Romanian Journal of Oral Rehabilitation

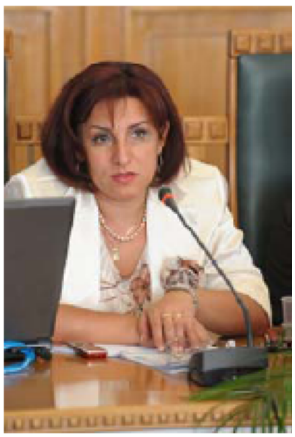
Vol. 1, No. 3, July 2009

Volum realizat în cadrul Casei Editoriale DEMIURG

CUPRINS

Vol. 1, No. 3, July 2009

FOREWORD



The oral rehabilitation represents that integrative concept which re-establishes every segment of the dental-jaw device that is affected by indentation in different clinical forms, without eluding the induced complications and the influence which the general status has within the chosen therapy algorithm.

The implant-prosthetic therapy, a stage of exactingness in the therapy solutions' field of the present dental medicine, tries to explain if the passing of the time deteriorates the ideal effect for this option, starting from the simplest solutions and ending up with those ideal and complex. A permanency remains in the field of possibilities and limits, the patient being in the middle of this circle, in the best of cases, being conscious of the possibility of applying the firm ideal solution of the treatment, dictated by the appeared deficiencies or pre-existing the diminishing of the emotional ground with the certainty of the therapy's solution choice.

In other cases, choosing the ideal solution can be made only under the impulse of external factors: the company, the working place etc. These patients are not convinced within themselves of the opportunity of the solution. The regret is that in critical situations represented by the general stage of affection, the patient's fear, disbelief, the restrained economic possibilities limit the variety of ideal solutions in this moment, which we hope that the future will be able to surpass – the reality becoming a paradigm.

Prof. Univ. Dr Norina Forna
The President of Romanian Society ofOral Rehabilitation

FACIAL ASSOCIATED TRAUMATISM

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SMPhU "N. Testemițanu".

Abstract: During 2008 the maxillofacial traumas have taken the second place among the inflammatory processes. The associated maxillofacial traumas represented 37.25% of total patients. Cranium cerebral traumas associated with the facial traumas represented 79.26% and traumas associated with alcoholism – 21.24%. The treatment of facial trauma is a period of 7 days in bed. On the first place are the mandible fractures that are followed by facial lesions, and the naso-ethmoid are placed on the third place. Complex zygomatic fractures are on the fourth place and the last place is taken by those of the upper jaw.
Key words: traumatism, mandible fractures, treatment, aggression

INTRODUCTION

Recently traumatism received the pandemic proportions, exceeding medical aspects and becoming a social problem. Traumatism represents an urgent relative frequency with a tendency to grow with time and with the important treatment problems because of the traumatism's complexity and possible complications (1-7).

Multiple, associated and combinative traumatisms differ in special gravity in the clinical aspect, connected with the serious deregulations of the vital functions of the organism, diagnostic difficulties, difficulties in treatment, major rate of disablement, increased lethality. Very often such lesions are connected with the traumatic shock, massive hemorrhages, deregulations of blood circulation and respiration, sometimes of the terminal stage.

Recovery of the deregulated forms and functions is the main goal in treating traumatism (1-7).

Object of work: The analysis of the facial associated traumatism during 2008 and the existing methods of treatment.

MATERIALS AND METHODS

In order to achieve the goal 193 patients with facial associated traumatism were examined and given treatment during 2008. For study material we have used the observation files from the department of oral and maxillofacial surgery of the National Scientific Practice Centre of Urgent Medicine in Chisinau.

RESULTS AND DISCUSSIONS

Over 63.73% of traumatized patients regard to the Chisinau district, 77.72% of them are males. The transportation of the patients with the ambulance car was registered in 39.37% of cases and independently addressing in 39.89%. Appointing the victims of the regional clinics was registered in 20.72% of cases, which indicates a low collaboration between the clinics and the Republican Centre of oral and maxillofacial surgery.

Aggression was the cause of trauma in 40.41% of cases (1st place), then comes falling – 26.42% and the 3rd place goes to road accidents (21.24%).

74.09% of victims addressed for help during the first 24 hours after the accident, 8.8% - on the second day, 5.18% - on the third day after the accident. 8.8% have addressed on the 5th and more days but for them the possibility of infection diffusion increases and the recuperation of such patients will be more constitutive with more modest results.

The accidents statistics according to the social status is the following: the 1st place with 50.77% get the workers, homeless people represent 25.9%, 3rd place occupy students and retirees – both 7%.

Repartition of the accidents with facial traumatism effects the following way: the 1st place goes to the fractures of the mandible and the lesions of soft tissues of the face. Mandible fractures have 45.52% of the facial associated traumatism. 3rd place is occupied by the fractures of the naso-ethmoid complex (24.35%). The fractures of the zygomatic-orbital complex was registered in ponderable 16% among which cases without displacement take 6.73%, with displacement – 8.8% and one case of open zygomatic arcade wasn't registered. The fractures of the upper jaw occupied the 5th place with 5.69%, among which LeFort II 3.1% and LeFort III 2.59%. The lesions of the facial soft tissues got the 2nd place with 45.52%, among which the isolated facial sores have 28.49%, multiple facial sores 10.88%, bruises of the facial soft tissues 4.14% and the facial haematoma 1.55%. The ratio between the fractures of the middle part and the mandible is 87 to 79.

The facial associated traumatism along with the cranium-cerebral traumatism was registered in 79.26% of cases and the cerebral bruise – in 1.55%. Ethyl intoxication in this period was registered in 21.24% of cases. Lesions of the thorax and extremities were registered in 11.39% of cases, lesions of articulations in 12.43% and lesions of abdomen in 2.07%.

Depending on the degree of the displacement of the fracture fragments and the deregulation of the functions of the maxillofacial area, tactics of treatment is decided: surgical or conservative.

At the moment, the treatment of the fractures without displacement is conservative. Patients with bone fractures with minimal displacement that don't lead to esthetic and functional deregulations are indicated in the cases of fractures of zygomatic complex, zygomatic arcade and naso-ethmoid complex. The fractions of upper and lower jaws are to be immobilized obligatory.

Medical treatment: antibiotics, analgetic, adrenomimetics, daily bandages and the evidence in patient's dynamics with radiologic examination in the dynamics in order to verify the recovery of deregulated forms and functions.

The methods of treatment applied to the patients with the fractures of the naso-ethmoid complex effected depending on the clinical form of the fracture. All the patients indicated medical treatment. Surgical treatment with reducing and fixing fractured fragments was given in 14.89% of the whole amount of patients with nasal traumatism. Traditional treatment includes: reduce the displaced fragments, apply antiseptic plugs inside the nasal area, to detent the fragments, and nasopharyngeal airway, to assure the nasal respiration. Nasal bone associated fractures with nasal sores effected the surgical handling of the sores according to well-known rules.

Treating malar fractures with displacement consists of reducing as cautiously as possible the displaced fragments. Fractures without displacement of the zygomatic-orbital complex were registered in 61.9% of malar fractures which indicated conservative treatment and the evidence in patient's dynamics. The goal of the surgical treatment is to recover the deregulated functions and to obtain the esthetic result. Fractures of the zygomatic complex with displacement were registerd in 80.95% of cases of malar fractures with reducing the fractures by the subzygomatic method of injecting the Limberg hook. The surgery technique is accessible but a postsurgical cicatrice remains on the face and this fact doesn't satisfy most of the patients, especially women. The osteosynthesis of the malar complex was registered in 1.55% of the cases. In 9.52% of cases of the open fracture of the zygomatic complex depending on the degree of displacement effected reducing, indicated conservative treatment in the case of the absence of the

displacement effected primary surgical handling of the sores according to well-known rules.

Orthopedic treatment used in the cases of maxillary fractures was registered in 69.38% of cases. At the moment, the priority in treating mandible fractures has a conservative method with the usage of the braces confected individually or prefabricated, applied on the dental arcade. In case of edentia the immobilization of the fractures after reducing is difficult or impossible. Braces applied on the dental arcade prove to be more of a disadvantage: the patient can't eat, can't effect the hygiene of the buccal cavities in corpore, difficulties in phonetics, deglutition, damaging the gingiva in some cases might cause infection. In spite of a number of disadvantages, the maxillary immobilization by means of braces is the most commonly used method at the moment because the technique of applying the braces is simple and cheap, with minimal costs. The presence of a number of sufficient antagonists on both arcades and the absence of the significant displacements of fractured fragments gives the usage of braces the 1st place in the treatment of maxillary fractures.

Surgical treatment is indicated for multiple maxillary fractures, partial and total edentia, comminuted fractures and others. Osteosynthesis assures a precise reposition and a stable fixation of the fragments of the maxillary fracture. The postsurgical intermaxillary immobilization is obligatory because it allows to detent the fragments in the reduced position and decreases the term of consolidation and forming of the osseous callus. Osteosynthesis with a metallic flap (15.3%) and miniplates with screws (13.26%) were applied to the patients with comminuted fractures, adentia and multiple fractures. An exact fixation and a calm postsurgical period make this method occupy an important place among the methods of surgical treatment.

Osteosynthesis through the exobuccal access, used more often, also has several disadvantages: dermic incision creates a postsurgical cicatrice, a traumatic surgery for the osseous tissues and for the soft tissues as well. That's why lately the priority in the surgical treatment via osteosynthesis is given to the endobuccal access. The open fractures may be with or without displacement. Depending on the kind of displacement a proper treatment is applied.

While treating the open fractures with displacement after the immobilization of the fractured fragments, independently of the way, surgical or orthopedical, the primary surgical handling of the sores is applied additionally. The primary surgical handling of the sores effects independently of the cause of traumatism and the time of addressing for help after the facial associated traumatism. The following are the steps of the surgical handling of the sores.

The steps of the surgical handling of the sores.

1. Preliminary handling of the operating field:
   - Alcohol for 3 times – skin
   - Antiseptic, K_2MnO_4; H_2O_2; - mucous coat
2. Isolating the operating field with sterile material
3. Anesthesia:
   - General anesthesia
   - Truncal peripheral anesthesia with premedications
4. Revision:
   - Hemostasis
   - Elimination of the foreign bodies
   - Reposition of the fractures
5. Suturing the strata:
   - Catgut – mucous coat
   - Atraumatic needle - skin
   - In case of the open fracture to reduce the fracture, suture mucous coat and then other tissues
6. Drainage system:
   - With drainage – superficial ones

- With tubes – profound ones

7. Filtering with antibiotics
8. Antitetanic serum
9. Simple compressive bandage

In plastic surgery the primordial importance goes to the way of closing the sores. The basic principles of closing the sores are the following: the margins of a sore can't be sutured in tension; traumatizing the tissue with the tool or the suture material must be minimal; suturing of the sore needs to be made apodactilly; synthetic materials are to be used more often as suture materials because they have a neutral correlation with the tissue.

Surgical treatment of the facial bones by means of osteosynthesis with the metallic flap occupied the 1st place with 15.3% followed by osteosynthesis with miniplates and screws – 13.26%.

CONCLUSIONS

1. Facial associated traumatism during 2008 made up 37.25%.
2. Treatment duration is 7 days.
3. The mandible fractures and soft tissues lesions of the face have equal proportions in facial associated traumatism.

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CERAMIC PROSTETHICS RESTAURATIONS - CLINICAL STUDY

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Abstract:
Purpose: This study seeks to create a systematic approach in choosing the right ceramic system according to the clinical situations.
Material and method: The clinical cases have been selected from the Ovidius University of Constanta, Faculty of Dentistry's Prosthetic Clinic: two male patients and three female patients, between ages of 20 and 44, presenting coronary lesions and small partial edentations that required aesthetical and morpho-functional restorations by fixed ceramic prostheses manufactured according to standard protocols.
Results: Following the choosing criteria for the ceramic system mainly suited to the clinical situation, led to obtainment of aesthetic and functional ceramic fixed prosthetics restorations, to the patients delight and satisfaction of the technician-dentist team.
Conclusions: Choosing the proper ceramic systems depends on the minute evaluation of the patient's occlusion, decisions taken favoring aesthetics, resistance, bonding requirements and parafunctional situations, than on a preferred system. Dentists will select ceramic crowns by using hierarchical approach.

Key words: full-ceramic, metal-ceramic, aesthetic, resistance.

INTRODUCTION

The completion of the ceramic restorations may be the most valuable, but also the most difficult part of dental prosthetics. Taking into consideration the large variety of ceramic systems, it is a real challenge for the practitioner choosing a certain system: metal-ceramic or full-ceramic. [1, 2, 3]

This article tries to present a systematic approach regarding the choice for the proper ceramic system according to the clinical situation.

MATERIALS AND METHOD

The clinical cases have been selected from the Ovidius University of Constanta, Faculty of Dentistry's Prosthetic Clinic: two male patients and three female patients, between ages of 20 and 44.

Clinical case 1: Patient A, B, male, age 20, student, comes to the Faculty of Dentistry's Prosthetic Clinic for the remake of the existing unaesthetic left-central incisor coronary-radicular restoration (fig.1). Therapeutically solution: a full-ceramic crown (Wieland pressed ceramics) on 21 because the aesthetical needs govern this case and parafunctional habits are not present (fig.2).

Clinical case 2: Patient S.L., age 40, male, has a partially fixed frontal acrylic crown that was old, worn out and with an altered color (fig.3). taking into consideration the area to be restored, frontal, and the fact that full-ceramic systems offer superior satisfactions than metal-ceramic systems, the choice was to create four full-ceramic crowns – 11, 12, 21, 22 (fig.4).

Clinical case 3: Patient M. P, age 33, female, presents a partial prosthesis treated 2 modifications 3rd Kennedy maxillary edentation' class. The chosen therapeutic procedure is a fixed metal-ceramic partial prosthesis in the front-lateral area – sustaining teeth 21,22,12,13,14,15,17; this is because in this case aesthetic and resistance have the first word; dental contacts are better to be done in metal rather than ceramic to lower the wear of the opposing natural teeth.(fig.5, 6).

Clinical case 4: Patient M. S, age 46, comes for aesthetical prosthetic rehabilitation in the lateral area of type III Kennedy maxillary and mandible edentations. Two partially metal-ceramic fixed prostheses were manufactured for the right maxillary and mandible lateral area with supporting teeth 13,15,43,45. This solution was based because this area requires both resistance and retention, but also aesthetics. Metal-ceramic restorations are the only one that can offer all of these. The ceramic used was VITA (fig.7, 8, 9, 10).

Clinical case 5: Patient G.A, age 44, had a maxillary type III Kennedy edentation and a 2 modifications mandibular type III Kennedy edentation. It was decided to manufacture of 3 VITA metal-ceramic fixed partial prosthesis with supporting teeth 13, 16, 43, 45, 47, 33, 34, 38, because the lateral area is a high stress functional area (fig.11, 12).

RESULTS

Following the choosing criteria for the ceramic system required by the clinical situation led to aesthetical and functional fixed ceramic prosthetic restorations, which brought numerous satisfactions both to the patient and to the technician-practician team.

DISCUSSIONS

Two myths roam regarding ceramic crowns:

I. The most important decision factor is resistance and

II. The most aesthetic are always full-ceramic crowns. [4, 5].

Resistance should not be the decisive factor in choosing a ceramic system [6, 7]. It is true, metal-ceramic crown tend to be more resistant than full-ceramic crowns, but the real problem is how much resistance is it really necessary?

Full-ceramic systems have a higher aesthetic grade than metal-ceramic; nevertheless, having the necessary space from the tooth preparation, skilled technicians can mimic natural teeth using a metal-ceramic system [8, 9].

The questions that we need to ask ourselves before deciding over the correct ceramic crown system are:

i. What are the aesthetic needs, mainly in the gingival third?

ii. What is the quality of the adhesive surface?

iii. How much resistance is it necessary?

iv. What is the patient's oclusal status? Does the patient have parafunctions? If yes, how severe are those?

After answering the questions regarding aesthetics and resistance, the adhesive surface and parafunctions, a hierarchical approach can be used to select the best ceramic restoration.

Selection starts with ceramic veneers and ends with metal-ceramic crowns. (the selection starts with ceramic veneers and ends with ceramo-metalic crowns).

The type for ceramic crown is chosen when the tooth matches all indications for that level, then, by adding supplementary criteria, a subtle choosing can be made.

CONCLUSIONS

- Choosing a ceramic system depends on the minute evaluation of the patient's occlusion [10], and decision is based more on aesthetical, resistance, bonding requirements and parafunctional considerations rather than a preferred system.
- Practitioners will use the hierarchical approach for ceramic crown selection and they will discover that for the same smile a wide range of ceramic materials can be used.
- The critical factor in maintaining in top shape the gum tissue is the correct evaluation of the fraction between crown's edge localization and the overcrest fiber attachment.
- The resistance form is the most important factor to be taken intro consideration in every restoration; the

functional success is based on the cylinder-cone shaped preparation with a minimal cone angle of 10-12 degreed, on the height, diameter and cement type.

Fig.1. Preoperative clinical aspect

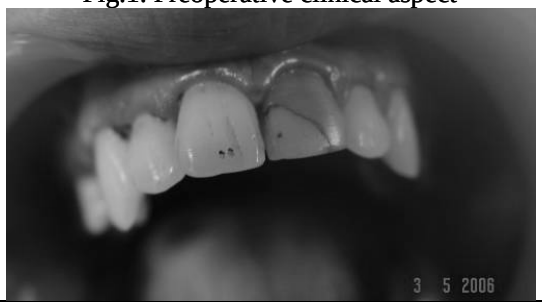


Fig.2. Full-ceramic crown (21)

Fig.3. 12, 11, 21, 22 – Preoperative aspect

Fig.4. Final clinical aspect

Fig.5. Preoperative image

Fig.6. The prosthetic restoration

Fig.7. Preoperative image

Fig.8. Metallic frame try-out

Fig.9. Try-out on model of metal-ceramic prostheses

Fig.10. Final clinical result

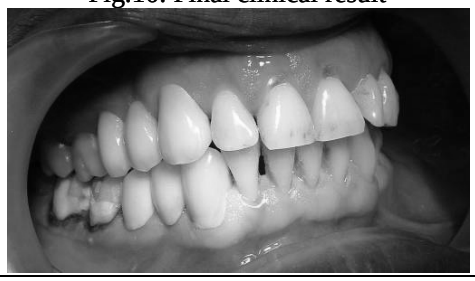
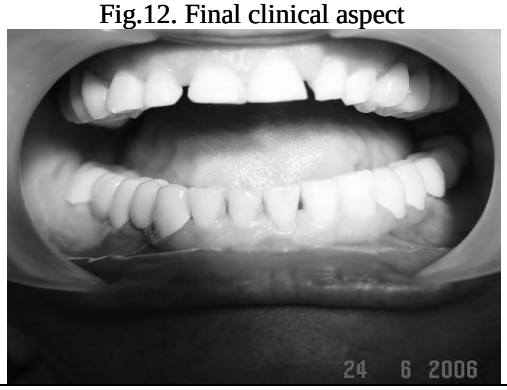


Fig.11. Initial clinical aspect

Fig.12. Final clinical aspect



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CHILD PHYSICAL ABUSE FROM THE PERSPECTIVE OF PEDIATRIC DENTISTRY

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Abstract: Child physical abuse is a complex problem, of great topical interest, a severe social problem, with direct implications on the dento-somato-facial harmony and on the psycho-mental and intellectual development of the child.
Aim. To highlight the oro-maxillo-facial signs of physical abuse and the role of the pediatric dentists in identifying and evaluating this signs of physical abuse.
Material and Method. The study was carried out on a sample of 299 abused subjects (218 boys and 81 girls) aged between 6-18 y.o. from Iasi rural and urban area. The data were analyzed and statistically processed and the results were synthesized with the help of a descriptive and correlative study.
Results. The physical abuse has serious consequences in oro-dento-facial area, that consists especially in soft tissue lesions – 62.11%, dento-periodontal trauma (fractures, luxations, concussions, avulsions) – 19.47%, mandible fractures – 7.89% facial massif fractures – 7.89% and temporo-mandibular joint lesions - 2.63%.
Conclusion. Pediatric dentist should to be legally qualified and morally entitled to report to report when s/he suspects any physical abuse against the child.

Key words: child, physical abuse, pediatric dentist.

INTRODUCTION

Child physical abuse is a complex highly topical issue, a serious social problem that has direct implications on the dental, somatic and facial harmony and over the psycho-mental and intellectual development of the child and the adult he will become.

Analyzing the data from the specialized literature regarding the psychical, mental and behavioral evolution of the child, from birth to teenage, and the determining pre-and post-natal circumstances, it was ascertained that one of the factors that may disturb variably the normal development, is child abuse and neglect [1]. Kempe W. and col. (1962) introduced in the specialized medical literature the notion "*syndrome of the beaten child*", and Elerstein states that "*child abuse causes more physical and psychological morbidity than most child diseases*."

Health Canada defines child abuse as any maltreatment enforced by a parent, guardian, caretaker or any other person onto a child that results in hitting or traumatizing emotionally or psychically the child. Physical abuse is the most frequent form of abuse and the easiest form to notice by the dentist, due to the prevailing location of lesions (over 50%) [2, 3, 4, 5] on the cephalic extremity, on the orofacial soft parts, on the facial massive bone, on the dental and periodontal units, mandible etc.

Specialized studies show that in Great Britain, every year at least 1 child out of 1000 (under 4 years old) is a victim of violence, while in the United States and in Canada 47 children out of 1000 are physically abused.

Dentists should be aware that physical abuse involves in more than half of the cases (65%) (Becker and col. 1978, daFonseca and col.1992, Jesse, 1995), manifestations in the mouth and on the head (i.e. bleeding of the face skin, excoriations, dental fractures, dental-alveolar fractures, lesions of the lip, gum,

mandible fractures) that may provide clues as to the time of the abuse, its nature or the identity of the aggressor.

The aim of this study is to outline the orofacial manifestations of the physical abuse of the child and to emphasize the important part played by the pediatric dentists in identification and correct assessment of these signs and in reporting the various child abuse forms.

MATERIAL AND METHOD

This paper is an integrative part of a longitudinal study on the medical legal aspects of oro-facial and dento-periodontal traumas of the child and the teenager. The study was conducted on a group of 299 subjects (218 boys, 81 girls), aged between 6 and 18 year old, from the urban and the rural environment of Iasi county, that were referred to the Service of Forensic Medicine in the Polyclinic no.1 of Iasi. The distribution of subjects per sexes and environments of origin are shown in fig.1 and fig.2.

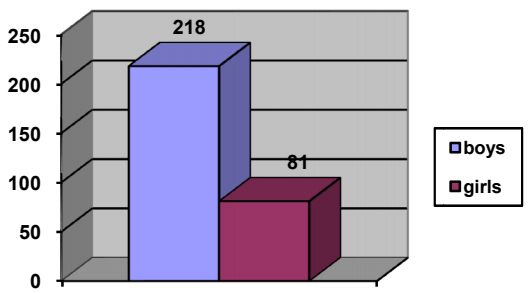

Fig. 1 Distribution of subjects per sexes and origin environment

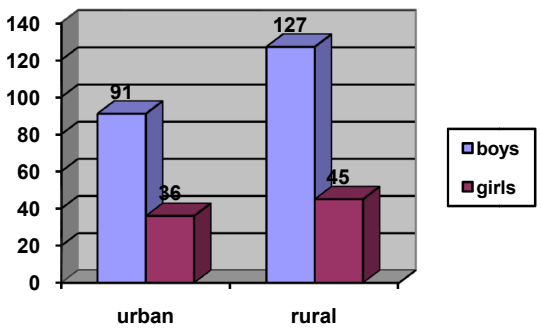

Fig. 2 Distribution of subjects per origin environment

The data (number of traumas, etiology of the trauma, type of orofacial traumatic lesion, type of odonto-periodontal lesion and so on) obtained from all legal medical certificates were statistically analyzed and processed and the results were synthesized by means of a descriptive and correlative study.

RESULTS AND DISCUSSIONS

It was ascertained an alarming rate of cases of oro-facial traumas produced via physical abuse, compared to other cases (car crashes, rapes) (fig.3), and their prevalence at the age stage 13 to 18 years (table 1), which suggests a higher rate of oro-facial traumatic lesions at this age stage in comparison to other age stages, data comparable with those in the specialized literature [2, 6].

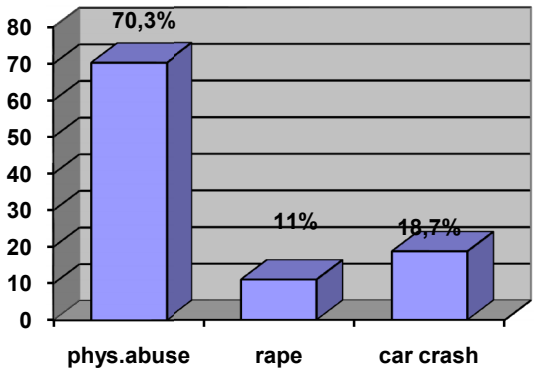

Fig. 3 Etiology of orofacial traumas

Age	6-12 years	13-18 years
Etiology	Physical abuse	Physical abuse
Number of subjects	15.05% (45 subjects)	84.95% (254 subjects)

Table I. - Distribution of subjects per age stages

Child abuse has major consequences in the oro-facial area, which consisted generally in lesions of soft tissues (contusions and ecchymoses, bites) - 62.11%, dento-periodontal traumas (fractures, dislocations, conccusions, avulsions and so on) – 19.47%, mandible fractures – 7.89%, fractures of the facial massive bone – 7.89% and lesions of ATM – 2.63% (fig5). It was ascertained that in comparison to other types of lesions, dental fractures were at a higher rate – 49%, and as to the topography of the dento-periodontal traumas, they were prevailingly located at the level of the central incisors – 74%.

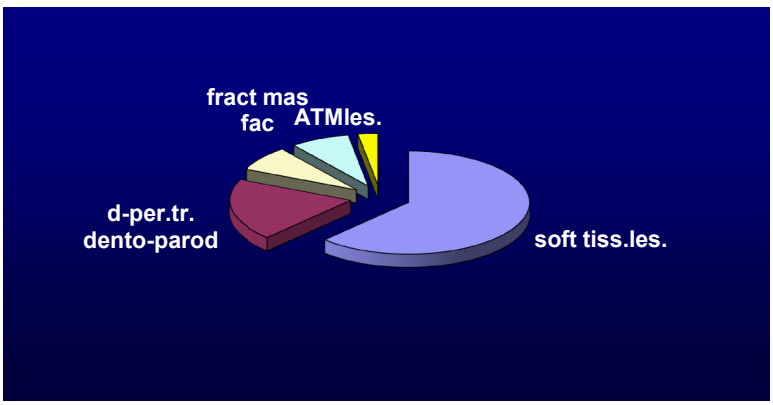

Fig. 5 Distribution of the lesion type on the orofacial area

We may say that it is highly necessary to make a minute extra and extra oral examination in all cases that the dentist suspects or believes are child abuse cases. Some authors [7] consider the oral cavity as being a target of the physical abuse because of its significance and role in ensuring important functions, such as communication or nutrition.

All pediatric dentists should know how to recognize the signs and symptoms of child abuse and to be aware of the laws

which requires them to report such cases to the authorities, because the timely recognition of such a problem leads to taking effective intervention measures, beneficial on the short, medium and long term, if we consider that most of the times these children are subject both to physical abuse and to the emotional abuse, as they live in fear, they lack confidence in themselves and have no self-respect.

CONCLUSIONS

It is required a holistic approach of child health and social work for the child, with the true involvement of all the decision-makers. As most then half the lesions resulting from physical abuse are located in the orofacial area, pediatric dentists have the moral and ethic obligation to report child abuse that they see in their dental practices. The pediatric dentists should be legally habilitated and morally entitled to report to competent authorities that they suspect any child abuse, as this is a complex issue with multiple legal-medical and psychological-behavioral implications.

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RELEVANCE OF PRIMARY MOLARS IN DEVELOPMENT OF OCCLUSION IN MIXED DENTITION

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Abstract: The term "infraocclusion" describes a tooth that lies below the occlusal plane. The infraocclusion is a common eruption disturbance, which constitutes a major clinical problem. It is reported that the prevalence of children with infra-occluded primary molars in the various population ranges from 1.3% to 38.5%. Infra-occluded teeth could have a high potential to malocclusion. In the literature, complications of infraoccluded primary molars were stated as tipping of the neighboring teeth, loss of space, extreme eruption of the antagonist, posterior open bite and rotations in the successor teeth. In the present study, we described a case that presents all temporary molars in infraocclusion and its evolution during a period of surveillance of three years.

Key words: infraocclusion, primary molars, ankylosis.

INTRODUCTION

Infraocclusion is a condition, which has its origin in tooth ankylosis or dento-alveolar ankylosis. The vertical growth of the affected tooth is inhibited and it fails to reach the occlusal level of the surrounding teeth. The range of prevalence of infraocclusion is very wide, in generally between 1.3 and 38.5% [1].

Ankylosis of deciduous molars has been routinely found to be associated with various developmental disturbances in permanent dentition such as aplasia of the succedaneous tooth, ectopic eruption of the premolar, infraocclusion of the ankylosed tooth leading to tipping of the first permanent molar etc.

Ankylosis is an anomaly where there is fusion of alveolar bone with cementum and / or dentin, which occurs either before or after tooth eruption. It occurs more commonly in molars, particularly mandibular second primary molar. The exact cause of ankylosis is still unknown, although factors like genetic tendency, traumatic injury to the bone and periodontal ligament, deficient local vertical bone growth, disturbance in local metabolism and local inflammation have been suggested [3, 6]. Clinically, ankylosed primary molars often present with infraocclusion, as due to ankylosis the primary molars remain in fixed occlusal level while the neighbouring teeth erupt continuously due to vertical growth of alveolar bone.

The degree of infraocclusion can be from mild to severe. Depending on the degree of infraocclusion, the occlusion and the position of the tooth germ could be affected. Infra-occluded teeth could have a high potential to malocclusion [2].

Here is a report of a case with ankylosis of the all-deciduous molars, both maxillary and mandibles, associated with crossbite of 1.1 and 1.2 and laterally protrusive syndrome.

MATERIAL AND METHODS

A girl of 6 years old referred to the Department of Paediatric Dentistry Iasi presenting first temporary molars on the upper arch and first temporary molars on the lower arch in infraocclusion. The infraoccluded teeth were observed after clinical and radiographic examinations including orthopantomograph and periapical radiographs. The follow-up examinations also comprised clinical and radiographic examinations annually for a period of 3 years. The radiographs were evaluated for resorption and ankylosis of the infraoccluded teeth and comparisons were made with radiographs taken before.

Parameters assessed were degree of infraocclusion based on radiographs, altered position of adjacent and successor teeth. The degree of infraocclusion was

considered as mild, moderate or severe. Mild was described as occlusal surface located approximately 1 mm below the expected occlusal plane for the tooth. Moderate was described as occlusal surface approximately level with the contact point of one or both adjacent tooth surfaces. Severe was described as occlusal surfaces level with or below the interproximal gingival tissue of one or both adjacent tooth surfaces. Mobility test was performed by direct finger pressure

RESULTS

At the time of first examinations, the patient had 5.4, 6.4, 7.4, 7.5 and 8.4. The degree of infraocclusion was considered as mild for first deciduous molars (fig. 1). The therapeutic approach was to monitor the patient annually.

Fig. 1. Radiological aspect at 6 years old

After 3 years the orthopantomograph showed that infraocclusion had worsened in the both upper and lower regions and tipping of the neighboring teeth, especially first permanent molars on the lower arch (fig. 2).

Fig. 2. Radiological aspect at 6 years old

Orthopantomogram and clinical examination revealed that the degree of root resorption of the infraoccluded tooth was unchanged although the root of the permanent successor has developed, but a resorption was observed at the distal root of the symmetrical primary second molar.

Because of the infraoccluded temporary molars, the upper arch remained small, so 1.1 and 1.2 were in crossbite, and the patient presented also lateral protrusive syndrome on the both side, thus she needed orthodontic treatment for this time (fig. 3).

Fig. 3. Anterior crossbite and lateral protrusive syndrome

DISCUSSIONS

Infraocclusion is found from 3 years of age and prevalence of infraocclusion has been reported to reach a peak at ages from 6 to 11 years of age. It is also mentioned that the variations in the age could possibly be related not only to genetic predisposition to infraocclusion but also to the inception of this condition and the exfoliation time the infra-occluded tooth [4].

Infraocclusion of primary molars is usually found not to be sex linked. However, a more frequent occurrence in girls than in boys has been reported in some studies. Most investigations have reported that the primary second molars were most commonly found in infraocclusion. However, it has recently been reported that the primary first molars were more often found in infraocclusion. This difference is most probably due to the fact that mandibular primary first molars ankylose earlier, produce less infraocclusion and usually exfoliate on time, which means that they may go undetected [7]. In contrast, mandibular primary second molars produce more severe infraocclusion and a slight delay in the eruption of their successors. In children with more than 1 tooth affected, bilateral occurrence was reported to be more common.

The prognosis of ankylosed teeth has been found to be unpredictable. Extensive root resorption due to pressure from erupting adjacent tooth irrespective of whether the successor tooth is present or not has been reported. But significantly the rate of such resorption is slow.

Most infraoccluded primary molars showed progression of the infraocclusion. Negative effects on occlusal development were usually temporary and normal conditions were present after eruption of the permanent successors [5].

The general treatment recommendation is to await normal exfoliation of infraoccluded primary molars. Continuous supervision of occlusal development and periodic radiographic control of normal root resorption are recommended. Only in special cases (occlusal disturbances with severe tipping of neighboring teeth and space loss, malposition of the permanent successor preventing normal root resorption and severe infraocclusion etc.) is extraction necessary [8].

CONCLUSIONS

Infraocclusion is a common pathology, which is equally prevalent in both genders and is most frequently seen in patients with mixed dentition in the infant population studied.

It could be concluded that early diagnosis, correct treatment approach and follow-ups were the main factors of a successful treatment of infraoccluded primary molars.

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EXPERIMENTAL RESEARCHES ON FLUORESCENCE OF AESTHETIC DENTAL CORONAR RESTORATIONS

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Abstract: Introduction. The aesthetic dental coronary restorations are made-up by composite resins, compomers or non-metallic prostheses. Natural teeth are fluorescent, and so, the biomaterials used today are fluorescent, too. The determination of fluorescence for coronary restorations is useful in dental medicine and forensic medicine. **Material and method**. On a black cast of a maxillary arch there have been applied coronary restorations and fixed prostheses from some biomaterials frequently used today: Compafill A 1, Compafill C 3 (Wilde Dental, Germany), CeramX, Dyract extra, Quixfill (Dentsply DeTrey, Germany), Coltene (Whaledent, Germany), Degufill (Degussa, Germany), Concise (3M, USA), Superpont (Spofa Dental, Czech R.), Vita Akzent "sun kiss" ceramic material (Vita ZF., Germany). The fluorescence of these restorations was revealed in photos by the time of UV-A irradiations, than, the photos were comparatively examined from the point of view of intensity and fluorescence chromatics. Using the photometer appliance (fluorescent-photometer) assisted by a computer, realized by Professor Dr. Michael Bohnert, it was measured and graphic registered, the light-length and the intensity of light emitted on UV-A irradiation, thus, the fluorescence of each restoration from the black cast. **Results**. For each restoration made from such biomaterials, it was observed a particular fluorescence, characteristic. This characteristic was attested also by computerized determination of fluorescence reflected in specific curves. **Discussions.** In dental medicine, especially in dental prosthetics, it is necessary that restorations and fixed dental prostheses to have the same fluorescence as natural teeth. In forensic medicine, the specific fluorescence can offer an extra element to identify the unidentified bodies. **Conclusions**. The coronary dental restorations and fixed prostheses present a different fluorescence, corresponding to the biomaterial used. When there are used non-fluorescent biomaterials, they appear with a clear different chromatic aspect from natural teeth, in UV-radiation light, natural light and artificial light

Key words*:* coronary restorations, fluorescence, aesthetic biomaterials

INTRODUCTION

The aesthetic dental restorations are made-up from chemo-curing and light-curing biomaterials, acrylic resins and composite materials, ceramics or zirconium oxides materials by CAD-CAM technology, covered with „make-up" ceramics elements.

The mineral component of composite and ceramic biomaterials used today for aesthetic dental restorations, is fluorescent. Until the end of the last century, the necessity for fluorescence of aesthetic coronary restorations, aesthetic crowns and bridges, the artificial teeth of removable prostheses, fluorescence that exist at natural teeth, was ignored. Even now, the fluorescence of natural and artificial teeth is represented in iconographies of dental articles, as it appear at irradiation, the lamps which emitted UV radiations, but also, violet- and blue-light, which screens the real chromatic nuance of teeth fluorescence or of the biomaterials.

To determine the real chromatics of fluorescence for dental restorations from different aesthetic biomaterials, we used a special filter applied on the emitting lamp of UV radiations (UV-A) – "black lamp". Using a device to register the intensity and the wave-length of emitted light of the biomaterial after the UV irradiation, so, the fluorescence, represent a modern method to determine – objectively and exactly – the fluorescence of the biomaterial used.

The subjective, visual, assessment of the fluorescence of biomaterials for coronary restorations, is useful to restore the optimal aesthetic aspect in restorative therapy and dental prostheses, and the exactly determination of fluorescence for different biomaterials, became useful in forensic medicine, to identify the unidentified bodies.

MATERIAL AND METHOD

For the experimental research of the fluorescence of aesthetic dental coronary restorations, we used a hard stone cast of maxillary dental arch, where there were prepared different forms, similar with those of substructures used for occlusal restorations, coronary preparations and a vestibular preparation for laminate veneer.

The cast was introduced than in China ink to obtain a black, frosted, surface. On the black cast were applied the aesthetic biomaterials for coronary restorations or dental crowns: Compafill A-1 (hybrid composite, Wilde Dental, Germany), 1.7. occlusal restoration with CeramX (nanoceramic hybrid composite, Dentsply-DeTrey, Germany), 1.6. occlusal restoration with Dyract Extra (compomer, Dentsply-DeTrey, Germany), on 1.4. ceramic dental crown with Vita Akzent „sun kiss" AKZ-3 (Vita Zahn-Fabrik, Germany), on 1.3. substitution inlay-on lay (IOS) from Concise EBS (chemo-curing macro-composite, 3M Co., USA), on 1.2. aesthetic crown from thermo-curing acrylic resin Superpont (Spofa-Dental, Czech Republic), at 1.1. incisal and oral restorations with Miris (micro-composite, Coltene-Whale Dent, Germany), on 2.1. Cantilever dental bridge, with crown and distal extension from Degufill (micro-composite, Degussa, Germany), on 2.4. was applied a vestibular ceramic veneer (laminate) maked-up with Vita Akzent „sun kiss" AKZ-3 (Vita Zahn-Fabrik, Germany), 2.5. occlusal restoration with Quixfill (hybrid composite, Dentsply-DeTrey, Germany), 2.6. occlusal restoration with Clearfill (macro-composite, Kuraray, Japan), and at 2.8., integral occlusal restoration with Compafill C-3 (hybrid composite, Wilde Dental, Germany). The light-curing process was realised with a lamp with the emission of violet-indigo-blue light 400 nm – 470 nm, Optilux (Demetron, Kerr), without distal extension bridge made-up from micro-composite which was realised in the light-curing device in the dental lab: Lumamat 100 (Ivoclar, Liechtenstein)[1]. The black cast with aesthetic dental restorations was placed on a black-tray centred on the UV research table, from Forensic Medicine Institute, „A;bert-Ludwigs" University, Freiburg, Germany.

RESULTS

The emitting UV radiations tubes of the UV research table are equipped with a

standard filter, and the dental restorations appeared all with a blue fluorescence. By using the so-called "hand lamp" with UV radiation over which we applied a special filter, it can be observed the different nuances of different fluorescence of aesthetic biomaterials for coronary restorations[2].

There is a white-light blue fluorescence for occlusal restorations with Compafill on 1.8., 2.8., a deep blue for 1.7., 1.1., in case of CeramX and Miris restorations, and with an intermediary nuance for the bridge with distal extension from Degufill, a yellow-light green fluorescence for the artificial preparation with Concise EBS, a pink fluorescence for the ceramic crown and the laminate veneer with Vita Akzent „sun kiss", and the absence of fluorescence of aesthetic crown made-up from acrylic resin Superpont applied on 1.2..

The determination of fluorescence for different restorative biomaterials with the device called "fluorescence-photometer" assisted by a computer, designed by Prof Dr. Michael Bohnert, was made for next biomaterials: CeramX, Compafill A-1, Compafill C-3 (Wilde Dental, Germany), Degufill (Degussa)[3]. The others restorations had a too small surface for the traductor device, as it was realised in that period of time (2006).

The results obtained with this device are reflected in curves with maximal values corresponding to the wave lengths of the light emitted under the action of UV radiations, and so, to the fluorescence.[4]. These wave lengths coincide with light-blue nuances, visual registered (fig.1).

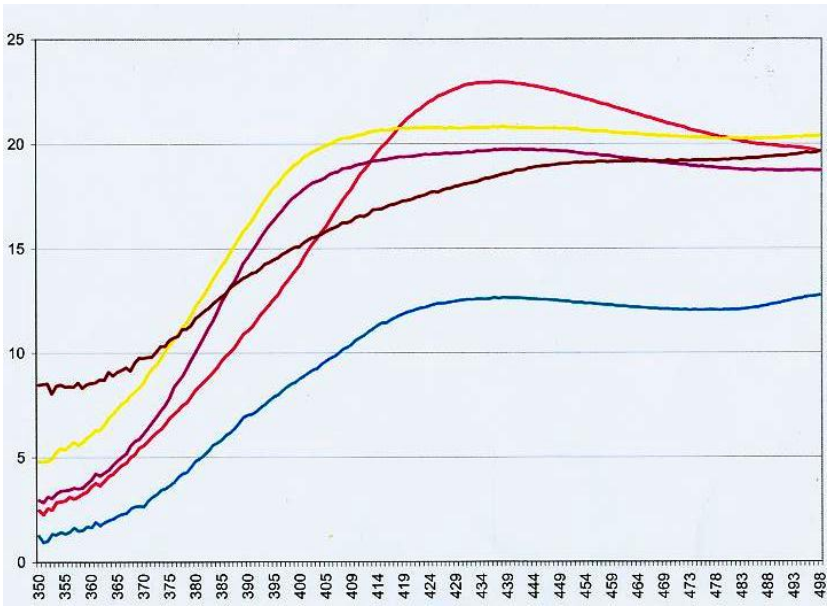

Fig.1. The registration of fluorescence resulted after UV irradiation with the photometer assisted by computer for some aesthetic coronary restorative biomaterials (CeramX, Compafill A1, Compafill C3, Degufill)

DISCUSSIONS

From the point of view of contribution at restabilising the aesthetic function, the aspect of natural tooth, the pink fluorescence presented by "make-up" ceramics Vita Akzent „sun kiss" represent

the most valuable contribution in this area, because this pink fluorescence is added to white nuances corresponding to vestibular surface of prosthetic restorations, and having that effect for it were made others experimental research, to give the aspect of „vital tooth", natural tooth for restored or prosthetic replaced teeth.

The yellow-light green fluorescence visual registered, for the artificial preparation from composite resin Concise EBS, also contribute to the effect of naturalness of dental restorations.

This revolutionary material, almost half a century ago, was designed for posterior restorations, and had remarkable results from aesthetic point of view, this fact was verified also with the visual registered fluorescence of the artificial tooth realised with this material, fluorescence which is almost the same with this of natural tooth.

The light-blue fluorescence observed at others materials is summering-up with other nuances of white, white-light yellow, white-grey, after which are chosen the biomaterials corresponding to key-colours, and contribute to aesthetic function, in condition of natural light illumination and artificial light with UV-A radiations.[5]

CONCLUSIONS

In conditions of restabilising the aesthetic function of restored dental arches by conservative or prosthetic therapy, begin to represent an exigency of aesthetic dentistry, the fluorescence of materials for dental coronary restorations, which contribute to the disappearance of the differences from natural and restored teeth, is a concern for researchers and practitioners. The forensic medicine doctors have a new method to use, introduced by our research group, method which is an international premiere.

Special thanks. We express our gratitude for *Prof. Dr. Elmar Hellwig*, from the Conservative Dentistry Department, "Albert-Lüdwigs" University, Freiburg, Germany, who gave us some of the restorative biomaterials, and for *Asist. Prof. Dr. Med. Dent. Birgit Gmeiner*, who made some of the restorations on the experimental cast, and also, the light-curing process.

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THE TRIBOLOGICAL BEHAVIOUR OF CERAMIC MATERIAL

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Abstract: The actual material wear process is influenced by a set of specific factors, such as: their filling, the used speed and lubricant, the amount of material, hardness.

Aim of study: is to determine the wear coefficient of the ceramic materials.

Material and method: we made disks with a radius of 2.5 cm and a 2 mm thickness, out of 2 types of ceramic restoration materials we found on the market: INLINE and HERA CERAM, on which we measured the friction coefficient and the amount of material used. The experiment was carried out using a CALOWER friction meter. The sliding speed is constant in time (about 150 r.p.m.) and acts on a variable sliding distance, between 3255 and 16277 mm, (corresponding to about 35000 mastication cycles, on a 0.5mm long occlusion). A force of 0.35N acts on the material samples.

Results: the amount of material used increases with the filling increase for the whole sliding length, the number of rotations and friction length.The rate of transferred material decreases with the increase of the amount of certain constituents used, the material thus having better abrasion wear strength.

Conclusions: the stress occurring on the contact surfaces is extremely interesting and enables us to understand their wear behavior.

Key words: ceramic material, wear, wear coefficient

INTRODUCTION

In the growing sphere of restorative therapy, the common materials are more and more frequently replaced by new types, selection criteria being influenced by wear resistance, compatibility oral surrounding tissues, neutrality in oral fluids, and, of course, the aesthetic aspect. But, the process of wearing of material mass is influenced by a series of specific factors, such as: modality of loading, the rate and the lubricant used, quantity of material included, hardness, etc.

STUDY OBJECTIVE

The objective of this study was to determine the behaviour of wearing coefficient and of volume of worn material for two types of ceramic materials.

MATERIAL AND METHODS

Determination of friction coefficient and of worn material volume was accomplished on two types of restorative ceramic materials market available: D.SING (IVOCLAR) and VM13 (VITA), from which 8 samples were made, namely disks with 2.5 cm radius and 2 mm thickness (metallic rest 0.5 mm and physiognomic component 1.5 mm). Casting, processing and finishing of the disks were sequentially accomplished, by following the instrumentation casing and the instructions of manufacturers (fig. 1).

The experiment was performed by means of a tribometer, CALOWER (CSM Instruments) that permits the determination of material density (thickness) and of intrinsic wearing coefficient of strata (fig. 2).

A sphere with known diameter is applied at a certain load in movement on the surface on study; both the relative position of the sphere, and the contact load being known. The lubricant is represented by artificial saliva, whose composition is presented in the following table (before saliva's application, the surface of the tests tubes is wiped with alcohol).

The speed of gliding is constant in time, of approximately 150 rot/min, n a variable gliding distance, of between 3,255 – 16,277 mm (corresponding to approximately 35,000 masticatory cycles,

on an occlusive contact length of 0.5 mm). A force of 0.35 N is acting upon the samples of material.

Fig. 1. Samples of ceramic material

Fig.2. CALOWER Tribometer

Each of the wear tests was repeated at least three times; subsequently, the value mean and the mean square deviation for worn material volume are calculated. The variation of tangential force depending on displacement was automatically recorded in functional cycles, and the worn surfaces were subsequently examined by various MO methods.

In order to determine the main parameters, the authors have used as sphere-plane-specific parameters the following items:

- ✓ ***P_0: maximal pressure***

$$p_0 = \frac{1}{\pi}\sqrt[3]{\frac{6FE^{*2}}{R^2}}$$

Where F – pressure force

- ✓ ***E* - equivalent elasticity module***

$$\frac{1}{E^*} = \frac{1-\nu_1^2}{E_1} + \frac{1-\nu_2^2}{E_2}$$

- ✓ ***R: equivalent curvature radius***

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

where: *R1 – sphere radius*
R2 = plane radius

- ✓ ***P: mean pressure***

$$\bar{p} = \frac{F}{\pi a^2} = \frac{2}{3}p_0$$

- ✓ ***a: contact-surface radius***

$$a = \sqrt[3]{\frac{3FR}{4E^*}}$$

RESULTS AND DISCUSSIONS

Applying the formulae presented in order to determine the weariness of ceramic material being in contact with the metallic sphere, we have obtained the following results for material-characteristic parameters:

- *regarding* ***material properties:***

1. steel ball presents the elasticity module E1, and Poisson's coefficient ν_1 (values taken from specialty literature)

E_1 = 210000 MPa

ν_1 = 0,3

2.ceramic sample has as characteristic parameters:

E_2 = 358,000 MPa

ν_2 = 0,3

- pressure force is a time-constant F = 0.35 N
- sphere radius: R = 12.7 mm
- equivalent module: $\frac{1}{E^*} = \frac{1-0,3^2}{210000} + \frac{1-0,3^2}{358000} = 145,450\,MPa$
- maximal pressure $p_0 = \frac{1}{3,14}\sqrt[3]{\frac{6x0,35x145450^2}{12,7^2}} = 207\ MPa$
- medium pressure $\overline{p} = \frac{0,35}{3,14x0,028} = \frac{2}{3}x207 = 138\ MPa$
- contact-surface radius $a = \sqrt[3]{\frac{3x0,35x12,7}{4x145450}} = 0,028\ mm$

All parameters being calculated, we could have determined the coefficient of abrasive weariness for the ceramic materials under study.

The volume of worn material rises exponentially with the number of rotations and the length of friction (if at a friction length of 3,255 mm, it corresponds an abrasive weariness coefficient of approximately 0,011129248 mm^3/Nm). The rate of transferred material diminishes proportionally with the increase of the percentage of filling particles, the material becoming more resistant to abrasive weariness; this fact is emphasized by the results of the test, results that are presented table I and graphic represented in figura 3. It is obvious the direct proportionality between friction length, loading and weariness coefficient. It is to be remarked a progressive rising of sphere diameter concomitant with the corresponding rise in the volume of worn material.

TABLE I. Characteristics of D. Sing Ceramics

Diam of contact wear surface[mm]							Lenght of friction [mm]	Wear volume [mm3]	Wear coefficient k	
D1	D2	D3	D4	D5	Media	Abaterea			Abaterea	[mm3/N*m]
1,4	1,2	1,3	1,2	1,275	0,095743	3255	0,010214	3,2478E-07	0,008964643	1,4
1,5	1,5	1,6	1,4	1,5	0,08165	6511	0,019567	1,71784E-07	0,00858672	1,5
1,6	1,65	1,8	1,7	1,6875	0,085391	9766	0,031343	2,05504E-07	0,00916951	1,6
1,8	1,8	2	1,8	1,85	0,1	13022	0,045274	3,86515E-07	0,009933886	1,8
2	2	2,1	1,95	2,0125	0,062915	16277	0,063403	6,05607E-08	0,011129248	2

The volume of worn material rises proportionally with the contact depth (a coefficient of about 0.003 for a 0.97 mean of contact).

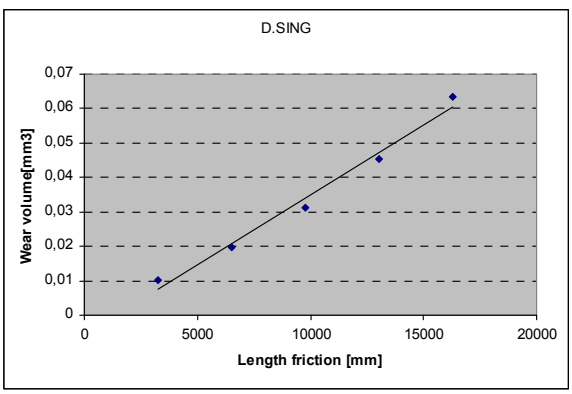

Fig. 3. The mean of worn-material volume depending of friction length for D. Sing Ceramics

The microscopic image emphasizes fissures and alterations in the structure of ceramic mass, a sign that at this level a loss of material has emerged. The surface seems to be rugged, porous, in comparison with the untested surface (fig. 4, fig.5).

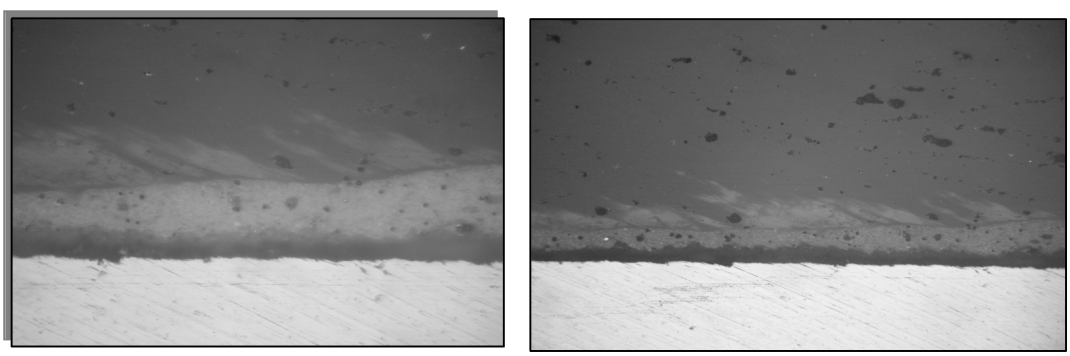

Fig. 4. Microscopic aspect of D.Sing Ceramics

In opposition with these, in the case of Hera-Ceram ceramics, it is obvious that the material becomes more wear-resistant at abrasive weariness, quantity of deformed and displaced material

Fig.5 Porous aspects of D.Sing ceramic

diminishing proportional with the rise in the capacity of ceramic material to resists the force exercised upon it (the values are presented in Table II and graphically represented in fig. 6).

TABLE II. **Characteristics of VM13**

Diam of contact wear surface[mm]							Lenght of friction [mm]	Wear volume [mm3]	Wear coefficient k	
D1	D2	D3	D4	D5	Media	Abaterea			Abaterea	[mm3/N*m]
1,1	1	1,2	1,2	1,2	1,14	0,089443	3255	0,006528	2,4737E-07	0,005729433
1,3	1,2	1,4	1,4	1,6	1,38	0,148324	6511	0,014018	1,87073E-06	0,006151466
1,6	1,6	1,6	1,7	1,9	1,68	0,130384	9766	0,03079	1,11703E-06	0,00900758
1,9	1,7	1,8	1,8	2,1	1,86	0,151658	13022	0,046261	2,04466E-06	0,010150421
2	1,9	2	1,9	2,15	1,99	0,10247	16277	0,060615	4,26133E-07	0,010639827

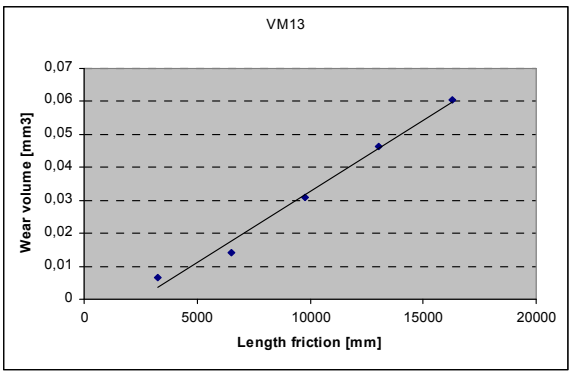

Fig. 6. Mean of worn material volume depending on friction length for VM13 Ceramics

Microscopic image show radiar cracks în the materials ceramic (fig. 7, fig. 8) and little pores in the surface

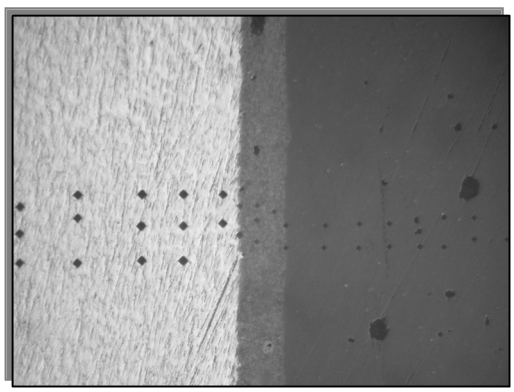

Fig.7. Porous apects of VM13 ceramic

It is visible that, the volume of material depends upon the area and depth of contact

Fig. 8. Dislocations of material (VM13 ceramic)

DISCUSSIONS

The results of this study suggest that there is an inverse proportional relation between hardness and the behaviour at abrasive weariness of solid materials, in our case the ceramics (results rendered evident by Borgiolli in his studies.) In fact, hardness and weariness resistance are two parameters that represent themselves, by their structure, a rigid support that preclude the flexion of material strata. (1, 2)

Materials with increased hardness (VM13) present shallow and narrow marks of wear, in comparison to D.Sing, whose hardness determines losses of material during the testing. It is possible that, in the absence of lubricant, the displaced particles of ceramics to become themselves components of weariness process and to contribute to the augmentation of the already settled process.

The shape and the dimension of testing sphere has imprinted a singular character to our determinations, its diameter increasing proportionally with the penetration depth, simultaneously with the increased contact stress; so, the transition response from elastic to plastic, with the determination of properties of contact stress straining represent distinct characteristics of ceramic materials.(4) This type of shape permits the concentration of stresses in the contact area, simultaneously allowing the determination of behaviour at certain types of loadings. Stress in the contact area rises proportionally with the imprint depth and inverse proportionally with the volume of worn material, a fact well pointed out by the values obtained in the study performed on the four ceramic material types (3).

CONCLUSIONS

The main parameter used for the assessment of wearing phenomenon is the volume of worn material. If the material and the medium of testing remain the same, the volume of lost material will evaluate time-linear. The depth is proportional with a significant vertical loss that is, on its turn, a function of occlusive factors.

It is confirmed the fact that weariness factors are load-depending for all the surfaces taken into study, aspect that justifies their use in the attempt of normalizing the parameters of quantifiable weariness.

Knowing the main material characteristics allows us the foreshadowing of the first fracture lines at the level of fragile strata that will be subjected to stress. But the most important aspect for ceramic material would be the precluding of radial fissures emergence in strata that are subjacent to the ceramics. In order this requirement to be fully accomplished, it is necessary the assurance that the density of strata matches to the maximal supported loading.

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WINE POLYPHENOLS INFLUENCE ON THE OXIDATIVE STRESS IN EXPERIMENTAL ATHEROMATOSIS

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Abstract: Starting from the protective properties of the phenol compounds present in wine, signalled out in the case of cardiovascular affections, the sanguine level of some enzymatic and non-enzymatic markers of oxidative stress has been studied on three batch of rabbits subjected to an atherogeneous hypercholesterolemia diet, namely: B1 – untreated, B2 – treated with white wine (2.5 mg/kg body), B3 – treated with red wine (2.5 mg/kg body), comparatively with a control bath (C), subjected to a normal diet. The atherogeneous diet alterates the oxidative anti-stress factors, inducing inhibition of superoxide dismutase (SOD), stimulating glutathion peroxidase (GSH-Px), diminishing the level of reduced glutathion (GSH) and increasing the level of malonil dialdehyde (MDA), comparatively with the values of the control batch. In the wine treated batches, a tendency of normalization of the values of these parameters is observed, along-with a reduction in the level of lipid peroxidation. The melioration effects of anti-oxidation defence are more pronounced in treatments with red wine, comparatively with the white one as due to a richer content of polyphenols, the anti-oxidation capacity of which is well-known, and of scavenger *versus* the free oxygen radicals, which supports the beneficial effects of a moderate wine consumption.

Key words: health, white and red wine, atheromatosis, oxidative stress, markers of oxidative stress, anti-oxidation effect

INTRODUCTION

Along the years, several researchers warned on the formation of noxious lipid peroxides and free radicals, as a result of the oxidative stress induced by either pathological or experimental atherogeneous hypercholesterolemy [2, 7, 10]. Under the action of oxygen's free radicals, lipids' peroxidation is intensified, which is accompanied by the formation of malonyl-dialdehyde (MDA), known as capable by interacting with the proteins and the nucleic acids, leading to the formation of noxious compounds with cyto-toxic effects, involved in cardio-vascular affections, cancer, hepatopathies, HIV infection etc. [2, 3, 13, 14].

Equally, increase of the oxidative stress activates the systems of antioxidant defence within the organism, thus protecting the biologically–important molecules, which modifies the activity of the anti-oxidant enzymes – such as, super-oxide dismutase (SOD), glutathione peroxidase (GSH-Px), catalase (CAT) – viewed as markers of the oxidative stress [4, 10, 13, 14]. As generally known, the diet may influence the metabolic processes, the ones involved in the oxidative stress included. A direct correlation has been thus established between food's content of cholesterol and the level of lipid peroxides recorded in cardio-vascular affections, in laboratory experiments reproducing such processes on animals [4, 10].

Various epidemiological, clinical and experimental investigations put into evidence the protecting effects of a moderate wine – red wine, especially – consumption upon cardio-vascular morbidity, in parallel with providing possible explanations to the so-called "French paradox" on the correlation between a moderate wine consumption and the reduced frequency of cardiovascular affections [12, 15].Wine's beneficial effects ore attributed to its high content of polyphenols (present especially in the red wine) known as possessing anti-oxidative,

anti-inflammatory, vaso-relaxing effects, placketary, anti-aggregating and even anti-cancerous effects [1, 3, 6, 10].

Starting from the protecting properties of the phenol compounds existent in wine, the present paper analyses the sanguine level of some enzymatic markers of the oxidative stress, followed on rabbits subjected to a hypercholesterolemic atherogeneous diet, to which white and red wine had been administered.

MATERIALS AND METHODS

The experiments were performed on 4 batches, each formed of 10 mature, male rabbits of the same average weight and race, to which a differentiated treatment has been applied for 8 seeks, as follows: 3 batches with a hypercholesterolemic aterogeneous diet (*i.e*., 0.05 g cholesterol in 2 mL sunflower oil per kg body) – batch B_1 – untreated (reference); batch B_2 – treated with white wine (2.5 mL/kg body); and batch B_3 – treated with red wine (2.5 mL/kg body), comparatively with a control batch (C), to which a normal a diet had been administered.

In the treatments, wines produced in the viticulture region of Iaşi (Romania), with various contents of polyphenols, have been used, namely: red wines (*Merlot, Pinot noir, Cabernet Sauvignon),* with an alcoholic concentration between 10.80–12.63%, total phenol compounds 1.60 – 1.91 g/L anthocyans 129 – 240 mg/L, pH 3.27 - 3.98, as well as white wines (*Blanc Cotnari, Fetească regală)* with alcoholic concentration between 11.70–12.07%, total phenol compounds 0.43–0.46 g/L, no anthocyans.

The phenol compounds were analyzed by HPLC, the main compounds thus identified being monoglycoside (derivatives of delfinidine, cyanidine, pethunidine, poenidine, malvidine), diglicosidic derivatives (of the some monoglycosides or p-coumarote-monoglycosides) and anthocyans – in the red wines.

After 8 weeks, there have been determined, by specific methods, [1, 5, 9, 11] the concentrations of total cholesterol (Ch-T), of superoxide dismutase (SOD), glutathion peroxidase (GSH-Px), malonyl dialdehyde (MDA), reduced glutathione (GSH), as well as the GSH-Px/SOD ratio, from the total blood, serum, plasma or erythrocytes.

The data thus obtained have been statistically analyzed according to Student test.

RESULTS AND DISCUSSION

In the rabbits belonging to the control batch (C), subjected to a normal diet, the seric **total cholesterol** records, after 8 weeks, an average value of 77.20±3.23 mg/dL (Table 1).

Instead, the atherogeneous diet with cholesterol, administered to the reference batch B1, induced a significant increase of the level of seric cholesterol, up to a value of 123.70±6.56 mg/dL (Table 1), that is 60.23%, higher than the value recorded in the control batch – which demonstrates the atherogeneous potential of the diet applied in the non-treated, reference batch.

At the level of batch B_2, to which an atherogeneous diet and a treatment with white wine had been applied, the seric concentration of cholesterol is of 126.20±7.07 mg/dL (Table 1) again significantly higher than the value recorded in the control batch (with 63.47%) and similar to the one of the non-treated batch (B_1), which indicates absence of any protecting effect of the white wine on the induction and evolution of the atherogenneous process.

However, the treatment with red wine, applied to batch B_3 concomitantly with the atherogeneous diet induced a returning to the normal values of cholesterol*, i.e.,* of 77.70±4.16 mg/dL, which is similar to the one recorded in the control batch (Table 1). The result is indicative of the protecting effect of the red wine, which maintains cholesterolemy at normal

values, below the ones considered as a factor of atherogeneous risk, as shown by other authors as well [2, 8, 13, 15].

The activity of the erythrocytary **superoxide dismutase** (SOD) is diminished by the exclusively atherogeneous regime applied to batch B_1, with 13.79% *versus* the control batch (C) with a normal diet (Table 1), which is the consequence of an intensified lipid peroxidation, by the addition of exogenenous cholesterol, as accompanied by the formation of superoxidic free radicals and by the installation of an oxidative stress condition, as also evidenced by other investigators [7, 10].

The wine treatment applied to rabbits with an atherogeneous regime re-establishes the normal values of SOD which, in batch B_2, treated with white wine, records a negligible reduction, of only 3.45% − comparatively with the control (a 12 % increase *versus* the non-treated batch), a slight increase, of 1.72% *versus* the control, being recorded in batch B_3, treated with red wine (*i.e.*, a 18% increase *versus* B_1). Therefore, the wine (the red one, especially, but also the white wine) reduces the level of the superoxide radical ($O_2^{\bullet -}$), manifesting a protecting effect against the intensification of the oxidative stress, thus assuring the organism's antioxidant defence, by the action of polyphenols, which neutralize the free radicals (thus acting as scavengers).

The activity of **glutathione peroxidase** (GSH-Px) significantly increases *versus* the one recorded in the control batch (C) with 12.61% in batch B_1, subjected to an atherogeneous regime, without any treatment (Table 1), which evidences intensification of the oxidative stress, through the accumulation of the oxidised form of glutathione [7, 10].

Table I - **Influence of red and white wine upon oxidative stress markers in rabbits with atherogeneous diet**

Batch (treatment)	Parameters						
	Values	Total cholest. (mg/dL)	SOD (U/Ht)	GSH-Px (UI/L)	GSH (mg/dL)	MDA (µmol/L)	GSH-Px/SOD
Control (C) (normal diet) n=10	X	77.20	5.80	76.90	35.50	2.60	13.26
	±ES	3.23	0.09	2.62	0.80	0.10	0.29
	% (C)	100	100	100	100	100	100
	±% (C)	0	0	0	0	0	0
$B1_{reference}$ (atherogeneous diet) n=10	X	123.70***	5.00	86.60*	24.50*	5.50***	17.32*
	±ES	6.56	0.16	1.94	0.98	0.13	0.30
	% (C)	160.23	86.21	112.61	69.01	211.54	130.62
	±% (C)	+60.23	−13.79	+12.61	−30.99	+111.54	+30.62
	% (B_1)	100	100	100	100	100	100
	±% (B_1)	0	0	0	0	0	0
$B2_{(atherogeneous\ diet + white\ wine)}$ n=10	X	126.20***	5.60	73.20	38.60	5.40***	13.07
	±ES	7.07	0.19	2.41	1.17	0.17	0.26
	% (C)	163.47	96.55	95.19	108.73	207.69	98.57
	±% (C)	+63.47	−3.45	−4.81	+8.73	+107.69	−1.43
	% (B_1)	102.02	112.00	84.53	157.55	98.18	75.46
	±% (B_1)	+2.02	+12.00	−15.47	+57.55	−1.82	−24.54
$B3_{(atherogeneous\ diet + red\ wine)}$ n=10	X	77.70	5.90	79.50	34.60	4.60***	13.47
	±ES	4.16	0.19	3.33	1.95	0.22	0.39
	% (C)	100.65	101.72	103.38	97.46	176.92	101.58
	±% (C)	+0.65	+1.72	+3.38	−2.54	+76.92	+1.58
	% (B_1)	62.81	118.00	91.80	141.22	83.64	77.77
	±% (B_1)	−37.19	+18.00	−8.20	+41.22	−16.36	−22.23

The treatment with wine, as an alimentary addition, induces, however, reduction, of the negative effect of the atherogeneous diet, the activity of GHS-Px decreasing with 4.81% comparatively with the reference under the effect of the white wine (batch B_2), its value remaining slightly higher (with 3.38%) in batch B_3, treated with red wine, which evidences, one more, the protecting effect of the two types of wine, under this aspect, as well.

The level of the **reduced glutathione** (GSH) decreases considerably in batch B_1, with 30.99% comparatively with control batch, under the influence of the atherogeneous diet (Table 1). Similar situations have been recorded, too, in certain pathological states (atherosclerosis, hyperlipoproteinemy), being accompanied by the decrease of level of the non-enzymatic antioxidants (GSH, vitamins C and E) and of SOD [6, 10, 13].

The treatment with white (batch B_2) and red (batch B_3) wine re-establishes the GSH level at values similar to those of the control (of 108.73% and, respectively, 97.46%), reducing the level of lipid peroxidation, as correlated with the increase of the malonyl dialdehyde values and normalization of the SOD values.

The concentration of **malonyl dialdehyde** (MDA) records a highly significant increase in batch B_1, with 111.54% *versus* the control batch, as a reaction to the atherogeneous diet known as intensifying the process of lipid peroxidation. Similar results have been obtained by other investigators [2, 7], the MDA being viewed as a liable indicator of the level of lipid peroxidation (LP), the increase of which is accompanied by reductions in the SOD and GSH level and also by the increase of the GSH-Px value, as one may observe in batch B_1.

The treatment with wine, as a dietary addition, on rabbits subjected to nutritional induction of atheromatosis slightly reduces the MDA values, yet without normalizing them in the white wine-treated batch B_2 the value recorded being 107.69% higher than in the control batch (C) while, in the red wine-treated batch B_3, it is 76.92% higher, which indicates, once more, a more intense effect of the red wine, of reducing the LP level, unlike the wine, on the application of which the MDA values remain high, being similar to those recorded in the non-treated batch B_1.

The effect of the red wine, of reducing the LP level, is accompanied by increases in the SOD and GSH values, as well as by a normalization of the GSH-Px values (Table 1) which is an indication that, by its rich in polyphenols content, by its well-known anti-oxidative properties and by its acting as a scavenger *versus* the free oxygen radicals, the red wine had contributed in a significant manner to increasing the anti-oxidation defence of the organism, assuring the anti-oxidative state necessary for the reduction of lipid peroxidation, under conditions of an atherogeneous diet.

The **GSH-Px/SOD ratio** is a parameter permitting to evaluate the correlation established between the activities of the anti-oxidation enzymes. The atherogeneous diet, administered to batch B_1 in the absence of any treatment, induces a significant increase of this ratio, with 30.62% comparatively with the control batch (Table 1), as caused by increase of the GSH-Px values, in parallel with the decrease of the SOD level. Administered as a dietary addition, the wine normalizes the values of this ratio, by increasing the SOD values and by decreasing the GSH-Px level, in both batch B_2, treated with white wine, and in batch B_3, treated with red wine, comparatively with the untreated batch B_1. The conclusion may be therefore drawn that both types of wine possess the capacity of re-establishing a normal ratio among the activities of the anti-oxidation enzymes here involved, which indicates that the polyphenols present in the wine may prevent any increase in the intensity of lipid peroxidation, which evidences once more the beneficial effects of a moderate wine consumption.

CONCLUSIONS

If considering all the parameters involved in the analysis, one may observe that the wine – the red one, especially – has positive effects in the treated batches of rabbits, a tendency towards a normalization of the values of oxidative stress indices, along with the reduction of lipid peroxidation, being evidenced.

The red wine, with a higher content of polyphenols and anthocyans than the white ones, shows more intense anti-oxidation effects, thus improving the defence capacity against the atherogeneous oxidative stress, in parallels with assuring an efficient level of the anti-oxidation enzymatic defence.

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Vol. 1, No. 3, July 2009

ETHYIOPATOGENIC AND CLINICO-RADIOLOGICAL ISSUES IN SYNDROME OF RESORPTION AND ATROPHY OF MAXILLARY BONES

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Abstract: Complex processes of atrophy and resorption of edentulouse ridges manifested by the gradual disappearance of partial or total alveolar bone, which occur, especially after losing dento-periodontal units, was for years the subject of several studies presented in literature. Although so far no such phenomena have not been fully elucidated, however, it was demonstrated that they are totally different from atrophy and resorption mechanisms governing internal transformations of axial skeleton and apendicular bone. All clinical research and laboratory experiments have established with certainty the evolutionary, cumulative and irreversible processes of those who engage in time-anatomical morphological changes and radiological ones in local and loco-regional system stomatognat. Personal studies correlated with data from literature on ethiopatogeny process of atrophy and resorption of edentulous ridges, revealed a number of primary factors (the overall condition of the body factor, age, genetic factors, hormones, nutritional) and aggravating factors (factors similar to factors of etiology of complete edentation functional factors, iatrogeny, risk factors), which are combined in an infinity of cases, making these two complex, multiple disease entity. Conclusions: The mechanisms of producing atrophy and alveolar bone resorption seem to have unlimited potential, regardless of the degree of mineralization of bone and evolve over several years, leading to serious and irreversible morphological changes of skeletal maxillo-facial bone. Along with many other factors, they are significant for planning and forecasting, when required by a conventional removable prosthetic treatment or implants.

Key words: edentation, atrophy and resorption alveolar bone.

INTRODUCTION

Although progress in dental materials and dental techniques, complex phenomenon of resorption and atrophy of the maxillary bone is still a challenge for the profession of dentistry. As defined, in general atrophy is a reduction in volume and weight of an organ due to nutritional deficiencies tissues, caused by the termination of some of the functions that previously participated. Phenomenon of resorption of edentulous ridges is manifested through the gradual disappearance of partial and total alveolar bone, as the loss of tooth from dento-alveolar archways. Along with aging and the emergence of various forms of clinical edentation, at maxillary bones level both phenomena occur. Initially, is the residual alveolar component resorption, then followed by the atrophy. The two mechanisms, almost inseparable, have a concerted action on edentate maxillary bone and therefore involve morphological and structural changes, local and loco-regional level in all components of the stomatognat system. The rate of these changes, the age at which it is produced and their etiology, affecting the evolution in time of the prosthetic support causing irreversible complications, sometimes very serious and difficult to solve through prosthetic conventional therapy.

Resorption of the edentulous ridges, which Atwood has called a *"major oral disease",* is considered by other authors, an oral manifestation of systemic bone disease (1). Wical et al. (2) supports the idea that alveolar bone atrophy is primarily a systemic disease, were significantly associated withperiodontal disease and in this context would be an early manifestation of generalized osteoporosis. Studies on partial edentulouse patients

with periodontal disease have confirmed the coincidence of occurrence of vertebral osteoporosis with the periodontal disease and concluded that osteoporosis would be a risk factor for this condition. In addition, other authors have found a direct relationship of proportionality between the severity of osteoporosis, age and height reduction of the edentulouse ridges, especially in the mandible (3,4).

Studies on etiopathogeny of the syndrome of atrophy and resorption of the alveolar ridges revealed a number of primary factors and aggravating others, which combined in an infinity of cases, making this process a multifactorial disease entity. Clinical and laboratory studies conducted in Dental Prosthetics Clinic in Iasi, allowed classification of these factors in 2 categories namely general factors (the overall condition of the body, the factor "age"; genetic factors, hormone, nutritional) and local factors (factors similar to the factors of etiology of complete edentation, functional factors, iatogenic factors). As will be detailed aspects of general factors influence the maxillary bone.

1. Overall condition of the body is the primary factor that its imprint on the evolution of all components of the system stomatognat. Changing status through the gastro-intestinal diseases, accompanied by malabsorbtions of calcium, renal diseases that involve increases in the excretion of calcium, which causes diabetes generating consecutive vascular disorders and disorders of calcium metabolism and glycolipoproteic metabolism, are just some of the chronic diseases commonly seen in complete edentulous patients, who have repercussions at the local level,on the alveolar bone.

2. Factor "age". Atrophy and resorption of alveolar after extractions is localized, chronic, evolving and cumulative bone loss, which increases the importance of this phenomenon, the more so as edentation is older. This process is correlated with age through the *factor "edentation age"* (5). Chronological age is involved in the phenomenon of reducing edentulous ridges not as etiologiycal factor, but as an associated factor because senility it is not always synchronous with the disappearance of edentation and with disappearing of the edentulous ridges. After Lejoyeux, age is correlated with two major categories of incidents, on the level of the bone substrate : a factor of diminishing general bone mass of the stomatognat system and a factor of diminution of the height of residual alveolar ridge .

Age - as a factor in decreasing the overall bone mass is related to aging of the bones and is quantitative and qualitative. Bone loss with age also affects both the structure and mechanical properties of bone, being characteristic to osseous disease feature of involution, of which the most common are osteoporosis affecting particularly III-rd age and fourth and is characterized by a deficit of bone tissue per unit volume without affecting calcium homeostasis.

From a quantitative point of view, up to 90% of the maximum bone mass is stored during the growth phase, which lasts 10-15 years, when the bone mass increases continuously until reaching a maximum around the age of 30 years. Then, after a period of stability, feature consolidation phase (35-40 years), after which bone mass starts diminishing as advancement in age, both men and women, although the pace of bone loss differs from bone at cortical and trabecular from one anatomical region to another (6). Early bone loss may be genetically predetermined, although this is uncertain.

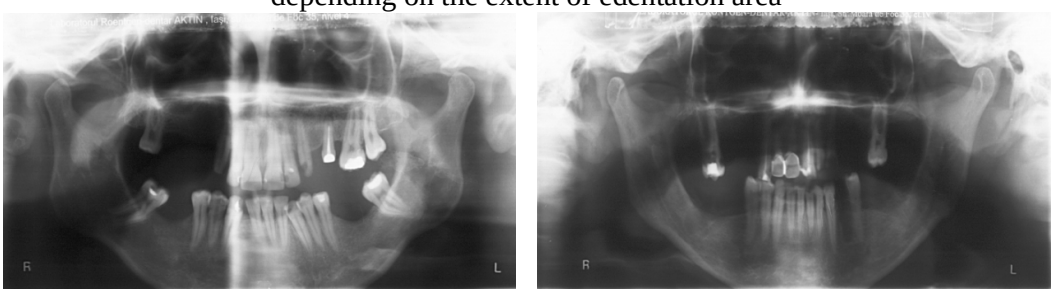
The pace in which the bone is losing is probably a reflection of the presence and severity number of factors that adversely affect the osseous mass They can include menopause, low levels of circular calcitonin, decreased production of androgen adrenergic, nutritional factors,

smoking, alcohol, coffee, reduced physical activity and decreased absorption of calcium (7, 8, 9). In addition, there are a number of factors known to cause secondary osteoporosis that aggravates loss related to age and can thus accelerate the development of osteoporosis (steroid therapy, bone metastases, diabetes, etc.). In terms of quality, age causes reduced bone strength in both sexes. Between 35-70 years in the cortical the bone strength and bending to torsion is reduced by a downward curve, with approximately 15-20%, and decreased bone compression is reduced by approximately 50% (6). These phenomena lead to bone fragility and increased fracture risk at the lowest mechanical stimulus (9). Resistance of the bone is dependent on the cortical bone thickness, trabecular architecture, the maximum bone mass With age, all these parameters are amended due to a process of remodeling, but decreased bone strength is more pronounced than the decrease in bone mass. Studies on bone shows a distance of trabecular network along with aging, causing perforation of the horizontal bone lines subsequently being affected cortical bone thickness (10, 11).

Of all the osseous components of the stomatognat system , mandibulary bone and the maxillary (from the palatal vaulte), have the greatest quantitative changes, depending on age and sex, both in the compact bone as in its trabeculae. At the level of resistance columns of the cranio-facial massif bone, cortical mineral density, although decreasing with age, is still at a fairly high fulfilled and thus the role for which they were created (12,13). Since tooth loss due to *"age factor"* determines the functional disorder in the whole complex stomatognat system and occurs in parallel with quantitative changes in skeletal in generally and in jaw bone in particular and we consider this loss, both as a predictor of jaw bone ageing, as well as a functional marker of aging of this system and even the whole body.In this context, some studies have shown that tooth loss by periodontal disease would be associated with increased risk of coronary disease or with functional disorders of the pancreas(14).

"Age" - as a decreasing factor of the height of alveolar ridges : reduction of maxillary alveolar bone height and mandibulary with age is a physiological process, involution characteristic of all individuals, which takes the appearance of a generalized alveolar atrophy. In partial edentulous patients was noticed that rates and annual percentage loss of alveolar bone increases in proportion to the extent of the edentation in both sexes, women being more affected by this process. Consequently, the radiological image of the horizontal mandibulary branch , in time becomes an image of "strangulation" in the edentulous area(15). (Fig.1, 2).

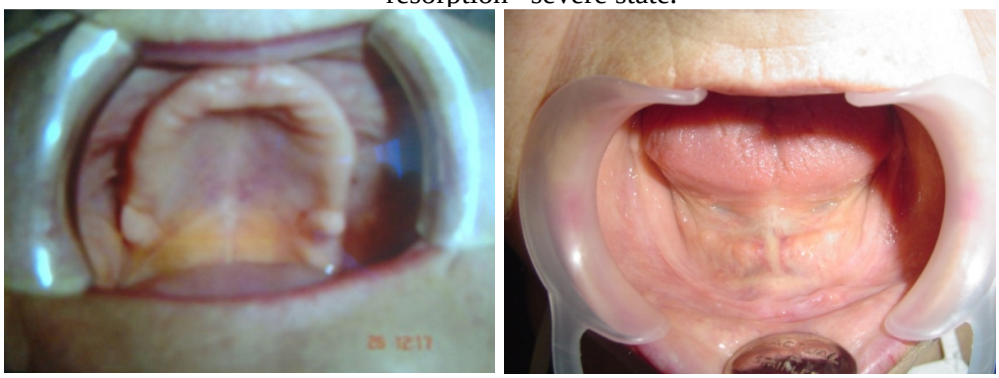
Fig 1, 2 Radiological aspects of maxillary and mandibulary alveolar ridges resorption, depending on the extent of edentation area



In partial extended edentations class III of Kennedy, with 1-2 teeth absent, the alveolar ridge in the lateral area is usually slightly concave or plane, edentulous area being limited between mesial and distal tooth. When edentulous area is the result of the loss of several teeth, alveolar ridge concavity becomes more deeply, as happens in partial extended edentations of Kennedy class I; edentulous area is limited only by mesial tooth and in the distal part of the edentulous area produce a collaps and resorption of the 2 walls of the alveolar bone.

In complete edentulous patients, it produces a dramatic change of the whole functional and parafunctional mechanism of force transmission due to full loss of the dento-periodontal support (Fig.3,4).

Fig. 3, 4: Clinical aspects: Complete maxillary and mandibulary edentation:osseous atrophy and resorption –severe state.



Furthermore, osteoporotic phenomena associated with the atrophy and resorption causes in alveolar bones one of the most severe bone complication of stomatognat system, since it undermines its strength (Fig. 5, 6).

Fig. 5 OPT: Complete bimaxillary edentation-osseous atrophy and resorption –severe state.

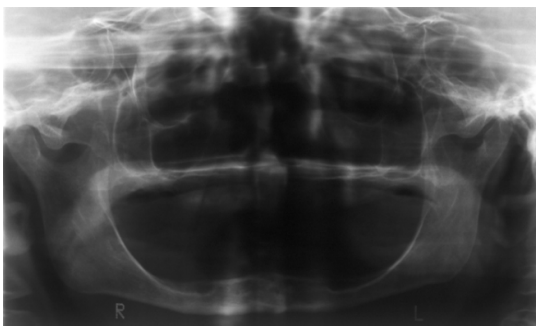
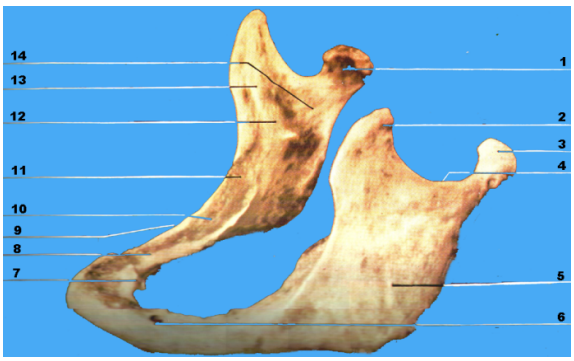


Fig. 6 Complete edentulous mandible-advanced form of atrophy and resorption: 1-pterygoidian fossa; 2- coronoidian process; 3-condylian process; 4-mandibulary incisure; 5-maseterin tuberosities; 6- menton hole; 7-superior geniuses apophysies;8 milohyoidian line; 9-external oblique line; 10-the alveolar area; 11-retromolar recess; 12-mandibulary protuberance; 13-temporal crest; 14-ridge of mandibulary cervix.



Both the personal research and observations of other studies in literature show the existence of a relationship between senile alveolar atrophy, as a phenomenon of local bone loss and installation of the systemic osteoporosis, as a general skeleton bone loss (16,17). Increasing the rate of loss of alveolar bone would seem that it coincides with the generalized skeleton bone loss as a result of hormonal lack, particulary in estrogen at women in postmenopause period,the only one responsible for accelerated phase of bone resorption. (16) . It would seem that the phenomenon of senile alveolar atrophy, in the absence of other favoring local factors (eg, marginal chronic periodontal disease, edentations) is approximately equal in both the jaw bones, both in the frontal and lateral areas.

3. Genetic factors. Kleinfinger and Lejoyeux (5) focus on the importance of genetic factors as individual factors of resistance to atrophy and resorption of edentulous ridges and oldest studies of Mercier and Lafonfant (1979) suggests that a direct relationship between area size and atrophy degree of the edentulous ridges , less developed maxillas, with a small area, being more susceptible to atrophy than those bulky, characterized by a much larger area, which is related to bone up capital accumulated by each individual up to adult age (3,7). Other studies (10) reinforce these observations, showing that individuals with high waist and fat body were well represented in jaw bone, with the most densely bone tissue and are less susceptible to atrophy and alveolar resorption compared with individuals small and weak.

4. Hormone factors related to age is another issue affecting the bone loss rate at the level of alveolar bone. Best correlated with this phenomenon are estrogen and the PTH (3, 4, 6, 7, 18). Comparative studies on gender showed that in men, dentate mandible suffer a slight continuing increase, positively correlated with age, while in women found a significant decrease, indicating that the OP postmenopause through depletion of the estrogens may be the cause to increased resorption of the trabecular portion of the

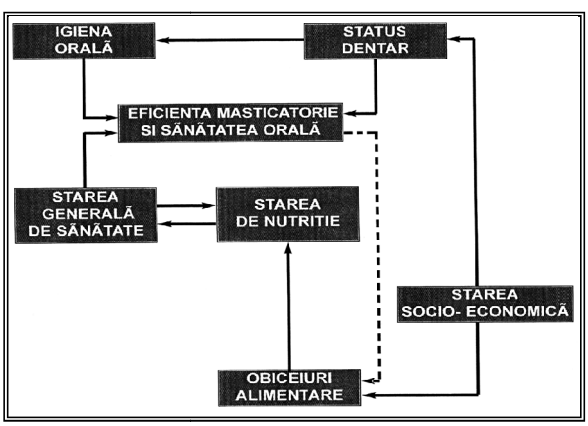
mandible, while cortical bone area becomes radiotransparent and with low functional value (19).When bone is the result of increased activity of parathyroid glands, alveolar bone is also affected at the edentulous ridges level. If a skeleton lack of calcium ions, released as a result of paratyroid stimulation, alveolar bone is affected first, ribs and vertebrae second, and long bones in the end. All studies to date have shown that senile osteoporosis is a substantial contribution to the deterioration of oral health of the elderly (5,6,16), depletion causing disruption and extended resorption of trabeculae, followed by a cortical remodeling with altered structure (16).

5. Nutritional factors have a dominant effect on the body at any stage of the lifecycle, Watkin (2)noting the existence of an inseparable triade between *nutrition - aging - health*. Some chronic diseases (obesity, atherosclerosis, colon cancer, diabetes, osteoporosis, periodontal diseases) are associated with long-term vicious dietary habits. The vulnerability of poor diet increases with age, because of the determinants factors(oral factors, physical factors, functional factors, psychosocial factors) that contribute to the emergence of signs of malnutrition in the elderly (17,18,19,20).

One of the stomatognat system subject submit to both involution changes of age and other general factors (including the nutritional factor) and local, is the alveolar bone. Until recently, most experts believed that alveolar bone resorption is a locally caused in particular by the lack of functional stimulus of the mechanical factors and occurrence of local inflammatory phenomena (20).Since the systemic factors were not well clarified, they were considered secondary to the phenomenon of alveolar bone resorption. Experimental and clinical evidence have recently shown that alveolar bone resorption is in direct relationship with the alteration of nutritional status,which in turn further undermines the integrity of oral tissues,thus creating a truly vicious circle(Scheme I).

SCHEME 1

Interrelation of the determinate factors of the malnutrition at the third age



In this context, the assessment of elderly nutrition becomes increasingly necessary particularly in cases of proprosthetic bone reconstruction of the alveolar ridges with important resorption or in case of overdentures on implants. In conclusion, the dimensional changes and structural parameters of the maxillary bone are determined by the conjugate action of a complex of general and local factors that influence internal and external mechanisms of osseous remodeling Resorptiopn and alveolar atrophy is a chronic, progressive, irreversible and cumulative phenomenon, evolving slowly over a long period, causing dramatic functional disorders in the stomatognat system.

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THE STATISTICAL STUDY OF MALOCCLUSIONS

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Abstract: The aim of this study is to achieve a statistical evaluation on a consignment of patients who have addressed the Dental ambulatory for children (Iaşi) for orthodontic consulting over a period of 10 years (1990 – 2000). The study has been performed on 375 patients (157 boys and 218 girls) aged between 4-24 years, with malocclusions. The diagnosis was established by clinical and paraclinical exams (cast and radiological measurements). Both removable and fixed appliances were used in conducting the treatment. The data base was created with MS Excel and the statistical evaluation was completed with the SPSS-15 and the EPI-Info-15 software, using descriptive statistics, bivalent correlations and linear regression. The Patients in need of orthodontic treatment presented malocclusion Class I 63,2%, Class II 28,3%, and Class III 5,8%. The group and isolated malocclusion proportion varied on the basis of the clinical manifestations asociated to the malocclusion Class. Based on age, the patients were applied with prophylactic treatment 3%, interceptive treatment 5% and curative 92%. The Pearson corelations made on the consigment of patients prooved the existence of a directly proportional link between the therapeutical results, the diagnosis of the malocclusions and the treatment chosen to be carried out. The Fisher test applied on the ortodontic treatment, the diagnosis Class and the therapeutical results proved to be significant in the statistics. The results of the prevalence maloclusion types are comparable with the ones from the speciality literature. The corelations that were carried out were based on medical reasoning. The regression model of prediction is probabilistic.

Key words: malocclusion, prevalence, correlations.

INTRODUCTION

The nowadays dental-facial orthodontics and orthopedics are increasingly becoming an important health service, which sets out and maintains one's physical and psychiatric balance. This service practices preventive procedures which anticipate the malocclusion's evolution, or interceptive procedures which remove or reduce the malocclusion's severity and corrective procedures for the malocclusion's treatment.

MATERIAL and METHOD

The aim of this study is to achieve a statistical evaluation on a consignment of patients who have addressed the Dental ambulatory for children (Iaşi) for orthodontic consulting over a period of 10 years (1990 – 2000). The study has been performed on 375 patients (157 boys and 218 girls) aged between 5-24 years, with malocclusions (Figure 1).

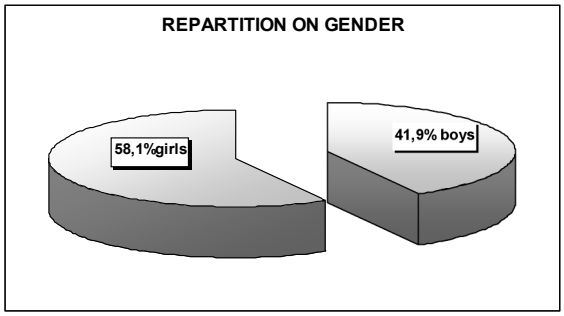

Figure 1

The patients came from the urban environment in a proportion of 85,6% and from the rural environment in a proportion of 14,4%. Amongst these patients 71,7% live in Iaşi and 28,3% in other countys.

The diagnosis was established by clinical and paraclinical exams (cast and radiological measurements). Both removable and fixed appliances were used in conducting the treatment.

The data base was created using MS Excel and the statistical evaluation was completed with the SPSS and the EPI-Info-15 software. Descriptive statistics, bivariate correlations and linear regression were carried out based on medical reasoning.

RESULTS

The patients in need of orthodontic treatment presented malocclusion Class I 63,2%, Class II 28,3% and class III 5,8%. From the overall malocclusions, 2,7% were transitory malocclusions, which have set in place once the teeth grew(Figure 2).

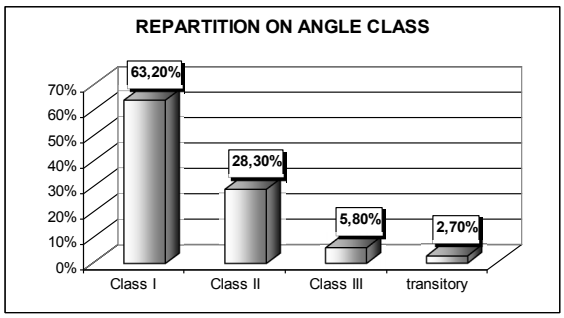

Figure 2

The group and the isolated malocclusion proportion varied on the basis of the clinical manifestations asociated to the malocclusion class. The prevalence of the isolated dental malocclusions was: malocclusion of number 6,9%, of shape 1,3%, of volume 8,8%, of position 79,5%, of premises 14,6% and of structure 43,2% (Figure 3).

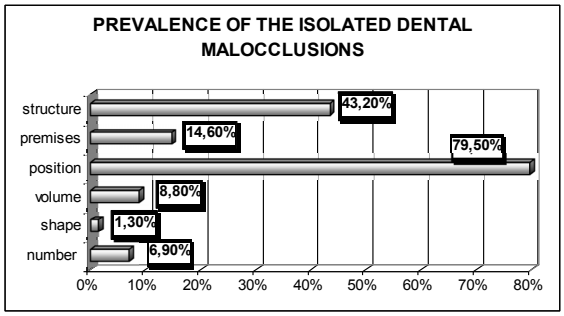

Figure 3

The prevalence of group malocclusion was: interincisive space 5,6% and dental crowding 94,4% (Figure 4).

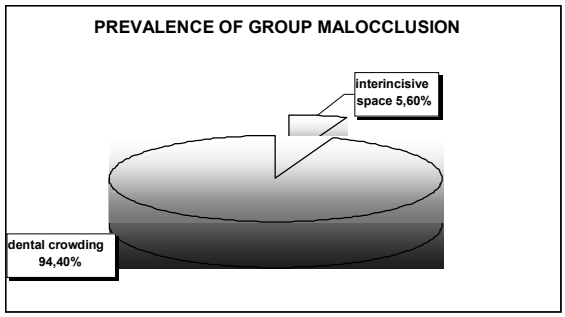

Figure 4

The cause of the malocclusion was determined by general factors 18,7%, disfunctional 28,5% and local 52,8% (Figure 5).

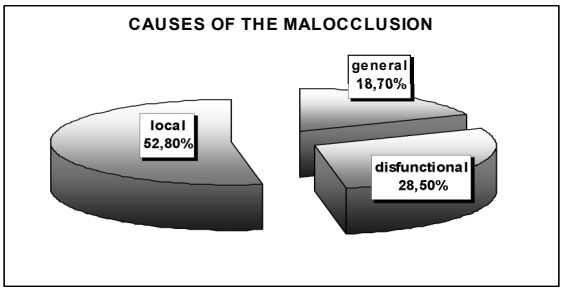

Figure 5

The patients were applied with profilactic treatment 3,2%, interceptive 5,9% and corrective 90,9% based on age (Figure 6).

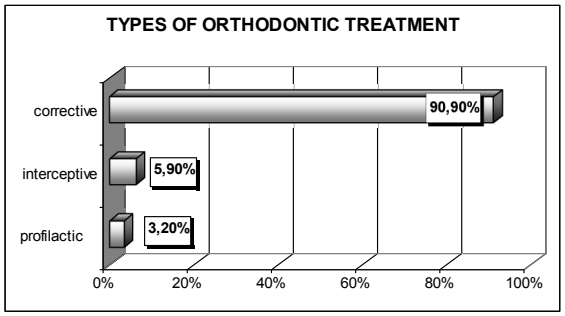

Figure 6

The therapeutical results varried on the pacients' acceptance, finishing or abandoning of the orthodontic treatment: treatment not carried out 39%, abandoned treatment 36%, finished 22%, refused treatment 2% and contraindicated treatment 1% (Figure 7).

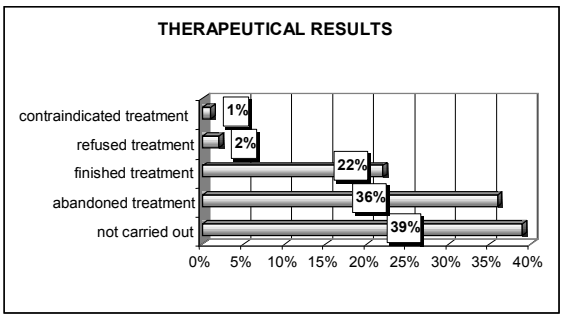

Figure 7

The Pearson correlations made on the consigment of patients proved the existence of a directly proportional link between the therapeutical results and the diagnosis of the malocclusions, significant with the value p=0.01 (Table I).

Table I. Pearson Correlation

Correlations		Class Angle	Results
Class Angle	Pearson Correlation	1	.311(**)
	Sig. (2-tailed)		.000
	N	375	375
Results	Pearson Correlation	.311(**)	1
	Sig. (2-tailed)	.000	
	N	375	375

** Correlation is significant at the 0.01 level (2-tailed).

There was also a directly proportional link between the therapeutical results and types of treatment used, signficant with the value p=0,01 (Table II).

Table II. Pearson Correlation

Correlations		Types of treatment	Results
Types of treatment	Pearson Correlation	1	.269(**)
	Sig. (2-tailed)		.000
	N	375	375
Results	Pearson Correlation	.269(**)	1
	Sig. (2-tailed)	.000	
	N	375	375

** Correlation is significant at the 0.01 level (2-tailed).

The Pearson corelations made on the consigment of patients proved the existence of a directly proportional link between the type of appliance and the therapeutical results, significant with the value p=0.01 (Table III).

Table III. Pearson Correlation

Correlations		Results	Type of appliance
Results	Pearson Correlation	1	.276(**)
	Sig. (2-tailed)		.000
	N	375	375
Type of appliance	Pearson Correlation	.276(**)	1
	Sig. (2-tailed)	.000	
	N	375	375

** Correlation is significant at the 0.01 level (2-tailed).

There was also a directly proportional link between the surgical-orthodontic treatment that was carried out and the therapeutical results, signficant with the value p=0,05 (Table IV).

Table IV. Pearson Correlation

Correlations		Results	Surgical treatment
Results	Pearson Correlation	1	.102(*)
	Sig. (2-tailed)		.049
	N	375	375
Surgical treatment	Pearson Correlation	.102(*)	1
	Sig. (2-tailed)	.049	
	N	375	375

** Correlation is significant at the 0.05 level (2-tailed).

The calculated multiple regression model had as dependent variable the type of treatment that was carried out, and for independent variables, the diagnosis class and the therapeutical results. The Fisher test was statistical significant and the threshold was lower than 0,05 (Table V).

Table V. Coefficients of correlations

Model		Not standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	168.492	13.433		12.543	.000
	Class Angle	-3.610	5.795	-.032	-.623	.534
2	(Constant)	115.185	15.695		7.339	.000
	Class Angle	-14.361	5.836	-.128	-2.461	.014
	Results	33.892	5.722	.309	5.923	.000

Dependent Variable: Types of treatment

The standard grades histogram of the deviation did not have a normal curve, the distribution of the points overcame the diagonal. The low value of the dependent variable has the tendence to subestimate the reality (Figure 8).

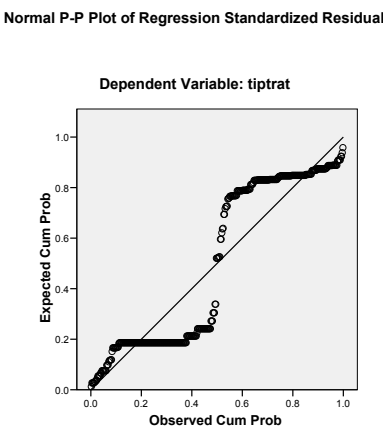

Figure 8

DISCUSSIONS

The malocclusions are capable of producing a series of functional, aesthetical and psychological imbalances. The malocclusions also can be the cause of poor dental hygiene, tooth decay, periodontal disease, traumatic occlusion and dental fracture. Disorders that come around in the case of a malocclusion can be aesthetic, masticator, of speech, dysfunction of temporo-mandibular joint and social integration.

The results of our study show a small prevalence for the skeletal malocclusions of Class II and Class III, which means that treatment planning are not difficult for orthodontics. However, the increased dental associated and group malocclusion prevalence imposes more steps for orthodontic treatment for achieving the therapeutic objectives.

The etiological factors for the malocclusions are in great proportion local, fact which proves that their removal

is easier than removing the dysfunctional and the general factors. The general factors require the cooperation with other disciplines of medicine and postpone some orthodontic treatment.

The finished results proportion is very small in comparison with our expectations. This situation is caused in mostly because of the low orthodontic sanitary education of the population which attend the health system of public orthodontics mainly because the primary orthodontics is sporadic applied in collectivities.

The calculus of the Pearson correlations and the linear regressions based on medical reasoning was carried out to verify if in the studied consignment of patients there was a link between the diagnosis of the malocclusions, the type of orthodontic treatment that was applied, the type of orthodontic apparatus that was applied and the obtained therapeutic results.

CONCLUSSIONS

The prevalence results of the malocclusions are comparable with the ones from the specialty literature, but they are specific to the geographic region.

The therapeutic results obtained refer to the population which attended the public orthodontic health service provided by the Home Health Insurance.

The accomplished correlations were carried out on the basis of medical reasoning and the regression model of prediction is probabilistic.

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FUTURE CONGRESSES

1. 33rd Annual Congress of the European Prosthodontic Association (EPA) in Innsbruck, Austria, from October 1st to 3rd, 2009
http://www.epa2009.at/

2. 2009 FDI Annual World Dental Congress --- 2-5 September 2009, Singapore
http://www.fdiworldental.org/microsites/Singapore/congress1.html

3. International Association of Paediatric Dentistry 2009, 22nd Congress --- 16-20 June. Munich, Germany
www.iapdworld.org

4. 14thCongress of Balkan Stomatological Society --- 6-9 May 2009, Varna Bulagria
www.bass2009.org

5. 5th Congress of the International Society for Oral Laser Aplications - SOLA 22nd-25th2009
www.sola-int.org/vienna2009

6. The World Aesthetic Congress 2009 AAED 34th Annual Meeting & IFED 6th World Congress
'Passion, Esthetics, & New Technology: The Future of Dentistry'
August 2-5, 2009
The Bellagio Resort, Las Vegas, NV

For more information, follow this link:

7. 51st IADS Annual World Congress

Berlin 09.08.2004 - 15.08.2004
A) Periodontology / Impantology / Prosthodontics; B) “Dentistry, quo vadis”