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CORRELATION BETWEEN ROOT COMPLEX MORPHOLOGY AND SURGICAL EXTRACTION OF MANDIBULAR THIRD MOLARS

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Abstract:
Introduction: An impacted tooth is a tooth that has not erupted in the oral cavity, that is, its eruption is prevented for some reason. These are teeth that, throughout their development and under the influence of biological, dynamic and mechanical factors of genetic and phylogenetic origin, show variations in their number, size and degree of development.
Material and methods: This paper included 80 patients who were divided into 2 groups of 40 patients each according to the degree of impaction and analyzed how the morphology of the root complex is affected by the surgical technique used during extraction.
Results and Discussion: The results show that the easiest surgical intervention is when the morphology of the root complex is a single conical root or the roots are joined in a conical shape, or even distally bent, because it is not necessary to separate them to extract the impacted tooth in its entirety and at the same time the possibility of apical fracture is avoided.
Conclusion: The oral surgical procedure for extraction of impacted mandibular molars is not correlated with the morphology of the root complex but rather depends on the experience of the surgeon.
Key words: impacted mandibular third molar, root complex morphology, operative surgical procedures, flap, separation

Introduction

An impacted tooth is a tooth that has not erupted in the oral cavity, that is, its eruption is prevented for some reason. These are teeth that, throughout their development and under the influence of biological, dynamic and mechanical factors of genetic and phylogenetic origin, show variations in their number, size and degree of development.

The growth of the mandible has been the subject of study by a large number of authors, with a special interest in the growth of the condylar cartilage, which bears the epithet "growth center", for the simple reason that its damage leads to a serious reduction in the overall growth of the mandible. This cartilage is not a primary growth center, but develops secondarily to ensure the articulation of the mandible with the cranium.

The development of deciduous teeth begins during the sixth or early seventh week of intrauterine development. Permanent teeth and their development, on the other hand, differ in whether they are permanent teeth that replace milk teeth or are additional teeth that do not have their predecessors, and this includes all permanent molars. Developmental anomalies on the teeth are numerous and, depending on the clinical picture, are divided into several groups:

- Irregularities in the position of the teeth
- Irregularities in the number of teeth
- Irregularities in the shape of the teeth
- Irregularities in the size of the teeth
- Structural irregularities in the development of the teeth and
- Disorders in the eruption of the teeth

Impaction and semi-impaction belong to the sixth group of developmental anomalies, where we have a disorder in the eruption of teeth. Some authors understand impacted teeth as teeth in which there are visible mechanical obstacles that have prevented their eruption, and retained teeth as teeth that are retained in the jaw without visible mechanical obstacles. An important prerequisite for normal

eruption is a slight mesial inclination of the impacted mandibular third molar that follows the Spee compensation curve. The retained tooth can be completely impacted in the jaw or only a part of it, so we are talking about semi-retention of the tooth and if it is near the tooth socket, it is orthotopic retention, and if it is outside the jawbone as an aberration of the tooth, in that case it is ectopic teeth. Dental impaction has been related to other genetically linked dental abnormalities according to Solana et al [1].

The occurrence of impacted and semi-impacted teeth is found in both primary and permanent dentition, but not only regular teeth can be impacted, impacted and sometimes semi-impacted teeth can also be supernumerary teeth [2,3,].

Otherwise, pericoronitis is the most common complication in impacted and semi-impacted third molars common cause (in 40% of patients) in different age groups. The results of this study coincide with the research of Andy Lanza [4] and Alireza Shirzadeh [5].

The presence of non-restorative caries is another indication for extraction of IMTM (impacted mandibular third molar). Naji Z Arand et al. [5] in their study of 2000 randomly selected orthopantomograms, as an indication for extraction of mandibular molars and the presence of non-restorative caries proved in there was caries of the second mandibular molars, which in turn was an indication for extraction of the third mandibular molars. Periapical pathological processes of the mandibular third molars are also indications for their extraction according to Alisha Gadhia [6].

The position of the mandibular 3rd molar serves as a key indicator of extraction complexity [7]. The position of the mandibular third molar serves as a key indicator of the complexity of the extraction [7]. However, impacted teeth should not be extracted without reason, but when they are the cause of cellulitis, abscesses, osteomyelitis, the presence of periodontal disease or orthodontic abnormalities, they should be removed.

Ogden [8] recommends that when impacted teeth are deeply set, without pathological processes, in patients with chronic diseases who would not tolerate oral surgery, they should be under some monitoring. The morphology of the root complex of the IMTM has a great influence on the degree of severity of surgical extraction and the planning of the oral surgical technique, which are closely related to it.

The morphology of the root complex facilitates the extraction of the IMTM, especially if it is a single conical root. If the roots are fused in a conical shape and distally bent, the oral surgical technique is facilitated because it is not necessary to separate them to extract the IMTM in its entirety and at the same time the possibility of apical fracture is avoided. The total width of the roots in the mesiodistal direction should be compared with the width of the tooth in the cervical line. Whenever the mesiodistal width of impacted molars is smaller, surgical extraction is easier. Apical bending of the roots makes oral surgical intervention more difficult. The density of the surrounding bone plays a major role in determining the difficulty of extraction, it increases in direct proportion to the age of the patient due to reduced elasticity, the existence of the dental follicle also determines the difficulty of extraction and the larger it is, the easier the extraction of the IMTM.

There is also prophylactic extraction of IMTM, which is applied to patients with the following medical conditions:a) endocardial abnormalities, b)predisposing bacterial endocarditis, c) patients who need to be treated with transplantation d) and patients who are undergoing chemotherapy and radiotherapy. Prophylactic extraction is also performed in patients who need to have a prosthetic appliance made, i.e. the indication is pre-prosthetic, but the third molars are also prophylactically extracted to prevent resorption of adjacent teeth, at the same time, the extraction of IMTM for orthodontic reasons is represented in the largest percentage of patients.

Objective

The aim of this paper is to see if there is a correlation between the morphology of the root complex of impacted mandibular molars and the surgical extraction of impacted and semi-impacted third molars.

Material and method

The research was conducted at the Clinic for Oral Surgery at the University Dental Clinical Center "St. Panteleimon" in Skopje.

The research included a total of 80 patients with clinically diagnosed impacted or semi-impacted mandibular third molar who presented to the aforementioned clinic for oral surgical intervention, with the respondents being divided into 2 groups of 40 patients each, as follows:

I. Respondent group of 40 patients with impacted mandibular third molar

II. Respondent group of 40 patients with a semi-impacted mandibular third molar

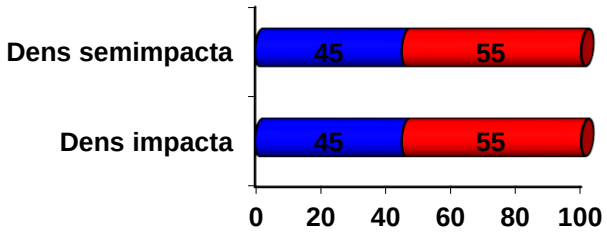
All patients underwent a descriptive analysis according to:

- age (group of subjects up to 24 years of age and group of subjects over 24 years of age)
- gender and
- morphology of the root complex of the IMTM
- location of IMTM in relation to ramus mandible

The age and gender of patients presenting for surgical extraction of IMTM were recorded from the anamnestic data. Each surgical intervention was performed using local anesthetic in the form of a conduction block anesthesia. After conduction anesthesia for the inferior alveolar nerve and submucosal anesthesia for the buccal nerve, and with a previously determined position of the impacted and semi-impacted third molar of the mandible, we planned the surgical approach with the following incisions applied: Axhausen incision, short and extended envelope with or without vestibular extension, and sulcus incision. After the incision was made, i.e. the formation of an appropriate mucoperiosteal flap, we proceeded to apply an appropriate surgical technique that was correlated with the morphology of the root complex: some third molars were extracted only with osteotomy, in some we had in addition to the osteotomy and crown separation, and in others, in addition to the osteotomy and crown separation, it was necessary to perform a separation of the IMTM roots. After the IMTM extraction was completed and the operative field was abundantly irrigated with saline, we proceeded to close the surgical wound and place sutures.

Results and Discussion

A total of 80 patients participated in the study, of whom 36 (45%) were male and 44 (55%) were female (Graph 1), in both study groups. Our results are largely consistent with the results of the peer-reviewed papers cited. what we have extracted from the published publications [9,10,11].The classical surgical removal of impacted mandibular molars is one of the most common procedures in oral surgery, although today the use of piezosurgery has made the work much easier and safer. The exact position of the impacted mandibular

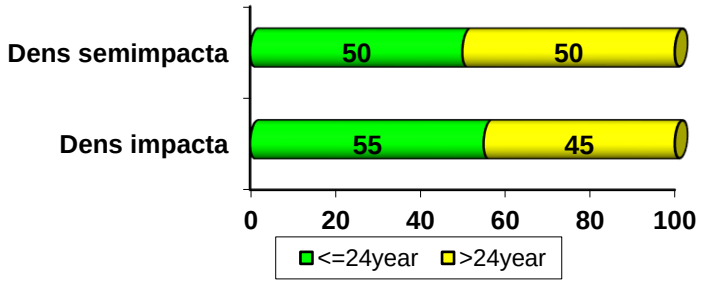


Graph 1 Distribution of patients by gender

Graph 1.

the third molar is determined quite precisely with orthopantomographic images, although computed tomography and the SBST technique. A proficient knowledge of oral anatomy is mandatory to facilitate uncomplicated removal of the mandibular third molars Gupta [9]. The distribution of patients by age and degree of impaction in both groups is with equal percentage representation depending on whether they are patients under 24 years of age or over 24 years of age, so the difference expressed in percentages

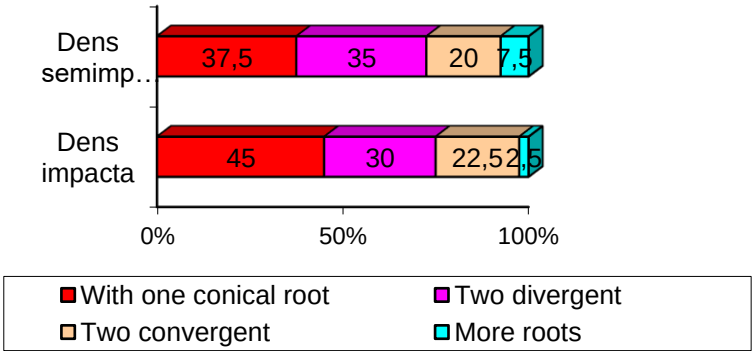
between the groups and within the groups themselves is statistically not significant for p>0.05. (Graph 2)



Graph 2.

Graph 2 shows the distribution of patients according to age and degree of impaction in both groups

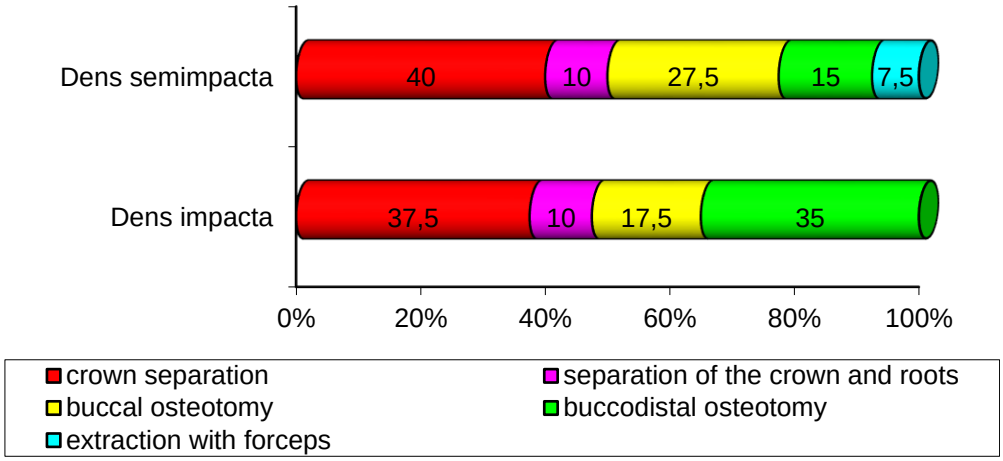
The results are shown in graph 3 the root complex is a single conical root or the IMTM roots are fused into a conical shape or even distally bent, the oral surgical technique is facilitated because it is not necessary to separate them in order to extract the IMTM in its entirety and at the same time the possibility of apical fracture is avoided.



Graph 3.

Graph 3 shows the distribution of patients according to the classification of the root complex and the degree of impaction in both groups

The density of the surrounding bone plays a major role in determining the difficulty of the extraction, it increases in direct proportion to the patient's age due to reduced elasticity. The existence of the dental follicle also determines the difficulty of the extraction and the larger it is, the easier the extraction of the IMTM (Graph 4 distribution of patients according to degree of impaction and method of extraction)



Graph 4.

Graph 4 shows the distribution of patients according to surgical technique and degree of impaction in both groups

From Graph 4, it can be seen that in the largest number of cases, both the semi-packed and the impacted teeth have undergone coronary separation.

Conclusion

Considering the complexity of oral surgical extraction as a therapeutic procedure in the care of impacted and semi-impacted mandibular third molars, as a general conclusion we indicate that the morphology of the root complex of impacted mandibular third molars is important in the planning of the mucoperiosteal flap but does not determine the course of the surgical intervention, i.e. there is no statistically significant relationship between the root complex and the planned surgical approach. The experience of the oral surgeon And the estimate for the course of the intervention is what is important for an operative extraction of mandibular third molars.

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