

## ORIGINAL PAPER

## The option for prosthetic treatment determined by social and economic factors.

Andreea Mariana Bănăţeanu<sup>1</sup>, Barbu Alexandru<sup>2</sup>, Farah Bechir<sup>3</sup>, Claudia Florina Andreescu<sup>1</sup>

<sup>1</sup> Faculty of Dental Medicine, Titu Maiorescu University, Bucharest, Romania

<sup>2</sup> Private practice

<sup>3</sup> Faculty of Dental Medicine, University of Medicine, Pharmacy, Science and Technology of Targu Mures, Targu Mures, Romania

### Abstract

Fixed mixed restorations are frequently realized in prosthodontics. The purpose of the study was to analyze comparatively the frequency in realization of fixed prosthetic restorations, represented by metal-polymeric and porcelain fused to metal bridges, in private practice, in patients living in rural and urban area.

95 patients, 42 of rural and 53 of urban area were selected for this study. The selected clinical cases were compared after the achievement of prosthetic restoration (metal-polymeric and porcelain fused to metal bridges), to determine the causes of choosing of the type of prosthetic treatment plane. The selected patients received 114 fixed mixed restorations, represented by 70 metal-polymer (FMMP) and 44 porcelain-fused-to-metal (PFM) bridges. The distribution of FMMP restorations were 59 for patients of rural area and 11 for the patients of urban area. All 44 PFM restorations were achieved for the patients of urban area.

In some situations, the adopted prosthetic treatment plan may represent a compromise solution in terms of the optimal resolution of the case, due to the local or general particularities of patients, or due to the objective/financial factors.

**Key words:** fixed prosthetic restorations, metal-polymeric bridges, metal ceramic bridges

### Introduction

Coronary destruction and partial edentations are clinical situations frequently encountered in dental practice [1]. The variety of clinical cases facing the practitioner is a very important element in selecting the options for the establishment of the prosthetic treatment plane [2,3].

Coronary destruction and of partial edentations determine undesirable local changes in the functions of the orofacial system, which are accompanied by negative effects on the whole body, and, last but not least, by the psychological impairment of the patient [4,5].

The most common local complications are represented by the esthetic and phonetic disturbances, masticatory disorders, tooth migration, periodontal affections, occlusal disturbances, and dental abrasion [6].

Fixed mixed prosthetic restorations are frequently realized in prosthodontics [7].

The purpose of the study was to analyze comparatively the frequency in realization of fixed prosthetic restorations, represented by metal-polymeric and porcelain fused to metal bridges, in private practice, in patients living in

rural and urban area. To achieve the purpose of the study, were analyzed in the dental offices the various clinical cases.

### Material and methods

The study was realized in conformity with the ethical principles and the good clinical practice. All selected patients understood and signed the written informed consent prior the initiation of this research. The researches were realized in 22 private Romanian dental offices, of which 10 were located in the rural area and 12 in the urban area. Of the 100 selected patients, at the final of researches remained only 95 (42 patients of rural and 53 of urban area). The inclusion criteria were represented by the healthy patients, with ages between 31-50 years and the presence of extended dental coronary destruction and of partial edentations restored by dental bridges.

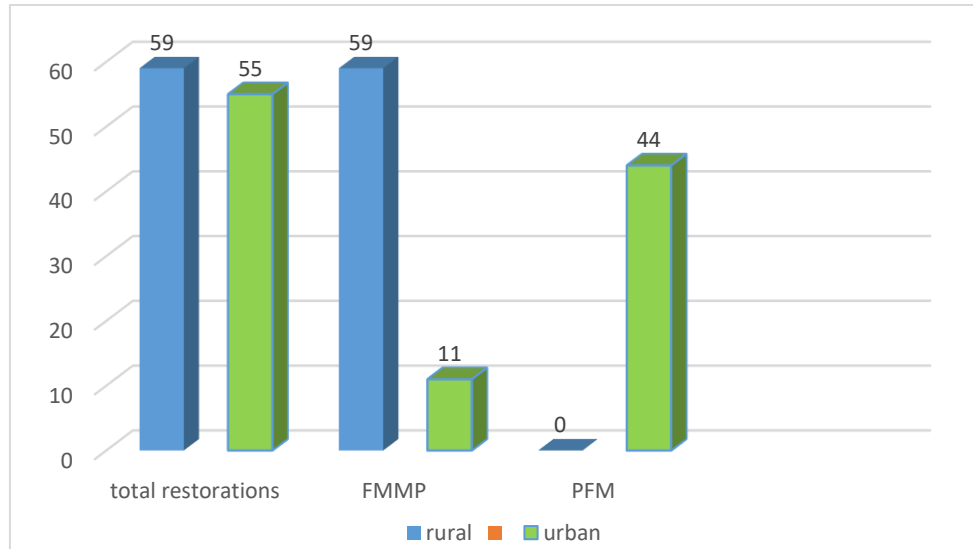
To achieve the purpose of the article, we analyzed in the dental offices the various clinical cases. The metallic component part of all manufactured restorations were by Remanium alloy. The polymeric component part were represented by the baro-polymerized dental resin, and the ceramic

component part by the porcelain realized by the additive method.

### Results and discussions

The selected 95 patients received 114 fixed mixed restorations, represented by 70 metal-

polymer (FMMP) and 44 porcelain-fused-to-metal (PFM) bridges. The distribution of FMMP restorations were 59 for patients of rural area and 11 for the patients of urban area. All 44 PFM restorations were achieved for the patients of urban area (Graph 1).



Graph 1. The distribution of the fixed mixed restorations

For illustration, we present two of the solved cases by fixed mixed restorations, one by metal-polymer (FMMP) and one by porcelain-fused-to-metal (PFM) fixed prostheses.

The first cases is a 44-year-old female, which came to the dentist's office invoking the

dysfunctional mastication, respectively the disturbed phonetics and aesthetics. The clinical examination revealed root fractures, changed color of the physiognomic component part, gingival recession, unsatisfactory aesthetic appearance.



Figure 1. The initial situation

The edentation diagnosis (figure 1) was maxillary II<sup>nd</sup> Class Kennedy edentation with 3

modifications (absence of teeth 1.6, 2.1, 2.4, 2.5, 2.7), and mandibular II<sup>nd</sup> Class Kennedy

edentation with two modifications (absence of 3.4, 3.5, 3.6, 4.4, 4.6, 4.7). The adopted treatment plane was represented by the ablation of old prosthetic restorations with the pillars 1.4, 1.5, 1.7; extraction of 1.4; performing the endodontic treatment on tooth 1.3 (for metallic post and core, impression and, than, placement of metallic post and core) and of tooth 2.2 (reconstructed with glass fiber core and glass ionomer cement). The pillars were prepared by the same grinding techniques, the impression of prosthetic field was performed with condensation silicone material.

The next stage was represented by: the try-in of the metallic component on the pillars (verifying the marginal adaptation, the occlusion, the contact of mucosal area of pontic with the edentulous ridge, the



Figure 2. Try-in of the metallic component part in the oral cavity



Figure 3. Final cementation of the fixed prosthesis

The second selected case is of a 44 age old patient, who came to the dental office for the restoration of the masticatory function, affected by the loss of teeth 3.6 (figure 4). The edentation diagnosis was IIIrd Class Kennedy edentation. The treatment options chosen after the discussion with the patient was the realization of a PFM fixed restoration with the aggregation elements on teeth 3.5-3.7 and with the pontic covered in totality with the porcelain. The phases of the prosthetic

treatment consisted in the patient's health education, preparing of the local pre-prosthetic field, preparation of abutments, impression of prosthetic field, the effectuation of the laboratory phases and of the post-prosthetic treatment. It was necessary to realize the devitalization at the level of 3.7 (due its large coronal destruction) for the achievement of a post and core for the crown coverage (figure 5).



Figure 4. The initial situation

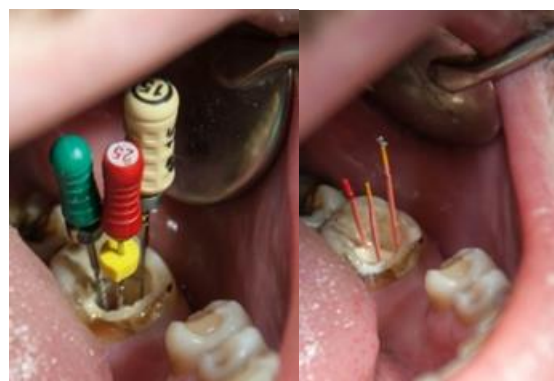


Figure 5. Endodontic treatment

In order to ensure the necessary space for the metallic component part and for the ceramic one the abutments were prepared almost 2mm in profundity and with buccal cervical shoulder of 0.5mm, for aesthetic reasons. In figure 6 is presented the try-in of the metallic component part in oral cavity. The



Figure 6. The try-in of the metallic component part in the oral cavity

PFM bridges shows optimum mechanical resistance and esthetic features, reason of which is superior to the metal-polymer bridges. In all studied cases, the chosen variant of prosthetic treatment plane was determined by the socio-economic considerations of the patients.

In defiance of the competition among metal-polymer and metal-ceramic fixed restorations, the first ones represents still in present of the most widely used types fixed esthetic restorations, because the combination of the polymeric esthetic component part with the metallic component represent a success regarding the cost of this type of prosthetic restoration. Compared with porcelain fused to metal fixed restorations, an important disadvantage of metal-polymeric restoration is represented by the accentuated reductions of dental hard tissues especially on the labial/buccal surfaces of pillars, often followed by endodontic treatment [8].

Many researchers suggest that patients with low social and economic conditions have the tendency to undervalue their level of dental healthcare demands [9-12].

Costs and risk assessments influence the selection of mixed fixed restoration type and the prognosis [13].

provisional cementing of the PFM bridge was followed by the final cementation effectuated after 3 weeks. The patient' follow-up continued with their oral health education about the sanitation of the fixed restorations as well as of the remaining teeth after 6 months (figure 7).



Figure 7. Final cementation of the fixed prosthesis

Sometime, removable dentures represent, even at present, a viable dental treatment alternative, especially in the cases where the fixed mixed prosthetic restorations cannot be realized due to the clinical, technical or social and economic conditions [14-17].

The limitations of findings are represented by the reduced number of studied cases and further researches, on a large number of patients, are required.

### Conclusions

- In some situations, due to the local or general characteristics, or due to objective, financial factors, is required to elaborate prosthetic treatment variants with few compromises in terms of optimal resolution of the patients' case.
- The solved cases by the use of metal-polymeric restorations suggest the conclusion that there are restored optimally the masticatory function and satisfactorily the esthetics function, which is why they are preferred by patients with more limited financial possibilities

**Conflict of interest:** None to declare.



## Selective references

1. Shillingburg HT Jr, Sather DA, Wilson EL Jr, et.al. Fundamentals of Fixed Prosthodontics, Fourth Edition, Quintessence Publishing Co, Inc, 2012, p. 81-82.
2. Rediu S, Adam M, Aspects of the edentulous state perception in children and adolescents versus therapeutic attitude, Rom J of Oral Rehabil. 2011;3(3):99-107.
3. Al-Quran FA, Al-Ghalayini RF, Al-Zu'bi BN. Single-tooth replacement: factors affecting different prosthetic treatment modalities. BMC Oral Health. 2011;11:34.
4. Antohe M-E, Andronache M, Feier R, Stamatin O, Forna NC. Statistical studies regarding therapeutic approaches for edentulous social clinical cases in students`practical stages, Rom J Oral Rehabil. 2017; 9(2): 94-99.
5. Michelotti A. An interview with Ambrosina Michelotti. Dental Press J. Orthod. Internet. 2018; 23(2):22-29.
6. Dumitra D. Clinical-statistical study concerning the prosthetic rehabilitation of extended partial edentation, Acta Medica Transilvanica 2014;2(4):303-305
7. Ciavoi G, Bechir A, Bechir ES, Curt-Mola F, Pribac V, Sapte E, Dascalu IT. Long term trial of two dental resins used in the manufacture of the aesthetic component of fixed restorations, MATERIALE PLASTICE 2017; 54(2):265-68.
8. Pop DM, Negrutiu ML, Cojocariu AC, Craciunescu EL, Pirte A, Sinescu C. Metal polymer interfaces-assessment in dentistry, Rev. Chim. (Bucharest), 2015; 66(4):575-7.
9. Zoekler JM. Occupational stress and health among home health care workers. Dissertations - ALL. 666, 2017. <https://surface.syr.edu/etd/666>.
10. Crocombe LA, Brennan DS, Slade GD. The influence of the volume of dental treatment on change in self-reported oral health. J Public Health Dent. 2013; 73(2):120-6
11. Blizniuk A, Ueno M, Zaitso T, Kawaguchi Y. Association between self-reported and clinical oral health status in Belarusian adults. J Investig Clin Dent. 2017; 8(2). doi: 10.1111/jicd.12206.
12. Trohel G, Bertaud-Gounot V, Soler M, Chauvin P, Grimaud O. Socio-Economic Determinants of the Need for Dental Care in Adults. PLoS One. 2016; 11(7):e0158842. doi:10.1371/journal.pone.0158842
13. Overmeer J, Narby B, Hjalmarsson L, Arnrup K, Eliasson A. A retrospective multicenter study comparing metal-ceramic and composite single crowns performed in public general dentistry: 5-year results. Acta Biomater Odontol Scand. 2016;2(1):43-8.
14. Hubáľková H, Linetskiy I. New trends in prosthetic dentistry. Prague Medical Report. 2006; 107(2):149–164.
15. Alani A, Bishop K, Djemal S. The influence of specialty training, experience, discussion and reflection on decision making in modern restorative treatment planning. Br Dent J. 2011;210(4):E4.
16. Roşu AO, Ionaş M, Ghergic DL. Complex oral rehabilitation through fixed implant supported prosthodontic restoration. Case report, Acta Medica Transilvanica. 2015;20(1):118-9.
17. Boariu D, Agop Forna D, Iordache C. The role of clinical stages in making efficient the therapeutic management in partial edentation, Rom J Oral Rehabil. 2018; 10(3):125-138.

## Corresponding author:

Farah Bechir

University of Medicine, Pharmacy, Science and Technology of Tirgu Mures, 38 Gheorghe Marinescu street, Tirgu Mures, 540139, Romania

Email: [farah.bechir@yahoo.com](mailto:farah.bechir@yahoo.com)

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