

Investigations of the masticatory function of patients with different types of prosthetic constructions

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Abstract: *The aim of the authors is in conditions of clinical study to investigate the masticatory function in patients with different types of prostheses. Normal function requires the coordinated action of many elements, including teeth, salivary glands, tongue, and masticatory muscles. Dysfunction in any of these areas can result in impaired mastication. Missing teeth and old prostheses are concern to the patients and dentists and this can be a multifactorial problem that involves esthetics, phonetics, mastication and swallowing. The pilot study showed necessity of additional study of masticatory function.*

Keywords: masticatory function, objective study of mastication, subjective study of mastication

frequency analysis and crosstabulation of quality variables; graphical methods for data presentation.

1. Introduction

A thorough dental prosthetic treatment must meet all three medico-biological criteria. Dental aesthetics becomes worthless if dentures do not meet the functional requirements. Therefore, the study of masticatory efficiency proves to be essential in the evaluation of dental prosthetic treatment.[1] Mastication is a neuro-muscular activity, whose purpose is to process food and at the same time the process by which food is broken down into smaller particles, thus increasing its surface area [2]. As chewing continues, the food mixed with saliva reaches body temperature while turning it into a bolus. At the same time, pleasant sensations delivered by taste and smell satisfy basic human necessities.[3] Mastication comprises complex mechanical and physiological processes whereby all the parts of the chewing apparatus are involved.[4, 5]

Aim

The authors set themselves the goal of investigating objectively and subjectively the masticatory function after the recovery of the masticatory unit with various types of fixed and removable prostheses.

2. Material and Methods

The subjects of the study are 38 patients with prostheses as follows: 12 with fixed prostheses, 12 with partial-removable prostheses and 14 with dentures. The objective study is based on sieve analysis of a sample of test food of natural material (Bulgarian peanut). The subjective survey is conducted via a survey of 15 questions. In this study the authors use as a basis of comparison the answers to question number 11: Are you able to chew whole nuts? The ranges of possible answers are: 1. No, I can not chew this kind of food at all. 2. Yes, but it is difficult for me. 3. Sometimes I can chew this kind of food. 4. Yes, I can chew normally.

For statistical analysis of the data was used SPSS for Windows version 16. The following methods have been used:

3. Results and Discussion

The investigated 38 subjects have total 71 prostheses.

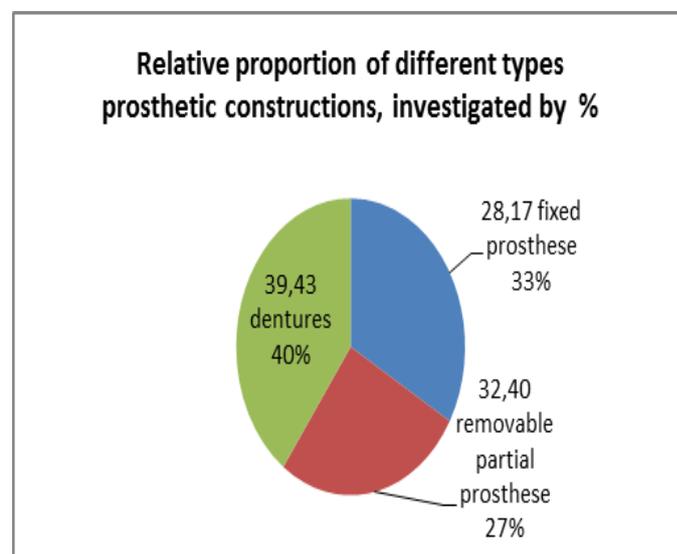


Figure 1: Relative proportion of the different types of prostheses investigated by percentage

38 of the prostheses investigated are for the upper jaw and 33 for lower jaw. All of them meet all three medico-biological criteria. The objective methods for the examination of the masticatory function combine various techniques of precise laboratory studies. The authors' choice is sieve analysis.

The results report almost fully restored function in patients with fixed prostheses (91%), a lower recovery rate in the patients with removable prostheses (74%) and the lowest in patients with dentures (57%).

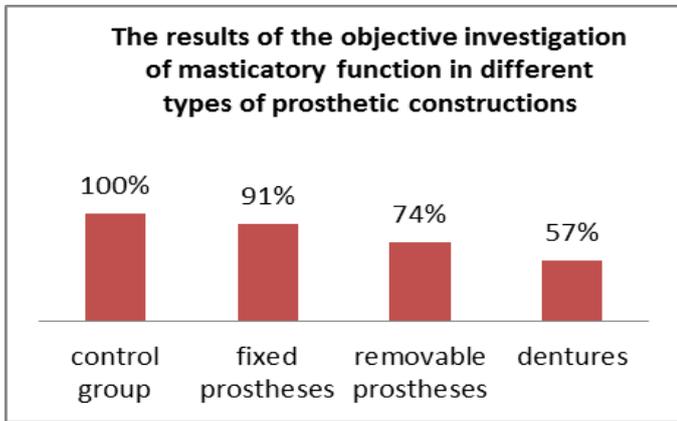


Figure 2: The results of the objective investigation of masticatory function in different types of prosthetic construction

The results obtained via the questionnaire are analogous to those from the functional investigation: 89% of those surveyed who have fixed prostheses responded that they are able to chew normally while, 70% of those surveyed who have partially removable prostheses and 61% of those with dentures consider their masticatory function to be unimpeded.

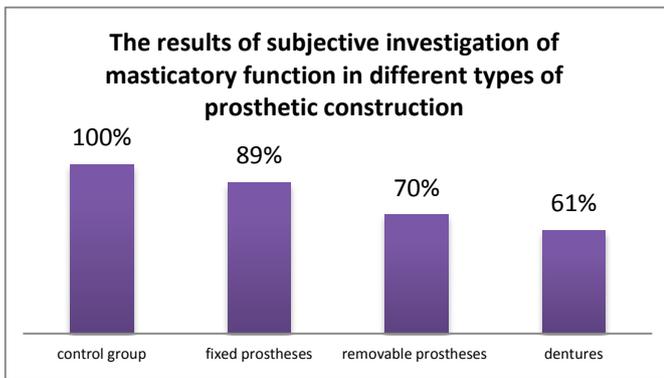


Figure 3: The results of subjective investigation of masticatory function in different types of prosthetic construction.

The results obtained indicate that the most intact masticatory function is achieved with fixed prostheses. These are possible with defects classified as Class 3 and Class 4 according to the Kennedy system and Class A according to the Boyanov system.

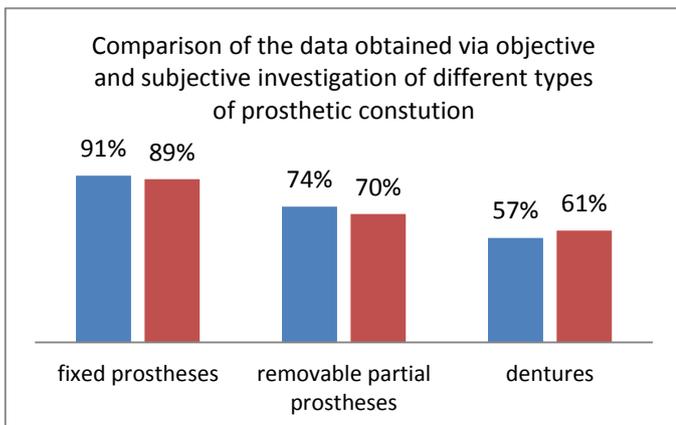


Figure 4: Comparison of the data obtained via objective and

subjective investigation of different types of prosthetic construction

It thus follows that specialists in prosthetics should always opt for fixed prostheses in their selection of a plan of treatment wherever this is possible.

In the case of partially removable prostheses it can be observed that 4% of those surveyed regard their masticatory function as more impaired than the objectively obtained data would indicate while those with dentures are 4% more satisfied in comparison to the data from the functional investigation.

The slight discrepancies registered between the objectively and subjectively obtained results lead us to consider once again the type of nervous system of each individual organism and its role in the act of mastication.

4. Conclusion:

The main objective of prosthetic treatment is to fulfil the three biomedical criteria: prophylactic, functional and aesthetic. This obliges the dental practitioner to take into account the study of the masticatory function after each prosthetic treatment conducted.

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