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CUPRINS

FOREWORD

We need effective models to be professional.

Professional performance needs direct access to the European requirements, standards and innovations.

The 16th Edition of the Balkan Society of Stomatology Congress reunites after 10 years the Balkan Elite (represented by the Executive Committee of BASS and the counselors of the Balkan countries: Greece, Cyprus, Turkey, Serbia, Bulgaria, Albania, Croatia, Slovenia, Bosnia and Romania) as well as outstanding names of the world dental medicine. The event is to take place in Bucharest between April, 28 and May, 1, 2011.

This edition novelty is the merging of General Medicine and contemporary Dental Medicine domains to provide a unique complex approach of the oral pathology patients.

Over 1500 Balkan participants will be actively involved in Conferences, Round Tables, Scientific Works, and they will participate at the Exhibition of Dental Medical Devices and Materials "Ro BaSS Expo 2011.

The organizational support provided by ICOI (the International Congress of Oral Implantologists) and by the Romanian Academy is a warrant of the high practical and academic standards that must characterize a scientific event. The Romanian Society of Oral Rehabilitation and specialized Romanian organizations are also bringing their contribution to the success of the most important Congress of Dental Medicine organized in Romania in the past few years.

Prof. Univ. Dr.Norina Forna
President elect of the BASS Congress 2011
Presedent of the Romanian Society of Oral Rehabilitation

PATIENTS' KNOWLEDGE AND ATTITUDES TOWARDS INFECTION CONTROL IN THE DENTAL PRACTICE

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***Abstract*:**
Objectiv: This study aims to investigate patients concern and knowledge regarding the cross-infection risk and the infection control methods in the dental practice.
Material and methods: The questionnaire-based survey was conducted among 170 patients aged 16 to 68 years. The questionnaire included 20 items related to the medical staff protection equipment, dentist professional appearance and safety protocols in the dental practice. The patients' answers were analyzed by gender, age and education level. using the SPSS 15.0 statistical package and levels of statistical significance were set at $p<0.05$.
Results: The results revealed that 83,6% of the patients have confidence that the medical staff protects them from catching general illnesses during dental treatment.45,5% of the patients are concerned about the procedures used by the dentist to control cross-infection. Positive responses were associated with traditional professional clothing as the white coat and the name tag. 89,0% of the patients want the dentists to wear rubber gloves, 63,6% agree to face masks and 47,2% to protective eye glasses.
Conclusions: The results of the present study prove that most patients trust the dentist in the matter of infection control protocols adopted in the dental office but they claim a better approach in this domain. The medical team has the responsibility to inform the patient on the measures which have been taken to reduce the risk of infection, in order to increase the public confidence in dental care safety.

Key words: infection control, patient attitude, dentistry.

INTRODUCTION

The complex clinical activity carried on in the dental practice is associated with a high risk of transmitting pathogen agents from blood and saliva directly through contact with contaminated products, indirectly through instruments and equipments, as well as by cross-infection.(1)(6).

The population concerns regarding their health status imply a special interest towards infection control during the dental treatment, not only concerning the HIV infection, but also other infectious diseases such as viral hepatitis, tuberculosis or respiratory infections.(2) The patients' involvement in their own health care represents a strategy of increasing the medical staff responsibility for the safety of the medical act.(4).

MATERIAL AND METHODS

A questionnaire-based study was conducted among 170 patients in 12 dental offices in Iasi. The survey lot included 37% men and 63% women with ages ranging from 16 to 68 years. The questionnaire comprised 20 questions regarding the protective equipment, professional appearance of the medical team, knowledge concerning diseases that can be transmitted during dental treatments and the procedures with high risk of infection. The data has been analyzed by educational level, age and gender, using the SPSS 15.0 statistical package (levels of statistical significance were set at $p<0.05$).

RESULTS

The data from the questionnaires revealed the fact that the majority of the patients (83,6%) trust the medical staff in protecting them from contracting general diseases. Only 10,9% avoid the dental care because of the risk of getting infected and 5,5% do not think that they could catch a disease during the dental treatments.

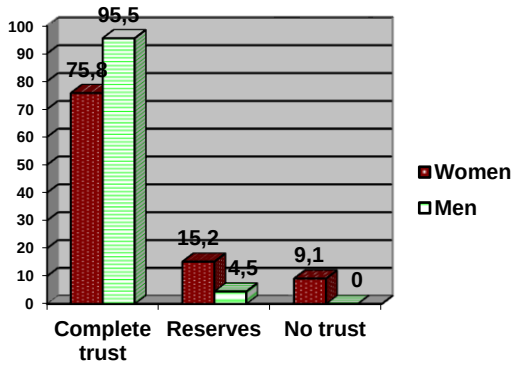

Fig. 1 The degree of trust in the medical staff by

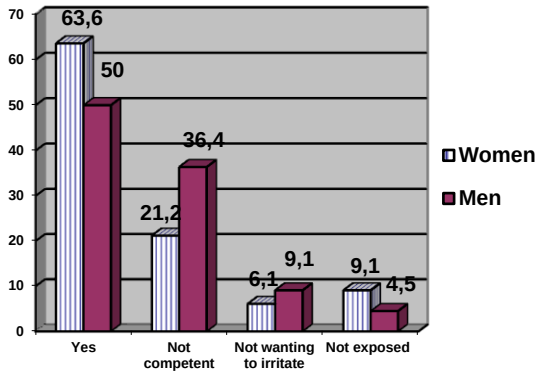

Fig. 2 Patients'involvement in infection gender control procedures

Men (95,5%) showed a higher level of trust in the medical staff than women (75,8%) .A percentage of 45,5% of the subjects are interested in infection control protocols applied after each patient (changing the glass for oral rinses, changing rubber gloves and facial mask , surface disinfection). Among those, the majority are young active persons ranging from 19 to 35 years old (46,7%) and 36 to 64 years old (39,1%). The older subjects (80,2%) and those with medium educational level (69,2%) don't consider that their implication is necessary ; 1,8% of the subjects are not interested in those aspects and 10,9% admit that they do not know anything about those procedures . There where significant differences by gender, women involving twice as much as men (51,1% to 27,3%) in making sure that the infection control procedures are applied (fig.2).

The diseases thought by the patients as presenting a high risk of transmission during dental treatments were : HIV infection (67,3%), viral hepatitis B(60,0%) and C (47,3%) and , in a smaller ratio, tuberculosis (25,5%) and flu (21,8%). The subjects with a medium level of education manifested a high concern regarding the HIV infection (84,6%) while the subjects with high education were more worried about the infection with a form of viral hepatitis (72,7%) .

Concerning the dentist clothing, 52,7% of the subjects would like the doctor to wear a surgical one made up of a white blouse and trousers , 23,6% prefer the classic gown and only 1,8% of the subjects agree a short blouse over the casual closing.20,0% of the subjects do not have any specific preference in this domain, 22,7% of them being men. Actually, a significant high percentage (65,5%), especially women and persons with high education, consider that the appearance of the doctor increases the trust of the patient in the quality of the medical act. About half of the subjects would prefer the doctor to wear an ID card.

The evaluation of the answers concerning the protective equipment, revealed the fact that 89,0% of the subjects want the doctor to wear rubber gloves, 63,6% agree to the face mask and 47,2% to the protective glasses; a relative low percentage of the patients (27,7%) are preoccupied by the hair protection with capelins. 98,2% of the interviewed persons , without significant differences by gender or education level , appreciate that those equipments reduce the risk of contracting various infectious diseases during dental treatments.

The medical instruments thought to have the biggest potential of transmitting infections are the endodontic needles (68,1%), the syringe needles (63,6%) and the dental burs (61,8%) .

The risk of contracting an infection during the visit to the dental office is associated by patients with lacks in the

sterilizing of the instruments (80,0%) and surfaces and equipments disinfecting (54,5%).

The procedures considered to be important for preventing the infection during dental treatments were: dentists' hands washing (78,2%) , the disinfection of the surfaces in the dental practice after each patient (56,4%) and handling the instruments by the doctor in safe conditions (45,5%).

DISCUSSIONS

The results of the study prove the trust of the patients in the medical staff and in the manner of applying the infection control methods. A low percentage of the interviewed subjects think that during the dental treatment they cannot contract a general disease. This fact demonstrates, especially in men, the lack of knowledge concerning the risk of being exposed.

Concernments regarding the procedures used by the dentists to control the infection are expressed particularly by young persons and women, whereas the majority of the old subjects don't have the necessary knowledge or do not consider that it is of their competence to interfere with the doctor acts. Also, the high level of education inflicts an involvement of the patient in his own health care, with benefic effects over the safety level of the dental treatment.

The majority of the patients want the doctor to use rubber gloves as an essential protective equipment for reducing the risk of infection transmission, the results of our studies being similar with the ones reported in the literature (3),(5). The percentage of the subjects willing to involve in the dental treatment is low revealing the trust granted to the dentist but also the lack of knowledge regarding the risk of infections and the measures needed to prevent it.

The way in which the appearance of the staff influences the perception of the patients regarding their competence reflects in the choices of the subjects for a sober appearance, the classic white gown and an ID seen as a mean of committing to the medical act. The subjects with high education consider that the appearance of the doctor increases the quality of the treatment, whereas the majority of the elderly persons do not asses the professional merits of the dentist by the way he is dressed.

CONCLUSIONS

The medical personnel has the responsibility to inform the patients on the measures used to reduce the risk of diseases transmission and to apply them in an obvious way, in order to reduce the concerns and the avoidance of the dental treatment.

The assessment of the patients' perception regarding the equipments, procedures and protective barriers which are not completely regulated by the law has to be a decisive factor for the compliance of the medical staff in using them in the dental practice according to the European standards concerning the safety of the medical act.

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THE IMPORTANCE OF FINDING OUT FACTORS THAT CAN TROUBLE THE MUSCULO-LIGAMENTAR EQUILIBRIUM IN PACIENTS WITH COMPLETE AND EXTENDED PARTIAL EDENTATION

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INTRODUCTION

The stomatology of the third millenium acquired new boundries and dimensions, upshot of the developement of the diagnosis and therapy, they themselves being influenced by the modern and complex technology and also by the psycho-social and communication aspects.

The functionality of the stomatognat system depends on many factors which can act on it in the direction of equilibrum and that can anytime be changed, adapting to new situations and circumstances. Among the elements that play a role in the stomatognat system'stability, a special place is held by the muscular factor, the dynamic constituent.

PURPOSE

In this paper, the extended partial edentation or the complete edentation are looked in terms of the multiple systemic conexions, both inner and outer, that are established between the elements of the stomatognat system.These conexions are responsable for the way in which, the morphological or functional deterioration of one of the components will drawn the alteration of all.

Therefore, in this paper we clinicaly establish the signs of muscular disfunction and based on these information we get the incidence of oro-facial muscular disfunctions, in order to work out a complete treatment plan, pursuing to get a complex muscular rehabilitation.

MATERIAL AND METHOD

The patients were chosen from those who came in our clinic to get prosthodontic treatment.They were 264, 128 men and 136 women.The average age was 58,7, the study being held on three groups of age:40-55years old, 55-70 years old, 70-85 years old (tabel I).

TABELUL I

Distribution of the patients according to their age and sex

Age	Men	Women	%men	%women
40-55	39	43	30,46	31,61
55-70	61	78	47,65	57,35
70-85	28	14	21,87	10,29
	128	136		

The patients we selected were complete, partial or extended edentated and they were protheses wearers for 3 to 10 years.All patients were informed about this study and they consented to it.(tabel II).

TABELUL II

Distribution of the patients according to their type of edentation

Age	E.P		C.E		E.P	C.E
	Men	Women	Men	Women	%	%
40-55	36	42	3	1	95,12	4,87
55-70	28	37	33	41	46,76	53,23
70-85	6	5	22	9	26,19	73,80
	70	84	58	51		

To each and every patient was elaborated a clinical report.They were throughly examined and so was every muscular group using the clasic methods of inspection and palpation.

There were investigated the temporals, the masseters as muscles of mastication and the buccinators and the orbiculars as oro-facial ones.

The palpation was made by pressing smoothly the muscles'insertion and tucking the muscles'mass, both in movement and in rest.

During the postural position, the muscles are characterized by a light contraction, that can't be detected on the electromyography-muscular tonus of posture.This can vary depending on many other factors such as clinical, functional and morphological ones and it will be evaluated considering the relation between the muscles' osseous insertions and the postural tonus that exists.

First we palpated the masseter and the temporal muscles-the osseous insertions and the masses and then we palpated the oro-facials muscles.Every muscle was examined equably on the right side and on the left.We assesed and wrote down in every patient medical report the trophicity of the muscles and their consitency. The muscular tonus was examined using Netter's tests.

After the clincal exam of the muscles we examined the protheses, assesing their the maintenance and stability usin the following standards (Tabel III)

0 – Maintenace - Non at all.When it is inserted in the oral cavity is dislocate itself .Stability - Non at all.It's tipping on the prothetic field.

1 – Minimal maintenance. It has light maintenance when pulled vertically and the same or nothing at all when pull on side.

Minimal stability. It's tipping moderately on the prothetic field.

2 - Moderately maintenance when pulled vertically and the same or nothing at all when pull on side.

Suficient stability. It's lightly tipping or not tipping at all on the prothetic field.

3 – Good maintenance. When pulled vertically has maximum maintenance and enough when side forces act. Good stability, without tipping.

The rating of the protheses was made likewise:

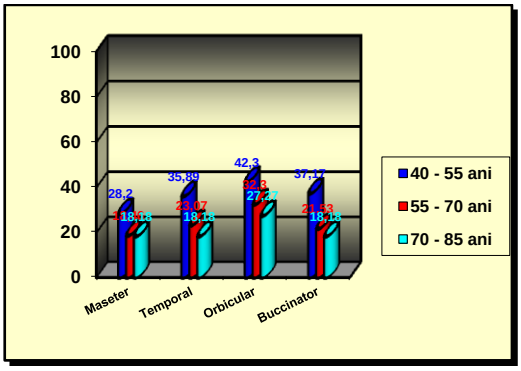
- minimal stability and maintenance-score <6
- moderately stability and maintenance-score 6-8
- good stability and maintenance-score > 8

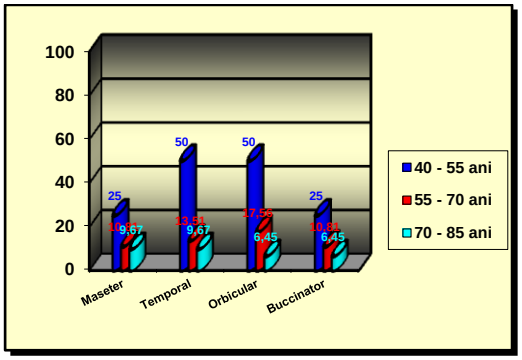
RESULTS AND DISCUSSIONS

After the clinical exam we found the following grades of tonicity of the masticatory muscles:

- at group of age between 40-55 with partial extended edentation from 78 cases :22 of them had normal tonicity for masseters, 28 with normal tonicity for the temporals , 33 with normal tonicity for the orbiculars and 29 for the buccinators, 15 with hipertonicity for the masseters, 17 with hipertonicity for the temporals, 12 with hipertonicity for the orbiculars and 8 with buccinators hipertonics and with hipotonicity we found 41 cases for masseters and temporals, 33 for the buccinators and the orbiculars

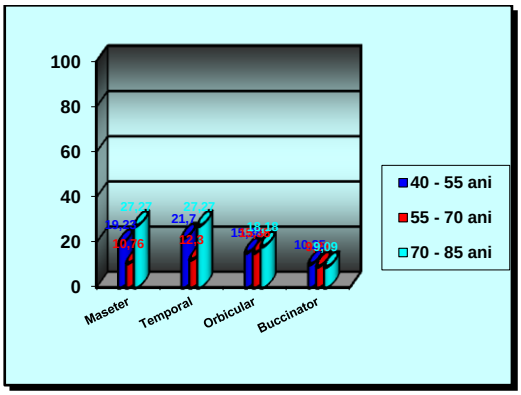
- at the same group of age but in casese of complete edentation from 4 cases we found one case with normal tonicity in masseters, 2 cases in temporals and orbiculars and one with normal tonicity in buccinators

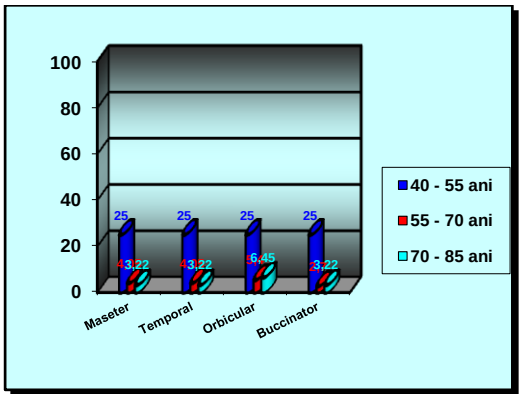




- at group of age between 55-70 with partial extended edentation from 65 cases : 12 of them had normal tonicity for masseters, 15 with normal tonicity for the temporals , 21 with normal tonicity for the orbiculars and 14 for the buccinators , 7 with hipertonicity for the masseters, 8 with hipertonicity for the temporals, 10 with hipertonicity for the orbiculars and 6 with buccinators hipertonics and with hipotonicity we found 46 cases for masseters and 42 for temporals, 45 for the buccinators and 34 for the orbiculars

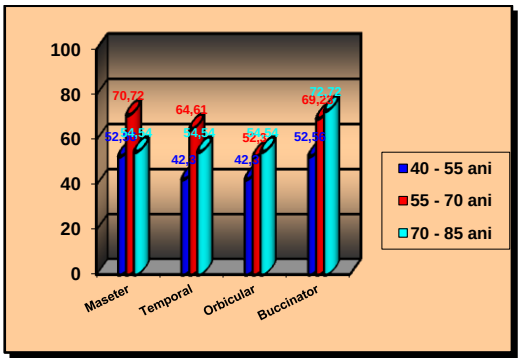
- at the same group of age but in casese of complete edentation from 74 cases we found:8 of them had normal tonicity for masseters, 10 with normal tonicity for the temporals, 13 with normal tonicity for the orbiculars and 8 for the buccinators , 3 with hipertonicity for the masseters, and the temporals, 4 with hipertonicity for the orbiculars and 1 with buccinators hipertonics and with hipotonicity we found 63 cases for masseters and 61 for temporals, 64 for the buccinators and 57 for the orbiculars.

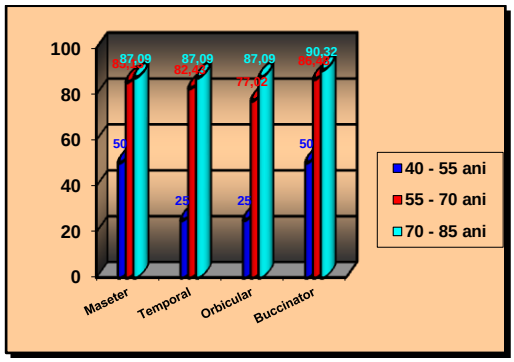




- at group of age between 70-85 with partial extended edentation from 11 cases we found: 2 of them had normal tonicity for masseters and the temporals , 3 with normal tonicity for the orbiculars and 2 for the buccinators , 3 with hipertonicity for the masseters and the temporals, 2 with hipertonicity for the orbiculars and 1 with buccinators hipertonics and with hipotonicity we found 6 cases for masseters ,for temporals and for the orbiculars and 8 for the buccinators
- at the same group of age but in casese of complete edentation from 31 cases we found: 3 of them had normal tonicity for masseters and for the temporals , 2 with

normal tonicity for the orbiculars and the buccinators , 1 with hipertonicity for the masseters, and the temporals and buccinators, 2 with hipertonicity for the orbiculars and with hipotonicity we found 27 cases for masseters ,for temporals and for the orbiculars, 28 for the buccinators





CONCLUSIONS

1. Between the morphological bone structure and the muscles of the stomatognat system there is quit equilibrium, always changing according to the adaptation of the two systems, the muscular activity being directly influenced by the integrity of every element of the stomatognat system

2. The dishomeostasis of the stomatognat system as a result of edentation is just a step on the way of this complex diseases, the changes that took place being irreversible.Therefore, the group of muscles affected can influence the relationships between the two maxilla and can also change the mandible's movements in old wearers of protheses.

3. The great variety of the stomatognat system's changes as a result of edentation and ageing requires a thoroughly investigation of each and every case, in order to track down as soon as possible every muscular disfunction.

4. All patients found during the clinical exam to have a muscular disorder must be investigated to set up a complex treatment, monitorized even after the prothese would be over

5. As a result of the clinical and paraclinical investigations, we determined a high rate of muscular disfunction in the group of old wearers, with the stability and maintenance of the protheses affected .The disfunction was asserted by means of hiper and hipotonicity of the muscular masses. In the group of recently edentated patients the changes were less visible than in the group of old wearers, in which the body tried to adjust to the edentation.We also found muscles that weren't yet affected by the changes of the stomatognat system.

6. The change of the muscular tonus and of the mandibular movements are signs and symptoms that lead us to a diagnosis of muscular disfunction and are elements that will influence the prosthodontic treatment.

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THE EFFECTS OF THE PAIN ENDURED DURING DENTAL TREATMENT

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INTRODUCTION

It has been acknowledged for many years that human pain perception is made up of multiple dimensions, including a sensory aspect and an emotional/affective quality aspect (Price, 1988). Researchers have shown that some "pain" stimuli are associated with high levels of emotionality/affect (for example, cancer pain), whereas other "pain" stimuli can produce relatively low levels of emotional distress (for example, labour pain) (Price et al., 1987). These findings indicate that people can experience very different emotional responses to very similar levels of stimuli intensity, depending on their perception of the event (Gracely, Kwilosz, 1988). Assessment of clinical pain response requires the use of measurement scales designed to capture the different dimensions of pain perception (Logan, 1995).

The dental treatments usually are associated by the patient with pain and anxiety. Is proved that painful therapeutic procedures are the most important reason of generating pain and anxiety during a dental treatment.

An early negative dental experience is probably the most stated single cause for dental anxiety (Locker et al., 1996, 1999). However, a negative dental experience does not necessarily lead to dental anxiety. The 'latent inhibition' theory, for instance, states that a history of positive or neutral dental experiences may serve as a buffer against the development of traumatic associations or experiences (Davey, 1989). As a consequence, high levels of anxiety or fear are developed less easily. Conversely, an early negative dental experience can serve as a one-shot conditioner and may leave a patient with feelings of anxiety. Fear of dental pain is a highly relevant concept in dental pain research and, moreover, in dentistry (van Wijk and Hoogstraten, 2003). Whereas anxiety and fear can be seen as a state of distress in anticipation or in the presence of a perceived danger, respectively, fear of pain can be seen as a state of distress related to a very specific type of stimulus, namely, pain (Gower, 2004). Research suggests that anxious people tend to overestimate anticipated pain. Moreover, individuals tend to overestimate the intensity of aversive events in general, including such events as fear. Therefore, people who are predisposed to respond fearfully to pain are at an increased risk of ending up in a vicious circle of anxiety, fear of pain, and avoidance of dental treatment (van Wijk, Hoogstraten, 2005).

The target of this study is to prove the connection between previous pain and anticipating pain. This study is a part of a larger research project , and the results presented here are only preliminary, they can modify with the advancement of the study (ex. rising patient number).

MATERIAL AND METHOD

This study is based on a questionnaire created by us, which includes general data's about the patient (age, sex, studies), and also contains four questions , which are helping us to determine, if the patient had any painful experiences during the dental treatment, if he's anticipating the

pain, or if he is avoiding the appointments because of pain.

At the same time we determined the patient's anxiety level using the Dental Anxiety Scale (DAS) questionnaire. DAS contains four questions about different situations which are occurring during the dental treatment. Every question is rated between 1 (no anxiety) and 5 (very anxious), the final score can alternate between 4 and 20. A result higher than 15 is the proof for a high level of anxiety.

The patient's selection was based on the next criteria's:

1. patients older than 18
2. patients who had contact with one or more dentist's before the start of the study
3. we used only the fully completed questionnaires

After a selection made using this criteria's it resulted a lot of 247 persons with age between 18 and 79 (M = 38,03), 179 (72,47 %) female and 69 (27,53%) male.

Using the DAS we confirmed that the majority of the patients with painful experiences in the past are subject of high or even severe level of anxiety.

RESULTS

The questionnaire carry out by us presents questions with closed answer (yes, no), codified by entering them in statistical analysis charts, done by GraphPad InStat 3 and NCSS software's.

Out of 247 questioned patients 60 % said that they endured painful dental treatments in the past and also 60|% said that they during a dental treatment are waiting for the appearance of the pain. For statistical analysis we used the Fisher test and the results showed that is a very significant association between pain in the past and anticipating pain ($p< 0,0001$) The association is significant both statistically and scientifically to (OR = 3.951, CI = 95%, 2,298 – 6,794) (fig. 1).

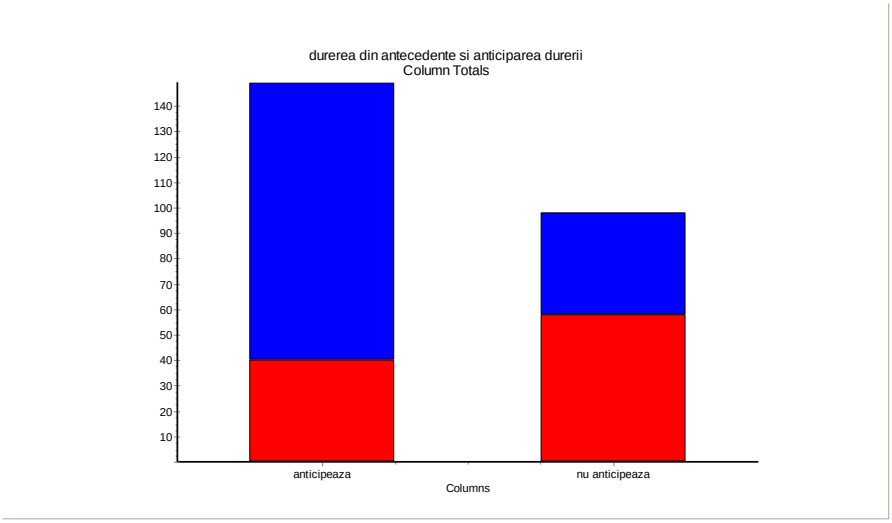

Fig. 1 Correlation between pain in the past and anticipating pain

After dividing on age groups we observed a extremely significant positive association, both from statistically or scientifically points of view , between pain in the past and anticipating pain at patients with ages between 18 -30 (n= 81) years and 41 – 50 (n= 47) years with p=0,0005 (OR = 5.600 95% CI: 2,088 to 15,017), or in case of p=0,0006 (OR = 12 95% CI:2,685 to 53,636). At patients with ages between 18 and 30 years we could prove statistically significant correlation between anticipating pain and avoiding dental treatment (p=0,0024) (Fig. 2).

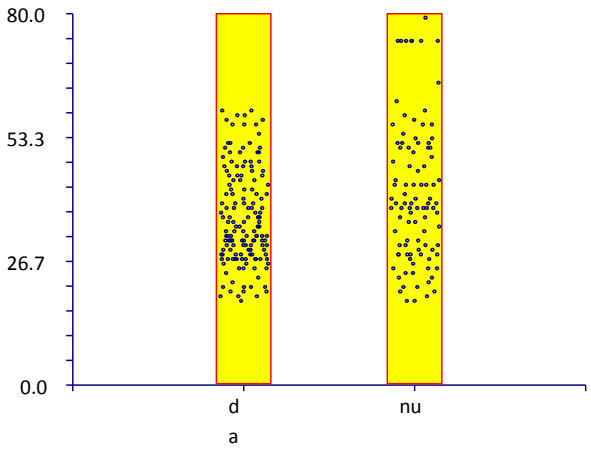

Fig. 2 Pain anticipation and ages

The statically reading of the results showed that between pain in the past and avoiding dental treatments exists a positive association, but statistical insignificant (p=0,08 OR = 1,743 95% CI: 0,9635 to 3,151). This helped us to conclude that to obtain accurate results we need a larger lot of patients.

CONCLUSIONS

In 1984 Wall and Melzack said " Pain always is one-sided. Every individual is learning the signification of this word by the experiences he starts to have from his first years. Without doubts is a sensation with organic origins, but this sensation always is apprehended like an unlike one, which makes from this an emotional experience"

For many patients, fear of dental pain and avoidance of dentistry are synonymous (Freeman, 1991). Moreover, clinicians report that managing some patients' pain and distress can be a frustrating task (Lindsay, Jackson 1995).

From this lot of patients 60% (n=149) had in the past dental treatments involving pain. This result has to put the practitioners to think how they can avoid pain, because pain could be the starting or the aggravating factor of the dental anxiety.

The high number of patients who had a positive answer to the first question from our questionnaire shows us that practitioners are not giving enough significance to the symptom of pain, resulting an absence of interest in trying to challenge the pain. Between pain in the past and avoiding dental treatments exists a positive association, but to determine the statistically and scientifically magnitude we have to rise the number of questioned patients. We can claim that any pain endured during the dental treatment remains printed in the patients memory, making them to think on possible pain at their following appointment. 73% (n=109) out of the patients who experienced painful dental treatments , are believing that at the next appointment pain can show up again. A number of 40 patients are waiting for pain to show up at their next appointment, even they never experienced painful dental treatments. This situation is making us to associate pain with the dental treatment.

It often is assumed that aging results in loss of pain sensitivity. Although some efforts have been made to study the effects of aging on pain perceptions, the results are not conclusive. Experimental studies of acute pain responses do not show significant age-related alteration in the pain perceptions of healthy elderly subjects (Harkins et al., 1994). It has been proposed that differences in acute pain responses between younger and older

patients (Lash et al., 1997) may be a result of changes in pathophysiology (for example, neural conductivity) rather than changes in the pain perception itself (Harkins et al., 1990; Heft et al., 1996). It is not clear, however, from the literature whether these changes in pathophysiology influence both affective pain and sensory intensity in the elderly.

During our study we observed that patients with age between 18 – 30 years are avoiding dental treatments because of the pain which can show up during the dental treatment. Patient older than 50 years are not avoiding dental treatments. One of the main reasons of this can be that painful experiences are fading during the years in patients memory.

New evidence suggests that there are differences in pain perceptions between men and women (Riley et. al. 1998, Unruh et al. 1999). Although, most studies suggest that women have greater pain sensitivity than men, there are inconsistencies in the literature (Eli et al., 1996). These inconsistencies suggest that the type of pain stimuli may influence perceived pain differences between men and women (Fillingim, 1998). In addition, the influence of aging on these reported sex differences has yet to be clarified.

In our study because of the lower number of questioned male patients we couldn't determine a precise correlation between pain in the past , anticipating pain and avoiding dental treatments.

Our own experience is showing that the majority of patients are favoring different methods to fight pain showing up during the oral rehabilitation treatments.

Patients avoiding dental treatments usually presents a poor oral health, and at the end they will need elaborate oral rehabilitation treatments.

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EMDOGAIN AND BIO-OSS BETWEEN HOPE AND REALITY

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Abstract: In the last years the treatment of periodontal disease has gain new meanings thanks to new developed materials that helped the surgical treatment. The developers of these materials promise a lot in the field of guided tissue regeneration, but in order to know how much of these is true we tried some of them in clinical tests. The most frequently used materials by us was Emdogain and Bio-Oss and made a study (similar studies was conducted by Sculeanu et.al.) to demonstrate how much of these materials properties was hope and how much was reality. The aim of the study was to evaluate the clinical and radiographic outcome using two different materials in the treatment of periodontal bone defects based on guided tissue regeneration techniques (2). Our study included 40 subjects with generally healthy status with periodontitis ilness in advanced stage. Depending of the materials used in the treatment our patients were divided into two equal groups. The group number I, was treated with a bovine-derived hydroxyapatite xenograft (Bio-Oss,) combined with a resorbable collagen membrane (COREM, Poneti) was used. In the second group was used enamel matrix derivative (Emdogain® Gel). Before the surgical treatment a clinical and radiographic examinations were performed, and the following parameters were evaluated: plaque index, gingival index, probing pocket depth, clinical attachment level, radiographic defect depth, and defect width. At the patients with bad oral hygiene the plaque and gingival index was haing high values. All clinical and radiographic parameters (except plaque index) were significantly reduced after treatment in both groups . No great differences were revealed between the two groups of patients in examined parameters after treatment. The results demonstrated that the treatment of periodontal bone defects with both materials leads to similar and significant improvements in clinical and radiographic parameters. The exception was made by the patients with bad oral hygiene.

***Key words*:** emdogain, Bio-Oss, guided tissue regeneration, osteoregenerative materials.

INTRODUCTION:

In the last years the treatment of periodontal disease has gain new meanings thanks to new developed materials that helped the surgical treatment. The developers of these materials promised a lot in the field of guided tissue regeneration, but in order to know how much of these is true we tried some of them in clinical tests. The most frequently used materials by us was Emdogain and Bio-Oss and made a study to demonstrate how much of these materials properties was hope and how much was reality. The aim of the study was to evaluate the clinical and radiographic outcome using two different materials in the treatment of periodontal bone defects.

MATERIAL AND METHODS

The study included 40 generally healthy subjects with advanced periodontitis (20 women, 20 men), aged 35–60, supra- and subgingival scaling and root planing were carried out during a 3-month preoperative period in all the patients, who also received oral hygiene instructions.. The patients were divided into two groups, 20 in each, according to the material used. In the first group, a resorbable collagen membrane (COREM, Poneti) and a bovine-derived xenograft (Bio-Oss®; Geistlich, Wolhusen, Switzerland, Bioos, Cerasorb) was used. The other group of patients was treated with enamel matrix derivative (Emdogain®; Biora, Malmö, Sweden).

Clinical and radiographic examinations were performed prior to, and 1 year after surgery. A periodontal probe (WHO Probe, CPITN) was used for clinical examinations prior and 1 year after surgery. At the same time the radiographic examination was made. Clinical were evaluated the folowing parameters: plaque index (PI - Sillness& Löe), gingival index (GI - Löe& Sillness), probing pocket depth

(PPD, in mm), clinical attachment level (CAL, in mm). The measurements were made on folowing sites mesiovestibular, vestibular, distovestibular, mesiooral, oral, distooral.

Radiographic examination used two intraoral radiographs taken with customized film holders and long-cone paralleling technique. The following parameters were measured; (1) defect depth (the vertical distance between the crest of the alveolar process and the jonction site of the root surface and normal alveolar bone, in mm), (2) defect width (the horizontal distance between the root surface and the most coronal part of the alveolar process, in mm).

Only patients with deepest site of gingival pocket was considered for analysis. This selection was made using the folowing criteria: PI<1, PPD≥6 mm and radiographic defect depth≥3 mm. Bone defects chosen for analysis were similar in size and shape, and were found at homonymous teeth in the two groups to be compared. Both groups of patients have presented periodontal pockets (22 with two walls, 8 with three walls, 5 circular bone defects and the remaining five other defects).

In both groups of patients, the surgical procedures were performed under local anaesthesia (4% Ubistesin). Following an incision in the gingival pocket, a mucoperiosteal flap was raised vestibularly and lingually. Vertical incisions were placed only if necessary for adequate access to the surgical site or to achieve complete coverage of the membrane with the mucoperiosteal flap (1). Granulation tissue was removed from the bone defect, and the root surface was cleaned and planed using hand and rotative instruments depending of the site defect. The surgical area was then rinsed with physiological saline. In the first group, the root surface was etched for 2 min with neutral 24% EDTA to remove the smear layer. Then the site was rinsed again with physiological saline and Emdogain was applied starting at the bottom of the defect. Finally, the flap was repositioned coronally and sutured tightly with non-resorbable sutures. In the second group of patients, the bone defect was filled with Bio-Oss and then covered with the resorbable Bio-Gide membrane. The membrane was fixed using resorbable sutures. The sutures were removed 14 days after the surgery. All patients received antiobiotics – 1 g amoxiclav twice a day for 1 wk. Moreover, the patients were instructed to avoid mechanical tooth brushing in the region involved for 4 wk, to chew carefully for 4 wk, and to rinse the oral cavity with 0.2% chlorhexidine solution (Plak-Out) twice daily for 6 wk. Four weeks after the procedure the patients started gentle tooth cleaning using the roll technique. Postsurgical appointments were scheduled at 2, 4 and 6 wk, and then every 2 months. During the first year after surgery, only professional supragingival tooth cleaning was carried out.

RESULTS AND DISCUTIONS

In all patients postoperative healing was uneventful. No inflammatory complications were observed, except a few case of patients with bad oral hygiene.

The mean PI values in the Bio-Oss and the Emdogain groups at baseline were identical. Following the treatment PI remained unchanged in both groups. The mean GI values in the two groups before treatment were not significantly different. The mean GI values after treatment were significantly reduced in both groups, and the values were not statistically different between the two groups. Likewise, PPD and CAL values were initially similar between the two groups. After surgery, the mean PPD and CAL values significantly decreased in both groups.

The differences in radiographic parameters between the two groups of patients before treatment was not significant. The mean radiographic

parameters (depth and width of bone defects) were significantly reduced after both Bio-Oss and Emdogain treatment.

We will try to exemplify this using the RX from two patients. First patient was treated with Emdogain. It presents periodontal pockets around 1.7 and 1.8 with a probing depth of 8 mm, 4.7 presents a lvl 4 furcation, and around 4.2 and 4.3 periodontal pockets with a probing depth of 5 mm (Figure 1). Also around 2.2-2.3 periodontal pockets with a probing depth of 6 mm and 2.7-2.8 periodontal pockets with a probing depth of 7 mm. The second Rx (Figure 2) was taken after 1 year and it shows a bone gain of 5-6 mm.

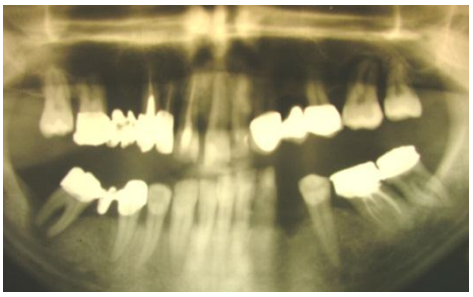

Fig. 1

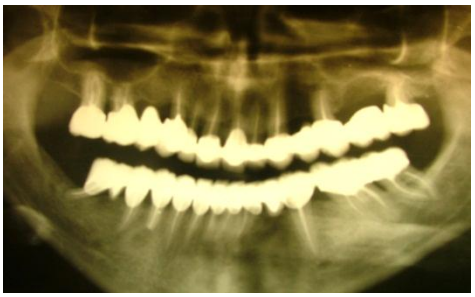

Fig. 2

This patient was treated with Bio-Oss. It presents periodontal pockets around 1.7-1.6 1.3, 2.4-2.5 with a probing depth of 6 mm (Figure 3). The second Rx was taken after 1 year and it shows a bone gain of 5-6 mm (Figure 4).

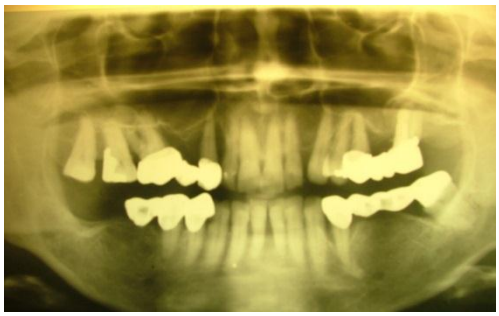

Fig. 3

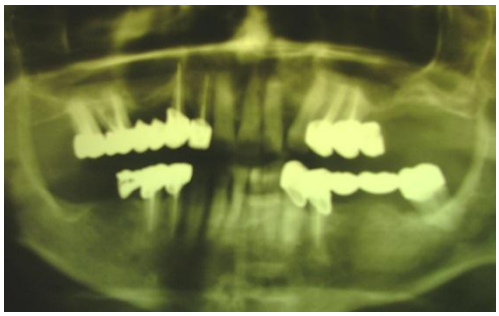

Fig. 4

CONCLUSIONS:

Based on the above data and our own experience it appears that the use of Bio-Oss combined with resorbable membrane and the regenerative tehnique with Emdogain are comparable in the aspect of clinical and radiografically assessed periodontal healing and ofered the bone regeneration promised by their developer. The reults of our study are overlaping with data reported by other authors, who demonstrated a similar improvement in radiographic parameters. In some cases we couldn`t reach the bone regeneration desired because of the patient bad hygiene and other healing factors that are not related to the proprieties of the material used.

Emdogain aplication caused pocket depth reduction and improvement in the periodontal atachement level, which statistically shows significant reduction in gingival pocket depth by at least 4 mm after 1 year period.

This results corespund with those of others authors (Sculean et al., Heden et al).

In conclusion the results of our study are overlaping with another study (Sculean et. al. and Melonig et. al.) (3) and demonstrated the treatment of periodontal defect with Bio-Oss and Emdogain leads to improvement in clinical and radiographic parameters and are a reality.

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THE PREVALENCE OF HYPODONTIA IN CHILDREN WITH CLEFT AND NONRELATED CONTROLS

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Abstract: The aim of this study was to compare the occurrence of hypodontia, dental age, and asymmetric dental development in children with cleft with a non- sibling control group. The study sample consisted of 30 children with cleft (aged 7.2 to 17.1 years) and 60 controls without cleft (aged between 7 and 18.8 years). Hypodontia, dental age, and asymmetric dental development were assessed on panoramic radiographs of the children with cleft and the control children without cleft. The cleft (p.001) group showed a significantly higher frequency of hypodontia and a significantly higher occurrence (cleft p.01) of asymmetric dental development, compared with the control group. Only a small, but insignificant delay in dental development could be found in the cleft group. The cleft subjects showed a significantly higher occurrence of hypodontia and asymmetric dental development than the non-cleft control group. This may suggest a genetic component for the occurrence of hypodontia and asymmetric dental development.

Key words: cleft, hypodontia, tooth formation

INTRODUCTION

Some dental traits such as hypodontia, supernumerary teeth, peg-shaped teeth, dental delay and dental asymmetry occur with higher frequency in individuals affected with cleft lip, cleft palate, or both (Ranta, 1986). The literature includes a large number of studies dealing with tooth formation in patients with cleft with a range of findings. Several studies report a delayed formation of the permanent teeth (Bailit et al., 1968; Ranta, 1972, 1982; Harris and Hullings, 1990; Brouwers and Kuijpers-Jagtman, 1991). Other studies report only a delayed dental development in boys until the age of 9 years (Prahl-Andersen, 1978; Prahl-Andersen et al., 1979). In the study of Loevy and Aduss (1988), early development in boys with clefts was observed. Left-to-right differences in tooth formation are also greater in children with cleft (Ranta 1973; Harris and Hullings, 1990). The incidence of hypodontia away from the cleft area in individuals is also markedly increased as compared with the population without cleft (Haataja et al., 1971; Ranta, 1986; Jiroutova and Mu¨ llerova, 1994). In particular, hypodontia most frequently involves the second premolars in the upper and lower jaw and the upper lateral incisor on the noncleft side (Ranta, 1986).

Some studies (Jordan et al., 1966; Schroeder and Green, 1975) report an increase in dental aberrations such as abnormal shape of teeth and supernumerary or missing teeth in siblings of children with cleft, compared with the general population.

However, these studies were only descriptive with little statistical analysis and in the meantime the dental age was not investigated. Investigations of Adams and Niswander (1967) and Bhatia (1972) support the idea that the same etiological factors that cause the formation of the cleft can affect the development of the dentition. Significant associations of some patients with cleft lip and palate with tranforming growth factor alpha and retinoic acid receptor loci (Chevenix-Trench et al., 1992) were found.

Since there are few studies on children with a cleft, the aim of the present study was to compare hypodontia, dental delay, and asymmetric dental development in children affected with cleft lip or palate with a group of control children.

MATERIALS AND METHODS

Sample Selection

The cleft group consisted of 30 children (20 girls and 10 boys), aged 7 years 2 months to 17 years 1 month (mean age 10 years 2 months). All were of Caucasian origin with nonsyndromic clefting. Twenty of these children had a complete cleft lip and palate, 6 children showed an isolated cleftpalate, and only 4 children had a cleft lip with cleft alveolar process. They were all enrolled for treatment at the Department of Orthodontics at the University of Medicine and Pharmacy ”Iuliu Haţieganu” Cluj-Napoca, Romania. The nonsibling control group consisted of 60 children (40 girls and 20 boys) whose age ranged from 7 years to 18 years 9 months (mean age 11 years 3 months). At the time of the orthopantomogram, none had been treated orthodontically. The children of the noncleft sibling and control groups were of Caucasian origin and were nonsyndromic.

METHOD

An orthopantomogram was taken of each child to assess the frequency of hypodontia and the dental maturation (dental age). The sample for evaluating the frequency of hypodontia consisted of 30 children with cleft.

Dental age was calculated using the method of Demirjian and Goldstein (1976). A computer system and individual data sheets were used to train the evaluators in scoring the stages of development correctly and consistently. Individual radiologic appearances of the seven permanent teeth on the left side of the mandible were evaluated according to developmental criteria. Development of each tooth was categorized into one of eight stages. These individual scores were entered into a clinical evaluation program, which converted them, depending on the sex of the child, into a maturation and dental age score. Panoramic X-rays, which showed a full maturation score, or bilateral agenesis or extraction of at least one tooth in the lower jaw were excluded. Thus the final sample for evaluating the dental development consisted of 30 children affected with namely 20 with cleft lip and palate, 6 with a cleft palate, and 4 with a cleft lip and alveolus. In order to assess the reliability of this method, the scores of 30 children were measured twice with an interval of 1 month by two examiners as a pilot study.

To investigate the symmetry of permanent tooth formation, individual tooth developmental stages of seven left and right mandibular teeth were compared. A pair of teeth was regarded as having undergone asymmetrical development when the tooth development stage of the left tooth deviated from that of the antimeric tooth by at least one developmental stage.

The panoramic X-rays were also studied for congenitally missing teeth outside the cleft region (excluding the lateral incisor in the upper jaw on the cleft side). A tooth germ was considered to be congenitally missing if it was absent on the X-ray, although the child’s age would have supported its being radiographically detectable (Haavikko, 1970). The presence of the preceding deciduous tooth was in most cases a supporting criterion for the diagnosis of hypodontia. When the deciduous tooth was missing, the patient’s file was reviewed and the patient was interviewed in order to exclude the possibility of an extraction.

All data were transferred to Microsoft Excel 97 (Microsoft Corporation, Redmond, Washington) for statistical analysis.

For each patient, missing teeth, the difference between dental and chronological age, the dental delay compared with the controls as well as the asymmetry of dental development were assessed.

For each group (cleft group and control group), the means and the standard

deviations of dental age, chronological age, differences between dental and chronological age and dental delay of the cleft compared with the controls were calculated. Differences between the groups were analyzed using the unpaired *t* test and the *F* test for equality of variances. The chi-square test was used in order to test differences (frequency) in hypodontia and dental asymmetry among the two groups.

Probabilities less than .05 were considered to be statistically significant.

RESULTS

Error of Method

No statistically significant differences were found between the means of the intra- and interobserver set of measurements.

The intraobserver measurements yielded a correlation of 0.988, which was almost equal to the correlation of the interobserver measurements: 0.994. The measurement error for the dental age was at most one developmental stage.

Hypodontia

In the group of 30 children with cleft, 15 children (50%) showed hypodontia of one or more teeth outside the cleft region.A total of 17 teeth were absent (upper/lower jaw 10/7). In the control group of 60 children, 6 children (10%) showed hypodontia of one or more teeth. A total of 9 teeth were absent (upper/lower jaw 6/3).Compared with the nonsibling controls, the cleft group showed a highly significant increase in frequency of hypodontia (*p* .001).

Hypodontia involved mostly the second premolars of the upper and lower jaw and the upper lateral incisor on the contralateral side to the cleft. The most frequently missing teeth in all the groups were the second premolars. No significant difference in hypodontia between the upper and lower jaw or any significant sex differences were found.

Comparison of the Dental and Chronological Age

The cleft group had a mean dental age of 10.2 years, which was 0.25 years (3 months) greater than the mean chronological age of 9.11 years of this group.

The control group showed a mean dental age of 11.3 years, which was 0.3 years (4 months) older than the mean chronological age of 10.11 years.

Asymmetric Tooth Formation

In the group of 30 cleft children, 25 (50%) were found to have one or more asymmetrically developing pair of teeth and in the control group, 17 of 60 children (28.33%) showed asymmetric tooth development. The cleft group showed significantly more asymmetrical dental formation, compared with the control group (chi-square: cleft-control *p* .01). In each group, the premolars most frequently exhibited asymmetric development.

DISCUSSIONS

The aim of this study was to compare dental development among a cleft and a control group.

Sample size precluded comparison of scores for different cleft types, which would also influence results.

In the cleft group, some of the children had been treated orthodontically. According to Fanning (1962), orthodontic treatment can influence the eruption but not the root formation of the teeth.

Teeth close to the cleft are likely to have various malformations because of some additional environmental factors (Ranta, 1986). Since this study was interested in the genetic issues in hypodontia of children with cleft, we excluded hypodontia in the cleft area.

The most frequently missing teeth on the noncleft side were the premolars and the maxillary lateral incisor. This is in agreement with Ranta (1986). Our findings show a certain gradation in frequency of hypodontia among the two groups: the cleft group shows the highest frequency of hypodontia outside the cleft region

(34.5%), followed by the control group (22.6%). This frequency of hypodontia outside the cleft region is in accordance with previous studies (Weise and Erdmann: 1967; 28% in unilateral cleft lip and palate, 17.9% in bilateral cleft lip and palate; Ranta 1983: 31.5% in isolated cleft palate). Concerning the dental development, we preferred to use the method of Demirjian and Goldstein (1976), which uses the teeth of the lower jaw so that local (environmental) factors such as surgical trauma are excluded. We found no significant differences in mean (dental-chronological) age among the two groups. Compared with the controls, the cleft groups show an insignificant mean relative dental delay. Ranta (1986) estimated the delay in tooth formation to var y from 0.3 years to 0.7 years according to the severity of the cleft and the hypodontia. Tooth formation was delayed longer in the more severe cleft cases and in the subgroups with severe hypodontia. This is in agreement with the mean dental delay of 0.2 years reported in this study.

With the method of Demirjian and Goldstein, however, we were not able to assess dental age in cases of multiple missing teeth, which were often severe cleft cases.

Concerning the dental age assessment, a consistent overestimation of 3.5 months was found in all groups using the method of Demirjian and Goldstein. This confirms the results of other studies, which found an overestimation from 6 to 10 months with Demirjian and Goldstein's method (Ha¨ gg and Matson, 1985; Staaf et al., 1991). Given this consistent overestimation in all groups (greater overestimation in the control group than in the cleft group), one could wonder whether the cleft group are really as different as results indicate.

No gender difference could be discovered with Demirjian and Goldstein's method because the conversion of the maturity score into a dental age is dependent on the sex.

Significant differences were found in the frequency of asymmetric dental development between the cleft group and the control group. This agrees with the results of several other studies that found a significantly higher frequency of asymmetric dental development in children with cleft (Ranta, 1973, 1986). We should be careful with these results, given the reliability of the method (useable within one development stage).

CONCLUSIONS

The cleft group showed findings which were significantly different from the control individuals.

The children with cleft demonstrated a significantly higher frequency of hypodontia and a significantly higher frequency of dental asymmetries together with a small but nonsignificant mean dental delay relative to controls without cleft.

The results of this study suggest that some genetic factors for clefting and tooth development have some relationship.

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THE FINITE ELEMENT TECHNIQUE IN THE ANALYSYS OF IMPLANT BIOMECHANICS

Nicoleta Ioanid, N. Necu, V. Burlui

Abstract: The complexity of the forces which act on the dental implant can have miscellaneous consequences on the periimplantar tissues. In this study we want to reveal the influence of two geometrical parameters, implant length and diameter, considered critical factors in achieving and maintaining osseointegration in optimal parameters. The analysis of the mechanical stress distribution over the implant bed was based on the finite element technique, using three-dimensional computerized models. The simulation was applied for cylindrical, solid and non-threaded implants made of titan. Three different lengths were chosen for the embedded endosseous implant, 8 mm, 10 mm. and 12 mm, all of them having the same diameter (3.75 mm.), respectively, three different diameters: 4 mm, 5 mm. and 6 mm, all of them having the same length (10 mm.). The implant with 8 mm length and 3.75 diameter (the smallest size used) produced not only a concentration of the strain on the cortical wall, but maximally values on the stressed area and a minimally strain dissipation on the bone adjacent to implant. When the length increase, maximally values decrease, being distribute on a smaller zone, and the residual stress dissipating on a larger area. The increases of the implant diameter significant reduce the strain on the bone adjacent to implant neck. This influence is more effective comparing with implant length, due to a more favorable distribution of the forces applied in our study. If the diameter increases with only 1 mm. it determines a significant strain reduction on the periimplantar bone, almost 50%, and may achieve till 60% (in case of more than 6 mm. diameter).

Key words: finite element technique, biomechanics, implant length, implant diameter.

INTRODUCTION

The analysis of the biomechanical behavior of the bone-implant interface is the most often used application of the finite element technique in implant dentistry. In the past two decades, FEA (Finite Element Analysis) become an increasingly tool for researching on two main purposes: the interface studies and the analysis of implant prosthesis connection. From the biomechanical perspective interface studies are to reveal and identify the role of some physical and geometrical parameters played in the interaction between bone tissue and implant surface, correlated to: 1) stress and strain characteristics 2) the material properties, 3) the geometry of the implant, 4) implant surface definition, 5) bone-implant interface, 6) the quality and the quantity of the periimplantar bone tissue. Studying the mechanical actions of the implant-prosthetic complex, the purpose was to analyze the stress which acts on different connection: a) implant-abutment or fixture abutment, b) prosthesis witch are supported by a multiimplant system or c) by a dental implant system. (Keson B.C. Tan, 2001)[1]

The biomechanical behavior of the oral implant was tested both on statically forces and dynamical ones. The most FEA applications for simulation of the statically stress and strain uses vertical and/or horizontal forces. In the oral environment there are large variations on forces magnitude, a lot of studies sustaining that the impact of strain depends mainly of the implant location and aliment strength, for the vertical forces and mainly of cusp angularity and occlusal width of the prosthetic crown, for the horizontal one.

One of the goals of our analysis is to simulate forces applied on three different directions by using oblique forces, because this type of action is more appropriate for the occlusal loads acting in oral environment. The essential purpose is to investigate the role of two geometrical parameters, the length and the implant diameter and to show which one ensures a

more balanced distribution of the stress at the bone-implant interface.

MATERIALS AND METHODS

The study was realized using the three dimensional finite element techniques, commonly used for stress analysis of nonrigid bodies (Tat'jana Dosta´lova, 2004)[2] The implant embedded in maxillary bone was split into a mesh of elements and for each one of these were defined physical properties. In three dimensional models stress is generally represented by a stress tensor, characterized by 9 components. Six from these are independent, being normal tension on x, y, and z direction and tangential tension. To determinate the equivalent tension resulting in the analyzed bodies we used – so called „resistant theories", witch define the equivalent tension by all components of stress tensor. Predefined in the software used (ABAQUS, version 6.5) was von Mises criteria, commonly applied for the reprezentation of the strain.

The simulation was realized for solid and cylindrical titanium implants, without thread (for example IMZ, Interpore International, Irvine, California, ITI Bonefit, Insitute Sraumann, Waldenburg, Switzerland) and with bioactive coating, similar to the TPS implants. The influence of the implant length on the stress around cylindrical dental implant was analyzed by selecting three different lengths for the depth of the implant bone immersion: 8mm, 10mm. and 12mm, all of them having the same diameter of 3.75 mm. To study the impact of the implant diameter there have been chosen three different diameters: 4mm, 5mm and 6mm, all of the having same length of 10mm.

The implant was placed in a vertical position and in a solid parallelepiped designed like a maxillary bone, with two layers: cortical on the exterior walls, width of 1, 4 mm and spongy on the interior. The dimensions of the bone volume are: the total height H=15mm, the width L=11,5mm, and the thickness l=9,5mm.(fig.1). The interface between implant and bone was modeled as an immovable junction, which simulated the condition of the optimal implant osseointegration. For this reason, the "tied contact" option in the software was chosen (Larsen, 2000)[3]. The mesial and distal borders of the end of the modeled parallelepiped were constrained so that the displacement of nodes in all directions was equal to zero (Brink, 2007)[4]. The properties of the materials considered in the analysis are: titan – longitudinal elasticity module (Young Module) E=102GPa, density ρ = 4511 kg/m^3, transversal stress constant (Poisson constant) μ = 0.35 – cortical layer, longitudinal elasticity module E=13 Gpa and the transversal stress constant μ = 0.30 –spongy layer, longitudinal elasticity module E=9.5GPa (for a density of ρ = 1500 kg/m^3), transversal stress constant μ = 0.30.(Teixeira ER, 1998)[5]

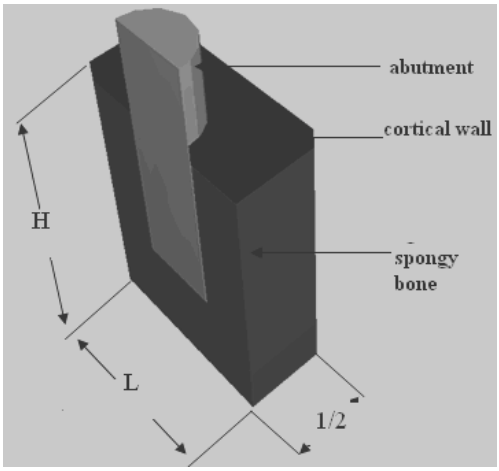


Fig. 1. Longitudinal section of the geometrical model is made for a better view of the tensile distribution around the implant

The whole structure was meshed using three dimensional finite elements C3D8R with intepolar, linear function (fig.2).

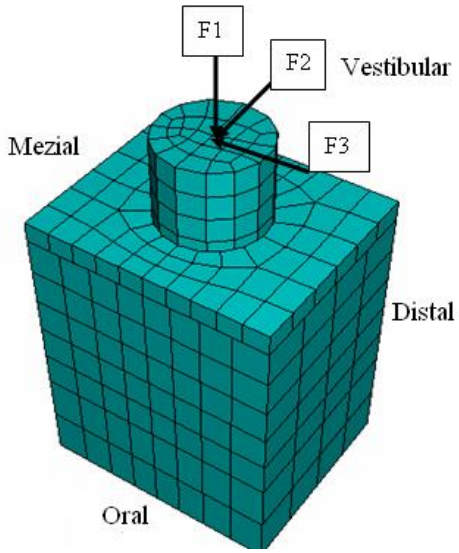
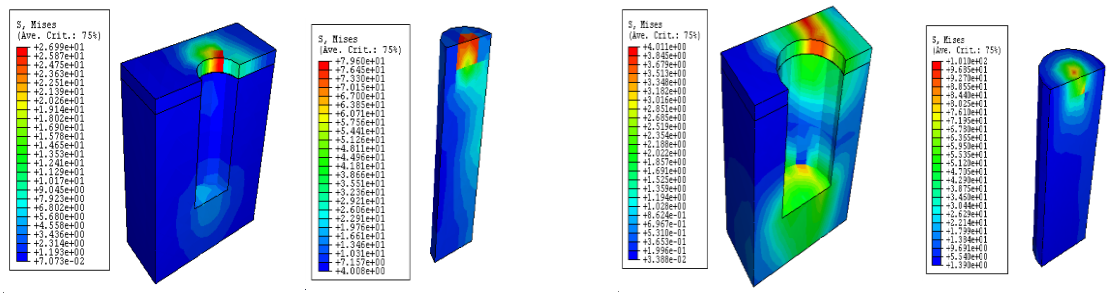


Fig. 2 Mesh of simplified 3-D implant model placed in bone. F_1, F_2, F_3 represent forces in vertical, oral and disto-mesial directions, respectively.

The modeled parameters were length and diameter Depending on implant size, the models consists of 16 500 to 21000 elements. Pre and post processor software used an Intel processor, RAM 512 MB, graphic card 128 MB. The axial force F_1 =110.1 N , the oral F_2=15.3 N and the disto-mesial F_3=21.4 are acting simultaneously on the center of upper surface of abutment, at a distance of 4 mm from the upper margin of bone. These components are the result of a masticatory force of 115.2 N. applied in angle of approximately 75 degrees to the occlusal plane The force magnitudes, as well as the acting point, were chosen based on the work of Mericske-Stern.(Mericske-Stern, 1996)[6]



A B

Fig. 3
A) Distribution of von Mises stress around implants with 8mm. length (the smallest length used) and 3.75mm. diameter.
B) Distribution of von Mises stress around implants with 10mm. length and 6mm. diameter (the biggest diameter used). On the right side of each image the view is from inside bony socket and on the left side from inside implant. Red represents region of maximum stress around implant neck. Values of maximum stress in respective scales are higher for B.

RESULTS

It is well knowen that statical loads on axial direction create maximal compresive strain on the cortical plate, near the implant neck and on the spongy bone, around apical implant side. (Barbier L,1998)[7] Our mathematical analysis demonstrated the same uneven stress distribution inside the bony socket (fig.3, A, B). The elements exposed to the maximum stress were located around the neck of the implant on the mesio-lingual side of the bony socket (area indicated by red color). This location was identical for all implant lengths and diameters considered.

The model for implants with different lengths, but the same diameter, indicate that is a small difference in the area affected by maximum stress and the values fell when implant length increase. The relation between relative stress and implant length is showed by the exponential regresion curve (CURVE EXPERT software, version 1.3) witch is less steep (fig.4) by comparing it with the same curve obtained for diameter increase (fig.5). The relative stress acting in the bone around the implant with a diameter of 4 mm was about 11.7 % smaller than the implant with diameter of 3.75 mm. Further stress reduction with the 5.0-mm implant represented an additional 20.5 %. Stress reduction continued to decrease for larger diameters. The use of an implant with a diameter of 6 mm resulted in reduction of the maximum stress values more than 50%.

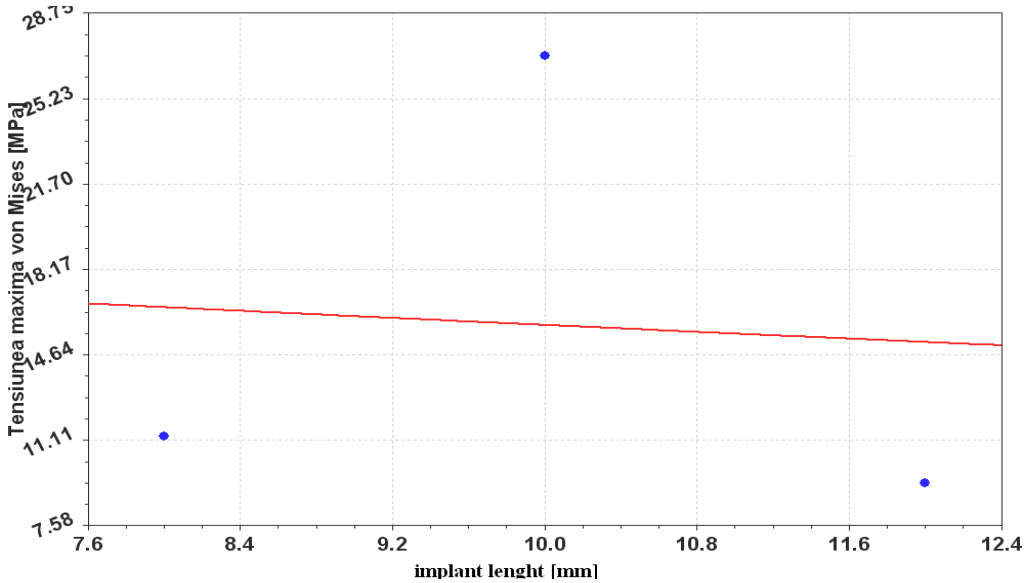


Fig. 4 Exponential regression curve express relations between relative values of stress and implant length

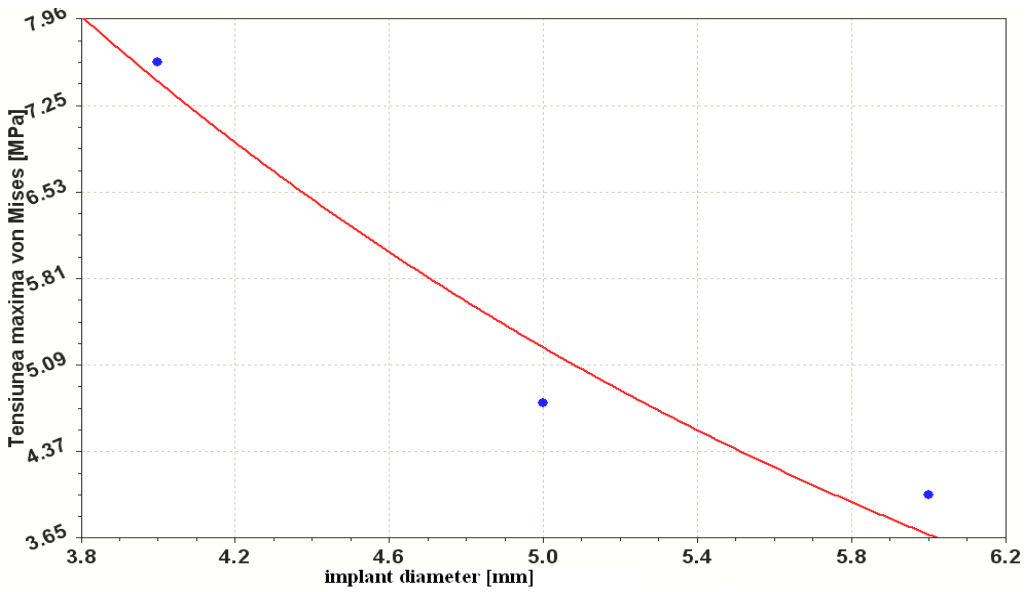


Fig. 5 Relations between relative values of stress and implant length. Exponential regression curve less steep than for implant diameter

DISCUSSIONS

The results of the FEA computation depend on many individual factors, including material properties, boundary conditions, interface definition and also on the overall approach to the geometrical model. (Himmlova, 2004)[8] The presented model was only an approximation of the clinical situation, but using the components of an oblique force for loading and a 3-D model for the dental implant, resulted in a more satisfactory results comparing with vertical or horizontal loading and 2-dimensional geometries. The model simplification refers only to the implant shape, designed like cylinder and not like screw or other shapes commonly used in clinical practice. Thus made it possible to reduce the required computer time without affecting the purpose of this study, which was to establish only the influence of the implant length and diameter**.**

The strain produced by axial and paraxial loads act in a diferent way on the bone – implant interface. Barbier and co. studied the bone remodeling process and a very important conclusion was made: the areas with highest equivalent stress has an accelerated process of remodeling. The location of zones with higher stress around the implant neck may indicate a danger of overloading in this area. The elements exposed to maximum stress were located where most of non-axial masticatory forces were transferred. For example, forces acting in lingual and disto-mesial directions are associated with grinding movements, in comparison with axial loading during chopping movements. This situation corresponds to nonparametric computerized models of loaded dental implants. Models show utmost strain acting around the implant neck (Holmgren, 1998, Oosterwyck, 2001)[9, 10]

CONCLUSIONS

This finite element study showed that implant with large diameter better dissipated the simulated force and significant reduce the stress on the bone – implant interface, while the effect of implant length was less notable. The highest decrease in stress, compared to the implant 3.75mm diameter, was obtained for the maximal diameter used in the study (52.7% decreases for 6 mm width). These results are in contradiction with some theories witch consider the implant length a dimensional parameter more important than implant diameter (Carl E. Misch, 2005)[13] Our conclusion is consensual with majority studies based on FEA: implant with the maximum possible diameter (allowed by the clinical condition) is the optimum choice (Goodacre, 2003, Keller, 2004)[11, 12]

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COMPARATIVE STUDY REGARDING THE GUM-PERIODONTAL MANIFESTATIONS DURING PREGNANCY AND NON-PREGNANCY

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Abstract: The pregnancy, by itself is not able to produce the taint of the limit paradont but the hormonal change together with the vitamin deficit which occures during this periode may affect the local reaction of tissues concerning the bacterial plack, the real cause of this problem. In case of pregnancy woman the bacterial flora inside protection against it decreases, so the oral hygiena and the alimentation hold the main role in the evolution of the gingivo – paradontal diseases.
A comparative study involving 25 pregnancy woman and 25 unpregnant over shows that the appearance of gingivo –parodontal diseases is bigger in the first lot that the second one. We also concluded that, in case of pluri –even pregnant woman, the paradontal teritory is more affected because of the previous pregnancies.

Key words: gingiva-parodontal diseases, pregnancy

INTRODUCTION

The pregnancy, by itself, does not produce the disease of the marginal parodont, but the hormonal modifications together with the vitamin coefficients which appear during this period influence the local reaction of the tissues compared to the bacterial plate-the real determinant factor.therefore, the gravity constitutes a secondary ethiopathogenic factor.

The pregnancy, through the modification of the level of estrogens and/or progesterone, determines the intense increase of the vascularization degree of the oral mucous, which determines the appearance of some intense desquamation lesions of the corion and of the gingival epithelium, accompanied by a gingival congestive edema.Although, the studies carried out proved that these modifications are transitory and do not appear in all the pregnant women leading to the conclusion that the area factor has an important role in the oral pathology.

The main cause of the gum-periodontal disorders in general and in the pregnancy in particular, is represented by the local factor, the bacterial plack, that organo-bacterian pellicle which adheres both to the mucosal surfacesand to the dental ones. During the pregnancy, the bacterial plate contained in the plate increases and is modified, resulting a greater disequilibrium that leads to the development of the inflammatory process.

The purpose of the study consisted in determining the incidence of the gum-periodontal disorders during the pregnancy and non-pregnancy, emphasizing the correlative aspects between the dental clinical entities and the general status, aspects that will be at the basis of a well-led therapy.

MATERIAL AND METHOD

The clinical statistic study was carried out on a lot of 50 patients, 50% pregnant (primipar and multipar) found in different stages of pregnancy and 50% non-pregnant. They had ages comprised between 20 and 30 and came from the urban environment.

We compared the two lots analyzing the following parameters : the aspect of the gum, the number of births, the personal gum pathological aspects, the dental hygiene state and the alimentation type. With this purpose, we used the data supplied by the :

1. **Anamnesis**: it comprised a series of questions through which we found out from the patients' representations data about the diet, the periodontal disease historic and the heredo-colateral antecedents. In addition, we picked information about their vicious habits since the specialized studies carried out until the present have proven that the smokers are 2-7 times more affected by the gum-periodontal disorders than the non-smokers. With the purpose to centralize the data obtained, we drew out an individual sheet, according to a dental sheet model.

2. **The plate index (IP**). For emphasizing the bacterial plate with the purpose to establish the oral hygiene state, we used plate revelators (basic fuchsine tablets or 0,03 brome-cresol green). The results obtained after the examination of the two lots are presented in the table below.

Tabelul I
Oral hygiene state

Type of persons tested	No. of persons studied	Satisfactory oral hygiene	Non-satisfactory oral hygiene
Pregnant	25	6	19
Non- pregnant	25	10	15

3. **The oral microbial degree** was established with the help of the Snyder test, which measures the rapidity of the acid formation from a saliva sample (1-2 ml) on a sample medium with a pH indicator. Its color changed in the following manner:

- light-blue: pH 5.4-5.5;
- green: pH 4.5-4.6;
- yellow: 4.2-3.8.

The results obtained after examining the two lots are presented in the table below (tab. 2):

Tabelul II
Oral Ph

Type of persons tested	No. of persons studied	Light-blue	Green	Yellow
Pregnant	25	12	9	4
Non- pregnant	25	15	7	3

4. **The bleeding index**. For establishing the gum inflammation degree we used the test proposed by Silnes –Loe, using with this purpose a small condenser, spherical, that we introduced in the gum sulcus until its bottom but without pressure, in an angle of 25-30 degrees from the dental surface.

We calculated the gum bleeding index from the sum of values for four areas of gum exploration: disto-vestibular, mesio-vestibular and oral divided in 4, and the notation was carried out according to the scheme proposed by the author:

0- normal gum;

1- light inflammation with color modification,edema, the absence of provoked bleeding;

2- moderate inflammation with congestion, edema and provoked bleeding;

3- severe inflammation with congestion, edema and tendency of spontaneous bleeding.

The results obtained after examining the two lots are presented in the table below (tab. 3):

Tabelul 3
The gum inflammation degree

Type of persons tested	Normal gum	Light inflammation	Moderate inflammation	Severe inflammation	Total pregnant women
Pregnant	6	6	12	1	25
Non- pregnant	12	8	4	1	25

RESULTS

Wy mention that of the 25 pregnant women studied, two did not present gum-periodontal modifications.

After the centralization of the data obtained through the methods above, we processed it statistically, and namely:

Tabelul 4
The gum aspect

	Normal gum	Congestive gum	Congestive-hypertrophic gum	Number of cases
Pregnant	2	14	9	25
%	8	56	36	100
Non- pregnant	12	12	1	25
%	48	48	4	100

Tabelul 5
Number of births

Parity	No. of pregnant women	% parity	No. of pregnant Women with gum-periodontal pathology	% according to the parity	% according to the total no. of pregnant women with gum-periodontal pathology
Primipar	4	20	2	40	8
Multipar	19	80	15	75	60

According to the anamnesis data, we obtained the following statistical numbers:

Tabelul 6
Personal pathological gum antecedents

Antecedents	No. of pregnant women	% according to the antecedents	No. of pregnant women with gingival pathology	% according to the antecedents	% according to the no.of pregnant women with gingival modifications
Existent before the current pregnancy	17	74	13	76	56
No antecedents	6	26	2	24	9

Tabelul 7

Types of alimentation

Types of alimentation	No. of pregnant women with gum-periodontal pathology	% according to the no. of pregnant women with gingival modifications	Non-pregnant women with gum-periodontal pathology	% according to the no.of non-pregnant women with gingival modifications
Meat	2	8,7	0	0
Vegetarian	3	13	1	7,69
Lactate	3	13	3	23,07
Hydrocarbonate	10	43,5	5	38,46
Mix	5	21,8	4	30,76

CONCLUSIONS

1. The deficit hygiene of the oral cavity associated with the state of pregnancy constitutes the main cause of the appearance of gum-periodontal diseases during the pregnancy.
2. We noticed an increased incidence of the gingival phatology during the pregnancy or non- pregnancy state, in the patients whose diet mainly consists of the hydrocarbonate aliments and less in the patients who consume lactate or vegetarian aliments.
3. The periodontal status indicates us a majority of pregnant women with gum-periodontal modifications.
4. We noticed an increased incidence of the gum-periodontal pathology in the multipar pregnant women both compared to the primipar patients and compared to the non-pregnant ones, which proves the existence of pathological states, appeared during the pregnancy and previous births with their exacerbation in the current pregnancy.
5. The graphical representation of the incidence of gum-periodontal diseases in the 50 patients shows that the greatest percentage was encountered in the case of pregnant women.
6. The interdisciplinary, gynecology and dental exam, the illustration of the incidences of gum-periodontal diseases, suggests the existence of a determinism between the gum-periodontal lesions and gravity state.
7. The increase of the addressability to the dentist of the pregnant women could contribute to the improvement of their oral health state.

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ULTRASOUND EVALUATION IN TEMPOROMANDIBULAR ARTHRITIS IN PATIENTS WITH CHRONIC JUVENILE ARTHRITIS

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Abstract: The EULAR classification defines the CJA as a systemic manifestation affecting both sexes before 16 years old and registers 3 clinical forms: the systemic disease (Still's disease), oligo- and poly-articular.
Ultrasonography has remarkable contribution in the diagnosis of musculoskeletal apparatus' lesions. Due to the advantages (non-invasive, low cost, no negative effects and contraindications), this method allows the static and dynamic evaluation of the hard and soft structures.
The purpose of the paper: to assess TMJ involvement in CJA patients by ultrasonography and to define characteristic patterns of the disease.
Material and method: the research was conducted on 2 patients with CJA, hospitalized in Rheumatology Department, Rehabilitation Hospital of Iasi during 01.01.2005-31.07.2006. Assessment was done according to a standard protocol in all patients and included: inflammatory and immune parameters and a complex, both static and dynamic, ultrasound evaluation of TMJ. Descriptive statistical analysis was done using SPSS-11.
Results and discussions 86.36% patients featured either inflammatory-destructive or degenerative types ultrasound lesions, the majority of them (59.09%) being inflammatory and destructive.
Conclusions a non-invasive, easy, low cost and easily reproducible method, ultrasonography, reconfirmed its diagnostic function in the small joints evaluation, including TMJ.

Key words: tmd, ultrasonography, tmj, cja

INTRODUCTION

The temporomandibular joint or temporomaxilar joint, the main component of the stomatognat system, is the only mobile joint in the cephalic extremity, the most developed and the most complex body joint, so that *Gouppille Philippe* (1988) used to name it also the most *challenging joint of the human body*.

The EULAR classification defines CJA as a systemic disease affecting both sexes before 16 years old; 3 major clinical forms are actually known including the systemic form of the disease (Still's disease), the olygo-articular and the poly-articular form. About 14-65% of CJA present with TMJ involvement as reported by Goupille in 1995; in 17% of cases (Grosfeld, 1973 and Mayne, 1969) and 63 % according to Ronnig, 1981, distinct types of lesions are described because the inflammatory synovitis leads to both destruction of the articular components (especially the condyle) and deformation of the region.

In the last two decades the imagistic diagnostic of the TMJ recorded important progresses assuring by this both the differentiation of the entities causing the chronic pain and disability in the oro-facial area and the results' evaluation of the conservatory and surgical therapy.

The ultrasonography has a remarkable contribution in the diagnosis of the musculo-skeletal lesions. Through its main advantages including non-invasive, low cost, no negative effects and contraindications, this method allows the static and dynamic evaluation of the hard and soft structures.

Objectives: to assess the TMJ involvement in CJA patients by ultrasound

and to define characteristic patterns of the disease.

MATERIAL AND METHOD

22 patients diagnosed with CJA as defined by EULAR criteria were enrolled in the present research. All patients were admitted in Rheumatology Department, Rehabilitation Hospital of Iasi during 01.01.2005-31.07.2006.

The main **inclusion criteria w**ere: both static and dynamic pain in the TMJ area (during the examination or in the history); either morning or after rest TMJ stiffness; difficulties in mouth opening or closing; trismus; articular noises (including crepitations, cracments).

The following **exclusion criteria** were taken into account: cranio-facial traumas; tumors and infections of the facial and cranial area; patients with neoplasia with other localizations. 32 patients with CJA, defined according to EULAR criteria, were included in the present study. The selected patients were clinically, biologically and echographically assessed using a 10MHz probe.

RESULTS AND DISCUSSIONS

TMJ ultrasound was based on a standard protocol allowing imaging in the antero-superior compartment, sagital and frontal planes.

The patient was supine, the transducer being placed directly on the TMJ area, parallel with the long axis of the mandibular ram. The transducer was oriented also parallel to Camper line (that connects the nose with the tragus). The movement in this way allowed the identification and the measurement of a hypoecogenic space, homogenous situated between the mandibular condyle and the lateral part of the articular eminence (patient with shout mouth), that corresponds to the disk.

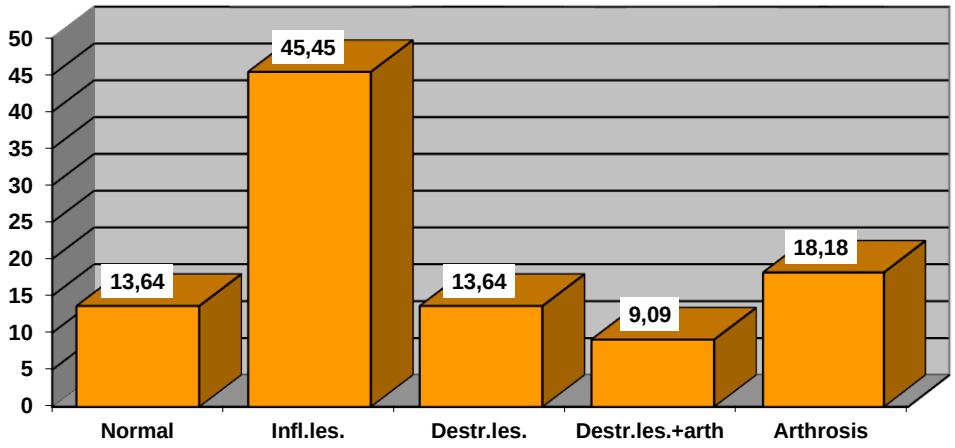
Both static and dynamic ultrasound TMJ examination were done, with Doppler color SAOT ultrasound device with a 10MHz probe. The following *ultrasonic evaluation score* was used:

- *condyle shape*: N (normal) = 0; flat (F) = 1, extended lysis (L) = 2;
- *articular space*: N (>0.5) = 0; <0.5 = 1;
- *synovial fluid*: the presence of the articular liquid in a high amount (hypoechogenic): LA = 2
- *condyle mobility* (trajectory, ampleness): normal (M0) = 0; moderately affected (M1) = 1, severely affected (M2) = 2;
- *condyle contour:* linear (CL) = 0; sclerous (CSc) = 2; jagged (CD)=3;
- *temporal bone contour*: linear (CL)=0; sclerous (CSc)=1; jagged (CD)=2;
- *erosions*: one (E1) = 1; > 1 (E2) = 2;
- *geodes*: one (G1)=1; >1 (G2) =2;
- *osteoporosis*: OP =1;
- *discal anomalies*: the displacement (DD) = 1; morphological changes (MMD) = 2;
- osteophytes: bone = 2;

Both inflammatory–destructive and degenerative lesions have been reported by ultrasound evaluation of TMJ in more than 86.36% cases; among them, 59.09% were of inflammatory –destructive types as shown in graphic no 1 and table 1.

Table 1: Ultrasound examination of TMJ involvement

Results	N	%
Normal	3	13.64
Inflammatory lesions	10	45.45
Destructive lesions	3	13.64
Destructive lesions + osteoarthritis	2	9.09
Osteoarthritis	4	18.18



Graphic no.1: The frequency of the affections detected in ultrasound

CONCLUSIONS

1. Sonography, an easy, non-invasive, low cost and easily reproducible method has reconfirmed its diagnostic place in the evaluation of the small joints relieving the TMJ lesions;
2. Ultrasound examination used in this study to a significant number of patients, can be considered as an useful diagnostic means for the TMJ pathology; we appreciate that **the method must be indicated even of first and unique intention** in the actual exploration, due to the advantages it has;
3. The technique has relieved pathological modifications of inflammatory, destructive and degenerative type.

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THE INFLUENCE OF POST MATERIAL ON FRACTURE RESISTANCE AND MODE OF FAILURE OF THE TEETH RECONSTRUCTED WITH POST SYSTEMS

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Abstract: The purpose of this study was to evaluate the fracture strength and mode of failure of endodontically treated teeth reconstructed with different posts. Forty maxillary central incisors were reconstructed with different posts and divided in 4 groups: carbon fibre posts, glass fibre posts, titan posts and control group (without posts). The force was applied at an angle of 45 degrees, until the failure of specimens. The failure loads were recorded and analyzed with student *t* method. The mode of failure (reparable or irreparable) was also evaluated. Regarding the mean value of resistance to fracture there were no significant differences between groups, but differences in the mode of failure were recorded. Metal posts caused a bigger number of irreparable root fractures, while non-metallic posts produced in most cases reparable root fractures. In conclusion, the fibre reinforced posts have a protective effect on the dental tissues comparing with metallic posts and are best suited for the restoration of endodontically treated teeth.

Key words: fracture resistance, carbon fibre post, glass fibre post, metallic post

INTRODUCTION

Despite the steady evolution of post and core materials and techniques, the failure of post-retained crowns is relative common. It is well known that endodontically treated teeth present a higher risk of failure than vital teeth (Caputo 1987). Some authors (Freedman 1996) consider that is the result of the loss of tooth structure, whereas others (Gutmann 1992) reported the effect of decreased moisture content and subsequent brittleness of endodontically treated teeth as causes of fracture. There is no consensus about the techniques and materials that are best suited for the restoration of endodontically treated teeth. The cast post and core has some disadvantages that may jeopardize long-term success: tooth weakened related to the removal of root structure to accommodate the necessary post length, lack of cement retention, corrosion risks, unevenly stress distribution leading to root fracture, difficulties in removal of the post, increased working time and laboratory costs (Purton 1996).

The restoration of endodontically treated teeth with metal-free materials that have physical properties similar to those of the dentin has become a major objective in dentistry. In the late 1980s were introduced fibre-reinforced post systems: carbon fibre, glass fibre and quartz fibre posts (Mannocci 1999). The carbon fibre post have a modulus of elasticity very close to that of dentin, so it causes less tooth stress resulting in fewer root fractures (Dean 1998). Glass fibre-reinforced posts are composed of unidirectional glass fibres in a resin matrix that strengthened the structure of the post without compromising the modulus of elasticity. These posts have the same good mechanical properties as the carbon fibre posts and are tooth-coloured, allowing to achieve better aesthetics (Rosentritt 2000).

This "in vitro" study aimed to evaluate the fracture strength and the mode of failure of endodontically treated teeth reconstructed with different posts: carbon fibre post (Carbopost/Carbotech), glass fibre post (Snowlight/ Carbotech) and titan post (Ancorextra/Svedia International SA) (Fig. 1).

Fig. 1. The posts used in this study (from left to right): Carbopost, Snowlight, Ancorextra

MATERIAL AND METHOD

Forty sound maxillary central incisors, recently extracted, were divided in four groups, according to the type of post used for restoration: gr. C: carbon fibre posts (Carbopost), gr. S: glass fibre posts (Snowlight), gr. T: titan posts and gr. M: control (endodontically treated teeth, but without posts).

All roots were filled with gutta-percha and a resin sealer. The crowns of teeth were cut perpendicular to their long axes, 2mm above the cemento-enamel junction (CEJ) using a diamond disk. After 48 hours gutta-percha was removed, leaving 3mm of canal filling in the apical third to ensure a good endodontic seal. The posts were cut 4 mm coronal to tooth section and cemented with dual-cure resin cement (Panavia F). Composite cores were built up with a light-curing composite to yield an abutment height of 6 mm from the CEJ. All preparations were covered with metal crowns, cemented with Panavia F and embedded into metallic cylinders filled with self-polymerizing resin

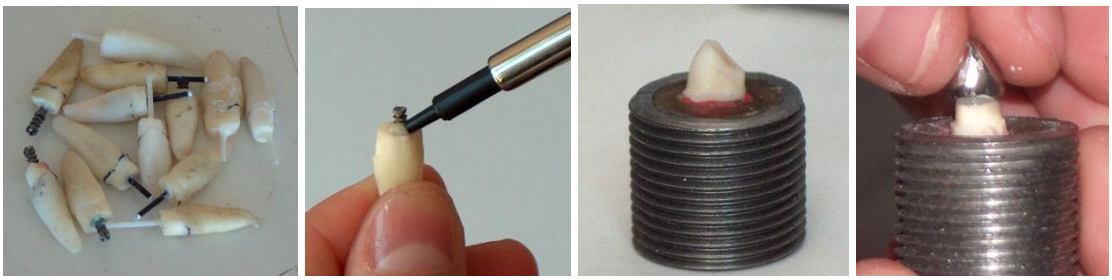

Fig. 2. Preparing the samples for the compressive test

On the palatal surface of the crowns, a 0.3mm deep notch was made, in order to place there the compressive load during the test. The load was applied using a chisel-shaped steel pin, corresponding to the shape and dimension of the incisal edge of a lower incisor. The metallic cylinders were screwed into a mounting device, directing the force at an angle of 45 degrees to the long axis of the tooth. This angle reproduces the position and loading characteristics on anterior teeth in a Class I occlusion (Fig. 3).

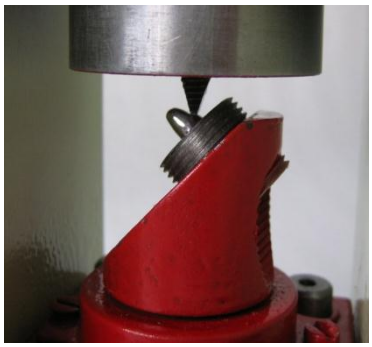

Fig. 3. Load is applied on the palatal surface, at an angle of 45 degrees to the long axis of the tooth

Each specimen was subjected to progressive compression load in a universal load-testing machine with nominal forces of 25 kN, at a crosshead speed of 19 mm/min and a monotonously increasing force until the specimens failed. The testing machine was connected to a data acquisition board. LabVIEW 6.0 National Instruments software was used to perform a data acquisition virtual instrument for measurement with a scan rate of 1000scan/sec. The compressive loads at failure recorded were compared with the Student *t* test. The mode of failure of the specimens was also evaluated.

RESULTS

Fracture resistance

All specimens failed because of teeth fracture. The range of load resistance of the teeth to the point of fracture was about 31-35daN. The mean values for each group were: gr.C: 31,8 ÷ 32,2, gr.S: 31,3 ÷ 35,1, gr.T: 31,75 ÷ 35,25, gr. M:31 ÷ 34,9

The values of fracture resistance obtained for endodontically treated teeth restored with post-and-cores are close to that recorded in the control group (endodontically treated teeth but without post and core) and are higher than maximal values of the physiological occlusal forces recorded clinically in anterior teeth (20 daN).The statistical analysis (Student *t* test) of the values obtained showed no statistically significant differences between the groups ($\alpha = 0.05$).

Mode of failure

According to their localization and complexity, root fractures were classified as favourable (reparable) if they appeared in the cervical third and catastrophic (irreparable) if they were in the median or apical third of the root. There were recorded three different patterns of fracture: a) vertical fracture, b) cervical (horizontal) fracture, c) complex root fracture (vertical and horizontal)

In *group C (Carbopost)* all three modes of root fracture were recorded: five of them were cervical (horizontal), three vertical and two complex root fractures (Fig. 4).

In *group S (Snowlight)* were found only two types of root fracture, most of them being reparable (eight cervical) and only two irreparable (complex root fractures) (Fig. 5). There were also recorded two post fractures, one associated with a cervical fracture and one with a complex root fracture. The posts fractured before the roots did and this is a clinical major advantage, because if the post fractures, the whole restoration fails and has to be immediately replaced. In this manner, the risk of root overloading and fracture is eliminated.

Fig. 4. Fractures in the group C (from left to right): vertical, complex and cervical fracture

Fig. 5. Modes of fracture in group S: few complex root fracture (irreparable) and most of them cervical fracture (reparable)

The patterns of fractures recorded in *titan post group* are typical for teeth restored with metal post: most occurred fractures were irreparable (five vertical fractures, three complex fractures) and only two cervical (reparable). In one root with a complex fracture we noticed that the titan post was bent (Fig. 6). Because of its higher elastic modulus, rigid metal post absorbs forces without rupture but transmits load to the tooth walls, which fracture on exceeding the elastic limit of the dentin.

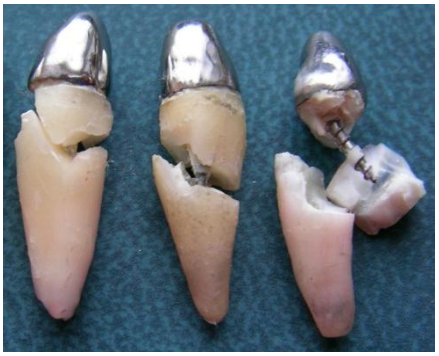

Fig. 6. Fractures in the group T: cervical, vertical and complex root fracture,

Fig. 7. Fractures in the control group were cervical and complex root fractures

The behaviour of the teeth in the *control group* (endodontically treated but without post) wasn't different compared with the test groups, the fractures recorded being 50% cervical (restorable) and 50% complex root fracture (irreparable) (Fig.7).These results show that the presence of the post have no significant influence on the mode of root fracture, the same types of fractures being observed in the test groups (with posts) and in the control group (without post) as well.
Comparing the test groups (with different posts) between them, it can be observed that post material has a certain influence on the mode of fracture. We found important differences between the three experimental groups one from each other regarding the mode of fracture. So, metal posts produced a bigger number of irreparable root fractures, while the non-metallic posts produced in most cases reparable root fractures.

DISCUSSION AND CONCLUSIONS

The results of this investigation, in concordance with those obtained by Mannocci, Mollersten, Rosentritt, showed

that the post material hasn't a significant influence on the fracture resistance of the endodontically treated teeth restored with post-and-core systems. There is a general consensus between specialists on the fact that the post material influences the mode of failure of the teeth with post and core. Regarding metallic posts, the main cause of failure is the vertical catastrophic root fracture (irreparable). Because of their rigidity, they can't follow the elastic deformation of the tooth structures and bend, transforming the contact area between post and dentinal walls in contact points. These points become zone of stress concentration inside the root that will lead to root fractures in certain unfavourable conditions.

The results of the in vitro studies show that non-metallic posts reinforced with carbon and glass fibres have a protective effect on the dental tissues by reducing to minimum the risk of root fracture and if these fractures occur, they are mostly restorable, comparing with the metallic posts that produce mostly vertical irreparable root fractures (Akkayan 2002, Mannocci 1999, Rosentritt 2000, Butz 2001).

The explanation for this behaviour results from the fact that their low Young modulus is closed to that of the dentin's and of the resin-cement used for fixing the posts. In addition, the chemical bond between all these elements (fibre reinforced post, dentin and resin-cement) is very strong and create a complex that behave like a unitary block under the occlusal forces.

Within the limitation of this in vitro study, the following conclusions can be drawn:

1. The post material don't have a significant influence on the fracture resistance of the teeth reconstructed with post-and-core systems but influence significantly the mode of fracture of these teeth.
2. Root fractures caused by metallic posts are mostly catastrophic (irreparable) and lead to the tooth extraction.
3. The non-metallic posts made from resin composite reinforced with carbon and glass fibres have a protective effect on the dental supporting tissues, the mode of failure recorded being more favourable to the root when compared with the metallic posts and therefore increase longevity of the restoration.
4. Fibre reinforced posts are the best choice for reconstruct endodontically treated teeth.

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SURGICAL-ORTHODONTIC TREATMENT OF IMPACTED CANINES

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Abstract: The main purpose of our study is to present the corrective movement of impacted canines using various surgical-orthodontic techniques.
Materials and method: The study was conducted on a batch of 27 patients aged 18 to 25 years, which were examined in Oral and Maxillofacial Surgery Ambulatory of Iasi and in Dr. Bogdan Stelea's private practice, between 2006 and 2007. The batch was formed by 22 patients with upper impacted canine and 5 patients with lower impacted canine. For this study we used only the batch of patients who presented upper impacted canine. Depending on the clinical status, we used the following surgical techniques: repositioned flap, gingival translation flap, window flap method and local mesh application. After surgery for 19 patients we considered that canine traction with an orthodontic device was necessary in order to obtain a vertical position of the teeth. The orthodontic systems used were: fixed orthodontics, ballista spring system or simple metallic clasps fixed on molar rings.
Results and discussion: We used the repositioned flap for 3 patients with deep impacted canines in order to uncover the teeth and to bond an auxiliary orthodontic device, the gingival translation flap for 7 patients with superficial impacted canines: 5 cases with apical translation and 2 with lateral and apical translation. The window flap was used for 12 patients with palatal impaction. After surgery all patients continued orthodontic treatment in order to correct every dental malposition and to obtain a neutral occlusion with esthetical, functional and stabile results.

***Key words*:** impacted canines, repositioned flap, gingival translation flap, window flap, surgical-orthodontic treatment.

INTRODUCTION

Dental impaction represents a frequent anomaly in dentistry. Because of the uncertainty hovering upon canine impaction evolution and prognosis dental practicians hesitate in proposing surgical-orthodontic treatment. This is why dental practitioners have to be instructed in diagnosis and treatment procedures of this condition, to know the differences of surgical approaches of the palatal and vestibular impacted canine and the various methods of traction and force directing. Dental practice has shown that it's not enough to obtain only the alignment of the impacted tooth, but it is also necessary to accomplish a healthy periodontal complex in order to prevent periodontal recession with or without dental mobility.

Upper canine inclusion is more frequent than lower impaction (with a minimum ratio of 4 to 1), in 57% cases in women (Becker, 2003). Palatal localization is six times more frequent compared to buccal impaction.

The etiological factors for upper canine inclusion were less cited in literature. Most authors concur with the idea that the eruption route of the upper canines is more difficult comparing with other teeth.

Deficiency in dental arch length is valid for the majority of the inclusions, but not for upper canines. Studies show that 85% of the palatal impacted canines (Bishara, 1998) have enough space for eruption, coexisting with agenesis or malformations of upper lateral incisor. For buccal impaction, only in some cases the teeth have enough space for eruption, while in rest the impaction coexists with the deficiency in dental arch length. Lately the multifactorial etiology has gained supporters, because it explains the existence of this anomaly in patients with enough space on the dental arch (Bado, 2005)

Clinical evaluation of canine impaction has an orientative value, the absolute diagnosis being possible only after performing complementary exams, such as: retrodentoalveolar X-ray, ortopantomography, teleradiography, occlusal radiography, CT scan and 2D and 3D reconstructions.
The therapeutic alternatives are diverse and vary from absence of treatment (when the patient rejects the treatment) to extraction of the impacted tooth (in case of radicular resorption, dentoalveolar ankylosis or bulky cystic formations), surgical-ortodontic treatment or self-transplant.
The main purpose of our study is to present the corrective movement of impacted canines using various surgical-orthodontic techniques.

MATERIAL AND METHOD

The study was conducted on a batch of 27 patients aged 18 to 25 years, which were examined and treated in OMF Surgery Ambulatory of Iasi and in Dr. Bogdan Stelea's private practice, between 2006 and 2007. The distribution of the cases was as follows: 22 patients with upper impacted canine (12 patients with differences between mezio-distal distances of the canines and the existent space, 2 patients with complex odontoma, 3 patients with cystic formations and 1 patient with dento-alveolar ankylosis) and 5 patients with lower impacted canine. For this study we used only the batch of patients who presented upper impacted canine, with the following distribution: 12 patients with palatal impaction and 10 patients with buccal impaction.
Surgical-orthodontic recovery of impacted canines involves three steps:
The first is the pre-surgical orthodontic step which has the purpose of creating the necessary space for the canine alignment. On the patients from our study batch we used the Edgewise technique. The second is the surgical step and the third is the post-surgical orthodontic treatment which accomplishes the alignment of the canine within the dental arch.
Depending on the clinical status, we used the following surgical techniques: repositioned flap, gingival translation flap and window flap method.
On the 3 patients with deep buccal impaction we used the repositioned flap because the gingival tissue cannot be positioned in the vestibule in order to uncover the tooth and to bond the auxiliary orthodontic device (Fig. 1).

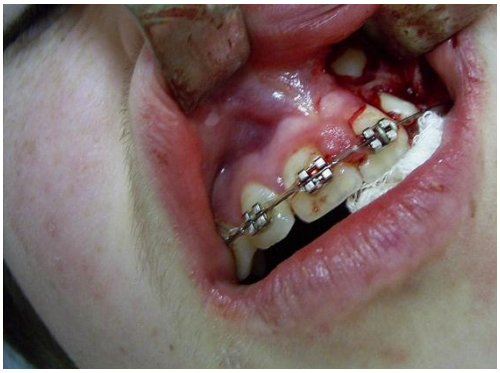

Fig.1. Buccal repositioned flap

We used the gingival translation flap for the 7 patients with superficial buccal impacted canine: apical translation for 5 patients (fig. 2) and lateral and apical translation for 2 patients respectively (fig.3).

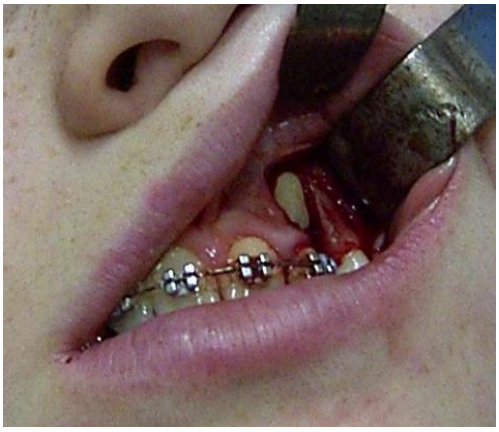

Fig. 2. Apical translation flap

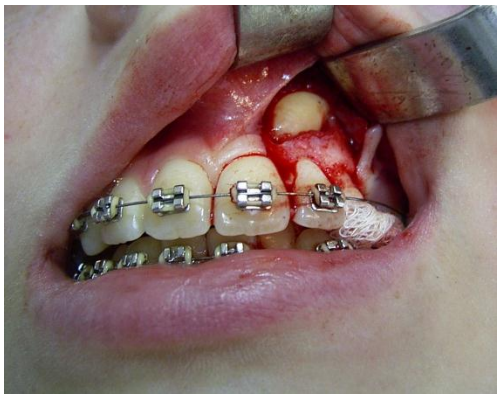

Fig. 3. Lateral and apical translation flap

For the 12 patients with palatal impaction we applied the window flap method (Fig.4).
For the three cases of impaction in which we diagnosed dentigerous cysts we performed cystectomy followed by meshing of the post-surgical cavity. The patient with dento-alveolar ankylosis underwent dental extraction.
After surgery the orthodontist performed canine traction with an orthodontic device was necessary in order to obtain a vertical position of the teeth. The orthodontic systems used were: fixed orthodontics, ballista spring system or simple metallic clasps fixed on molar rings (Fig. 5).
After surgery all patients continued orthodontic treatment in order to correct every dental malposition and to obtain a neutral occlusion with esthetical, functional and stabile results.

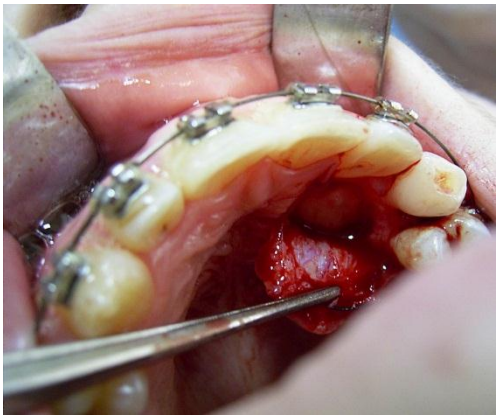

Fig. 4. Palatal window flap

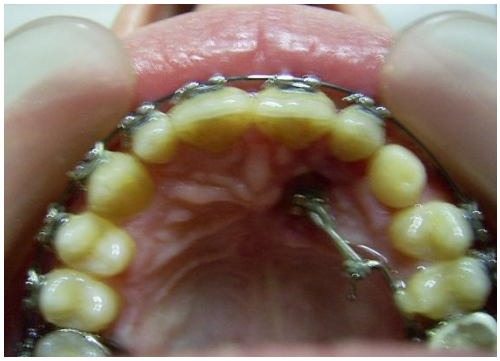

Fig. 5. Orthodontic anchoring device

RESULTS AND DISCUSSION
The purpose of our study was to analyze the indications of surgical methods according to the clinical status of each case.
In deep impactions, because the gingival tissue cannot be positioned in the vestibule in order to uncover the tooth and to bond the auxiliary orthodontic device, it is recommended the use of muco-periostal repositioned flap with passive guidance of the impacted canine. The apical translation flap has the purpose of assuring the uncovering of the teeth and provides the amount of periodontal tissue for the repositioned canine. Due to the fact that

the lower margin of the flap is positioned in direct contact with the tooth, this method contributes to periodontal restoration.

The window flap used in palatal impaction avoids extensive decollation of the mucosa, allows the attachment of orthodontic devices and minimizes the trauma to the marginal periodontal tissue.

Periodontal follow-up 6 month after surgery shows that in the cases in which we used the repositioned flap, apical translation flap and window flap there were no periodontal recessions or dental mobility which could compromise the treatment. Conversely, in the cases in which we used the lateral and apical translation method and meshing, the periodontal tissue was damaged and it needed surgical restoration.

CONCLUSIONS

We recommend conservatory surgical orthodontic treatment due to its role in alveolar bone formation during the movement of an impacted tooth, with restoration of the periodontium with esthetical and functional implications.

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INCIDENCE AND PROGNOSTIC VALUE OF ORAL CANDIDIASIS IN HIV INFECTION

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***Abstract*:** Oral candidiasis is the most frequent lesion encountered in HIV infected patients and is detected before any other clinic symptoms of oral pathology. Its growth is a complex process of changes in the oral cavity, and sometimes disorders involving the entire body. Its risk is increased by serious factors as follows: autoimmune deficiencies (illness of the primary cells which acts as modulators of the immune response), xerostomia, malignant neoplasm, different therapies (chemotherapy, antibiotic therapy, therapy with steroids) or iron deficiency anaemia.

Key words: oral candidiasis, HIV infection, prognostic value.

INTRODUCTION

The oro-maxilo-cervico-facial territories are areas where manifestations of HIV infection are most often observed. The vast majority of infected patients present at least one oral lesion, which sometimes can be the only expression of the disease. In this context, it is very important for dentists to be well informed of the oral signs of HIV infection. Affection of the oral mucosa is constant, appears early in the disease and it is a clinical indicator of the prognosis, which usually indicates an ominous evolution. Oral candidiasis, frequently observed in HIV infected patients, appears almost always before other clinical oral manifestations. It represents an indicator of imunosuppression, but it can also imply an increase in viral load associated with AIDS or resistance to anti-retroviral medication. The development of candidiasis is a complex process which is influenced by changes that may take place in the oral cavity; sometimes it implies disorders involving the entire body. Increased risk of developing oral candidiasis is associated with several factors including: established imunosuppression (disease of the primary cells implicated in modulation of the immune response), xerostomia, malignant tumours and therapy (chemotherapy, antibiotherapy, steroid therapy) or iron deficiency anaemia.

MATERIAL AND METHODS

Our study covers a period of 6 years and analyses a number of 117 patients diagnosed with HIV infection or AIDS associated with various oral pathology. The study aims to identify characteristics related to the incidence of the disease and biological, clinical and therapeutic aspects which could offer information towards the overall prognosis, therapeutic response and evolution of the disease.

Over the period of study, we followed:

-particularities of the patient group studied, analysis of the early clinical symptoms, the correlation to the disease stage with reference to specific oral symptomatollogy.

-the relation between specific clinical and haemato-immunological particularities in different forms and stages of the disease.

-the identification of clinical and therapeutic factors with prognostic value in a unitary analysis of the evolution and response to therapy.

Patients considered eligible for the study:

- serological diagnosis (ELISA confirmed WESTERN-BLOT) was infection with HIV
- absence of history and/or clinical signs of oral, oesophageal candidiasis and absence

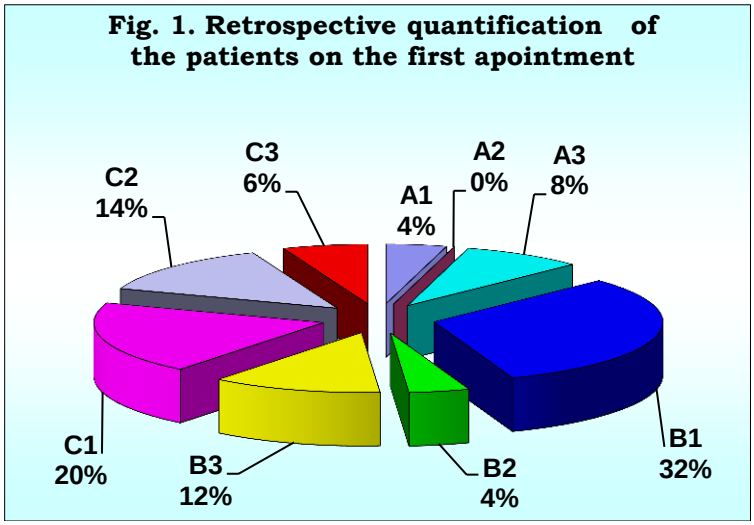
of anti-fungal treatment at least 3 months prior to present examination.
-with oral pathology encompassing HIV infection
Patients excluded from the study:
-HIV infection without associated oral pathology
-which were associated with other immunological and/or haematological pathology
-with high risk of death
Evaluation of initial diagnosis was followed by compulsory complete anamnesis, motives for presentation, complete objective clinical examinations, and biological and imagistic paraclinical examinations. Immunological markers (total lymphocyte and beta 2 micro-globulin) or viral markers (HIV p24 core antigen) were also used to monitor HIV infection and response to antiretroviral therapy.
The associated oral pathology was monitored by an examination of all patients keeping in line with strict clinical protocols of classification and identification of diagnostic criteria for oral lesions based on recommendations of "EC-Clearinghouse on Oral Problems Related to HIV Infection and WHO Collaborating Centre on Oral Manifestations of the Immunodeficiency Virus".

RESULTS

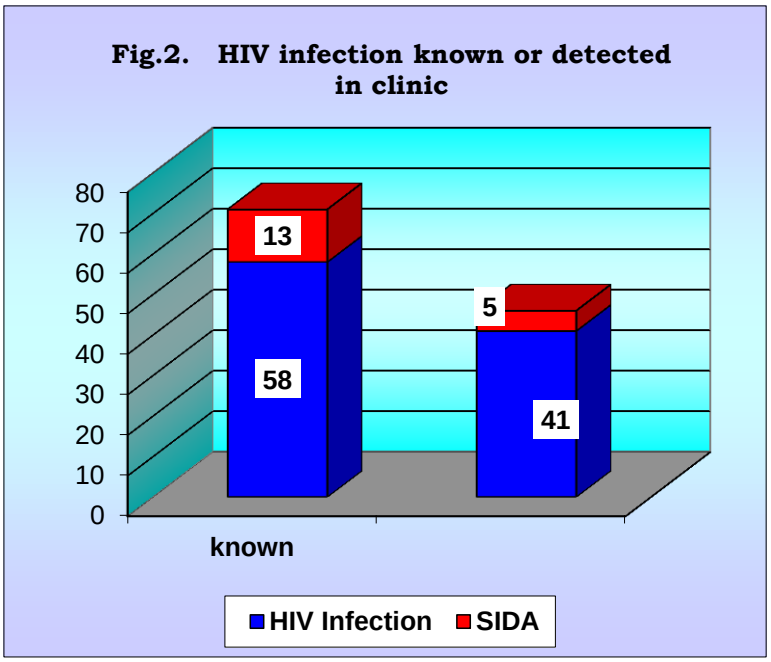
From the total number of patients studied (117 HIV infected), 71 presented signs of low grade or moderate disease (stage A and B-table I), while 46 were classified in final stage of HIV infection (AIDS) (fig. 1)

Table I

Clinical category	Nr. of cases
A1	5
A2	0
A3	10
B1	37
B2	5
B3	14
C1	23
C2	16
C3	7



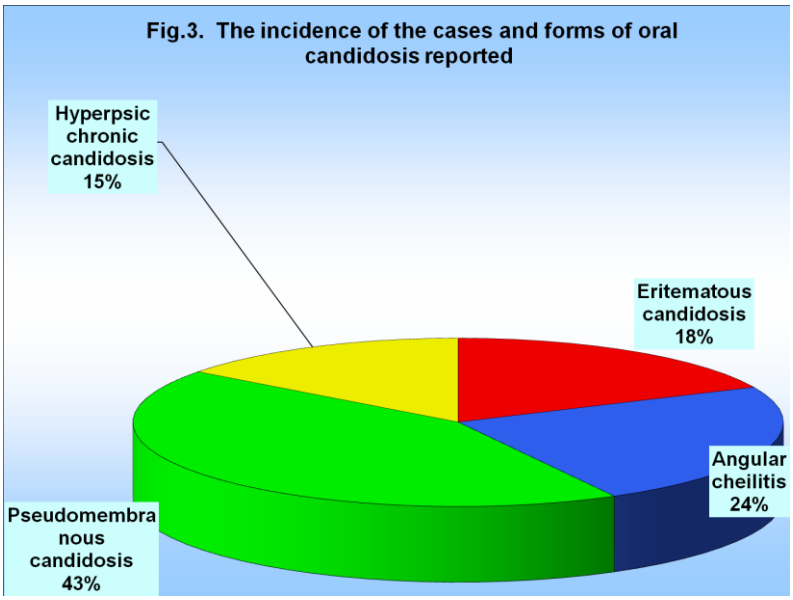
A number of 18 patients were diagnosed as HIV positive on presentation in the out-patient department for various oral affections (5 of whom were in final stage AIDS) (fig.2)
Oropharyngian candidiasis was the most frequent lesion found in HIV infected patients. The diagnosis (isolated or recurrent) was made in a number of 88 patients (75,2%). Systemic candidiasis (Candidemia) and fungemia was found in one single patient only.
In approximately 50% of the cases (over a median of 3-5 years) one or several episodes of oral candidiasis were observed. The presence of oral fungal lesions represented the early symptoms that lead to initial diagnosis of AIDS. Although it is not a pathognomic symptom, oral candidiasis, especially in chronic variation, multifocality, or when associated with esophagian candidiasis, was suggestive of AIDS diagnosis, with completion of the clinical pattern developing in the following months.

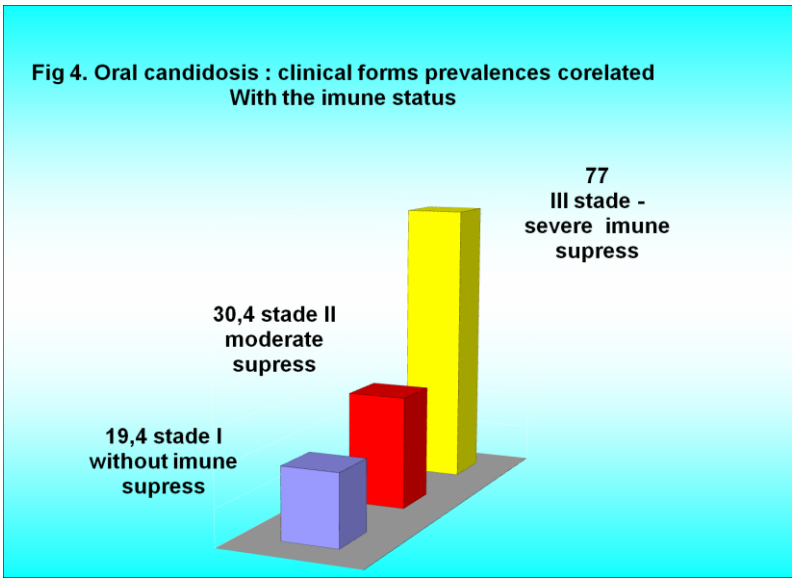


The following anatomic-clinical forms of candidiasis were encountered: erythematous, pseudomembranous, hyperplasic and angular cheilitis. Table II and fig. 3 present the incidence of cases with candidiasis:

Table 1I

Incidence and forms of oral candidiasis reported in the investigated patients	
Erythematous Candidiasis (atrophic)	16
Angular cheilitis	21
Pseudomembranous Candidiasis	38
Chronic hyperplasic Candidiasis	13





Patient inclusion criteria followed CDC 1994 protocols, with the mention that once a patient was classified as being HIV positive, he can no longer be reclassified in any other clinic-immunological category, even if his clinical or immunological status is modified.

Prevalence of oral candidiasis depended on the clinical stage of the patient as follows:
-stage I (without immunosuppression) – predominantly angular cheilitis registered in 19,4% of the cases
-stage II (moderate suppression) – predominantly erythematous candidiasis - 30,4% of the patients
-stage III (severe imunosuppression) – predominantly pseudomembranous form - 77% patients.(fig.4)
Table III presents the relation between the immune status and oral candidiasis in 84 patients (immunological status was monitored over a period of +/- 3 months after initial diagnosis was made).

Table III

Oral mucosa	LyT CD4/mmc	LyT CD8/mmc	CD4/ CD8
Normal mucous (24 cases)	540	1100	0,50
Erythematous candidiasis (40 cases)	320	790	0,40
Pseudomembranous candidiasis (20 cases)	220	840	0,26

1) *Acute erythematous candidiasis (atrophic)*
All patients presented a mild sensation of discomfort or burning; in 20 cases it was not reported as subjective complaints. The lesions presented in the form of an erythematous area (with varying colour intensity), having a preference to appear at the palate or dorsal part of the tongue. Occasionally, lesion of the tongue and the internal aspect of the lips were covered with a fine white-creamy non-adherent film.
Considering all these aspects the clinician should carefully examine the oral mucosa of the infected patient in order to diagnose and treat different forms of oral candidiasis, starting in the early stages when possible. In 28 cases, erythematous candidiasis preceded the

pseudomembranous form. Diagnosis was confirmed in 15 cases, by the presence of *Candida spp* in cultures with Saburaund media; another criterion was positive response to antimicotic treatment.

The clinical form described in literature „median rhomboid glossitis" was observed in 7 cases, as an area of soft, red depapilation, followed by transformation into a rusty, lobulated induration. Form and dimensions varied, but the most frequently encountered was an area of well demarked, 1/1, 25 cm oval or rhomboid shaped lesion on the posterior 1/3 and dorsal aspect of the tongue.

2) Pseudomembranous Candidiasis

Subjectively, patients complained of dry mouth, burning sensation, dysphagia and hyper-salivation. Other complaints included pain, sensation of tension in the affected mucosa, and altered gustation. Clinical examination showed the presence of papules or yellowish/white plaques (of a creamy consistency, non-adherent and easily removed by minimal pressure), covering the erythematous surface as an isolated or multifocal layer. Petechial or isolated erythematous puntiform elements were observed occasionally after debridgement of the white deposits. In general, the localisation of these lesions did not present a tropism towards a specific area of the oropharynx (oral mucosa, in the oropharynx, margins of the ventral aspect of the tongue, palatine mucosa).

Some of the lesions had a sudden debut (acute pseudomembranous candidiasis), usually after antibiotherapy; others had a slow, delayed evolution (chronic pseudomembranous candidiasis) which was observed in the majority of HIV positive patients.

Current diagnostic criteria include clinical aspect and positive response to anti-fungal therapy. Histological examination was possible only in a limited number of cases (35 patients). Microscopic examination, with Gram staining, showed the presence of fungi (pseudohypha, spores) in pseudomembranous deposits made up from desquamated keratinocytes, keratin, inflammatory cells, bacteria and fibrin. Biopsy examination revealed a hyperplasic epithelium, inflamed, infiltrated with polynuclear neutrophils, fungal hypha penetrating epithelial basal cells from the surface inwards deeply. In the lamina propria, a lymphoplasmocytic infiltrate was found. In specific stains - H-E, PAS and silver impregnation, fungal hyphae were remarked, with typical „bamboo stick" aspect. From the 98, oral gavaj before and after antimicotic treatment, from the 35 patients, the following biotypes of Candida were isolated:*C. albicans (*66%*), C. krusei (*12%), *C. torulopsis glabrata (*16, 5%), *C. tropicalis (*4%) and *Geotrichum candidum (*1, 5%).

C. albicans was isolated in over 75% of the patients after treatment with ketoconazol. In 10 patients with recurrent oral candidiasis, several biotypes were isolated.

There was no correlation observed between the different biotypes of *C. albicans* and the clinical picture of the oral lesions, stages of HIV infection or the number of CD4 cells. In reference to the different biotypes identified between different episodes, a conclusion could not be drawn as to the reappearance of the lesion as an effect of exogenous reinfection or relapse (through modification of the same stem).

Data obtained from literature reports the last possibility without having justified the pathogenic mechanism; alternation of the different biotypes could be in fact a different phenotype expression of the same fungal genotype. These phenotype variations could possibly be due to modifications in the local immune response, physiochemical variations induced by therapy or even ecological oral variations. The differential diagnosis was made with all possible white lesions of the oral mucosa.

3) Chronic Hyperplasic Candidiasis

Also named *Candida* leukolpakia,it is the rarest form and also the most controversial. Some authors consider it as being a candidiasis superimposed over a pre-existing leucoplasic plaque, but it has been demonstrated that a fungus can on its own induce hyperplasic lesions at the level of the oral mucosa.

It was represented in 5 patients under the form of a plaque with variable thickness, an irregular aspect, surrounded by an erythematous area, situated on the dorsal surface of the tongue or on the superior or inferior labial mucosa. Their removal by debridgement was not possible, persisting up to 1-2 years. In 3 patients this was associated with angular cheilitis.In 12 patients, multiple Candida lesions were discovered as being *chronic multifocal candidiasis.*In one case, the leucoplasic area was in intimate contact with zones of red colouring, constituting *spotted leucoplasia*, a situation where it was clinically differentiated from erythroleucoplasia, and which, from the microscopic point of view, presented frequent displasic lesions. The diagnosis was confirmed microscopically, demonstrating fungal hypha infiltrating epithelial hyperplasia and also by therapeutic tests- complete resolution under antifungal treatment.

4) Angular cheilitis

Subjective symptoms frequently encountered were sensation of dryness and burning at the level of the lips, associated with impossibility to consume hot or spiced foodstuff.

It has been described under the form of an erythematous area, fissured and covered by crusts, situated at the level of the labial commisures. The surrounding tissue is sheared. The majority of the patients have bilateral lesions, training discomfort and pain on opening the mouth, thus limiting normal oral function.Diagnosis is confirmed by presence of fungus (hypha and blastosporea) from oral prelevations and favourable results to antifungal therapy.

In the study group were isolated *C. albicans* (20% of cases), or associated with *Staphylococcus aureus* (60% of cases), while the rest 20% had just *Staphylococcus aureus.* Pathogenesis of the affection is not sufficiently known and is probably due to the frequent damping of the labial mucosa (due to xerostomia) which permits the micro-organism access to superficial plans of the labial epithelium, accompanied by their desquamation.

In the majority of the patients, the process of localized inflammation at the labial commisures was associated with atrophic or membranous candidiasis, with different localizations.

In the absence of suggestive lesions, and in conditions of suspected candidiasis, the use of quantitative culture from undiluted saliva or from oral gavaj was implemented

DISCUSSIONS

Oral Candidiasis is one of the clinical indicators of the development and progression of infection with the human immunodeficiency virus. The development of this pathology, without a local cause (xerostomia, antibiotherapy, corticotherapy) has to suggest an HIV infection. Our research has proven a close correlation between oral candidiasis after T lymphocyte depletion, with the report of CD4/CD8 and with laboratory and clinical markers of HIV progression.The study has proven that the presence of oral lesions has been in close concordance with the value of biological test results (absolute number of lymphocytes, beta 2 microglobulin, IgA). This correlation (even in the absence of determining CD4 lymphocytes) has imposed an attitude of prophylaxis of HIV infection in asymptomatic patients, with modified biological tests only.Atrophic Candidiasis precedes the pseudomembranous form in the case of HIV infection and appears early in the

disease. No significant statistical correlations were found between the presence of atrophic candidiasis and the low CD4 count (p=0, 68) or AIDS (p=0, 81). The pseudomembranous form is most frequently encountered in patients with AIDS and had a significant statistical association with CD4 lymphocyte count under 200 cells/mm3, appearing frequently in the final stages B3, C1, 2, 3 of HIV infection. Angular cheilitis constitutes a candidic associated manifestation of HIV infection which, in our study, demonstrates a severe immunodeficiency.Keeping in mind the possibility of an asymptomatic evolution of candidiasis, the clinician should carefully examine the oral mucosa of the infected patient and thus be able to diagnose and treat the different forms of candidiasis in its early stages. Patients without oral candidiasis have had a better prognosis as compared to those with clinical forms of candidiasis. Thus we have established the prognostic value of oral manifestations of candidiasis, as a marker of evolution in AIDS. Esophageal candidiasis appeared later, in a case with advanced immune deficiency representing a criterion for diagnosing AIDS (over 20% of cases).There were no observations made between AIDS related deaths for different types of oral candidiasis.

CONCLUSIONS

Oral manifestations should be considered as clinical signs of HIV infection and as an objective indicator of disease progression. In this context, oral candidiasis is one of the early clinical indicators of infection and its severity. The pseudomembranous form and the atrophic form of candidiasis are markers of HIV, highly predictive for the further development of AIDS.

Oropharyngian candidiasis has been associated with other markers of prognosis: reduction of CD4 lymphocytes, therapy with anti-retroviral agents and evolution of the disease AIDS. Furthermore, for patients with AIDS, oral candidiasis has been a pre-monitor marker for esophageal candidiasis.

The ability to recognise the predictors of HIV progression may step up the decision in administration of early protection for HIV infected individuals. Dentists can play an important role in the detection of symptoms associated with HIV/AIDS and can considerably improve the quality of life for these patients.

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AESTHETIC GOALS IN PORCELAIN FUSED TO METAL REHABILITATION

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***Abstract*:**
Purpose. The ultimate goal for ceramic fused to metal restoration is the creation of a perfect aesthetic integration of the restoration with healthy tissues.
Material and method. The study included a group of twenty-one patients. Sixteen of them were partial edentulous patients and five presented dental lesions or chromatic modifications of the dental tissues. The treatment plan was represented by metal-ceramic crowns and bridges. The ceramic system used was Vintage Halo (Shofu).
Results. According to the patient's age, to the topography of the missing teeth or to the colour modification, we especially surveyed the aesthetic rehabilitation creating the specific morphological elements, in order to realise an individual natural aspect with a similar behaviour for the reflection of the light as the dental enamel.
Conclusions. The current popularity of metal-ceramic restorations is primarily related to their predictable strength achieved with reasonable aesthetics. The main parameters that are responsible for a high-quality result are represented by: non-invasive, reversible procedures, conservative preparations, individual function offered by an individualized reconstruction, gnathological concepts into the occlusal rehabilitation, biocompatible materials, longevity of the reconstruction and comfort for the patient.

Key words: aesthetic rehabilitation, shade determination, metal-ceramic restorations

INTRODUCTION

The aesthetic rehabilitation represents an important clinical goal of the prosthetic therapy. The aesthetic reasons often are the main factor for the treatment demands. To get a perfectly integrated rehabilitation, the dentist and the dental technician have to respect the specific conditions of the clinical case, to realize an appropriate design, to make a gnathologycal preparation of the abutment teeth, to preserve and to rehabilitate the occlusion and to use biocompatible dental materials, corresponding from the aesthetic point of view (Patrascu 2002, Dailey 2003).

MATERIAL AND METHOD

The study included a group of twenty-one patients. Sixteen of them were partial edentulous patients and five presented dental lesions or chromatic modifications of the dental tissues.

The treatment plan was represented by metal-ceramic crowns and bridges. The amount of tooth reduction should never be based on the existing tooth surface, but rather on the final volume of the restoration. The final preparation should not have undercuts, so that a precise impression can be taken and the restoration can be correctly placed during cementation. A precision impression with polyether or a polyvinyl-siloxane material was taken.

The spatial orientation and architectural dimensions of a wax-up were used to pre-design and validate the intended preparations for the teeth involved. The properly made diagnostic provisional provides a means of transferring the three-dimensional changes-planned with the patient through the aesthetic and functional analysis and captured in the diagnostic wax-up into the patient's mouth. After the wax pattern realisation, the metallic framework was cast from a non-precious chrome-cobalt dental alloy (Remanium CS/Dentaurum/Germany containing Ni 61%, Cr 26%, Si 5% Mo11%, S-Fe-Co-Al lower than 1%), selected for its strength, rigidity and high flexural strength. To enhance the link between metallic

infrastructure and the aesthetic component, the framework was sandblasted with 50µm Al_2O_3.
The opaque layer was applied with the spray-on technique according to the manufacturer's directions. The layer thickness must be equal to 0,2mm and it will be burned at 970-980°C, during 6 minutes, in vacuum. The main advantages of this technique are represented by a shorter working time, low cost and a homogenous, thin opaque layer. After the application of the opaque layer, the porcelain element was realized using the Vintage Halo Kit.
Achieving a shade match with a ceramic restoration continues to be problematic for the restorative dentist, even with increased knowledge of colour science.
Shade determination and communication are made difficult and demanding because of the limitations imposed by conventional manufactured shade guides. Conventional guides do not cover the shade range of natural teeth, are inconsistent and do not correspond to the materials or thickness used in to the actual restorations. Many concepts attempt to improve the colour communication, however, and various colour standards are available from market leaders such as Vita Classic, Vita 3DMaster, Chromascop and VITA Easyshade (fig.1)

Fig.1. Classic and modern shade system determination

The standard for visual shade determination was established by Sproull as a result of his investigations:
- shade guides present a different stratification than do natural teeth
- the material of which shade guides are made does not correspond to the restorative material. This leads to metamerism when reproducing colour
- there is no logical organization of the hues of natural teeth in the current shade guides
The ability to visualize the hue, chroma and value of an unfired ceramic element allows the clinician more precise control of shade determination, communication and realization.
The corresponding build up during the ceramic layering procedure requires appropriately colour-intensive ceramic powders that do not lose their effect when covered later with enamel and transparent ceramics. The incisal and transparent powders have to avoid a high grey value.
Final contouring is accomplished with diamond rotary instruments and the restoration is glazed in a furnace. The low backing temperature of the opaque dentin and cervical powders provides a particularly periodontium-friendly, homogenous surface. Areas that will be in contact with the opposing natural dentition and by–passing areas between lobes are controlled by polishing with rubber wheels.
The main parameters that are responsible for a high-quality result are represented by: non-invasive, reversible procedures, conservative preparations, individual function offered by an individualized reconstruction, gnathological concepts into the occlusal rehabilitation, biocompatible

materials, longevity of the reconstruction and comfort for the patient.

RESULTS AND DISCUSSIONS

The transition from the preoperative condition to an ideal and acceptable restorative outcome is complex. The active participation of two partners - the clinician and the patient, inevitably compounds subjectivity by requiring mutual agreement on the nature of the aesthetic problem and the approach to treating it.

According to the patient's age, to the topography of the missing teeth or to the colour modification, we especially surveyed the aesthetic rehabilitation creating the specific morphological elements, in order to realise an individual natural aspect with a similar behaviour for the reflection of the light as the dental enamel.

A particular aspect is looking to the embrasure spaces adjacent to the abutment teeth, that should be open to allow room for interproximal tissue and access for oral hygiene [Kataoke] (fig.2). Conversely, the embrasure space between two adjacent elements of the pontic should be close enough to reduce food and plaque accumulation as long as it is aesthetically feasible.

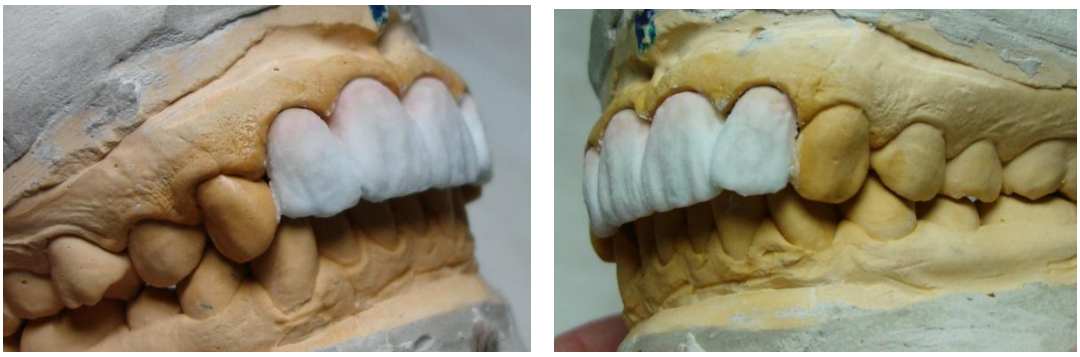

Fig.2. Cervical embrasures should be open to allow space for interdental papilla

The aesthetic rehabilitation with porcelain fused to metal crowns and bridges is conditioned by the natural aspect rehabilitation that depends on the perception, a concept that is not strictly defined, and that is conditioned by the internal dynamic of the interaction between the fluorescence and opalescence, by the conditions of illumination and the position of the observer (Dancy 2003, Gebhardt 2003). When we realize a ceramic fused to metal rehabilitation we have to survey the specific colour and the translucency of the ceramic layers according to the shape and relief, in order to get an optimal equilibrated prosthetic appliance with excellent aesthetics (Gurel 2003, Adolfi 2003). The focused light conduction of the ceramic layers that belong to the Vintage Halo system forms the basis for colour interplay of an aesthetic, high–value prosthetic rehabilitation. The optimal distribution of impacting light from the crown to the surrounding tissues assures the luminosity and vitality of the prosthetic appliance (Rufenacht 2000) The layering technique make possible to achieve the desired shade by additive applications of the powders. The opaque dentin and the dentin powders are provided to match the relevant shade tone (fig.3).

The translucence of the dentin powders promotes the colour effect from deeper layers as in the natural teeth. Under various spectra of light, natural tooth surfaces show a broad range of colours from pure blue to diffuse red-brown tones. The strong guiding effect of light becomes visible at the incisal edges and the enamel of natural teeth. To get a suitable strengthening depth effect on the cervical and proximal regions translucent cervical powders have to be used (fig.4).

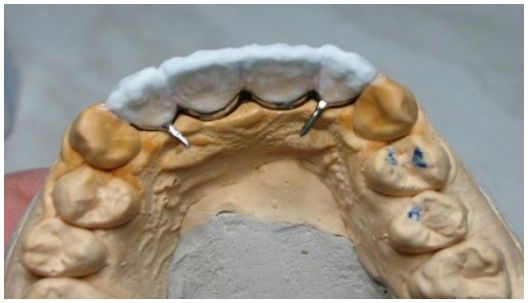

Fig.3. Application of the dentin powder

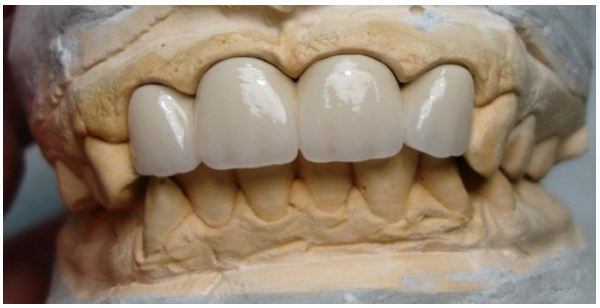

Fig.4. Final aspect of the aesthetic restoration

The use of pressed-to–metal technology for fabrication of conventional porcelain margins required a material of sufficient opacity to hide the opaque substructure, yet translucent enough to blend with the tooth margins. Sometimes a situation of diametrically opposing needs is created. If the restoration was pressed out of a material that was translucent enough to fulfill the marginal blending requirements, there was not enough opacity to hide the metal framework, and the opaque layer reflected through. On the other hand, if a material of sufficient opacity is used a slight lack of illumination it will be present at the margin (Muia 1994). An important evolutionary step consisted in the reduction of the amount of metal coverage located in the facial area of the restoration and the extension of the porcelain margins. This eliminates the need to hide the opaqued metal and allowed the use of more translucent pressing materials. The result will consists in a greatly improved gingival illumination, an increased vitality of the restored tooth and a better natural appearance (Ubassy 1994).

CONCLUSIONS

Aesthetic and functional parameters that have been identified during diagnosis may be verified, tested and adapted as needed in the definitive restoration. The restoration of the anterior arch is a continuous challenge between dentist and nature, the great potential of the new ceramics being very satisfactory.

The ultimate goal for ceramic fused to metal restoration is the creation of a perfect aesthetic integration of the restoration with healthy tissues. Fabricating a restoration that is in harmony with the remaining teeth and that express the coronal morphology and natural aspect, requires an understanding of the necessity of achieving this harmony with the adjacent teeth. Metal-ceramic bridges are suitable for long-span situation and can be used when higher stress resistance is required. However, their fabrication requires more tooth reduction and it may be more difficult to achieve a natural-appearing restoration. Replacing metal margins with porcelain ones greatly improves gingival illumination and enhances aesthetic results, but the amount of metal that can be removed up the axial wall of the prepared tooth is limited to the amount of powdered ceramic that can be accurately lifted from the die during the fabrication process.

The evolution of the patient's aesthetic expectations created new type of restoration that selectively uses metal where needed for strength and that eliminates it from the areas where it compromises aesthetics (metal encapsulated pressed-ceramic bridges), so that a large amount of clinical situations can be treated with high aesthetic results. The numerous choices increase the dentist's responsibilities, as it is not only the diagnosis and treatment planning that is important but also the communication between the members of the team involved as well as their performance.

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