tehnologia PRO-ARGIN



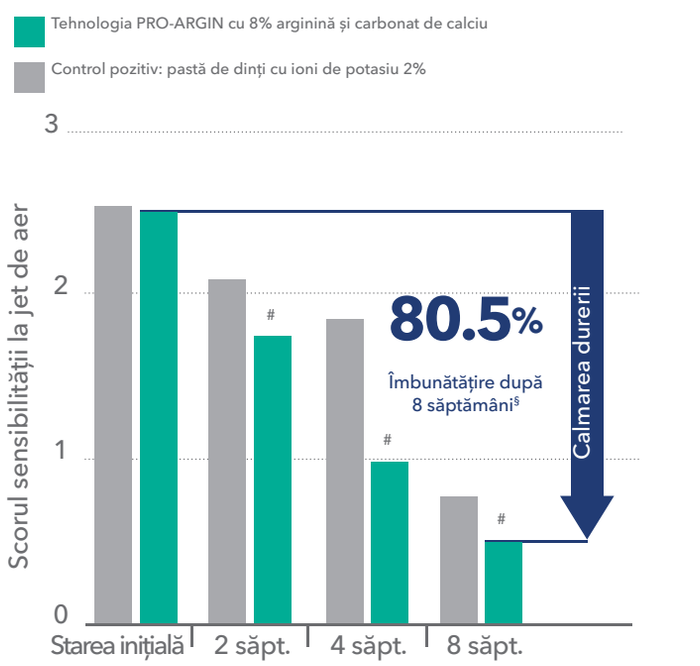
elmex® SENSITIVE PROFESSIONAL oferă calmare semnificativă imediată** și de durată a durerii din sensibilitatea dentară[3,4]

Calmarea semnificativă a durerii din sensibilitatea dentară instant[3,‡,**]



‡ În comparație cu starea inițială (sunt prezentate doar datele relevante)
• Semnificativ statistic (p<0,001)

Calmarea semnificativă de lungă durată a durerii din sensibilitatea dentară după 2, 4, și 8 săptămâni de utilizare[4,§,&]



§ În comparație cu starea inițială
& În comparație cu o pastă de dinți comercială desensibilizantă, ce conține 2% ioni de potasiu și 1450 ppm de fluor (NaF)
# Semnificativ statistic (p<0,05)

*Studiu in vitro, imagini reale de microscopie confocală după 5 aplicări (p<0,05%);
**Pentru calmarea imediată aplicați direct pe suprafața sensibilă și masați ușor cu vârful degetului timp de 1 minut.

Referințe: 1. Hines D, et al. Poster acceptat, July 2018 IADR. Colgate- Palmolive Company 2018.; 2. Hines D, et al. Poster #0742, March 2018 AADR. Colgate-Palmolive Company 2018.; 3. Nathoo S, et al. J Clin Dent. 2009;20(Spec Iss):123 –130; 4. Docimo R, et al. J Clin Dent. 2009; 20(Spec Iss): 17– 22.

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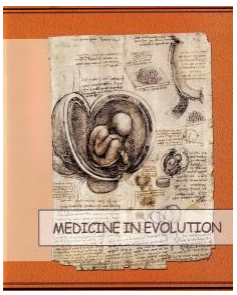
Apical pathological root resorption in primary teeth: retrospective study



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Abstract

Aim and objectives: to assess the changes in speed of the apical pathological root resorption and its causes in a group of Romanian children from Bucharest treated at the Paediatric Dentistry Department.

Material and methods: The retrospective study was carried out on the OPG of 94 Romanian children aged between 3.5 and 13.58 years, mean age 8.00±0.20 years and on 1137 primary teeth.

Results: The apical root resorption represented 93.1% from the teeth with external root resorption. Early root resorption was present in 15.4%, while the late root resorption in 6.5%, of the teeth. Pulpal and periapical infection were the most encountered (8%) causes of the accelerated root resorption.

Conclusions: Accelerated root resorption was the most common change in the rate of root consumption recorded in primary teeth and its main cause being the pulpal complications of the untreated caries and trauma.

Keywords: apical root resorption, primary teeth, early, late

INTRODUCTION

Pathological root resorption (PRR) represents the process of modified root consumption (pattern and speed) in both primary and permanent teeth (1-3).

The PRR classification according to Andreasen subdivides root resorption in two main groups: external and internal (2-7).

The external pathological root resorption, based on the location of the resorptive lesion, includes three types: apical, lateral and cervical (8,9)

The apical pathological root resorption (APRR) is the most common type of pathological root resorption (1).

Causes of APRR could include the following: complicated caries (10,11,12), trauma (13,14), vicinity pressure (3), systemic conditions (15-18).

The teeth with APRR are asymptomatic in the early stages (3,14). The clinical signs and symptoms are similar to those of the apical periodontitis in advanced stages (14). This is associated with a negative vitality test and a positive percussion test (13,14,18). The colour of the tooth can be altered to grey (19). Radiologically, shortening of the root can be observed (10) together with a radiolucency in the periapical area (13). Tooth mobility can be noticed as a consequence of APRR (3,20).

Aim and objectives

This paper aims to assess the changes in speed of the apical pathological root resorption and its causes in a group of Romanian children.

MATERIAL AND METHODS

The retrospective study was carried out over a period of 1 year (2016-2017), at the Paediatric Dentistry Department of the Medicine and Pharmacy University ''Carol Davila'', Bucharest, Romania.

The patients study sample (PSS) contained 94 Romanian children (46 girls and 48 boys, aged between 3.5 and 13.58 years, mean age 8.00±0.20 years).

The inclusion criteria of the participants were: healthy children with full medical records and primary or mixed dentition.

The study initial sample of primary teeth (IST) with and without root resorption (n=1137) was composed of 201 incisors (17.67%), 318 canines (27.96%) and 618 molars (54.35%).

The study sample of teeth with root resorption (n=835) was selected from the study initial sample of teeth and was composed of 165 incisors (19.76%), 225 canines (26.94%) and 445 molars (53.29%).

Data were collected from the patients' medical records and from theirs orthopantomograms (OPG). All radiographs were taken in the same radiographic facility according to a standardized technique.

The variables extracted from the patients' medical records were the following: age, gender, type of tooth, pulp diagnosis, presence and type of dental trauma.

The variables obtained (from OPGs and clinical records) were the following: type of root resorption (physiologic or pathologic), the location of external PRR, the possible causes of the external PRR (pulpal pathology, dental trauma, dental ankyloses, pressure on the dental root, multiple or idiopathic causes a.s.o.).

The speed of root resorption (physiological, early, late) was determined using the following data: the average length of root of the primary tooth (from standard tables) (21), the age range between which the physiological root resorption takes place for each dental group, the root length measured on the radiographs for each tooth. The age range during which root

resorption takes place was divided in equal parts of 1 year in order to observe the speed of the root resorption.

Table 1. The expected degree of APRR in primary incisors in accordance with patient`s age

Root resorption stages	Mx. CI	RAL (mm)	Mx. LI	RAL (mm)	Md. ci	RAL (mm)	Md. li	RAL (mm)
1.Initial stage	4 y	10	5 y	11.4	3 y	9	4 y	10
2. Intermed. stage 1	5 y	6.66	6 y	7.66	4 y	6	5 y	6.66
3. Intermed. stage 2	6 y	3	7 y	3.8	5y	3	6 y	3.33
4. Intermed. stage 3	7 y	3	8 y	3	6 y	3	7 y	3
5. Final stage	8 y	0	9 y	0	7y	0	8y	0

Legend: RAL – root average length; y-year; Mx. – maxillary; Md.- mandibular; CI, ci - central incisor; LI, li - lateral incisor.

Table 2. The expected degree of APRR in primary canines in accordance with patient`s age

Root resorption stages	Mx. C	RAL (mm)	Md. c	RAL (mm)
1. Initial stage	6 y	13.5	6 y	11.5
2. Intermediary stage 1	7 y	10.8	7 y	8.62
3. Intermediary stage 2	8 y	6.75	8 y	5.75
4. Intermediary stage 3	9 y	3.38	9 y	2.88
5. Final stage	10 y	0	10 y	0

Legend: RAL – root average length; y-year; Mx. – maxillary; Md.- mandibular; C, c- canine

Table 3. The expected degree of APRR in primary molars in accordance with patient`s age

Root resorption stages	Mx. CI	RAL (mm)	Mx. LI	RAL (mm)	Md. ci	RAL (mm)	Md. li	RAL (mm)
1.Initial stage	4 y	10	5 y	11.4	3 y	9	4 y	10
2. Intermed. stage 1	5 y	6.66	6 y	7.66	4 y	6	5 y	6.66
3. Intermed. stage 2	6 y	3	7 y	3.8	5y	3	6 y	3.33
4. Intermed. stage 3	7 y	3	8 y	3	6 y	3	7 y	3
5. Final stage	8 y	0	9 y	0	7y	0	8y	0

Legend: RAL – root average length; y-year; Mx. – maxillary; Md- mandibular; M1, m1 – first primary molar; M2, m2 – second primary molar.

Root length measurements were compared to the corresponding values in tables 1-3. Root resorption was assessed as early or late degree 1 if the measured length was in a resorption stage corresponding to an age one year older or younger, respectively in relation to the age of the patient. If the measured root length corresponded to an interval 2 or more years away from the length corresponding to the patient's age, it was included in the category of early or late resorption degree 2, respectively (Table 1-3).

The research team consisted of four examiners: a PhD student (AGG) which was previously trained in order to obtain an acceptable inter-examiner reliability score (Fleiss' kappa=0.82) and three experienced researchers.

Statistical analysis

Data analysis was performed using Stata® 11IC (StataCorp LP, Texas, USA) statistical software. A *p*-value of 0.05 was considered statistically significant.

RESULTS AND DISCUSSIONS

The study group was balanced in terms of children's gender (boys - 51.06%, n=48).

External root resorption was observed in 23.1% (n=263) of the initial study sample of teeth (IST), out of which the most frequently encountered (93.15%, n=245) was apical root resorption.

The alteration of the speed of the external apical root resorption was registered in 21.9% (n=250) of the initial study sample of teeth, including 5 teeth with delayed onset of root resorption.

The prevalence of APRR was not influenced by gender (p=0.970).

Table 4. The distribution of the root resorption according to the type of the tooth

	Normal speed	**Early RR**	**Late RR**
Incisors	70.1% (n=141)	1.67% (n=19)	3.6% (n=41)
Canines	87.1 % (n=277)	1.58% (n=18)	2.02% (n=23)
Molars	75.9% (n=469)	12.13% (n=138)	0.96% (n=11)

Early root resorption was present in 15.47% (n=176) of the teeth and was divided in two categories based on its severity: degree 1 (7.1%, n =81) and degree 2 (8.4%, n=95). The late root resorption registered a lower percentage (6.5%, n=74) and was also divided in the same two categories: degree 1 (2.9%, n=33) and degree 2 (3.6%, n=41). The prevalence of late root resorption was lower than reported by Taran and Ölmez (4.5%).

The distribution of the early root resorption according to the type of the tooth was the following: molars (12.13%, n=138), followed by incisors (1.67%, n=19) and canines (1.58%, n=18). The distribution of the late root resorption according to the type of the tooth was the following: incisors (3.6%, n=41), followed by canines (2.02%, n=23) and molars (0.96%, n=11).

Normal speed of the root resorption was observed in canines (87.1%, n=277) more frequently than in molars (75.9%, n=469) and incisors (70.1%, n=141). The accelerated degree 2 root resorption was observed more often in molars (13.6%, n=84) than in incisors and canines. The late degree 1 and 2 were more frequent encountered in incisors (20.4%, n=41) than in canines (7.2%, n=23) (p<0.001).

Molars represented 14.86% (n=11) of the teeth with late root resorption, which is similar than the results obtained by **Iraqi** et al, that showed a persistence on the arch in 15.2% of the primary molars (22) but lower than reported by Taran and Ölmez (30%) (23) who reported a high frequency of premolar agenesis.

The most common type of late root resorption was in incisors with 3.6% (n=41), followed by canines (2.02%, n=23) and molars (0.96%, n=11), which was in discordance with the Taran and Ölmez's results, that registered the highest percentage in canines (49.5%), followed by molars (30%) and incisors (20.6%) (23).

The pulpal diagnosis of teeth correlated with the alteration of the root's resorption speed was the following: necrosis or apical periodontitis has accelerated the root resorption in 8% (n=91) of the study initial sample of teeth, while irreversible pulpitis in 1.67% (n=19).

Dental trauma was recorded in 2.99% (n=34) of the study sample. About half of the teeth with severe trauma (0.79%, n=9) such as enamel-dentin-pulp fracture, root fracture and intrusion had pulpal complications compared to teeth with mild trauma (2.19%, n=25) like enamel-dentine fracture, subluxation and concussion in which only a third suffered consecutive pulpal diseases.

Early root resorption occurred in 66.7% of the teeth affected by luxation, which was higher than the results obtained by Costa et al. (46.7%) (24).

CONCLUSIONS

The external apical root resorption in primary teeth is a challenging pathology for the paediatric dentists due to the accelerated consumption of the roots which in time may lead to space loss on the dental arch and appearance of malocclusion.

The pathological alterations of the root resorption pattern were represented especially by external apical root resorption.

One of the most important causes of the accelerated speed of the root resorption was represented by necrosis and apical periodontitis and the periodontal trauma. Early diagnosis and treatment of the teeth with pulpal involvement and traumas may be helpful to clinicians in order to prevent premature loss of primary teeth and its consequences in the permanent dentition.

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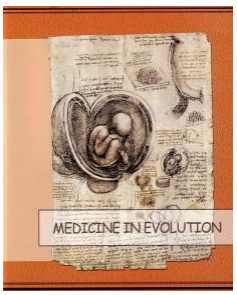
INFLUENCE OF FOOD PIGMENTS ON RESTORATIONS



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Abstract

Aim and objectives: to observe the influence of food pigments on composite diacrylic resin restorations and to evaluate the chromatic stability of the aesthetic materials that we used.

Material and methods: discs of a single type of DRC shade A2 and A3 were used. Initially, pre-immersion color measurements of the composite samples were performed. The composite samples were immersed in various pigmented solutions (tea, coffee, distilled water) for 24 hours and 7 days, the evaluation and observation of the degree of discoloration of the restorative materials being done every 24 hours and 7 days

Results: According to the results, it was found that the largest color change on the surfaces of the composite material was recorded for tea and coffee after immersion for 7 days. Tea and coffee significantly affected the color of the composite samples used in the study.

Conclusions: The effect of pigmented solutions (tea, coffee) that caused discoloration in the composite diacrylic resin was closely related to both the established immersion time (24 hours and 7 days) and the shade of the material used (A2 and A3).

Keywords: discoloration, DRC, immersion, food

INTRODUCTION

An increasing interest in aesthetic dental treatments has led to the development of new materials, namely composite diacrylic resins. The latter were the most popular materials used in cosmetic dentistry in the 1960s due to their excellent aesthetics, adequate mechanical properties (mechanical strength), moderate costs compared to those of ceramics and the ability to be chemically bound to dentin and enamel. (1)

Unfortunately, unacceptable color change is why these aesthetic materials need to be changed over time. Aesthetic restorative materials should mimic the appearance of the natural tooth in both the right color and color stability. However, composite diacrylic resins have a tendency to discolor in contact with the oral environment. The discoloration of these composite-based restorations can be caused by intrinsic and extrinsic factors. (2)

The aim of this study is to observe the influence of food pigments on restorations from composite diacrylic resins and to evaluate the chromatic stability of the aesthetic materials used.

MATERIAL AND METHODS

The study is based on the chromatic stability of composite samples (discs) using shades A2 and A3 of a single type of composite diacrylic resin. Initially, pre-immersion color measurements of the composite samples were performed at 24 hours and 7 days. Thereafter, these composite samples were immersed in various pigmented solutions (tea, coffee, distilled water) for 24 hours and 7 days and finally the evaluation and observation of the degree of discoloration of the restorative materials at 24 hours and 7 days. The evaluation method of this study was a digital one, this being performed with the Easyshade Vita device (digital spectrophotometer) which allows the exact determination of the chromaticity of aesthetic materials by electronic measurement.

The aesthetics of teeth and their color is an important topic for more and more people. The intrinsic color of a tooth is determined by how light is absorbed at the surface and structures of the tooth. Composite diacrylic resins are currently among the most widely used materials in aesthetic restorative dentistry by direct technique and represent the most complex types of materials in terms of finishing and polishing, which can achieve a high gloss because they contain a matrix of relatively soft resin and hard filler particles in their structures. Each composite material contains a different microstructure and the retention of gloss over time can vary considerably due to microstructural differences.

The color stability of current composites was studied by artificial aging in a room exposed to UV light, high temperatures of 70 degrees C and by immersion in solutions of coffee, tea and distilled water.

Din acest studiu efectuat a rezultat ca materialele compozite sunt rezistente la modificările de culoare cauzate de oxidare, dar sunt susceptibile la colorare (3).

In this experimental study, 100 composite samples with shades A2 and A3 were manufactured using a single type of composite material (50 copies each) using a plastic mold. The samples were divided into five groups of ten samples each and immersed in the following pigmented solutions for 24 hours and 7 days: coffee, tea, distilled water.

Table 1. Pigmented solutions used in the study

Tea	To prepare the tea solution, a prefabricated tea bag was immersed in 300 ml of boiling water for 5 minutes.
Coffee	To prepare the coffee solution, 3.6 grams of coffee powder were dissolved in 300 ml of boiling water.
Distilled water	The original packaging was used at room temperature.

The analysis of the initial shade of the composite diacrylic resin was performed at 24 hours and 7 days using a digital spectrophotometer (Vita Easyshade). Two layers of celluloid were placed under the composite samples and to obtain the shape of the composite samples, two glass plates were placed between the two surfaces. The composite discs were light-cured for 40 seconds using an LED lamp and all their surfaces were polished with a low-speed manual part. Each composite disc was then dried with a paper towel.

RESULTS

In the study based on the in vitro experiment on composite samples with shade A2, it was found that the highest coloration of the composite material was found in the sample immersed in the tea solution for 7 days followed by the sample immersed in the coffee solution that also caused an increased color change for 7 days.

The discoloration caused by the distilled water on the surfaces of the composite samples was not significant for 24 hours and 7 days.

Statistical analysis showed that the drinks had a significant effect on the translucency of the composite samples. Pigmented solutions based on tea and coffee produced the largest change in translucency. The change in translucency was not significant between coffee and tea, with distilled water causing the slightest change in translucency.

The tea was the pigmented solution that led to the highest coloration of all groups of composite samples, followed by the coffee solution for 7 days and finally in the last place is the distilled water that caused the slightest change in color at the surface of the composite sample surfaces.

All specimens showed visual changes.

DISCUSSIONS

There is a growing interest in the ability of restorative aesthetic materials to withstand discoloration because chromatic stability is an important factor in the success of treatment, especially in the aesthetic area. Numerous studies have shown that factors that affect tooth color can exert similar effects on composite diacrylic resins (4).

As highlighted above, the etiology of discoloration of composite diacrylic resins is multifactorial, ie caused by an intrinsic and an extrinsic mechanism. In fact, the discoloration of composite materials remains the major cause of the aesthetic failure of restorations and can be a major reason for their replacement. Recently, numerous studies have been carried out to evaluate the chromatic changes of composites in vitro and the color has then been analyzed according to some color systems in the world (5).

CONCLUSIONS

It was found that the pigmentation of coffee comes from both absorption mechanisms, on the dye on the surface and absorption in the inner layer of the composite material but the discoloration is probably related to the compatibility of the polymer and the organic phase of the composite resin.

This effect of the pigmented solutions (tea, coffee) which caused the color change in the composite diacrylic resin was closely related both to the established immersion time (24 hours and 7 days) and to the shade of the material used (A2 and A3). Shade A2 was selected because it is considered a light shade and susceptible to larger color changes. Color stability is an important consideration in dento-facial aesthetics.

In the present in vitro experimental study, the influence of pigmented solutions (tea, coffee, distilled water) on composite diacrylic resins after immersion for 24 hours and 7 days

was analyzed and the chromatic stability of the immersed composite samples (discs) was evaluated. in the aforementioned colored solutions.

According to the results, it was found that the largest color change on the surfaces of the composite material was recorded for tea and coffee after immersion for 7 days. Tea and coffee significantly affected the color of the composite samples used in the study.

An insignificant discoloration value of the composite samples was measured in distilled water. Hot drinks (tea and coffee) caused a fairly significant discoloration, followed by drinks used at room temperature (distilled water).

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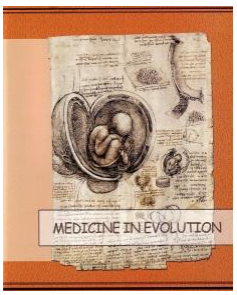
Parents' involvement in children oral hygiene



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Abstract

Parents play an important role in children' oral health by being decisional agents for hygiene habits in the first years. The aim of this cross-sectional study was to assess the children oral hygiene habits with parents' contribution. Material and methods: The study was conducted on 105 parents who were assessed using a self-administered on-line questionnaire. Results: Tooth-brushing twice daily is performed in 88.88% of cases in "under 2 years" age group by parents, and in half of the rest of cases. Fluoridated toothpaste is used by low number of children and around one quarter of parents are not aware whether their child' toothpaste contains fluoride. Recommended quantity of toothpaste is used by only 22.22% for children under 2 years, 52.38% for 2-6 yrs, 27.08% for 6-12 yrs. Conclusions: Oral hygiene habits are less than optimal. Parents' oral health education needs improvement in order to gain the recommended behaviors for children.

Keywords: oral health promotion, children oral hygiene, parents oral health education

INTRODUCTION

Dental caries remains the most frequently met oral disease among both adults and children, from early stages of life. Early Childhood Caries (ECC) is the particular form of dental caries disease that affects children under 6 years of age, with the most recent definition adopted by the International Association of Pediatric Dentistry (IAPD) as it follows: "the presence of one or more decayed (non-cavitated or cavitated lesions), missing or filled (due to caries) surfaces, in any primary tooth of a children under six years of age" [1]. And even if the prevalence varies between countries, from 12% in UK to 90% in Cambodia [2], globally 600 million children are affected by ECC [1,3]. These are facts despite that this is a highly preventable oral disease and unfortunately under-treated, affecting children quality of life [1]. In 2019, IAPD published the new consensus regarding the prevention and management of ECC: Declaration of Bangkok. Among the key strategies, aiming to reduce the burden of this disease, promoted by this Declaration, engaging the parents in children oral health and twice daily tooth brushing with optimal amount of fluoridated toothpaste, have a high impact [1]. Parents play an important role in children oral health in the first years of a child's life by deciding over child's exposure to dental caries risk factors like diet, oral hygiene, fluoride intake or dental services utilization [3, 4]. Therefore, raising awareness among the parents and engaging them in children oral health is the cornerstone of prevention of ECC. Fluoride exposure is mandatory for the prevention of dental caries and fluoridated toothpaste proved to be the 'ideal public health method' due to many advantages that this oral hygiene product offers: it is widely accepted and used by global population, have an accessible price and very efficient when proper fluoride concentration is used. According to the updated European Association of Pediatric Dentistry (EAPD) guideline for fluoride use, in order to obtain the optimal preventive effect of oral hygiene in children, the following recommendation should be applied:

a) frequency of tooth brushing: twice daily regardless the child's age, after the eruption of the first temporary tooth. And depending on the age of the child, the person in charge with the children was already established [5, 6] as it follows: in the first 2 years of life: by the parent; between 2 and 6 years of age: by the child and completed by the parent who re-brushes the hard-to-access areas; between 6 and 12 years of age: by the child under the supervision of the parent; after 12 years: only by the child.
b) concentration of fluoride: 1000 ppm from the eruption of the first tooth and up to 6 years; 1450 ppm over 6 years.
c) quantity of fluoridated toothpaste: age-adapted as it follows: from the eruption of the first tooth and up to 2 years: rice size; between 2 and 6 years: pea size; over 6 years: up to the length of the toothbrush.

Aim and objectives

The aim of the study was the assessment of parents' involvement in their child's oral hygiene. To achieve this goal, the objective established were the evaluation of the following: the frequency of child's tooth brushing and what is the parent contribution, the use of fluoridated toothpaste, the amount of toothpaste used.

MATERIAL AND METHOD

The cross-sectional study took place between January and June 2020, in Romania, on a sample of 105 parents, with a mean age of 38.38 ± 5.41 years. The assessment was performed using a self-administered on-line questionnaire. Their children, to whom they referred in their answers, had an age between 9 months and 17 years and were divided in age-groups in order to assess the age-adapted oral hygiene habits as recommended by the IAPD and EADP

guidelines. For parents who had more than one child, different questionnaires were filled-out for every child. Descriptive analyze was performed for frequency assessment of the variables.

RESULTS

The results were rendered after distribution on age groups of children of the parents enrolled in the study, as it follows: < 2 years: 9 children; 2-6 years: 21 children, 6-12 years: 48 children, and >12 years: 27 children.

a) Frequency of tooth brushing

The frequency of children brushing twice daily was highest among the youngest group, under 2 years: 88.88% (N=8) and lowest among the group between 2 and 6 years: 42.85% (N=9) while among the other two age-groups the frequency is still far from ideal, with only half of the children brushing twice a day (Table I).

Regarding the person performing the tooth brushing, for children under 2 years in only 88.88% (N=8) of cases is performed, as recommended by the parent while for 11.12% (N=1) the parent only completes the tooth brushing performed by the child. For age group between 2 and 6 years, in only 38.11% (N=8) of cases is tooth brushing performed, as recommended, by the child and completed by the parent while for 42.85% (N=9) only the parents do the tooth brushing and in lower percentages children are given this task either exclusively (9.52%) or under the monitoring of the parent (9.52%). For the age group between 6 and 12 years, in only 2,08% (N=1) of cases tooth brushing is performed, as recommended, by the child and under parents monitoring, while the highest percent of children perform the tooth brushing without any contribution from parents. (45.84%, N=22) and for the others parents are still involved either by performing the entire tooth brushing (25%) or by completing it (27.08%). For the group of children older than 12 years, in only 55,55% (N=15) of cases tooth brushing is performed, as recommended, only by the child, while in one third of cases the parents still are the ones performing the tooth brushing (29.62%, N=8) (Table II).

Table I. Frequency of tooth brushing, on different age-groups

	Twice a day		**Once a day**		**Seldom**		**Never**	
	N	**% (of the age group)**	**N**	**% (of the age group)**	**N**	**% (of the age group)**	**N**	**% (of the age group)**
< 2 yrs	8	88.88 %*	1	11.12 %	0	0 %	0	0 %
2-6 yrs	9	42.85 %*	9	42.85 %	3	14.30 %	0	0 %
6-12 yrs	27	56.25 %*	19	39.58 %	2	4.17 %	0	0 %
>12 yrs	15	55.55 %*	12	44.45 %	0	0 %	0	0 %

*recommended

Table II. Persons in charge of the child's tooth brushing, on different age-groups

	By the parent only		**By the child and completed by parent**		**By the child supervised by the parent**		**By the child only**	
	N	**% (of the age group)**	**N**	**% (of the age group)**	**N**	**% (of the age group)**	**N**	**% (of the age group)**
< 2 yrs	8	88.88 %*	1	11.12 %	0	0 %	0	0 %
2-6 yrs	9	42.85 %	8	38.11 %*	2	9.52 %	2	9.52 %
6-12 yrs	12	25 %	13	27.08 %	1	2.08 %*	22	45.84 %
>12 yrs	8	29.62 %	3	11.12 %	1	3.71 %	15	55.55 %*

*recommended

b) Use of fluoridated toothpaste

Fluoridated toothpaste is used, as declared by the parent, by only 44.45 (N=4) of children up to 2 years, 38.09% (N=8) of children between 2 and 6 years, 62.50% (N=30) of children between 6 and 12 years, and 59.25% (N=16) of children over 12 years. The results also show that one third of the parents in all age group, except for those with children under 2 years, are not aware of the presence of the fluoride in the toothpaste used for their children (Table III).

Table III. Use of fluoridated toothpaste, on different age-groups

	YES		NO		DON'T KNOW	
	N	% (of the age group)	N	% (of the age group)	N	% (of the age group)
< 2 yrs	4	44.45 %	5	55.55 %	0	0 %
2-6 yrs	8	38.09 %	7	33.33 %	6	28.58 %
6-12 yrs	30	62.50 %	5	10.41 %	13	27.09 %
>12 yrs	16	59.25 %	4	14.81 %	7	25.93 %

c) The amount of toothpaste used

If for younger age groups the amount of toothpaste used is higher than recommended, with only 22.22% (N=2) of children under 2 years using a rice size, as recommended, and only 52.38% (N=11) of children between 2 and 6 years using a pea size, as recommended, in older age groups use a less amount that recommended, only 27.08% (N=13) of children between 6 and 12 years, respectively 40.74% (N=11) of children older than 12 years putting toothpaste on the entire length of the toothbrush.

Table IV. The amount of toothpaste used, on different age-groups

	Rice size		Pea size		Up to length of the toothbrush		Random	
	N	% (of the age group)	N	% (of the age group)	N	% (of the age group)	N	% (of the age group)
< 2 yrs	2	22.22 %*	7	77.78 %	0	0 %	0	0 %
2-6 yrs	0	0 %	11	52.38 %*	6	28.58 %	4	19.04 %
6-12 yrs	0	0 %	32	66.66 %	13	27.08 %*	3	6.26 %
>12 yrs	0	0 %	11	40.74 %	11	40.74 %*	5	18.52 %

*recommended

DISCUSSIONS

The highest frequency of twice daily tooth brushing for the youngest age group could be explained by the fact that at this age in almost all cases parents have the control of tooth brushing and that they do not leave this task on children. On the other hand, at older age groups even if we see that the contribution of parents is more than that recommended, the frequency of children tooth brushing twice daily is still far from ideal and this might be explained that as children grow older these habits depend also on their will and decision, and that the parents could offer help but not force the child. Regarding the use of fluoridated toothpaste, the percentages of parents not being aware whether their children toothpaste contain fluoride, is alarming and should be an important aspect to be addressed in oral health promotion programs targeted to parents.

CONCLUSIONS

Children oral hygiene habits are less than optimal, as reported by the parents. Although most of the parents are involved in their children basic oral hygiene habits, their oral health education needs improvement in order to get be aware and contribute appropriately to their children oral health, in general, and prevention of early childhood caries, in particular.

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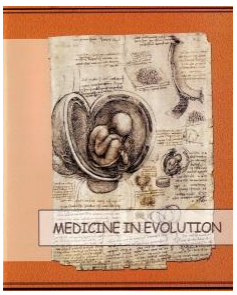
Prophylaxis of dental diseases in the first period of mixed dentition



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Abstract

Introduction: To reduce the morbidity caused by dental caries, it is necessary to intervene to eliminate it by acting on socio-economic, behavioural, environmental and medico-biological factors as well as on health systems.

The aim of this study was to continue to promote oral health among pupils aged 6-9 years.

Objectives-The study aimed at: - identifying the main aspects of dental morbidity specific to the first period of mixed dentition, studying the morbidity of the six-year molar due to caries.

Material and method: The study group included 1st, 2nd and 3rd grade pupils because their age corresponds to the first period of mixed dentition: 6-9 years old.

Results and discussions: Simple caries at the six-year molar are present in 35 of the cases (23.3%). The most affected are the lower molars (36 and 46) - 25 cases (16.6%), and in 10 cases (6.66%) all 4 permanent first molars are affected. One third of the subjects states that they regularly visit the dental office. Half of the children in the group go to the dentist only in case of emergency.

Keywords: molar, sealing, caries

INTRODUCTION

Dental caries is characterised by a multifactorial aetiology and, to reduce the morbidity for which it is responsible, it is necessary to intervene to eliminate it or to reduce its impact by acting on socio-economic, behavioural, environmental and medico-biological factors as well as and on health systems, knowing that the latter influence the health of the population by up to 10-15% [1,2].

Aim and objectives

The aim of this study was to continue to promote oral health among pupils aged 6-9 years through activities aimed at training and at developing correct behaviours regarding oral health as well as at increasing the level of medical knowledge among pupils.

Objectives:

- identifying the main aspects of dental morbidity specific to the first period of mixed dentition

- studying the morbidity of the six-year molar due to caries, taking into account, on the one hand, the vulnerability of this tooth to caries and, on the other hand, the importance of maintaining it on the arch;

- assessing pupils and their parents' level of knowledge on:
    - the six-year molar
    - the methods of preventing tooth decay
    - the importance of regular visits to the dental office

- monitoring attitudes and behaviours in parents regarding the addressability to the dentist for both curative and prophylactic purposes.

MATERIAL AND METHODS

The study group included 1st, 2nd and 3rd grade pupils because

- their age corresponds to the first period of mixed dentition: 6-9 years old;
- during this period, children develop attitudes, habits and behaviours related to maintaining oral health, oral hygiene and the integrity of the dento-maxillary apparatus;
- being a community, the oral health education programme is easier to implement and monitor.

In order to have the best possible representation for the city of Oradea, two schools were selected, according to the following inclusion criteria:

- schools located in different areas of the city
- schools with a large number of pupils
- children belonging to families with different levels of training, education, standard of living and social background.

Within each school, a class of pupils was selected for each level of schooling (1st, 2nd and 3rd grade - a total of six classes of pupils).

Thus, the resulting group, following the inclusion criteria presented above, consisted of 150 pupils.

The study was carried on between September and December 2019.

The working technique consisted of:

a. oral examination of the pupils included in the study

b. applying questionnaires on the study group (child - parent)

c. conducting an oral health prophylaxis and education programme

The oral examination of the pupils was conducted in the dental offices of the two schools and monitored individually, based on the dental formula:

- children's orodental state and dento-maxillary development,
- the presence or absence of dental abnormalities,
- the state of orodental hygiene.

Resources used:

- human resources: teaching staff (primary school teachers) in schools, dentists
- material resources: video format information and educational materials; educational film

Activities:

- working meetings with the Programme partners;
- information, educational, communication activities carried out with the pupils;
- distribution of promotional materials;
- quantitative/qualitative and subjective assessment activities;
- presentation of the results of the activities carried out [2].

Depending on the children's age, ability to understand and level of physical and intellectual development, the lessons were, at the beginning, informative and educational, evolving in complexity. Children developed correct skills and behaviours as well as the habit of visiting the dental office for preventive purposes and of promoting the acquired messages.

The following teaching methods were applied:

Didactic demonstration: The didactic demonstration consists in presenting several objects, phenomena or their substitutes or in performing several activities to be incorporated by the pupils in order to ensure a concrete-sensory support that shall facilitate the knowledge of certain aspects of reality or the reproduction of certain activities that are the basis of several practical components [3-5].

The didactic combined with problematization: The didactic exercise combined with problematization is a useful method thanks to its heuristic and activation potential. It consists in creating practical or theoretical difficulties where the solution should be the result of the activity performed by the pupil. This didactic method stimulates pupils to search, discover and figure out new solutions [4,5].

The formative value of this method is indisputable: it consolidates cognitive structures, stimulates the spirit of exploration, forms an active work style, cultivates autonomy and courage in presenting one's own positions.

Teaching aids are not only purely informative, facilitating the transmission of knowledge, but they are also formative, familiarizing pupils with handling, choosing and with the significance of several tools that are indispensable for describing and understanding new aspects or dimensions of reality.

Teaching aids also require thinking operations, stimulate search and research, positively influence pupils' imagination and creativity. At the same time, teaching aids raise pupils' awareness of certain problems, arousing their curiosity and motivating them further in discovering cognitive territories [2-4]

RESULTS AND DISCUSSIONS

Of the 150 children from the study group, 80 were girls and 70 were boys, aged 7-9 years.

The oral examination of the pupils in the study group showed that only 17.33% of the children (26 pupils) were free of caries - a very small percentage that raises some questions, motivates the basis of this study and explains the need to apply a prophylaxis programme for this category of population.

Being the period when temporary teeth are replaced and the six-year molar erupts, the present study places great importance on this molar showing that the six-year molar free of caries erupted on the arch in only 63 children (42%). Of these, 42 children (66.6%) presented

seals applied on all first molars, 6 children (9.52%) presented seals applied only on 2 molars while the other two molars were to be sealed during a future visit to the dental office, and the rest of 15 pupils (23.8%) presented no seals.

Simple caries at the six-year molar are present in 35 of the cases (23.3%). The most affected are the lower molars (36 and 46) - 25 cases (16.6%), and in 10 cases (6.66%) all 4 permanent first molars are affected.

51 pupils (34%) presented complicated caries of the six-year molars, the most frequently affected ones being again the lower molars 36 and 46.

Complicated caries of temporary teeth are present in 74% of the cases affecting one tooth (21 children), two teeth (41 children) and three teeth (49 children).

Being the period when temporary teeth are replaced, more than half of the pupils in the study group, that is a percentage of 51.33% (77 children), showed root debris of temporary teeth.

Treated temporary teeth in children in the group are less frequent. Only 31.3% of the children presented treated temporary teeth: 11 cases - with one filling, 9 cases - with two fillings, 19 cases - with three fillings, 8 cases - with four fillings.

According to the data in the literature [6-9] and in our study, the most affected tooth was the first permanent molar, present on the arch in 149 cases - its absence being reported only in a 7-year-old boy. Examination revealed the presence of only one six-year molar in another case (another 7-year-old boy). Impairment of this tooth was present in 86 cases, representing a percentage of 57.33% of the examined pupils.

The presence of dental anomalies and the association or not of vicious habits was present in 110 of the children examined (73.3%). Of these, 71 children (47.33%) presented vicious habits, the most common being oral respiration (42 cases), infant swallowing (23 cases), followed by thumb-sucking (6 cases).

Class II/1 malocclusion represented the most common dento-maxillary anomaly.

Addressability to the dental office in general and to the dentist in particular represented an issue formulated in several questions from the questionnaire applied to parents, but also in questions applied to the pupils.

There are no significant differences between parents' responses and pupils' responses. A fairly high percentage -10% states that (the age group studied) they have never been to the dentist.

One third of the subjects states that they regularly visit the dental office. Half of the children in the group go to the dentist only in case of emergency.

The main reason the respondents invoke in motivating this low addressability to the dentist and especially the lack of need for periodic examination results from responses such as “The child hasn't presented any problems or needed treatment / I do not think the child presents dental problems serious enough to go to the dentist” that represent 34.15% to which 0.41% non-responses to this question from the questionnaire are added.

“Unpleasant memories at the dentist and fear” are the following arguments in terms of frequency which motivate the low addressability to the dental office: 25.51% of the children's responses and 23.45% of the parents' responses.

None of the above arguments really motivates the low addressability to dental services as they are practically in contradiction with the results following the oral examination of the pupils included in the study.

However, the responses regarding the children's last visit to the dentist represent a consequence of this low addressability and reflect the state of fact mentioned above. The reasons they address the dentist more frequently are as follows:

- pain - in 34.56% of the children's responses and in 30.04% of the parents' responses;
- extractions of temporary teeth and their remains - in 28.39% of the children's responses and in 24.69% of the parents' responses;

– treatment of dental caries - in 9.46% of children's responses and in 30.86% of the parents' responses.

If the above responses showed low addressability, this is not due to accessibility to dental services. Responses such as "the dental office is too far" or "I could not afford" are very few - 2.05%, respectively 3.70%. One can notice that, theoretically, parents' attitudes are generally positive and, evaluating the addressability to the dentist only through the responses given, one can say that addressability is good, but referring to those previously detailed and to high caries morbidity, the following aspect can be suggested: - although parents know what the correct attitude and the necessary behaviour are, in practice, the vast majority of them do not proceed properly, taking the child to the dentist only in case of emergency.

The family is responsible for the child's sanogenic lifestyle because the family is the first source of information on oral health. One way to increase the child's interest in oral health is to provide constantly updated information, parents' education and permanent motivation. School also plays an important role in forming sanogenic habits because of the considerable amount of time children spend here [10,11].

The results of the present study show that adults' sanogenic habits and level of knowledge are important factors in children's sanogenic education. Family status with both parents shows lower values of caries indices in children compared to those coming from single-parent families. Mothers' level of knowledge in oral health is proportional to their level of education. The higher the mothers' level of knowledge in oral health, the higher the children's level of knowledge. There is a dramatic proportion of mothers who have no information and no knowledge on oral health [12,13].

CONCLUSIONS

1. The oral examination of the pupils in the study group showed that 42% of the children have permanent molars free of caries;

2. Complicated caries to temporary teeth are present in 74% of the cases;

3. Treated temporary teeth are found in 31.3% of the children in the group;

4. The presence of dental anomalies and the association or not of vicious habits was found in 73.3% of the examined children;

5. The oral prophylaxis programme for school children, parents and teaching stuff has raised the awareness of the importance of oro-dental hygiene, food factor, periodic visits to the dental office. Eventually, the programme has led to the conclusion that primary prevention in dentistry plays the main role in oral health education.

6. The family is responsible for the child's sanogenic lifestyle because the family is the first source of information on oral health. School also plays an important role in forming sanogenic habits because of the considerable amount of time children spend here.

7. Adults' sanogenic habits and level of knowledge are important factors in the children's sanogenic education.

8. The oral health education programme carried out in schools has led to the increase of tooth brushing to twice a day for both children and parents.

Although the average value of the caries index increased, from one assessment to another, one could note an increase in the level of knowledge as well as changes in school children's behaviours and attitudes.

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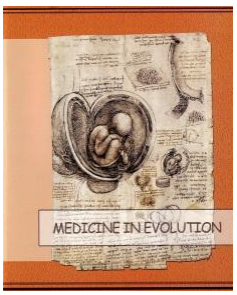
Step by step baseline calibration in ICDAS: an in vitro study



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Abstract

The ICDAS II represents an algorithm developed for assessing stages of caries. It becomes the main "instrument" used in epidemiological study of dental caries. All the examiners should be trained and calibrated to use correctly the ICDAS II clinical criteria before the study begins. This study presents step by step ICDAS II calibration process for the detection of occlusal caries (in vitro phase). 40 occlusal areas from 9 lateral teeth were examined in this experiment. The occlusal areas were assessed according to ICDAS II criteria and they were selected by one experienced examiner to present only scores between o and 4. Every area was also tested using DIAGNOdent Pen device, considering this evaluation as a "golden standard". The inter-rater agreement (kappa) for the examiner to be calibrated was calculated using MedCalc® software and it was found to be 0.68. According to the weight kappa main scale the kappa value found in this study is considered to be good but for a principal investigator, it is recommended to have a higher value before the clinical study begins.

Keywords: calibration, ICDAS, DIAGNOdent Pen, golden standard

INTRODUCTION

The ICDAS II represents a set of clinical criteria developed in order to make the correspondence between different stages of caries evolution and variable numbers (7 scores, from 0 to 6). ICDAS II becomes today a valuable and mandatory instrument for every clinical study of dental caries. It could be also very useful to teach students for improving their clinical diagnosis skills, especially for better understanding of early stages of dental caries [1].

Every investigator must be well trained and calibrated before taking part in a study. The calibration has two stages: the in vitro and the clinical phases [2]. The in vitro calibration process requires extracted teeth with various caries lesions and restorations. The examinations must be focused on occlusal, smooth or proximal surfaces, together or separately. The teeth can be examined separately or in a dental arch model [3].

The in vitro calibration process for the proximal caries lesions can be realised only in a special arch model when the interdental contact areas are present. For a high accuracy of carious detection a very good calibration process is needed (inter-rater agreement – *kappa* must be "very good", according to Altman [4]).

Another important device for caries detection is DIAGNOdent Pen that uses laser fluorescence technology and provides reliable results in caries detection.

This study presents a step by step algorithm for the in vitro calibration of using ICDAS II in occlusal caries detection, considering DIAGNOdent method as a "golden standard".

MATERIAL AND METHODS

9 extracted teeth (3 premolars and 6 molars) were used in this experiment, two of them being filled with resin. The teeth were cleaned with an ultrasonic scaler. Therefore, all the remains of the periodontal tissue, calculus deposits or staining were removed. Afterward, the teeth were immersed in a sodium hypochlorite solution for 10 minutes. A DIAGNOdent pen device (KaVo Dental GmbH, Bismarckring, Wiesbaden, Germany), air drying from a dental unit and a plastic container with deionized water were also used for this experiment.

The occlusal surfaces of the teeth were observed and analysed by one experienced examiner (no. 1) using the ICDAS II clinical criteria (table I) (no magnification). A total of 40 occlusal areas (between 3 and 6 for each tooth) were chosen by the examiner in order to have ICDAS scores between 0 and 4. Afterward, the examiner who requires calibration (no. 2) analysed every area using both ICDAS II criteria and DIAGNOdent Pen device (figure nr.1, a and b). The diagnostic validity for using ICDAS II criteria reported to values obtained using DIAGNOdent Pen device for the examiner no. 2 was calculated as follow:

- ICDASII scores were transform into simplified merged scores and compared with values measured with DIAGNOdent Pen (see table II)
- inter-rater agreement (kappa) was calculated using 19.4.1 demo version of MedCalc® software; the value of kappa coefficient were assigned according to Altman [4] (see table III)

Table I. Clinical criteria for the ICDAS II

ICDAS II codes and criteria for occlusal surfaces	
Codes	Description
0	*Sound surfaces*: No evidence of caries after 5 seconds air drying; surfaces with signs of tooth wear, fluorosis or structural defects are also assessed as sounds
1	*First visual change in enamel*: a) No evidence of caries when seen wet, but after prolonged air drying for at least 5 seconds a carious opacity/discoloration (white/brown) can be seen b) Carious opacity/discoloration when seen wet, but after 5 seconds of air drying the enamel lesion becomes more clear but not exceed the pit and fissure area
2	*Distinct visual change in enamel*: Carious opacity / discoloration wider than the natural fissure/fossa and

ICDAS II codes and criteria for occlusal surfaces	
Codes	Description
	visible when seen wet or dry
3	*Localized enamel breakdown*: Visually evidence of enamel demineralization when seen dry → loss of tooth structure / cavity with no evidence of dentine involvement
4	*Underlying dark shadow from dentine*: A shadow of discoloured dentine more visible through enamel when seen wet; the enamel breakdown can be or can be not present: there are no sign of direct visible dentine
5	*Distinct cavity with visible dentine*: The presence of dentine in the cavity is obvious; the cavity is no larger than ½ of the surface; there are no signs of pulp chamber opening
6	*Extensive distinct cavity with visible dentine*: The cavity is wider than ½ of the surface; the presence of dentine is obvious and the pulp chamber roof can be opened

Figure 1. a and b: DIAGNOdent Pen device used in caries detection

Table II. Correspondence between ICDAS II caries codes and merged codes

ICDAS II caries codes	Merged scores	Values measured with DIAGNOdent Pen
0	0 (sound)	0 – 12 (sound)
1,2	1 (initial stage decay)	13 – 24 (initial stage decay)
3,4	2 (moderate decay)	> 25 (deep demineralization)
5,6	3 (extensive decay)	

Table III. Kappa values according to Altman 1991 [4]

Weight kappa	Strength of agreement
< 0.20	Poor
0.21 – 0.40	Fair
0.41 – 0.60	Moderate
0.61 – 0.80	Good
0.81 – 1.00	Very good

RESULTS

Calibration step 1: Mark and examine all the areas included in the study. The occlusal areas examined in this experiment are shown in the figure 2.

Calibration step 2: Assess all the areas according to ICDAS II clinical criteria. The scores detected in this experiment are graphically exposed in the figure 3.

Calibration step 3: Transform all the ICDAS scores into merge simplified scores (according to criteria presented in the table III).

Calibration step 4: Re-examine all the selected areas using the DIAGNOdent Pen device. In this experiment we found: 13 sound areas, 6 early caries and 21 cavity caries (deep demineralisation). All the results found with the DIAGNOdent Pen correspond to the values detected from the experienced examiner (no. 1) using ICDAS II criteria but one, according to correspondence criteria (table III).

Calibration step 5: The inter-rater agreement (kappa) of using ICDAS II criteria was calculated using MedCalc® software considering values collected with DIAGNOdent Pen as "golden standard". *The value of kappa for the examiner no. 2 was 0.68*, which means "good".

Calibration step 6: In case of epidemiological studies, if kappa < 0.80 than choose other occlusal areas and/or other teeth and go to step 1.

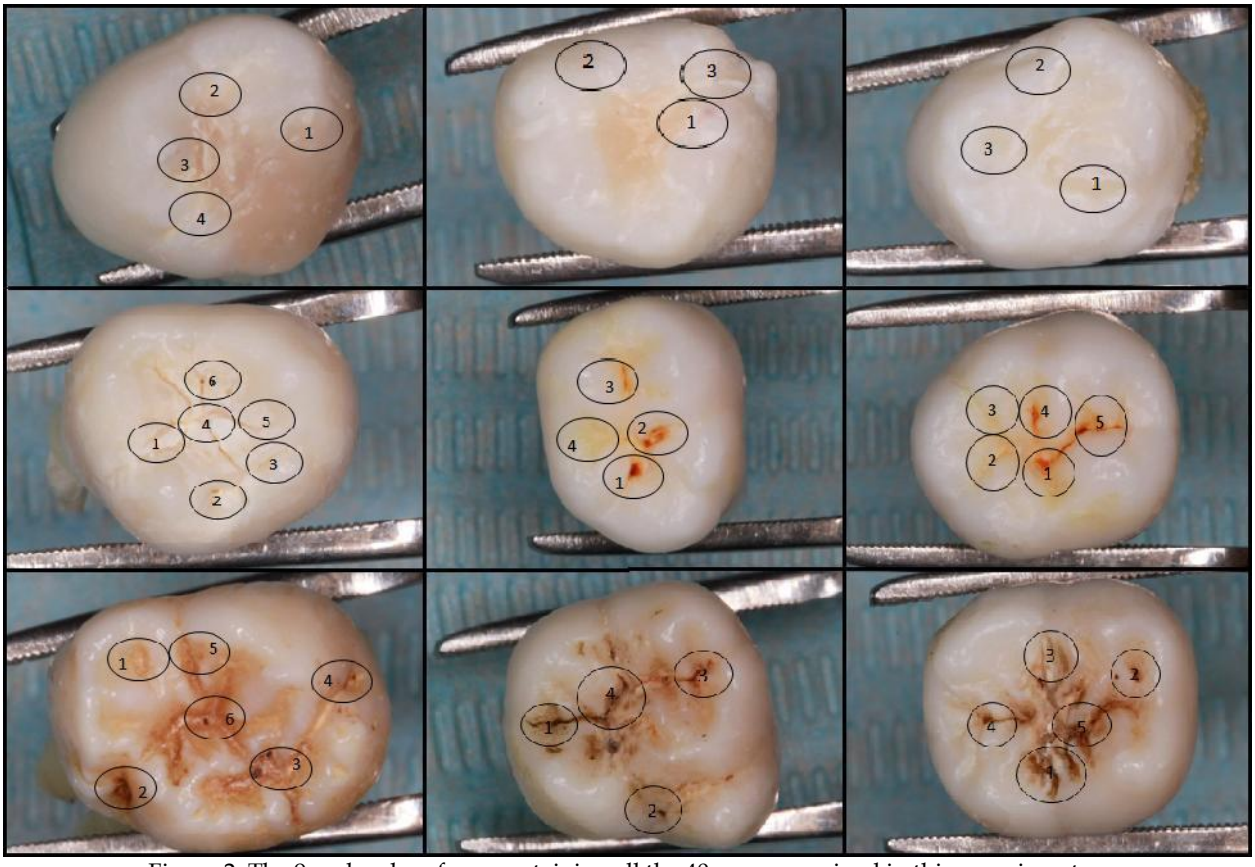

Figure 2. The 9 occlusal surfaces containing all the 40 areas examined in this experiment

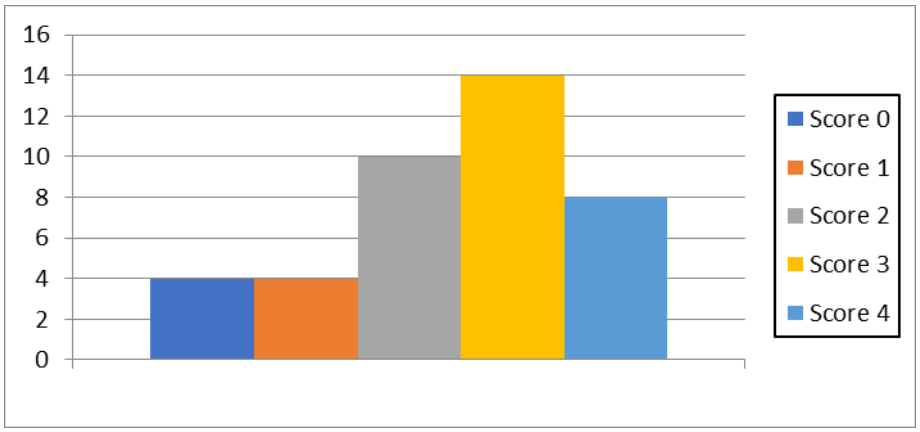

Figure 3. Number of ICDAS II scores detected in all the 40 areas examined in this experiment

DISCUSSION

This experiment presents a step by step in vitro calibration algorithm for the occlusal caries detection using ICDAS II criteria. However, this is only the first stage of calibration because for a complete process at least one clinical stage is needed. The kappa value resulted from this study was 0.68, which means a good value according to Altman [4]. However, for

accurate results in caries detection an examiner needs to be very well trained and calibrated and have a high value of kappa.

If the examiner will face an epidemiological study which involves dental caries, the calibration process can be repeated several times until a value of kappa over the 0.80 will be achieved. The rationale of our experiment was to calibrate an inexperienced examiner (no. 2) for using the ICDAS using the DIAGNOdent Pen caries detection method as a "golden standard". We did not intend to compare the ICDAS scores obtained by the novice examiner (no. 2) with the ICDAS scores of the experienced examiner (no. 1).

However, the ICDAS scores of the experienced examiner were almost the same with the results obtained using DIAGNOdent Pen device, which means that using the DIAGNOdent Pen method as "golden standard" was a good calibration method in this experiment. However, while in clinical stage of calibration at least one experienced examiner is needed, for the in vitro process some authors recommend using histological images [3] or Ekstrand and Lussi histological scores as "golden standard" [5].

On the other hand, it seems that the DIAGNOdent Pen is a very good and accurate method for caries detection only for caries with no visible dentine (0 to 4 ICDAS scores) [6]. This was the reason why the teeth and the occlusal areas were specially chosen by the experienced examiner to have only ICDAS scores from 0 to 4.

However, many authors suggest a long time training and practicing in ICDAS caries detection. This could increase the examiners' performance and help them to develop their skills and improve their accuracy in caries detection [7].

CONCLUSIONS

The DIAGNOdent Pen method can be used as "golden standard" in the in vitro phase of the ICDAS calibration process, especially for the caries with no visible dentine (o to 4 scores).

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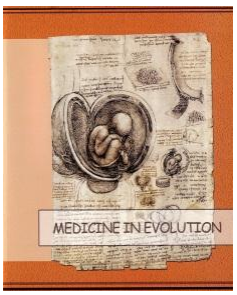
Solving partial edentation by elastic prostheses - a viable alternative compared to partial acrylate prostheses



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Abstract

Extended partial edentation is a condition that has an increased stage in the population, justifying the interest in the study of masticatory functions, retention and aesthetics. Flexible partial dentures are an alternative in solving partial edentation.

The purpose of this work is to provide an overview of the clinical application of flexible partial prostheses as well as the assessment of the satisfaction of the patient wearing flexible partial prostheses regarding, their chewing ability, speech, retention and aesthetics.

Material and method: The study group included 47 patients who had partial edentations restored or not. The objectives pursued were: gender distribution, age distribution and not least the determination of the degree of satisfaction of the partially edentulous patient by restoring the functions of the dento-maxillary apparatus regarding mastication, retention and aesthetics, the degree of acceptance of the prosthetic treatment adapted to the situation of each individual patient.

Results: Almost half of patients consider good chewing with prostheses and excellent retention. Two-thirds consider aesthetics to be excellent.

Conclusions: The use of flexible materials in the manufacture of partial prostheses is becoming more common as they have high resistance to fracturing. Flexible partial prostheses by Valplast can be used successfully because they adapt very well to the different situations encountered, depending on the particularities of each prosthetic field in the mouth cavity.

Keywords: extended partial edentation, flexible prosthesis, Valplast

INTRODUCTION

The proportion of adults with a partial edentation is constantly increasing as a result of increased life expectancy [1,2]. The prevalence of partial edentation is already estimated at more than 20% in some areas [3] and the number of individuals with partial edentation is constantly increasing. Aesthetics is a major issue for patients requiring dental treatment, with mostly prosthetic treatment. People over the age of 65 have an average of 18,9 remaining teeth, 43,1% missing 6 or more teeth [4,5]. In the United Kingdom, an adult dental health study in 2009 and it was found that 'almost one in five adults wore partial or total dental prostheses [6].

Due to the improvement of oral health, people lose their teeth much later and less. This factor implies an increased need to solve the treatment of partial edentation compared to the total edentation [2,7].

The main goal of the treatment of partial edentation should always be "to preserve what remains, not the systematic replacement of what has been lost". Therefore, partial prosthesis is an acceptable form of treatment by offering a wide range of restorative options involving maintaining or improving the phonetics, establishing or increasing the masticatory efficiency, stabilizing the dental relationships and developing the necessary aesthetics [8].

The satisfaction of patients wearing partial prostheses is reported in relation to the individual's personal particularities, the previous experience if he has been wearing partial dental prosthesis, and the manufacturing procedure. Trituration food capacity, stability and aesthetics are the most important factors in the acceptance and flexible partial denture wearing [9,10].

The patient's dissatisfaction with the partial prosthesis may also depend on the appearance of complications, such as: the increased risk of damage to the remaining teeth in the oral cavity through the appearance of caries, periodontal disease, tooth mobility, oral mucosal diseases (stomatitis and mouth disease) and others [11,12].

Aim and objectives

The purpose of this retrospective clinical study was to assess the satisfaction of the patient wearing flexible partial prostheses regarding their ability to chew, retention and aesthetics.

MATERIAL AND METHODS

This study covered a lot of 47 patients of both sexes, aged between 37 and 65 years, who had prezented partially edentations which have been restored or not, and who were the object of this research (Table 1). Partially edentulous treatment data were reviewed and summarized, focusing on the current and future impact on available oral health. Data on patient satisfaction and compliance with treatment through flexible partial prostheses were a priority for the individual patient.

Table 1. Gender distribution of patients

Gender	Nr.	%
Female	19	40,43%
Male	28	59,57%
Total	47	100,00%

Valplast is a flexible denture base resin that is ideal for partial and unilateral dentures. The resin is a biocompatible nylon thermoplastic that provides unlimited design versatility

and eliminates the concern about acrylic or metal allergies. The informed consent of each patient who participated in this study was obtained.

Of all 47 partly edentulous patients who received prosthetic treatment, 59,57% were male (Figure 1). The high percentage in men is due to the presence of periodontal disease as well as skills related to higher consumption of alcohol and tobacco.

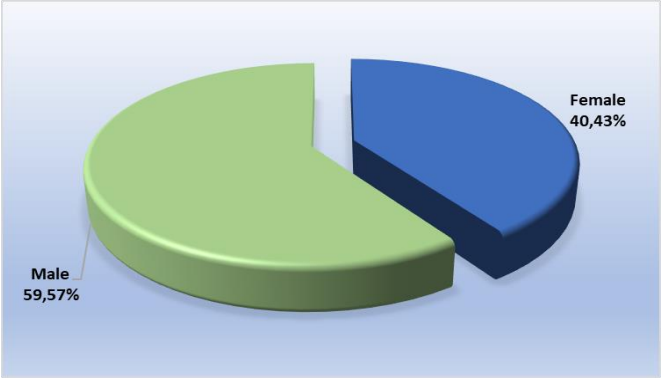

Figure 1. Gender distribution of patients

Most of partially edentulous patients were in the 40-60 age group, with mostly male 75% (Table 2).

Table 2. Distribution according to age

AGE GROUP	GENDER				TOTAL	
	Female		Male			
	Nr.	%	Nr.	%	Nr.	%
<40	1	5,26	2	7,14	3	6,38
40-60	16	84,21	21	75,00	37	78,72
60-65	2	10,53	5	17,86	7	14,89
Total	19	100,00	28	100,00	47	100,00

RESULTS

The evaluation of the satisfaction of the patients studied regarding the mastication capacity, retention and aesthetics of the flexible partial prostheses, is represented as a percentage compared to four parameters: bad, medium, good and excellent.

Regarding the degree of satisfaction of patients on mastication (Table 3) the highest share is represented by patients who evaluated mastication as good: 44.68%.

The satisfaction of patients who have assessed retention as excellent is 48,94% (Table 4).

Patient satisfaction in terms of the aesthetics of the flexible partial prostheses is considered excellent and was significantly higher, in proportion of 63.83% (Table 5).

Table 3. The degree of satisfaction of the partially edentulous patient regarding mastication with the partial elastic prosthesis

Retention	Female		Male		Total	
	Nr	%	Nr	%	Nr	%
Bad	1	5,26%	0	0,00%	1	2,13%
Medium	3	15,79%	2	7,14%	5	10,64%
Good	7	36,84%	14	50,00%	21	44,68%
Excellent	8	42,11%	12	42,86%	20	42,55%
Total	19	100,00%	28	100,00%	47	100,00%

Table 4. The degree of satisfaction of the partially edentulous patient regarding the retention with the elastic partial prosthesis

Chewing ability	Female		Male		Total	
	Nr	%	Nr	%	Nr	%
Bad	0	0,00%	1	3,57%	1	2,13%
Medium	2	10,53%	2	7,14%	4	8,51%
Good	9	47,37%	13	46,43%	22	46,81%
Excellent	10	52,63%	13	46,43%	23	48,94%
Total	19	100,00%	28	100,00%	47	100,00%

Table 5. Degree of satisfaction of the partially edentulous patient regarding the aesthetic aspect of the elastic partial prosthesis

Aesthetics	Female		Male		Total	
	Nr	%	Nr	%	Nr	%
Medium	2	10,53%	2	7,14%	4	8,51%
Good	5	26,32%	8	28,57%	13	27,66%
Excellent	12	63,16%	18	64,29%	30	63,83%
Total	19	100,00%	28	100,00%	47	100,00%

DISCUSSIONS

The results obtained from our study are consistent with those obtained by Cosme DC et al., they state that the vast majority of patients were very satisfied with elastic partial prosthesis [13].

Elastic prostheses are a therapeutic solution for patients allergic to metal or acrylate. They are better tolerated by patients with a deficient prosthetic field or systemic diseases (eg. diabetes). The most important advantage of elastic dentures is the lack of release of harmful monomer [14].

Flexible dentures help patients avoid pain associated with acrylic dentures. These dentures are porous to "breathe" better than other types of prostheses and the flexible resin coating allows for a custom fit [15].

Valplast removable partial denture can be recommended for elderly patients with edentulous areas bordered by teeth and who are not subjected to high chewing forces. The main advantages are: aesthetic satisfaction and ease of insertion and disinsertion [16].

Valplast prosthesis as a temporary denture can cause gingival labial recession of adjacent teeth so it is not indicated for the restoration of a previously missing tooth [17].

Although nylon (polyamide) prosthesis materials have a low modulus of elasticity and rigidity, they have great fracture resistance [18-20].

Adhesion of microorganisms to the denture base materials is an important issue. The studies concerning the effect of disinfecting methods on polyamides are very limited. The Val-Clean method has no particular influence on the gloss. Polident and Val-Clean can be safely used as denture cleaners as far as colour stability and flexural strength both are concerned [21,22].

CONCLUSIONS

In the coming years, the number of patients with partial edentulousness will increase with the need for treatments.

The correct evaluation of the dentition, the condition, the position of the teeth, the education of the patient, the maintenance are just a few steps necessary for a guaranteed success. Research and progress in digital technologies such as qualitative improvement of materials such as bio-compatible polymers have the potential to solve many of the problems related to the use of flexible partial prostheses and satisfactory oral health. Digital strategies

and the production of new materials expand the therapeutic field applicable to partial prostheses. The combination of improved materials, research and education will focus on the care of patients with partial edentation and will allow an improvement in the quality of life of our patients.

The use of flexible materials in the manufacture of partial prostheses is increasingly common because they have a high resistance to fracture. Flexible partial prostheses can be used successfully because they adapt very well to the different situations encountered, depending on the particularities of each prosthetic field in the oral cavity.

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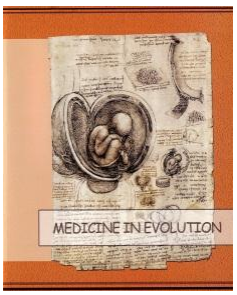
Oral and general seeking pattern behavior among adult dental patients



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Abstract

There is a need to identify the reasons why individuals do not attend regular medical checkups and to assess the main sources for health information. In this cross-sectional study were included 110 dental patients (50% females), with mean age of 51.25 years (SD±12.26) from Bucharest. The participants completed an anonymous questionnaire with items related to their dental visits habits and the main sources of medical information. Results: most of the patients (71.8%) used to visit the dentist for emergency reasons, especially patients with low level of education and reduced self-assessed socio-economic status. The main source of oral health information is the dentist (70%) and for general health, the physician (73.6%). Conclusion: there is a need for active involvement of dentists and general practitioners in the health education of their patients.

Keywords: medical information, health promotion, healthcare services.

INTRODUCTION

The context in which patients and individuals seek dental and general health information changed recently due to the diffusion of the media and reveal the autonomous medical search besides the dentist and physician [1, 2].

Notwithstanding recently appeared health channels for communication, doctors still remain the most reliable source of information for their patients [2].

Some studies showed that there are active communication channels (e.g. interpersonal, print, Internet) and passive channels (e.g. radio and television), both as primary oral and general information sources for health issues [3, 4].

In order to reduce inequities in medical information availability, there is a need to understand patient's medical information-seeking behavior [5].

MATERIAL AND METHODS

In this cross-sectional study were included 110 patients (50% males), aged between 33 and 75 years, from Bucharest. The participants have received and completed an anonymous questionnaire with items related to their dental visits habits (reasons for presenting to the dental office: regular check-ups or emergency); the main sources of medical information, and also socio-demographic data (age, gender, self-assessed socio-economic status, and education level).

Respondents were assured of data confidentiality.

The subjects were divided in two age groups: adults (18-64 years) and elderly (> 65 years).

RESULTS

The mean age of the subjects was 51.25 years (SD±12.26) and 50% of them were females. The main background characteristics of respondents are presented in Table I. Most of the dental patients were adults (81.8%) and with higher education (more than 12 years of study, and with medium self-assessed socio-economic status (SES). Half of subjects are employed.

Table I. Characteristics of dental patients included the study

Variables	N (%)
Gender	
Female	55 (50)
Male	55 (50)
Age	
Adults	90 (81.8)
Elderly	20 (18.2)
Education level	
≤ 8 years of study	8 (7.3)
9-12 years of study	47 (42.7)
>12 years of study	55 (50)
Socio-economic status (SES) - self-assessed	
Low	12 (10.9)
Medium	53 (48.2)
High	45 (40.9)
Labor market status	
Employed	55 (50)
Other conditions	55 (50)

Regarding the main reasons for attending the dental office, most of the patients (71.8%) used to visit the dentist for emergency reasons (pain or other severe oral problems), mainly men and with no differences by age (Table IIa), patients with low level of education and low self-perceived SES (Table IIb).

Although in a small number, there are four subjects who are on their first visit to a dental office (Table IIa).

Table IIa. Pattern of visiting dentist by age and gender

	All	Gender		Interval age	
	N (%)	Males (N)	Females (N)	Adults (N)	Elderly (N)
Every 6-12 month (check-up)	27 (24.5)	8	19	21	6
Emergency (pain/problems)	79 (71.8)	47	32	65	14
Never	4 (3.6)	0	4	4	0

Table IIb. Frequency and reasons for visiting dentist by SES and education level

	Education (years of study) (N)			Self-assessed SES (N)		
	≤ 8	9-12	> 12	Low	Medium	High
Every 6-12 month	0	12	15	0	14	13
Emergency (pain)	8	32	39	10	37	32
Never	0	3	1	2	2	0

In terms of dental information, the main source is the dentist (70%). Mass media and both sources (media and the dentist) are chosen in small proportions (7.3% and 6.4% respectively. Nearly one quarter (16.4%) say they have information regarding oral health or choose not to answer this question (Table IIIa).

Of those who declared the dentist as the only source of information, most have higher education and an increased level of self-assessed SES (Table IIIb).

Regarding the main sources of general health, the situation is similar to the one described above: most of the participants (73.6) are informed by the physician, especially men under 65 years of age (Table IVa), those with more years of study, with medium and high self-perceived socio-economic status (Table IVb).

A percentage of 14.5% of the subjects did not answer the question related with sources of medical information or say that are not informed in this regard, mainly females and elderly (Table IVa). Media and is a variant little chosen by respondents (3.6%), as well as the version with both sources of information (mass media and the physician), see Table IVa.

Table IIIa. Sources of oral health information by age and gender

	All	Gender		Interval age	
	N (%)	Males (N)	Females (N)	Adults (N) (18-64 ys)	Elderly (N) (≥ 65 ys)
None	18 (16.4)	6	12	3	15
Dentist	77 (70)	40	37	72	5
Mass media	8 (7.3)	5	3	8	0
Dentist and media	7 (6.4)	4	3	7	0

Table IIIb. Sources of oral health information by SES and education level

	Education (years of study) (N)			Socio-economic status (SES) self-assessed (N)		
	≤ 8	9-12	> 12	Low	Medium	High
None	3	11	4	11	7	0
Dentist	3	34	40	0	40	37
Mass media	2	2	4	1	2	5
Dentist and media	0	0	7	0	4	3

Table IVa. Sources of general health information by age and gender

	All	Gender		Interval age	
	N (%)	Males (N)	Females (N)	Adults (N) (18-64 ys)	Elderly (N) (≥ 65 ys)
None	16 (14.5)	8	8	4	12
Physician	81 (73.6)	42	39	73	8
Mass media	4 (3.6)	1	3	4	0
Doctor and media	9 (8.2)	4	5	9	0

Table IVb. Sources of general health information by SES and education level

	Education (years of study) (N)			Socio-economic status (SES) self-assessed (N)		
	≤ 8	9-12	> 12	Low	Medium	High
None	5	11	0	11	3	2
Physician	3	34	44	0	44	37
Mass media	0	2	2	1	2	1
Doctor and media	0	0	9	0	4	5

DISCUSSIONS

It is important to identify the reasons why individuals, in general, do not go to regular medical checkups throughout life.

The results of the present study revealed that incorrect medical and dental attendance is related with reduced education level and socio-economic status, similar with other studies [6, 7].

Subjects with increased level of education usually present for regular dental and medical check-ups, issue found in similar studies [8, 9, 10].

CONCLUSIONS

The addressability behavior at the dental office is largely incorrect, the participants included in this study addressed to the dentist when a problem or pain occurs, only a quarter present for regular checkups. There are also subjects who have never been to a dentist's office. The results show that the main source of medical information is the dentist and the physician. The media is a source of medical information, but in a small proportion.

The active involvement of dentists and general practitioners in the health education of patients is required.

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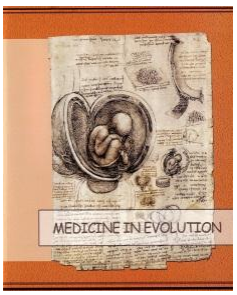
Overdenture on CEKA attachments-a good prosthetic option



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Abstract

A dental successful restoration aims for two main goals: the aesthetics, stability, and maintenance of the prosthesis, in other words, the satisfaction of patients for a long time. The degree of satisfaction of patients wearing overdentures is high, especially since the prostheses properly maintain their stability and retention for a much longer time than conventional total dentures. The functional characteristics of the overdentures are validated even more in the situation when the dental abutments kept under the prosthesis are provided with special means of fixation, retention and stabilization. The technique of over prosthesis on root abutments is an approach that addresses patients with too few remaining teeth and reserved periodontal prognosis with the advantage of postponing for a long time the installation of total edentulous condition and in addition reduces the atrophy advance. This paper presents the whole process for manufactured an overdenture on CEKA attachments, and describes the technical steps for a real case with a subtotal mandibular edentation and two extruded canines, which had circular caries of the package. They were prepared for the crown-root devices. The classic method was used in making overprosthesis on staples.

Keywords: Overdenture, Ceka attachments, removable dental prosthesis, dental restauration, removable partial denture

INTRODUCTION

The considerable advances in dentistry in recent decades are largely due to new equipment and concepts, which are generating therapeutic techniques and procedures. "All aesthetic reconstructions should have one thing in common. It should be modeled on nature, ie existing natural structures. Because the better we manage to imitate this model, the harder it is to recognize the denture as such" [1].

Marginal periodontopathy along with dental caries complications and occlusal dysfunction are the main factors that determine the appearance of subtotal edentulousness. Stress, fear of pain, financial deprivation and irrational nutrition have contributed to lowering the age of onset of subtotal edentulousness. Although the treatment possibilities are much more diverse and the average age has increased, more and more often the subtotal edentation affects the structures of the stomatognathic system, especially the elderly and not only, a good part of the patients being middle aged.

Mobile or removable prosthesis, during treatment, raises a number of problems in order to obtain the desired solutions, all of them depending on the degree of difficulty of the case. The basic objectives of a removable prosthetic treatment are the preservation of structures and the restoration of masticatory functions, in conditions of maximum balance of the prostheses, through the possibilities offered by the remaining teeth, to increase the quality of life and comfort of these patients, usually being in the elderly category. "Special systems or attachments are two-component aesthetic joints which connected, on the one hand to the tooth, root or implant, and on the other hand, to the removable partial denture (RPD). They are part of the direct means of fixation, retention and stabilization of removable partial dentures. However, special systems can also connect components of fixed partial dentures and are also used in overdentures" [2].

A correct and conservative treatment of pathological conditions, preservation of the remaining dental elements regardless of the prosthetic value, denotes an excellent prophylaxis of the prosthetic field, protecting the future completely edentulous from the phenomenon of mucosal atrophy in those areas. At the same time, through the attention offered and the effort exerted for saving the remaining dental elements and using them in the most judicious way, we can thus postpone the final installation of total edentulousness. "Carrying out a dental prosthesis that is functional and that meets the special aesthetic requirements of the patient is a challenge for the dental technician. If the dental technician manages to successfully combine both elements, then his work will be crowned with laurels" [3].

Aim and objectives

The overdenture on root abutments is a good method for patients with very few teeth and with periodontal prognosis because it has several advantages such as postponing the installation of the total edentulous condition and, in addition, the reducing of the atrophy advance. The objectives for overdentures are as follows:

- obtaining a correct height of the edges and the maximum optimal extension of the prosthesis base;
- distribution of relatively equal pressures on the hard and soft components of the prosthetic field;
- respecting the freedom of muscle movements and achieving the optimal marginal closure of the prosthesis;
- choosing artificial teeth that fit the patient perfectly;

great emphasis on the processing and polishing the prosthesis.

MATERIALS AND METHODS

The model used in performing the prosthesis is based on a real case with a subtotal mandibular edentation. The two extruded canines, which had circular caries in the cervical third of the teeth, were prepared for the post-and-core casts. The method used in making overdentures on attachments is the classic method. Making the preliminary model is an important step in the technology of total prostheses. It is not enough for the impression to be of good quality, but it is necessary for it to arrive in due time (depending on the material from which the impression is taken) in the dental laboratory where the model is made. A model that has imperfections can compromise the final prosthetic part, cancelling the physical and material efforts, both of the doctor and of the technician, during the technology of any overdentures. In this regard, two types of plaster were used to make the models.

The stages of making the preliminary model are:

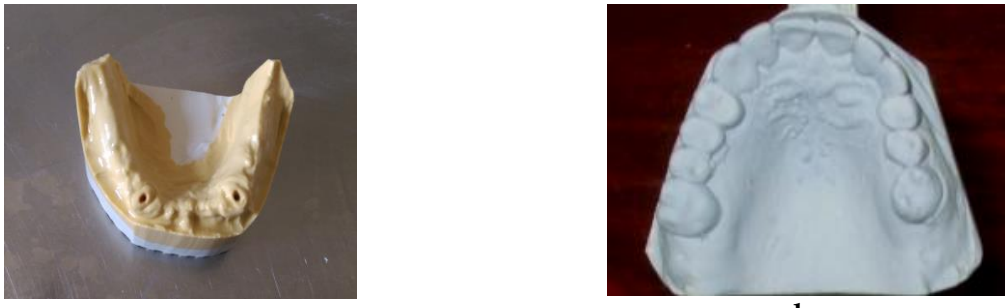
a) Impression preparation: washing, decontamination, detensioning, drying

b) Casting an extra-hard plaster, which will not exceed the height of the edges of the impression by more than 3-4 mm

c) After the material setting, the base is poured from a hard plaster, whose expansion coefficient is close to the extra hard one, previously used.

d) After the final setting, the impression is demoulded and then the working model is trimmed (Fig.1.a)

The antagonistic model was also made of moldano plaster (Fig 1.b).



a. **b.**

Figure 1. a. Working model; b. Antagonistic model

After removing the impression, the model was isolated at the level of the teeth prepared for post-and-core casts and their layout was started using red modeling wax, making the root device by dripping into the root canal, then the ring and then the cover of the system. The patrices of the special CEKA attachment system were placed over the latter with the help of the parallelograph for parallel positioning. Wax rods (wax rods, Hungary) were used for packaging because they melt together with the model and allow easy removal of wax from the mold. The rods were applied to the thickest part of the model, away from the edges and contact areas.

Figure 2. Layout of the post-and-core casts and assembly of patrices of the special CEKA attachment system

The Heraeus technique was applied for placing the rods, ie a rod of 3-3.5 mm with a length of 4.5-5mm was attached to each model, after which they were joined by a horizontal rod with a diameter of 3.5mm, which has role in being the metal reservoir. A vertical rod is detached from this rod which is attached to the casting cone.

Before packing, the model was detensioned, ie it was sprayed with a detensioning solution from Bredent. (Bredent, Senden, Germany). The size was tested; the model was placed in a plastic ring of the Bego company. The packaging mass used was BellaVest SH (Bego, Bremen, Germany) which is a phosphate-based material along with BegoSol HE liquid (Bego, Bremen, Germany).

Figure 3. Calcination furnace model STC 411.26 (Super Therm, Prahova, Romania)

The next important stage is the casting. Casting means the operation of inserting the molten metal or alloy into the mold cavity to make the cast part. A Ni-Cr alloy called VeraSoft (AallcaDent, USA) was used. Among the specific properties of the metal in the liquid state, the viscosity and the surface tension directly intervene in the casting process. The property that determines the rate of flow of fluids is called viscosity. It expresses the internal friction between the layers of liquid which, when flowing, move at different speeds. It is, therefore, the one that determines the fluidity of the liquid alloy and its ability to fill all the details of the pattern. When casting the alloy used in this case, a temperature of 100-150 ° C higher than the melting temperature is required, which ensures an appropriate viscosity.

At the casting temperature, the viscosity of the alloy is 1.5-3 times higher than that of water at ambient temperature. After the wax has melted, the mold was placed in the heating furnace and subjected to the plug of a thermal cycle.

A ceramic crucible was used to induce the melting by induction. A high frequency current device was used as the casting method. It was the centrifugal force that pushed the molten alloy into the mold. The temperature required to melt the dental alloy is generally between 850 and 1450 ° C. The cooling of the cast piece and the print was next.

The first step of unpacking is the detachment of the molded part with a core of packing mass from the ring, followed by the removal of the rest of the packing mass with pliers and weak hammer blows. After unpacking the cast metal part, it is necessary to clean the packaging waste and the oxides from the metal surface. By blasting, in addition to cleaning the metal surfaces from the packaging residues and oxides, the metal skeleton is also conditioned. The process consists in bombarding the metal surface with a jet of particles of different sizes, projected with the help of a column of compressed air at a pressure of 6 bars. By blasting, micro-retentions are made, therefore an increase of the contact surfaces is achieved. Sandblasting is also used to condition the metal surfaces of the metal component in order to make a connection with the aesthetic component.

For preparing metal components (Fig. 4), several types of milling cutters were used, from those with high hardness to those with low hardness with different oblique, crossed blades. Gum, brushes and fluff were used for polishing, along with polishing pastes.

Figure 4. Fixed metal components on the model

The next step was to make the light-curable resin individual/custom tray. The first step was to isolate the model with Izodent solution (Doriot Dent, England). The model was deretentivized in the fixed prostheses area, after which the Pico Tray plastic phase resin plate (PicoDent, Wipperfürth, Germany) was applied to the model and the base and accessories were cut in compliance with all the principles of making the individual tray. The model was then introduced into the light curing apparatus DentaColorXS(Kulzer, Germania).

The individual tray was sent to the dentist's office. The dentist sent the functional impression to the technician to begin the next phase of the prosthesis.

For this phase of the prosthesis a special conformer was needed in which alginate was placed and the impression was clogged up to a distance of 2-3 mm from the edges in order to highlight as well as possible the mucobuccal fold. Alginate Plus Phase from Zhermach, Germany, was used, which was mixed with water to create a creamy consistency like gypsum. This soft alginate was introduced into the conformer and then the functional impression was positioned with the base of the tray clogged in the alginic mass and the imprint with direct view. It was not covered on any part with alginate.

The working or final model is the positive replica of the totally edentulous prosthetic field made from hard plaster, done in the laboratory, based on the functional impression prepared in advance. On this model, the base of the future prosthesis is modelled, the artificial teeth are mounted, the pattern is made, and the future prosthesis is polymerized.

The technology of realizing the working model includes the stages:

a) Examination of the final impression in the laboratory;
b) Imprint preparation by embankment and formwork;
c) Casting the final model itself;
d) Imprinting the impression;
e) Modelling.

Determining intermaxillary relationships is an important clinical step. This can assess the position of the maxillary arch regarding to the mandibular arch, even in the absence of all dento-periodontal units. The occlusion templates have the role of being stylized imitations of prostheses in order to transfer them later to the dental laboratory. They have two components: the base of the templates and the occlusion rims.

First of all, the base of the light-curable resin template similar to the individual Pico Tray (PicoDent, Wipperfürth, Germany) was started, on which the pink modeling wax occlusion rim (Hungary) of the following dimensions was mounted:

- height in the frontal region – 10 mm, decreasing distally to 8 mm;
- width in the frontal area – 6 mm, increasing distally to 8 mm.

The occlusion rims were sent to the office to determine the intermaxillary relations.

Then the dentist sent the templates to the technician to mount the models in the articulator. The Handy articulator (Shofu, Ratingen, Germany) was used, a device that reproduces certain mechanical conditions of mandibular movements and which, due to some

mechanisms, forms an articular system similar to the temporomandibular joint. A Handy articulator (Shofu, Ratingen, Germany) presents the components:

- Upper member;
- Lower member;
- Shoulders or frame uprights (grip);
- Model mounting plate;
- Tightening screws for the mounting plates;
- Incisive plate with a 10 grade tilt;
- Incisive rod with an incisive pin;
- Model mounting disc tightening pins.

The assembly was started by fixing the maxillary model in contact with the occlusal plate at a distance of 10.5 cm from the intercondylar axis. After the fixing plaster has hardened on the base of the upper model, the plate was removed. The next phase was to mount the lower template in contact with the upper model according to the benchmarks from the determination of the intermaxillary relations. It was checked if the vertical rod comes into contact with the incisal plate.

The next stage was the making of the wax model denture. In this stage we started with the choice of artificial teeth according to the antagonistic model, the aesthetic and chromatic requirements required by the patient and the doctor. The prosthesis base was modelled and then the teeth were fitted.

Since it was a mandibular model, without toruses and exostoses, there was no need for foliation and engraving before the layout of the prosthetic base.

A pink modelling wax plate (Hungary) was taken and the layout of the prosthesis base began. After finishing the base of the prosthesis, from the same wax, a roll was made which was placed in the middle of the crest of the mandibular model, after which the installation of Vita MFT artificial teeth began (Sackingen, Switzerland). At the end, the model was ready to be sent to the dental office for the in mouth checking, the last check before completion.

Figure 5. Fixed metal components on the model

After the test, the molding was done. It was used an indirect, wave less molding. The cuvette in which plaster class II was placed was taken, after which the model and the molding were placed with the base of the model sunk in plaster until the limit at which the model begins. After the gypsum set, it was isolated with Izodent solution (SpofaDental, Marcova, Jicin, Czech Republic) after which the second part of the basin was assembled. The gypsum paste was prepared and poured into it until filling, then the lid was placed and inserted into the hydraulic press until the gypsum has set.

The next step was to remove the wax from the mold; for this the cuvette was inserted, inside where the prosthesis stayed in hot water for 5-6 minutes to plasticize the wax. After plasticizing the wax, the cuvette is opened and washed gently with hot water to completely remove any wax left in the mold.

Then, followed with the insulation of the pattern, a necessary procedure to prevent direct contact of the acrylic resin with its plaster walls. Patterns isolation aims to:

- Prevent the adhesion of the pattern to the acrylic resin;
- Demold without risk of fracture or cracking;
- Facilitate the detachment of the printing prosthesis;
- Prevent the risk of penetration of gypsum monomer or resin water in the polymerization process.

Thus, this is followed by the preparation, manual insertion, pressing and thermospolymerization of the acrylic resin of the overdenture base. It started with the preparation of the acrylic resin which takes place by mixing the powder with the liquid.

The acrylic paste, which is inserted in the mold, goes through the following polymerization steps:

- The sedimentation stage that gives the mixture a sandy character;
- The dissolution stage, in which the liquid diffuses between the monomer particles and gives a creamy appearance;
- Saturation stage, with a pasty appearance;
- The stage of evaporation in which an elastic paste appears - the phase is over.

Superacryl Plus pink acrylic resin from SpofaDental (Jicin, Czech Republic) was used. 6-8 ml of liquid was placed in the well, over which 14-16 g of powder were added over the liquid, which would be the equivalent of 1 g per tooth of powder, after which it was mixed and then the composition was left in the well until the paste reached the 3rd stage listed above, after which it was manually inserted into the pattern where the teeth are and the cuvette was closed. (Fig. 6).

Figure 6. Pressing the paste with the manual press

The next step after closing the cuvette was to press the paste using the hand press. Pressing the paste inserted in the pattern is done slowly and progressively, repeating the tightening 2-3 times with the help of a crank specific to the manual press. The final pressing is for at least 15 minutes at a pressure of about 3 barrels. Rapid thermopolymerization was used, where the cuvette is inserted and maintained at 65 ° C for 60 minutes and then the temperature rises to 100 ° C for 60 minutes.

Cooling was slow at room temperature. Unpacking followed when the cuvette was completely cooled. A wax knife was inserted between the two halves of the shaper to separate them. The prosthesis remained in part of the pattern. This unpacking procedure must be performed smoothly so as not to crack the prosthesis.

RESULTS

After unpacking the prosthesis, the following steps were followed: prosthesis processing, prosthesis smoothing and overdenture polishing. Prior to processing, the matrices of the special CEKA system were fixed on the mucosal face of the prosthesis with self-curing

acrylate. The processing and smoothing of the prosthesis were done with the micro motor and with rotary tools - milling, drills, brushes, polystyrene and puffs, the polishing was done with the horizontal biax motor. The overdenture is shown in Fig. 7.

a. b.

Figure 7. The overdenture a. Overdenture on attachments; b. Overdenture on attachments- frontal view

The loss of stability and maintenance of the prosthesis was observed within 4-5 years after the insertion of the dentures and could be solved either by a classic refraction of the prosthesis, or by changing the gaskets that ensure friction at the special systems of fixation, retention and stabilization. Prosthesis lining was usually followed by a thorough selective readjustment of the contact made between the root abutments and the mucosal surface of the prosthesis. The selective adaptation of the abutment contacts with the prosthesis base was absolutely necessary because an excessive and prolonged contact of the prosthesis base with the dental abutment determines, as a rule, the appearance of a painful sensation of variable intensity at the level of the abutment tooth.

DISCUSSIONS

Conceptually, the idea of keeping the last teeth under the prosthesis for as long as possible is based on the principle of transmitting occlusal forces from the prosthesis to the underlying bone base through the periodontal ligament system of root abutments kept under the prosthesis. The occlusal forces developed at the level of the prosthesis during mastication are not transmitted entirely through the periodontal ligament system to the bone base, the prosthesis benefiting in this sense from a mixed dento-periodontal and muco-bone support. It is considered that, in addition to the stimulatory effect exerted by the periodontal ligament system on the surrounding alveolar bone, due to the maintenance of the periodontal proprioceptive system, excessive occlusal forces are also avoided. It was considered extremely useful to keep the last teeth at the level of the arch, in order to reduce as much as possible, the bone atrophy at this level, given that at the level of the antagonistic arch there were natural teeth or fixed prostheses capable of exerting high occlusal pressures.

Avoiding the appearance of supraliminal forces due to the modulation of muscle activity by signals from periodontal proprioceptors, has the effect of avoiding functional bone overload at the level of the alveolar ridges and maintaining within confined limits the physiological process of atrophy, both around the remaining root and even remoted biological tissues.

Although carious lesions were one of the most common diseases detected at the level of root abutments during regular examinations, this was not the main cause of the extraction of dental abutments kept under the prosthesis. It has also been observed that the consistent application of mycobacterial plaque control means and caries prophylaxis methods have effectively reduced the incidence of caries.

Wear is another phenomenon that accelerates the corrosion process in vivo. Through this mechanism there are micro particles detached from the mass of metal dental prostheses,

which, together with metal ions (especially Cu, Ni, Co, Cr, Be) and salts, are able to interact locally with periodontal tissues. The role of these ions in oral inflammatory diseases (gingivitis, superficial or deep periodontitis) is certainly not elucidated, although in vitro studies reveal the interaction between metal ions and fibroblasts.

Along with the quality of the processing of the external surfaces of the dental prostheses, another determining factor that influences the development and magnitude of the corrosion phenomenon is represented by the architecture of the dental prosthesis (bio-prophylactic principle of making dental bridges).

CONCLUSIONS

The technique of overdenture on root abutments is addressed to patients to whom fixed prosthetic treatments are not applicable due to a too small number of remaining teeth and with a reserved periodontal prognosis. This treatment postpones for a long time the installation of total edentulous state, achieves a good prophylaxis of the prosthetic field (in the sense of reducing the progression of the atrophy phenomenon), avoids as much as possible the psychological and functional inconveniences related to the installation of total edentulous state. These patients may perceive the extraction of the last teeth as a dramatic organic amputation, with influences on their personality as well as on their social life.

The initial oral hygiene of some patients, although it is a recognized benchmark in choosing the treatment indication, developing the prognosis and monitoring the patient over time, is not a guarantee of the success of the therapeutic method over time.

The prognosis of any type of removable denture and especially overdentures, as well as the evolution of the dento-periodontal and muco-bone substrate depends essentially on the patient's ability to maintain proper hygiene and the regularity of dental appointments at agreed periods with the attending physician.

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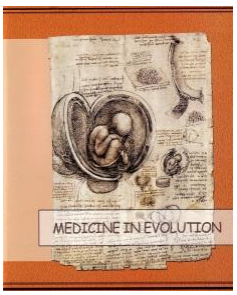
Metal-ceramic restauration with an SLM achieved framework



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Abstract

Laser Melting (SLM), a complex technique because of it requires close monitoring of the procedure. It combines modern CAD / CAM technology with the classic application of layer-by-layer ceramics, the material used allowing the selection from a wide range of colours, and thus giving the possibility of customization, aesthetic reproduction and at the same time a functional prosthetic restoration. Materials may include copper, aluminium, stainless steel, steel for tools, chromium cobalt, titanium and tungsten. The equipment used to obtain the metal frame by the SLM process is Mlab cusing 200R. Laser beam scanning is an essential task because these parameters happen to be the most influential on the characteristics.

Keywords: SLS, SLM Metal-ceramic restauration, CAD-CAM, Stereolithography

INTRODUCTION

From time immemorial, the smile and the appearance of the teeth have a special importance in appreciating a person's beauty. Both the beauty and the harmony of the face represent a continuous concern for people, having a special impact in interpersonal relationships. Human's constant preoccupation with beauty is a constant of life, regardless of the historical epoch in which he lives, that is why every human has tried by innumerable means to satisfy this demand. At the moment it can be said that a satisfactory performance has been reached. By combining two components, alloy and ceramic, one of the most resistant types of prosthetic restoration was made, combining beauty and functionality. The used technology is Selective Selective laser melting (SLM) technology was developed 25 years ago at the Fraunhofer ILT Institute in Aachen, Germany. The technique itself is not a difficult one, but rather complex, due to the procedures to be followed [1]. The process aims to combine modern CAD/CAM technology with the classic application of layer-by-layer ceramics, rendering the idea of compatibility between past and present. In terms of aesthetics, the material used allows the selection of a wide range of colours, with the ability to customize and reproduce aesthetically and functionally the prosthetic restoration.

Aim and objectives

The aim of the paper is to presents the technical process of SLM. The equipment used to obtain the metal frame by the SLM process is Mlab cussing 200R, a 3D metal industrial printer that uses powder 3D printing technology, offering a build volume of 100 x 100 x 100 mm. The virtual model was obtained using Exocad software and a laboratory scanner that scans with white light strips, Vinyl Open Air. The metal frame was clad in successive layers with ceramic. Glazing was done with powder (Vita AKZENT Plus Glaze) and liquid (Vita AKZENT plus Powder Fluid)

METHOD DESCRIPTION

Materials used to obtain the metal framework by the SLM process may include copper, aluminium, stainless steel, steel for tools, chromium cobalt, titanium and tungsten. SLM is also useful for the production of tungsten parts due to the high melting point and high temperature of ductile-brittle transition of this metal [2] [4].

In order for the material to be usable, it must be in atomized form (powder). These powders are previously atomized with gas, the most economical process for obtaining spherical powders on an industrial scale. Sphericity is desirable because it guarantees high cut ability and packing density, which translates into a fast and reproducible spread of powder layers. To optimize the flow, narrow-gauge distributions with a small percentage of fine particles such as 15 - 45 μm or 20 - 63 μm are usually used. Currently, the alloys used in the process include stainless steel, maraging steel, cobalt chromium, Inconel 625 and 718, aluminium [3][5] AlSi10Mg and titanium Ti6Al4V [6].

The mechanical properties of samples produced by using SLM differ from those manufactured by casting [7]. Improvements to the mechanical properties of SLM have been attributed to a very fine microstructure [9]. The next generation of addition is the direct laser melting process (DMLM) [8]. The power of the laser has an influence on the density and microstructure [9, 10]. Remanium star CL (Dentaurum) - powder for laser melting [11] is in the form of a powder intended for local melting with the help of a high energy laser beam with a high energy density [11].

The equipment used to obtain the metal frame by the SLM process is Mlab cusing 200R. This is a 3D metal industrial printer produced by Concept Laser (Germany), launched

in 2017, which uses powder 3D printing technology, offering a build volume of 100 x 100 x 100 mm.

RESULTS

SLM uses a high density laser to melt metal powders [12]. The process itself begins by cutting the data from the 3D CAD file into layers, usually having a thickness from 20 to 100 micrometers, creating a 2D image of each layer; a standard STL file format used in most 3D printing or layer-based stereolithography technologies. It is then loaded into a file preparation software package that assigns parameters, values, and physical media that allow the interpretation and construction of the file by different types of additive manufacturing machines.

In the case of selective laser melting, the thin layers of finely atomized metal powder are evenly distributed by using a coating mechanism on a substrate plate, usually metal, which is fixed on an indexing table moving on the vertical axis (Z). Most SLM machines operate with a workspace of up to 400 mm in X&Y and can go up to 400 mm in Z. The process takes place inside a chamber that contains a controlled atmosphere of inert gas, either argon or nitrogen, at oxygen levels below 500 parts per million. Once each layer has been distributed, each 2D slice of the part geometry is fused by selectively melting the powder. This is done with a high power laser beam, usually a ytterbium fiber laser with hundreds of watts. The laser beam is directed in the X and Y directions with two high-frequency scanning mirrors. The laser energy is intense enough to allow complete melting (welding) of the particles to form solid metal. The process is repeated layer by layer until the piece is complete [13].

The type of ceramic used to veneer the metal framework is VITA VM 13, feldspathic ceramic for veneering conventional alloy metal frameworks with CTE between 13.8 and 15.2. In addition to a low firing temperature, the Vita VM13 has high bending strength, thermal stability and low solubility compared to conventional ceramics [14]. It is found in a wide range of Classical Shades: DA1, DA2, DA3, DA3.5, DA4, DB1, DB2, DB3, DB4, DC1, DC2, DC3, DC4, DD2, DD3, DD4, to which are added the shades from the Professional range [15].

The firing temperature of the dentin, 880 ° C, ensures processing reliability, especially for alloys with a low solidification temperature <1100 ° C. Due to its homogeneous, compact surface, the processing and polishing are of good quality. The accumulation of plaque on the surface of the ceramic is significantly reduced.

For the realization of the special nuance effects, for the individualization of the restorations, the following stains are available: VITA AKZENT Plus and VITA INTERNO [16]. The main advantages of using Vita VM 13 are:

- Natural effects of shadow and light, due to the fine structure;
- Minimum contraction for precise burning;
- Excellent modelling features for fast and precise application of ceramics;
- Full range of additional materials for excellent effects;
- Efficient and cost-effective processing;
- Individualization with the help of VITA AKZENT Plus and VITA INTERNO; and
- Available in VITA 3D-Master and VITA classic A1-D4 [16].

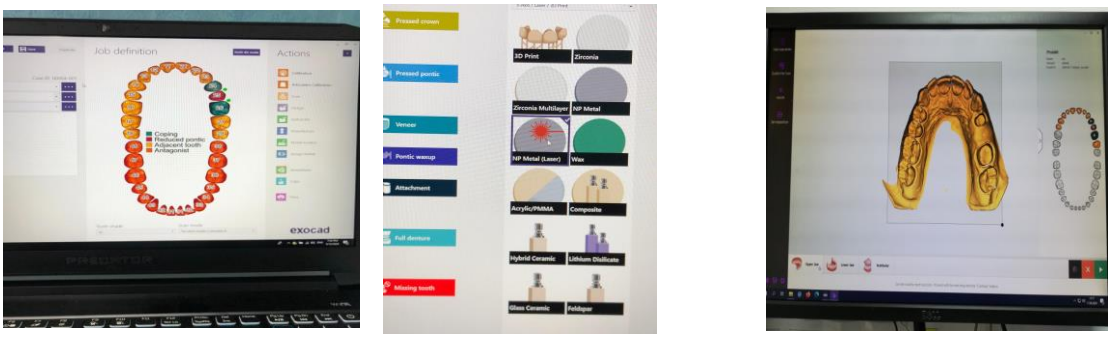
Ceramics are applied with specific brushes, of different shapes and sizes, in several layers. Due to the contraction during burning, the dental technician will shape the artificial teeth about 25% larger to compensate. At the time of application, the ceramic can have various colours (white, purple, pink) depending on the manufacturer. The final colour is obtained only after burning [17]. The base layer is the thickest, gives the base shape of the crown and defines its colour. Depending on the data sent by the doctor, the appropriate shades will be positioned for each area of the tooth. Normally, the gingival areas have a darker shade and the incisal areas are lighter [17]. The correction or retouching layer is the

layer in which small corrections can be made. More importantly, it is the layer in which certain features are created that are characteristic of different areas of the tooth. The dental technician can create special colours to give a more natural look to the artificial tooth [17] The finishing layer or glaze ensures the final gloss of the ceramic. It is extremely thin and will ensure a smooth and smooth surface as well as the characteristic translucency that mimics the enamel. The icing layer will not affect the shape or size of the restoration in any way, but it can make small changes in shade [17].

To obtain the virtual model, a laboratory scanner was used, which scans with white light strips, Vinyl Open Air and an Exocad software. To start the scan, the top model had to be mounted in a holder and inserted into the scanner. (Fig. 1)

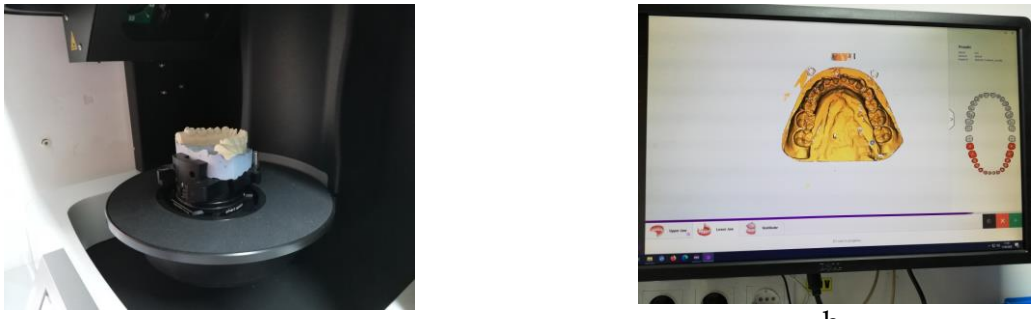
Figure 1. Vinyl Open Air scanner and superior model scanning

Before the scanner performed the scanning procedure, it was necessary to enter in its software a series of parameters necessary for scanning. For the beginning, it was considered to complete the patient file, the selection of abutments, neighbouring teeth and antagonists. (Fig. 2.a) The next step being the selection of the desired material, in this case NP Metal (Laser) (Fig. 2.b.), and finally the maxillary (Fig. 2.c) and mandibular (Fig. 3) models were scanned.



a b. c.

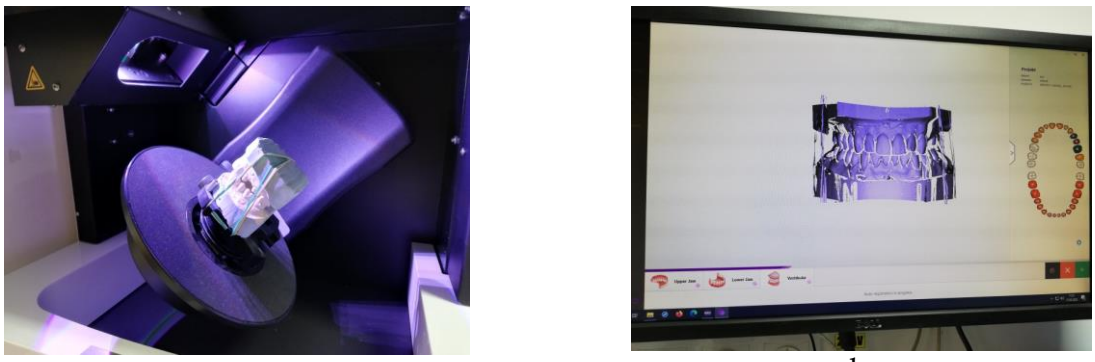
Figure 2. a. Completing the patient file, selecting abutments, neighbouring teeth and antagonists; b. Material type selection, in this case NP Metal (Laser); c. Scanning maxillary model



a. b.

Figure 3. a. Inferior model scanning; b. The mandibular model

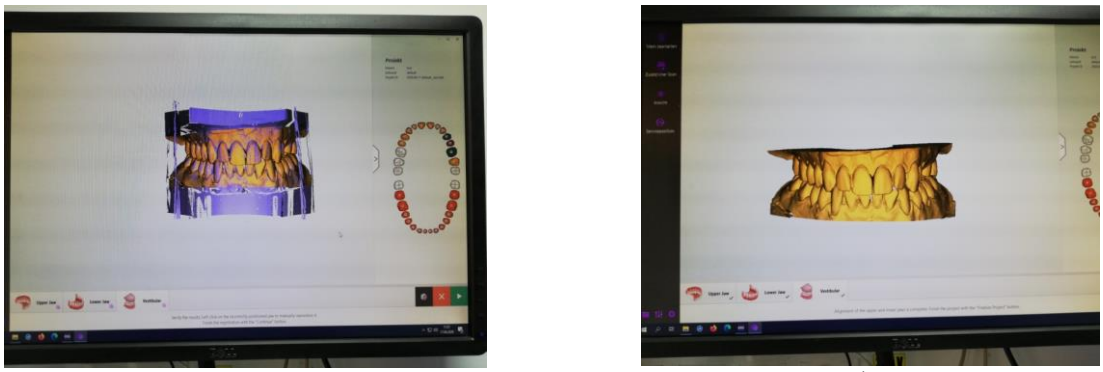
After obtaining the virtual models, they (both maxillary and mandibular models) are mounted in the maximum intercuspid position, with the help of elastics to keep them in the PIM, in order to scan the interference of the teeth in contact and occlusion. (Fig. 4)



a. b.

Figure 4. a. Scanning of models mounted in maximal intercuspidal position; b. Virtual models in MIP

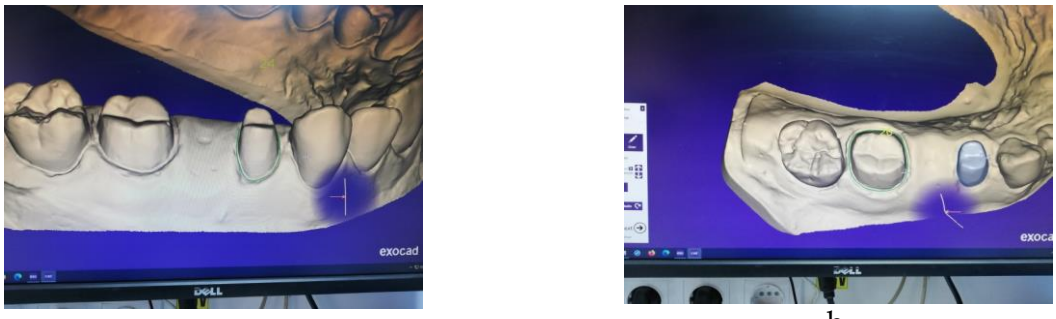
Following the scan, virtual occlusal reports of the models were obtained, but to obtain greater accuracy, three reference points of the models scanned in MIP were used, together with those scanned separately. Following this procedure, their overlap was generated (Fig. 5.a), thus reaching the final virtual models (Fig. 5.b).



a. b.

Figure 5. a. Overlapping virtual models through reference points; b. the final virtual models

After scanning the virtual models, the next step is to design the prosthetic restoration using Exocad software. The limit of the preparations of each abutment was marked (2.4 and 2.6) (Fig. 6).

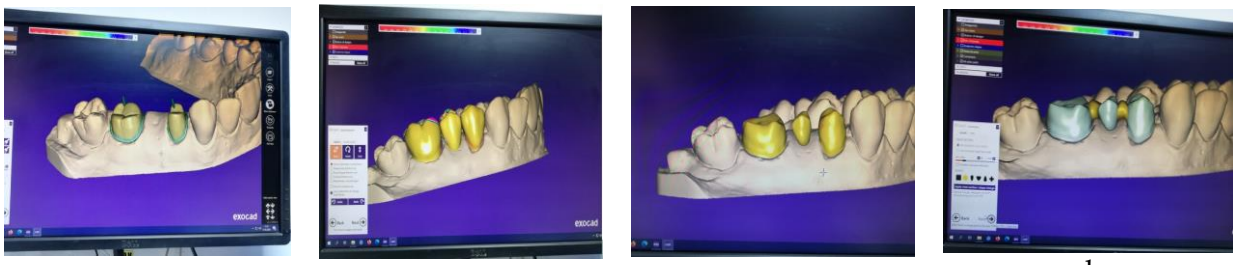


a. b.

Figure 6. a. Drawing the limits of the preparations on 2.4; b. Drawing the limits of the preparations on 2.6

After this stage, the completion of the virtual restauration was obtained (Fig. 8) by passing the following stages: the thickness of the cement was marked (Fig. 7.a), the

positioning the anatomical teeth (Fig. 7.b), the structural reduction the individualization of the restoration (Fig. 7.c), and the addition of the connectors (Fig. 7.e)



a. b. c. d.

Figure 7. a. Delimitation of the cement coating area and its thickness; b. positioning the anatomical teeth; c. structural reduction and the individualization of the restoration design;
d. adding connectors and changing their design

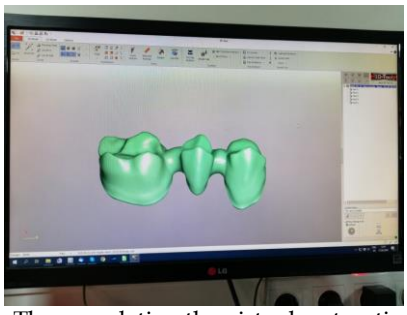
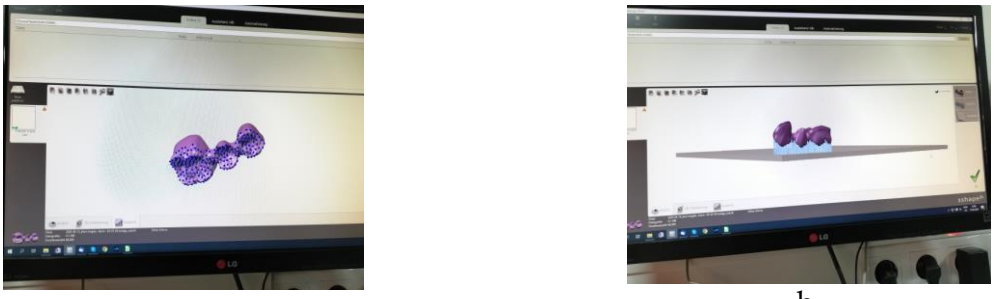


Figure 8. The completion the virtual restoration design

After scanning and designing the metal framework, the next steps are: positioning the support bracket and the virtual framework on the work plate (Fig. 9), introduction of the metal powder in the Concept Laser (Fig. 10 a.-b) and the STL data (Fig. 10.c-d);



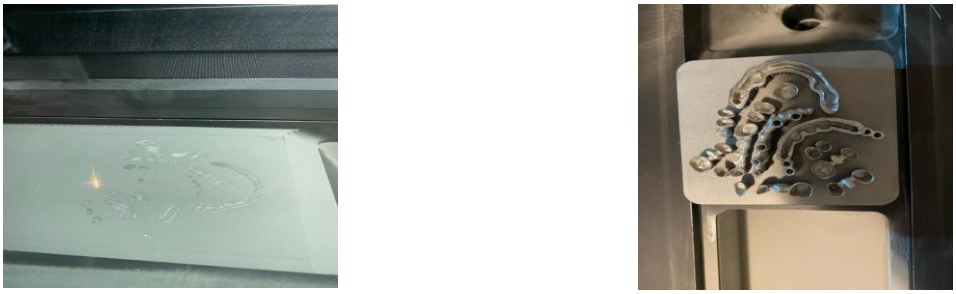
a. b.

Figure 9. a. Positioning the support bracket; b. Virtual framework on the work plate

a. b. c. d.

Figure 10. a. The used metal powder; b. Introducing the metal powder into the Concept Laser; c. Entering STL data in the Concept Laser; d. Programming for milling

Following these steps, next comes the actual sintering with laser (Fig. 11), obtaining the sintered metal framework (Fig. 12).



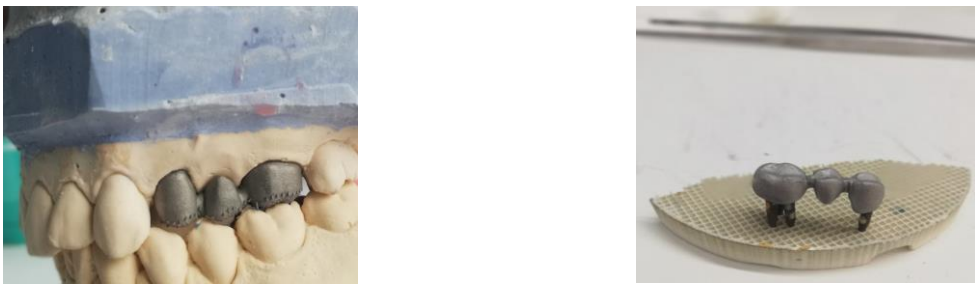
a. b.

Figure 11. a. The powder bed; b. The actual laser sintering on the powder bed

a. b.

Figure 12. a. Final shape from the sintering stage of the metal framework; b. The metal framework

Following the sintering stage of the metal framework, the support on which it was created is sectioned (Fig. 13. a), then its sandblasting follows (Fig. 13.b), the metal being thus prepared for the ceramic veneering stage.



a. b.

Figure 13. a. Metal framework on the model; b. Metal processing and preparation for ceramic veneering

In order to prepare the metal framework for ceramic veneering, it was considered to remove all impurities using the Atoms5 steamer. After removing all the impurities, the wash-opaque was applied, making the chemical connection between metal and opaque, and then the restoration was introduced in the P310 Programmed combustion furnace (Ivoclar Vivadent), at 970 degrees C, for 20 minutes. Then Opaque OP 3 is applied and placed in the firing oven at 960 degrees C for 20 minutes. While the metal frame is in the oven, the models were mounted in the articulator in maximal intercuspal position, in order to reproduce as correctly and real as possible the movements of the mandible. After the metal framework has been removed from the oven, in order to remove any impurities, it is cleaned again with the steamer and placed on the working model for the actual ceramic veneering. The first layer of ceramic is dentin (2M3 Base Dentine VitaVM13), which combines with the liquid (VitaVM Modeling Liquid) (Fig.42) and is applied with special brushes on the entire surface of the metal framework, to cover it completely. Following the Base Dentine layer, a layer of Transpa

Dentine VitaVM13 (Ivoclar Vivadent) will be applied on the tops of the cusps and ridges, then a last layer of Enamel VitaVM13 (Ivoclar Vivadent) is applied, in order to give transparency in the occlusion area. At the end of the application of the laminated ceramics, the framework was introduced in the firing furnace on a special support (Fig. 14.a), at 900 degrees C, for 20 minutes (Fig. 14.b).

a. b.

Figure 14. a. Positioning on the support for burning; b. Laminated ceramic inserted in the firing furnace on the special support

After the first firing, the ceramic, due to shrinkage, withdraws, so it requires a second firing in order to complete and retouch. These additions will be made with Enamel VitaVM13 (Ivoclar Vivadent) (Fig. 15.a), then it will be introduced again in the firing oven at 890 degrees C, for 20 minutes (Fig. 15.b).

a. b.

Figure 15. a. Completing the ceramic shrinkage with Enamel VitaVM13 (Ivoclar Vivadent); b. putting the framework back into the firing oven at 890 degrees C for 20 minutes

After the second firing and the adaptation to the model, the preparation for glazing was done with the steamer. Powder (Vita AKZENT Plus Glaze) and liquid (Vita AKZENT plus Powder Fluid) were used for glazing. A thin layer of glaze was applied over the entire surface, then placed in the firing oven at 870 degrees C, for 17 minutes (Fig. 16).

Figure 16. Burning the glaze layer

After removing from the oven, it is allowed to cool, next step is checking the final work on the model. (Fig. 17)

Figure 17. The final work on the model

After the complete treatment the prosthesis has a very good marginal adaptation. Possibility of 3D reconstructions of imaging analysis leads to a better understanding of areas investigated. The most important operation is to pass a laser beam over the surface of a thin layer of powder, previously stored on a substrate. Identifying the optimal parameters of power and speed. Laser beam scanning is an essential task because these parameters happen to be the most influential on the characteristics of the part (porosity, hardness and mechanical properties).

DISCUSSIONS

The main advantage and at the same time the major difference between the classical and the presented method is the elimination of the errors that occur in packaging and metal casting. An important aspect is the possibility to eliminate certain steps that can be completed virtually, this approach being superior in terms of accuracy, time, structure, and lower costs, too. The potential of SLM is proven by the procedure of manufacturing frames for complex dentures. The process of selective laser melting begins with a completely defined CAD model, divided into cross sections by a special software, to be subsequently used directly in this process. Other advantages of SLM technology can be: the accuracy of the 3D model, the palette of special metallic materials, the resistance of the obtained parts, the possibility of constructing extremely complex geometries, the flexibility of the printed models. 3D prototyping/printing has recently become a global phenomenon. In addition to being a quick and easy way to manufacture, this technique allows engineers to overcome certain design difficulties in just a few hours, while using traditional methods would take several weeks. 3D printing has become a method used in a lot of fields, from the automotive industry to advanced medicine [17]

3D printing or rapid prototyping is a process of making solid three-dimensional objects from a digital model. Creating a 3D printed object is possible by using additive processes. Through such a process, an object is created layer by layer, until the final shape of the desired object is reached. [18]

CONCLUSIONS

The process used to obtain the metal framework by additive technology has the following advantages: flexibility in complexity, automation of manufacturing preparation, automation of manufacturing and precise visualization of the final result of the restoration. Additive technology, compared to subtractive technology, does not have such a wide range of materials, but it exceeds the level of complexity that a subtractive technology can achieve. Vita ceramic-veneering metal restorations are indicated even in the frontal area, due to the quality aesthetics, managing, through the complexity of the applied layers, to imitate the

natural. Of course, they cannot be compared from this point of view with those entirely pressed or made by zirconium oxide subtractive technology, the latter providing the translucency necessary for an aesthetic of the highest quality, which cannot be matched when the framework is metallic.

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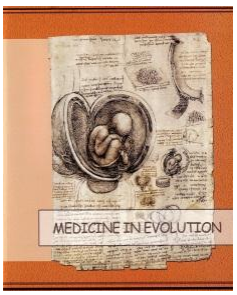
Orthodontic treatment in adult patients - a statistical study



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Abstract

Aims and objectives: The goal of this study was to establis the frequency of addressability of adults for orthodontic treatments, according to age, gender, environement, the reasons for requesting the consultations, clinical dental anomalies, dento-periodontal status and recommendations given after first clinical examination.

Material and methods: The study was performed on a group of 91 patients, the age between 19 and 52 years over a period of 2 years examined for orthodontic treatment in an dental office in Brăila county. The adults patients were selected from 608 subjects examinated in 2018 and 2019, atients being informed and accepting to participate in this study.

Results: Following the study performed on the adults specific group it was noticed that young females (age between 19-30 years), from urban areas, requested orthodontic treatment for dental aesthetic reason.

Conclusions: Adults subjects often requires an individualization of classical orthodontic treatment according to the existing and untreated malocclusion, dento-periodontal status and edentulous spaces.

Keywords: adult patients, clinical evaluation, orthodontic treatment

INTRODUCTION

The existence of malocclusions developed in childhood and their neglect over the years for various reasons (ignorance, financial or fear), influences the dento-maxillary apparatus, both functionally and aesthetically1,2. With age, the adult subjects undergoes changes in the bone support and periodontal tissue, which is particularly aggravated by the loss of teeth, which requires an individualization of classical orthodontic treatment according to the existing malocclusion and its aggravation over the years3,4. The demand for orthodontic treatment has increased universally, particularly over the past two decades in our office, both among children and young people, but also adults. A desire to enhance an aesthetic smile and a good oral health is the underlying motivation for most patients who seek orthodontic treatment3,5,6

The orthodontic treatment of adults, which frequently presents general condition and compromised oral health, involves a wide interdisciplinary collaboration between specialists in orthodontics, periodontology, prosthetics, implantology, oral and maxillofacial surgery7,8. Most adult patients who request an orthodontic evaluation are those patients who neglected malocclusions in childhood and did not benefit from orthodontic treatment or received ineffective or untimely discontinued orthodontic treatment. Some adults are sent by their general dentist for complex oral rehabilitation in interdisciplinary teams that include orthodontists, because the harmful consequences of periodontal diseases, edentations, parafunctions 5,9,10. The orthodontic treatment may have significant psychosocial benefits and can often lead to improved oral health-related quality of life most often involving teamwork for results that are as stable as possible over time11,12.

Aim and objectives

The motivation for choosing this topic derives from the desire for research and documentation related to the orthodontic treatment of adults, which differentiates it from that applied to children. The goal of this study was to establish the frequency of addressability of adults for orthodontic treatments, according to age, gender, environement, the reasons of orthodontic examination, clinical dental anomalies and dento-periodontal status and recommendations given after first clinical examination.

MATERIAL AND METHODS

The study was performed on a group of 91 patients, the age between 19-52 years over a period of 2 years examined for orthodontic treatment in a dental office in Brăila. The adults subjects were selected from 608 patients examinated in 2018 and 2019, patients being informed and accepting to participate in the study.

In 2018 were consulted 310 subjects, including 274 with age between 6-18 years and 36 with age between 19-52 years; in 2019 were examinated 298 patients of which 243 aged 6-18 years and 55 adults aged between 19-52 years.

RESULTS

A first analysis shows the distribution of the adults groups in 2018 and 2019 according to gender, age (three age groups: 19-30 years, 31-40 years and 41-52 years) and environment areas (rural and urban) (table I).

Table I. Distribution of the studied group in 2018 and 2019, according to gender, age and environment

Patients	Year	Gender	Age	Environment	
				Rural	Urban
36	2018	Male	19- 30 years	2	4
			31- 40 years	1	2
			41- 52 years	0	1
		Female	19- 30 years	4	10
			31- 40 years	2	8
			41- 52 years	1	1
55	2019	Male	19- 30 years	2	6
			31- 40 years	1	4
			41- 52 years	1	2
		Female	19- 30 years	4	17
			31- 40 years	1	11
			41- 52 years	1	5

The difference in the number of adult subjects consulted in 2018 and 2019 was not significant (22 more in 2019). Analyzing the data in table I, it can be concluded that in both years were presented for orthodontic consultation more female than male (a rate of 2:1), (fig.1), more adults from urban area than from the rural area (an average of 3:1) and more young adults aged between 19-30 years.

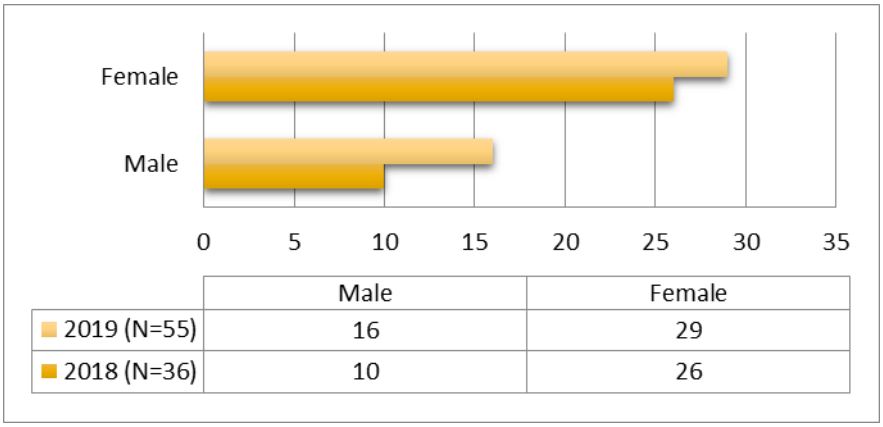
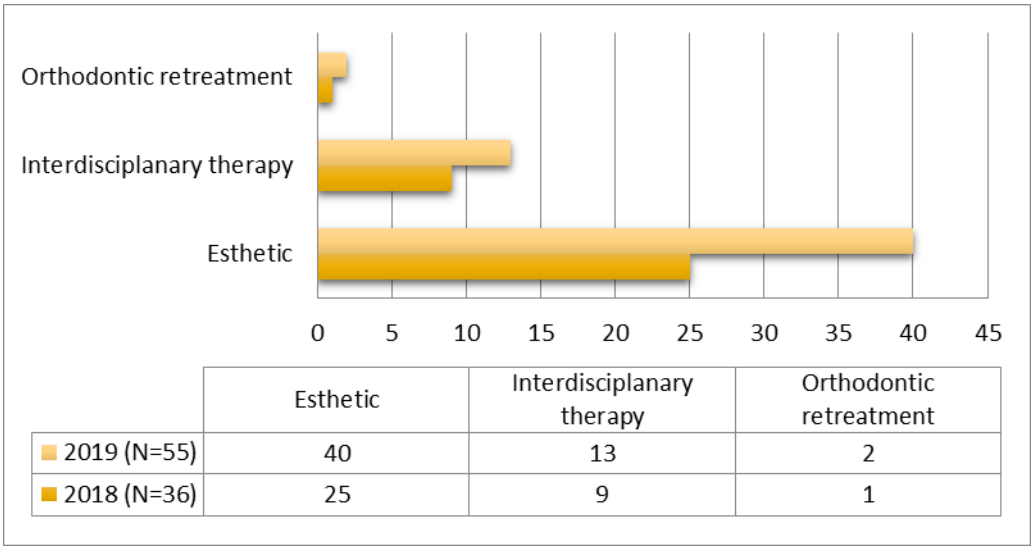


Figure 1. Distribution of the studied group in 2018 and 2019, according to gender

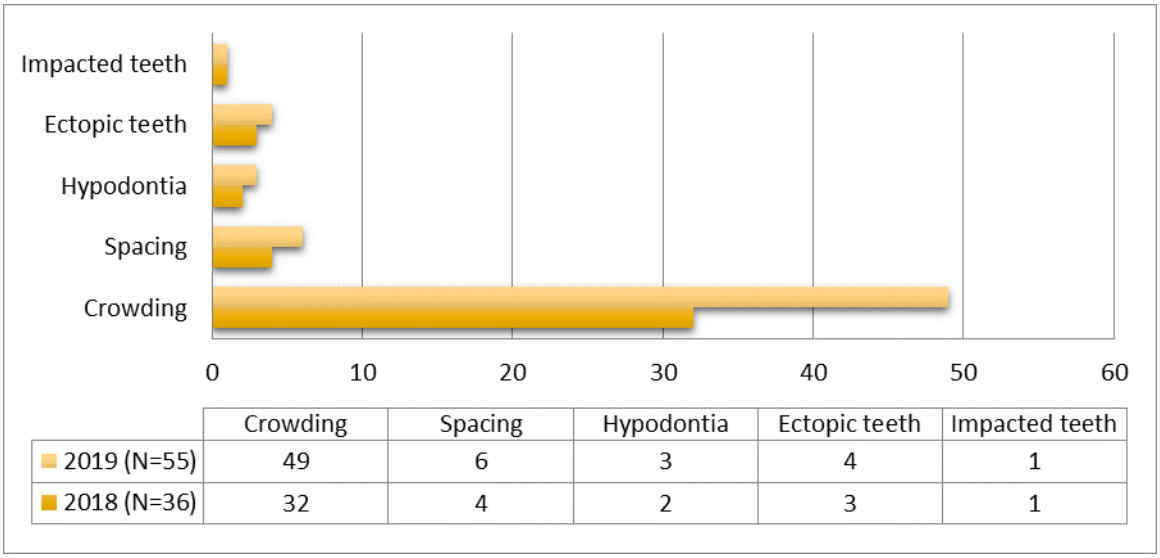
The reasons of orthodontic examination were esthetic, as part of interdisciplinary treatment and for orthodontic relapse (fig.2). The main reason of orthodontic examination was aesthetic, caused by dental crowding, malocclusion, ectopic teeth or anodontia. These patients requested orthodontic treatment without being sent by another doctor. Regarding the interdisciplinary treatment, the patients were reffered for consultation and orthodontic treatment by general dentist, periodontist or prosthetic specialist for correction of malocclusions caused by dental migrations, egressions or periodontal disease.



	Esthetic	Interdisciplanary therapy	Orthodontic retreatment
2019 (N=55)	40	13	2
2018 (N=36)	25	9	1

Figure 2. Distribution of the studied group in 2018 and 2019, according to reasons of orthodontic examination

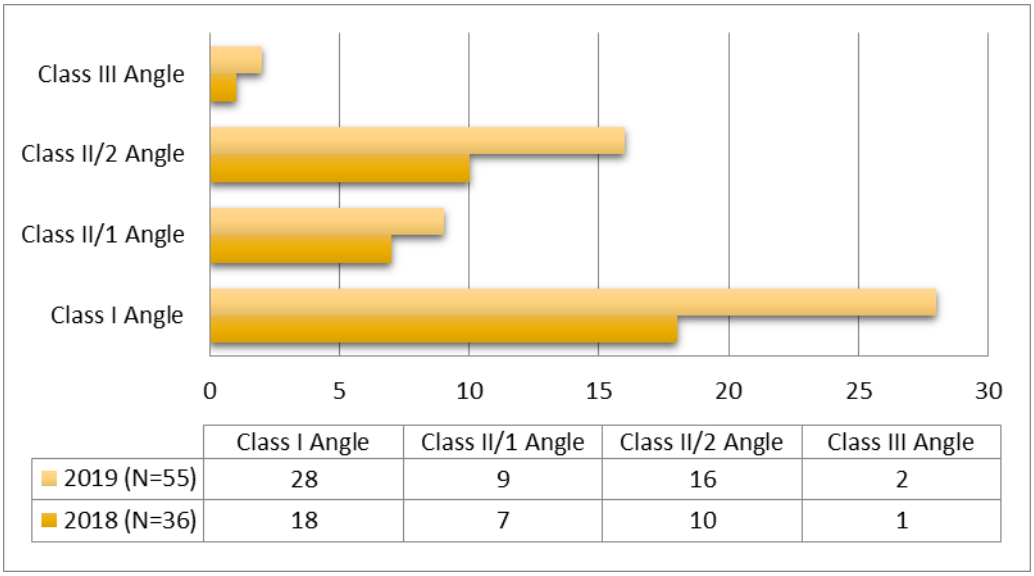
The distribution of the patients of studied group in 2018 and 2019, according to associated dental abnormalities (incongruence and isolated) was : the highest number of dento-alveolar incongruity with crowding, followed by ectopic teeth and dento-alveolar incongruity with spacing. At the first clinical orthodontic examination we noticed a increased number of adults with dental crowding associated with isolated dental anomalies (anodontia of lateral maxillary incisor or second mandibular premolar, impacted teeth or ectopic teeth) (fig.3).



	Crowding	Spacing	Hypodontia	Ectopic teeth	Impacted teeth
2019 (N=55)	49	6	3	4	1
2018 (N=36)	32	4	2	3	1

Figure 3. The distribution of the studied group in 2018 and 2019, according to associated dental abnormalities

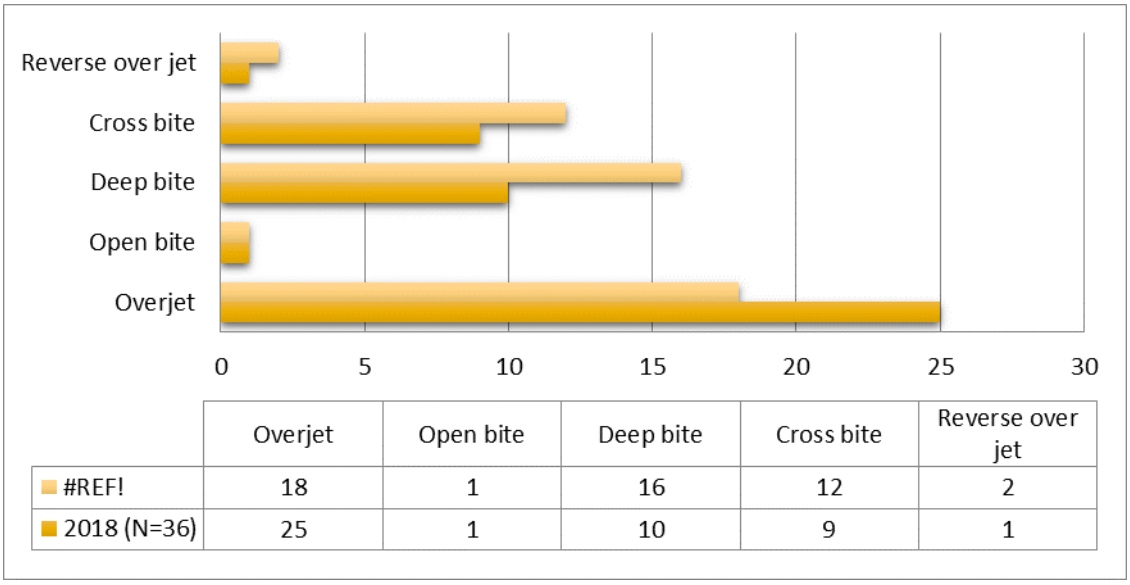
In term of occlusal relations (according to the Angle classification) we reported in both years an increase number of adult patients with neutral occlusal relations (class I Angle, characterized by neutral molar and cuspid relationships), followed by a relatively equal number of dental anomalies with distalized occlusal relations (Angle class II) and a small number of mesialized occlusal anomalies (class III) (figure 4).



	Class I Angle	Class II/1 Angle	Class II/2 Angle	Class III Angle
2019 (N=55)	28	9	16	2
2018 (N=36)	18	7	10	1

Figure 4. The distribution of the studied group in 2018 and 2019, according to occlusal relations (Angle classification)

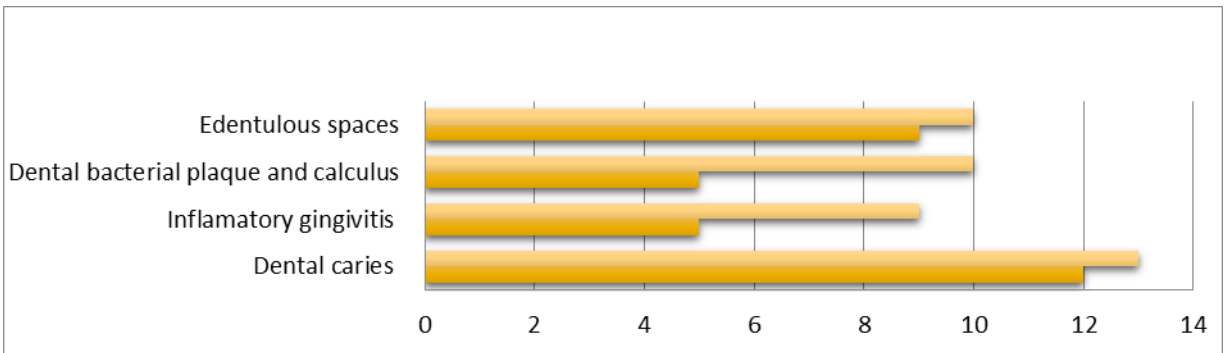
Regarding the maloclussions of the patients of the studied group in 2018 and 2019 it is observed that the adults with increased overjet (between 5-10 mm), with deep bite and with cross bite are significant more than adults with open bite and reverese overjet (figure 5).



	Overjet	Open bite	Deep bite	Cross bite	Reverse over jet
#REF!	18	1	16	12	2
2018 (N=36)	25	1	10	9	1

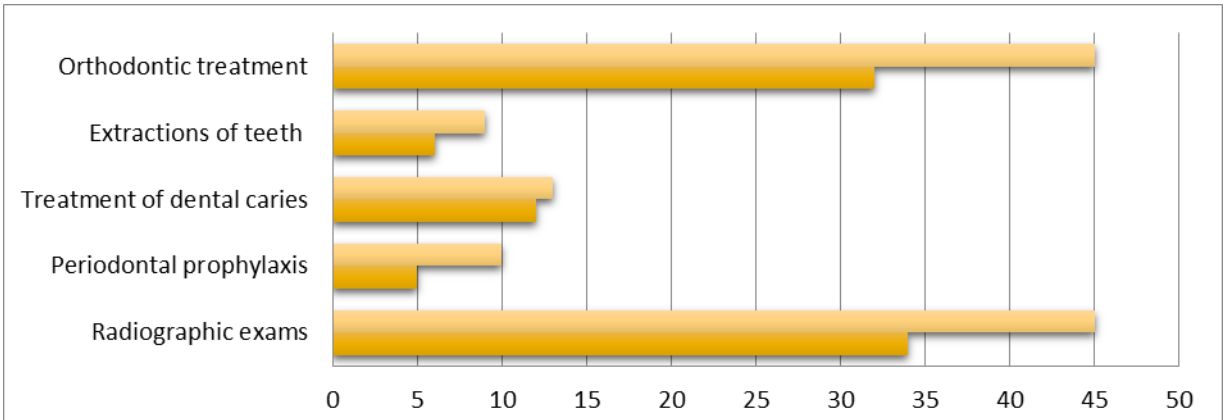
Figure 5. The distribution of the studied group in 2018 and 2019, according to malocclusions

According to associated oro-dental pathologies we observed at the first clinical examination, in both years, a relatively equal frequency of adults with untreated dental caries and edentulous spaces and with inflamatory gingivitis caused by dental bacterial plaque and calculus (figure 6).



	Dental caries	Inflamatory gingivitis	Dental bacterial plaque and calculus	Edentulous spaces
2019 (N=55)	13	9	10	10
2018 (N=36)	12	5	5	9

Figure 6. The distribution of the studied group in 2018 and 2019, according to associated oro-dental pathologies



	Radiographic exams	Periodontal prophylaxis	Treatment of dental caries	Extractions of teeth	Orthodontic treatment
2019 (N=55)	45	10	13	9	45
2018 (N=36)	34	5	12	6	32

Figure 7. The distribution of the studied group in 2018 and 2019, according to recommendations given after first clinical examination

Figure 7 shows the distribution of adult subjects examinated in 2018 and 2019, regarding the recommendations given after first clinical examination and discussions: complementary radiographic exams (orthopantomograms, lateral cephalograms, CBCT), extractions of teeth, treatment of dental caries and periodontal prophylaxis and orthodontic treatment.

DISCUSSIONS

Following the study performed on the adult patients groups, it was observed that one of the most invoked reason by adult patients who requested specialized orthodontic treatment, was aesthetic, caused by dental crowding, malocclusion, ectopic teeth or anodontia. In both years (2018 and 2019) were presented for orthodontic consultation more female than male, more adults from urban area than from the rural area and more young adults aged between 19-30 years, due to the tendencies of today's society to have a harmonious smile. More adult patients requested orthodontic treatment without being sent by another doctor and others were reffered for consultation and orthodontic treatment by

general dentist, periodontist or prosthetic specialist for correction of malocclusions caused by dental migrations, egressions or periodontal disease.

At the first clinical evaluation we could conclude that the most common abnormalities encountered were part of class I Angle occlusion, with dental crowding, anodontia and ectopic teeth, with increased over-jet, followed by class II Angle, with deep-bite and lateral cross-bite. According to associated oro-dental pathologies we also noticed, in both years, a relatively equal frequency of adults with untreated dental caries and edentulous spaces and with inflamatory gingivitis caused by dental bacterial plaque and calculus. Both for orthodontic treatment and for oral rehalilitation were recommended complementary radiographic exams, treatment of dental caries and periodontal prophylaxis and extractions of teeth.

CONCLUSIONS

The orthodontic treatments correct or minimize deviations from accepted normal characteristics of dental occlusion, orofacial function, and esthetics. More young adults seek orthodontic treatment for dental esthetic problem solving, as a consequence of untreated or neglected malocclusions in childhood, or an orthodontic iatrogeny. There are often situations in which adult patients need treatment for complex oral rehabilitation, including tooth extraction, treatment of periodontal disease, orthodontic or prosthetic treatment. The choice of treatment planning must take into account the good cooperation and consent of the adult patient, the opportunity to achieve and improve aesthetics and the maxillary functions and stability of the final result without affecting the periodontal status.

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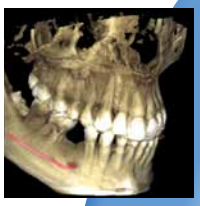

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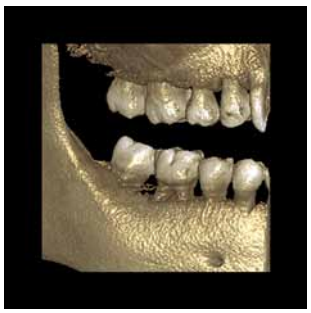

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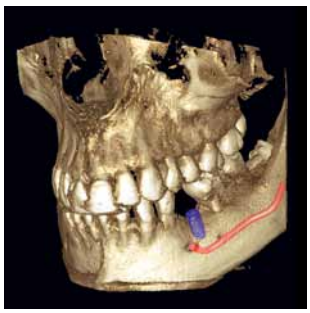

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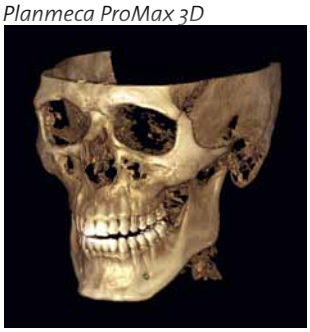

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- case presentations: 2-4 pages
- reviews, scientific and technical state-of-the-art articles, medical informations and opinions: 1-2 pages.

The paper will be edited according to international editing rules for manuscripts. The title will be written in capital characters and it will be followed by the name and surname of the author (authors), followed by their place of work (place where the paper has been elaborated). Studies and researches will be followed by a brief abstract, followed by 3-4 key-words.

The body of the paper will be structured on the following chapters: introduction, aim, objectives, material and method, results and discussions, conclusions. The references will be presented alphabetically and in conformity to the Vancouver Convention, including:

- for articles: name of the authors and surname initials, title of the article in the original language, title of the journal according to the international abreviation system, year of issue, volume, number, pages;
- for books: name of the authors and surname initials, volume, publisher (editors), city of publishing, year of issue.

Citation of references inside the body of the paper will be put between brackets, Harward style (author, year) or Vancouver style (number in square brackets or superscript). Cited reference titles will be selected, maximum 6 for studies and case presentations and 12 for general reviews. Acceptance, rejection or the need of alterations in sent materials, or in inconography, will be comunicated to the authors in due time. For this, the authors will indicate the person and address for corespondence (phone number, e-mail address). Given the less pleasant experience of the editorial board with some articles being rejected because they did not meet publishing criteria, we decided to support those who intend to publish in this journal by detailing the way such a paper should be elaborated, as well as our requirements.

Except some particular aspects concerning this journal, the following details are general requirements asked or imposed by other journals as well. Conditions to be met in order to propose a paper for publishing. The main author has the responsability to make sure the article has been approved by all the other authors. The journal will have copyright

for papers accepted for publishing. The editorial board reservs the right to change the style and dimensions of an article (major changes will be discussed with the main author) and to decide the date of issue.

2. FIRST PUBLICATION

The editorial board will not consider a paper already reported in a published general review or described in a paper proposed to or accepted by another journal. This does not exclude papers which have been rejected by other journals. Also, papers which have been presented at a scientific meeting will be accepted for discussion if they have not been entirely or partially published in a similar publication. „Multiple" publishing of the same study is seldom justified. One of the possible justifications is publishing in a second language but only if the following conditions are met:

- Editors of both journals involved are fully informed;
- Priority of the initial publication will be respected by a minimum publishing interval of two weeks;
- For the second publication, a shortened version will suffice;
- The second version strictly reflects data and interpretations in the first;
- A footnote may state: „This article is based upon a study initially published in [title of the journal]".

3. PATERNITY

Paternity must reflect the common decision of the coauthors. Each author must have participated enough to take public responsability for the content. A paper with collective paternity must have a key person responsable for the article.

4. COPYRIGHT

In order to reproduce materials from other sources, written agreement from the copyright owner must be obtained:

- photographer – for unpublished photographs;
- hospital where the photographer (physician) is employed – for unpublished photographs performed during the employment period;
- initial publisher – for a table, picture or text which have previously been published elsewhere.

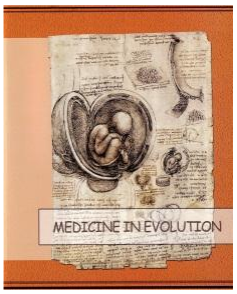
5. ETHICAL ASPECTS

Do not use name of patients, initials or hospital observation charts numbers. If a photograph of a body part which could allow direct or deductive recognition of the patient needs publishing, then the paper must be accompanied by the written consent of the patient and clinician, as well.

6. PRESENTING THE MANUSCRIPT

6.1. CONTENT OF THE PAPER - INDICATIONS FOR ORIGINAL ARTICLES

Paper title [Book Antiqua 20, bold, left alignment]



Surname N.[1], Surname N.[2] [Book Antiqua, 14, bold]

[1] *Author Affiliation (DEPARTMENT, FACULTY, UNIVERSITY, CITY/COMPANY) [10, italic]*
[2] *Author Affiliation (DEPARTMENT, FACULTY, UNIVERSITY, CITY/COMPANY) [10, italic]*

Correspondence to:
Surname Name: [10, italic]
Address: [10, italic]
Phone: +40 [10, italic]
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Abstract [Book Antiqua, 12, bold, justify alignment]

Recommendations for original studies

Original studies must include a structured abstarct of maximum 150 words, containing the following titles and informations: Aim and objectives; Material and methods; Results; Conclusions; Key words: give 3-5 key words; The abstract will be translated into an international circulation language.

Keywords: Innovation, technology, research projects, etc. [Book Antiqua 9].

INTRODUCTION [Book Antiqua, 11, bold, left alignment]

Introduction presentation of general aspects, in the context of the approached theme.

Introduction include **Aim and objectives –** Define the aim of the article. Briefly expose the rationale of the presented study or observation. Make strictly pertinent referals and do not exhaustively review the subject. Do not include data or conclusions from the paper.

There is a limitation of 4/6 pages. All pages size should be A4 (21 x 29,7cm). The top margins should be 2 cm, the bottom, right, margins should be 2cm and left margins should be 2,85 cm. All the text must be in one column and Book Antiqua font, including figures and tables, with single-spaced 10-point interline spacing.

Aim and objectives [Book Antiqua 11, bold italic, left alignment]

The text included in the sections or subsections must begin one line after the section or subsection title. Do not use hard tabs and limit the use of hard returns to one return at the end of a paragraph. Please, do not number manually the sections and subsections; the template will do it automatically.

[Book Antiqua, 11 point, normal, justified alignment].

MATERIAL AND METHODS [Book Antiqua, 11, bold, left alignment]

Describe the selection of observations or subjects for the experiment (including controls). Identify methods, equipments (with the name and address of the manufacturer in brackets) and give sufficient details on procedures. Give references for the selected methods, including statistical methods; offer details and brief descriptions for previously published methods which are not well known; describe new or substantially modified methods, justify their use and assess their limitations. Precisely identify all used drugs and chemicals, including generic names, dosage and administration ways. Describe statistical methods with sufficient details for reported results to be verified. Whenever possible, quantify discovered aspects and present them with appropriate measurement indicators for the uncertainty or error of measurement (such as confidence intervals). [Book Antiqua, 11 point, normal, justified alignment].

RESULTS [Book Antiqua, 11, bold, left alignment]

Present results in a logical succession as text, tables and illustrations. Emphasize or briefly describe only important observations. [Book Antiqua, 11 point, normal, justified alignment].

DISCUSSIONS [Book Antiqua, 11, bold, left alignment]

Underline new, important aspects of the study. Do not repeat in detail data which have been presented in previous sections. Include implications of revealed aspects and their limitations, including implications for future studies. Connect your observations to other relevant studies. Relate the results to the aim proposed for the study. [Book Antiqua, 11 point, normal, justified alignment].

CONCLUSIONS [Book Antiqua, 11, bold, left alignment]

Organize conclusions which emerge from the study. In the end state: a) contributions to be acknowledged but which do not justify paternity right; b) thanks for technical support;

c) thanks for financial or material support. [Book Antiqua, 11 point, normal, justified alignment].

REFERENCES [Book Antiqua, 11, bold, left alignment]

A numbered list of references must be provided at the end of the paper. The list should be arranged in the order of citation in the text of the publication, assignment or essay, not in alphabetical order(according to the Vancouver rules). List only one reference per reference number. It is very important that you use the correct punctuation and that the order of details in the references is also correct.

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Internet Documents - Standard format - #. Author A, Author B. Document title. Webpage name [format]. Source/production information; Date of internet publication [cited year month day]. Available from: URL. [Book Antiqua, 10 point, normal, justified alignment].

[1] _____
[2] _____
[3] _____

6.2. CONTENT OF THE PAPER - INDICATIONS FOR CASE REPORTS

Content of the paper for case report will respect indications for original articles.

Themes may be selected from all medical fields. Manuscripts which offer a special gain for daily activity will have priority. The title must be clearly, precisely stated. It may be completed by a subtitle. It is advisable to include in the key words of the title the main message, the special element which may be observed from the case evolution. The content of a case report must be divided into three parts:

Introduction – It must include a maximum of 15 typed rows (half page). Here, the main medical problem is summarized in order to place the case in a specific domain.

Case report – It contains essential specific information on the case. In order to make a logical, chronological and didactical case report the following 5 chapters are needed:

I. Anamnesis;
II. Clinical examination data;
III. Laboratory data;
IV. Additional paraclinical investigations;
V. Treatment and evolution.

Discussions – The reason for the case report must be stated. The report must be patient-centered. Occasional deviations from typical (characteristic) evolutions, nosologically important facts must be presented in such a manner to expose the clinical picture as completely as possible. The case report must not appear as an appendix of a general review. Dimensions of a case report: maximum 6-8 typed pages, 30 rows of 60 characters/page.

6.3. MEASUREMENT UNITS, SYMBOLS, ABREVIATIONS

All measurements must be expressed in International System (IS) units. Abreviations must be fully explained when first used.

6.4. TABLES

Tables are noted with Roman figures and they will have a brief and concise title, concordant with their content.

6.5. ILLUSTRATIONS

Number all illustrations in Arabic figures in a single succession. Apply a label on the back side of every illustration, containing its number and an arrow indicating the upper side. Coloured illustrations may be accepted but it is the choice of the editors, according to particular technical abilities of each journal issue, or it may involve a fee in special cases.

6.6. EXPLANATIONS FOR DRAWINGS AND GRAPHS

Explanation for drawings and graphs must be clear and in readable dimensions, considering the necessary publishing shrinkage.

6.7. PHOTOGRAPHS

Offer glossy, good quality photographs. Any annotation, inscription, etc. must contrast with the ground. Microphotographs must include a scale marker.

6.8. ILLUSTRATION LEGENDS

Include explanations for each used symbol, etc. Identify the printing method for microphotographs.

7. COPIES FOR PUBLISHING

In order to accelerate publishing, the main author will send a set of printed sheets presenting the final version of the paper, as it will appear in the journal. It is really helpful that texts to be also sent on electronic support, diacritic characters mandatory.

8. REJECTION OF PAPERS

If a paper does not meet publishing conditions, whatever these may be, the editors will notify the first author on this fact, without the obligation of returning the material. Original photographs or the whole material will be returned only if the author comes to the editor and takes them.

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