

THERAPEUTIC VARIANTS IN COMPLEX CLINICAL CASES OF INTERCALATED EDENTATION

Cristina Bodnar¹, Mihai Vizuroiu², Andrei Kozma^{3*}, Claudiu Topoliceanu⁴, Dorian Agop Forna⁵, Norina Forna⁶

1 Conf.univ.PhD. MD – „Carol Davila” University of Medicine and Pharmacy, Bucharest, Faculty of Dental Medicine

2 MD - „Carol Davila” University of Medicine and Pharmacy, Bucharest, Faculty of Dental Medicine

3 CS II, PhD, MD – National Institute for Recovery, Physical medicine and Balneoclimatology, Bucharest

4 Univ.assist, PhD, Faculty of Dental Medicine, University of Medicine and Pharmacy ”Grigore T.Popa”, Iasi

5 Lecturer, PhD, Faculty of Dental Medicine, University of Medicine and Pharmacy ”Grigore T.Popa”, Iasi

6 Univ.Prof., PhD, Faculty of Dental Medicine, University of Medicine and Pharmacy ”Grigore T.Popa”, Iasi

* *correspondent author:* Andrei Kozma dr.ka.mailbox@gmail.com

***all authors have the same contribution*

Abstract

Intercalated edentations have high prevalence both in anterior and lateral prosthetic areas. Various prosthetic solutions can be proposed for these clinical situations, including fixed bridges, hybrid prosthesis, or implant-prosthetic rehabilitation. Financial reasons or abutment teeth affected by severe periodontal disease, can conduct to the replacement of these prosthetic solutions with removable dentures but the oral hygiene as well as the period of adaptation and restoration of functions are more difficult. Pro-prosthetic treatments, crown lengthening and surgery procedures (augmentation associated or not to guided bone regeneration technique) on the level of the alveolar ridge, must be considered to improve the biological and clinical indices of the prosthetic area. The decisional processes are dealing with a great number of variables which need being evaluated and correlated with clinical factors, technological solutions, financial costs and patients' demands.

Key words: intercalated edentation, therapeutic variants, fixed metal ceramic bridges

Introduction

The intercalated edentations can be associated with various complications that can accelerate the deterioration of the edentulous prosthetic area (1). For these clinical situations, various prosthetic solutions can be proposed, including fixed bridges, hybrid prosthesis, or implant-prosthetic rehabilitation. These therapeutic solutions avoid more difficult period of adaptation and restoration of functions related to removable dentures (2,3,4). The complex cases of intercalated edentations require flexible treatment plans due to many

reasons, including the patient's ambivalence, unforeseen complications, prevailing clinical presentations, and financial status (5). When gingival and bone ridge defects are detected, pro-prosthetic treatments, crown lengthening and surgery procedures (augmentation associated or not to guided bone regeneration technique) on the level of the alveolar ridge, will significantly improve the biological and clinical indices of the prosthetic area (6). In anterior intercalated edentations, anterior hard and soft tissue deformities in the aesthetic zone will represent a significant dental and technical challenge to the restorative team (7).

The aim of this study is to assess the features and the challenges of the oral rehabilitation in 3 clinical cases of intercalated edentation.

Materials and method

Clinical case 1

The patient (male, age 58) demands the rehabilitation of the masticatory and esthetic functions. The remaining teeth present gingival retraction, trema, generalised wear III degree, inclination, and extrusions (fig.1,2). In the maxillary anterior area it is detected a defect of alveolar ridge following a surgical intervention for periapical kyst (fig.3). The occlusal stops are in low number, with unregulated distribution, affecting the occlusal stability (fig.4,5). These elements contribute to the decrease of the occlusal vertical dimension.

Edentation diagnostic:

- Maxillary edentation class III with 2 modifications
- Edentation class I with 2 modifications

The patient refused removable dentures or implant-prosthetic therapy. The selected prosthetic solution was fixed metallo-ceramic maxillary and mandibular bridges. After the recording of the new occlusal vertical dimension, this was tested by temporary fixed acrylic dentures. The rehabilitation by fixed metal ceramic prosthetic restoration recovered the masticatory and esthetic functions, the occlusal vertical dimension as well as the alveolar ridge defect by using ceramic with colour close to gingiva (fig.6-11). The selected prosthetic solution is a compromise

chosen at the expense of a more complex and more adequate prosthetic solution for the presented clinical case. The main reasons for the choice of the fixed bridge are the financial limits of the patient and his desire for limited number of treatment sessions.



Fig.1. Preoperative aspects



Fig.2. Preoperative aspects



Fig.3. Alveolar ridge defect



Fig.4. Occlusion disorders



Fig.6. Intraoperative aspects



Fig.7. Intraoperative aspects



Fig.8. Maxillary metal ceramic bridge



Fig.9. Mandibular metal ceramic bridge



Fig.10. Posttreatment aspect



Fig.11. Posttreatment aspect

Clinical case 2

The patient (female, age 59) demands the replacement of the maxillary metal acrylic fixed bridges.

Personal medical history: Basedow-Graves disease (hyperthyroidism, exophthalmia) and insulin-dependent diabetes.

After the replacement of maxillary bridges and the extraction of 21, 24 (fig.12,13), **the edentation diagnostic** is as follows:

Maxillary edentation class II with 3 modifications;

Mandibular edentation class I.

The general pathology of the patient contraindicates implants insertion during an implant-prosthetic therapy. For financial reasons, the patient demands only the treatment for the maxillary edentation.

The chosen treatment solution was metal acrylic fixed bridge. The remaining teeth can be used as abutment teeth as they have a favourable distribution, in different plans, and a favorable periodontal status (fig.14).

Due to the low smile line of the patients, the defect of the alveolar ridge was solved by the increase of the height of the prosthetic crown 2.1 by periodontal surgery procedure (Fig.15,16).



Fig.12. Preoperative aspect



Fig.13. Preoperative aspect

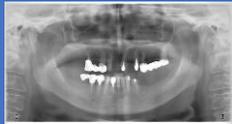


Fig.14. Radiographic examen



Fig.15. Posttreatment aspect



Fig.16. Posttreatment aspect

Clinical case 3

The patient (male, age 54) demands the rehabilitation of the masticatory and esthetic functions.

The patient is a smoker with poor oral hygiene and is affected by a severe chronic marginal periodontitis (fig.17.18,19).

Edentation diagnostic:

- Maxillary class III edentation, with 3 modifications;
- Mandibular class III, with 2 modifications (fig.17,18)

The patient has chosen to treat the mandibular edentation by totally physiognomic metal ceramic fixed bridge (fig. 21,22).

The canine 4.3 (fig.18) was included in the new fixed bridge from 4.3. to 3.5., due to the extended carious lesion that required treatment (fig.22).

The new fixed prosthesis rehabilitates the mandibular arch and immobilises the remaining teeth affected by periodontal disease.

The chosen prosthetic therapy respect the desire of the patient, that demanded to benefit by low number of treatment sessions. Also, the implant-prosthetic solution is contraindicated for this patient due to the poor oral hygiene, smoking status, periodontal disease, and the lack of motivation for complex therapy.



Fig.17. Preoperative aspect



Fig.18. Preoperative aspect



Fig.19. Radiographic examen



Fig.20. Intraoperative aspect



Fig.21. Intraoperative aspect



Fig.22. Mandibular metal ceramic bridge



Fig.23. Posttreatment aspect



Fig.24. Posttreatment aspect

Discussions

The prevalence of edentation in Romania is 46,7%, slightly higher in males (49,8%) than in females (43,7%) (8). The reasons for teeth loss are mostly the carious lesions and periodontal disease (8). Considering the extended prevalence of partial edentulous patients, the treatment must be initiated as early as possible due to the various complications that can be associated even to reduced intercalated edentations. The prognosis for remaining teeth should be assessed carefully, while the presence of extended carious lesions or advanced periodontal disease, associated to the reluctance of the patient to apply proper oral hygiene instructions, can modify an initial optimal treatment plan.

In the clinical cases presented previously, the challenge of the clinical situations was the reevaluation of the occlusal vertical

dimension, the esthetic and masticatory rehabilitation, the assessment of the periodontal status of the abutment teeth, the rehabilitation of the arch integrity, gingival tissues and bone tissues. The therapeutic planning also must integrate the systemic status, social and economic factors and motivational factors (9). Regarding the presented clinical cases associated with alveolar defects, we must consider the primary factors (systemic status, age, genetic factors, hormones, nutritional) and aggravating factors (iatrogeny, risk factors), in the prognosis of the posttreatment evolution and the long-term success of fixed prosthetic rehabilitation (10).

Setting up the treatment planning is related to the adaptation of systemic, loco-regional and local patient' data. A special focus must be considered on occlusal parameters. The occlusal disorders can be encountered due to dental migrations, modifications of occlusal parameters, inappropriate prosthetics but it may also result, within a subsidiary plane, due to muscular and articulatory dysfunctions (11).

Despite the fact that the ideal position for dissipation of occlusal forces by the periodontal ligament, since the load is axially directly through the teeth, the occlusal concepts must be adapted to particular stomatognathic system features of every patient (12).

The decisional processes are dealing with a great number of variables which require evaluation and correlation with the technological solutions and patients' demands (13).

Conclusions

- The choice of the therapeutic prosthetic solutions is mostly influenced by systemic status and social and economic factors; these factors can conduct to the choice of a compromise solution.
- The hybrid prosthesis is the best therapeutic solution when the implant-prosthetic treatment is excluded in terminal edentations.
- The bone and gingival defects of the alveolar ridges can be rehabilitated by addition procedures or by ceramic substitution using ceramic or acrylic materials with imitating the gingiva colour and restoring the esthetic function and lips support.
- The extended fixed bridges have the role to restore the arches integrity and to immobilise the teeth affected by periodontal disease.
- The restoring of the occlusal vertical dimension dimensiunii, tested by temporary prostheses, is an indispensable stage in the prosthetic therapy.
- The complex cases with edentations require a interdisciplinary approach, combining orthodontic, surgery and prosthetic techniques.
- The lack of oral health education combined with the lack of financial resources is associated with challenging clinical situations that require a complex, expensive, and long-term treatment that can be denied by patient.

References

1. Forna Norina, Protetică Dentară, Vol I si II, Editura Enciclopedica, 2011
2. Magda Ecaterina Antohe, Monica Andronache, Ramona Feier, Ovidiu Stamatina, Norina-Consuela Forna. Aspects of oral rehabilitation using removable dentures: esthetics and functionality. Romanian Journal of Oral Rehabilitation. Vol. 10, No. 1, January - March 2018: 133-139.
3. Antohe –Ecaterina Magda, Stamatina Ovidiu, Feier Diana Ramona, Andronache Monica, Forna Norina. Clinical and technological rehabilitation of partial edentation complications. Romanian Journal of Oral Rehabilitation Vol. 9, No. 4 October- December 2017: 84-89.
4. Bolat Maria, Nicolae Dan Bosînceanu, Baci Raluca Elena, Forna Agop Doriană, Bosînceanu Gabriela Dana, Forna Consuela Norina. Partial dentures-successes and failures. Romanian Journal of Oral Rehabilitation Vol. 9, No. 4 October- December 2017: 93-96
5. Roxana Ionela Vasluianu, Catalina Holban Cioloca, Magda Antohe, Bogdan Bulancea, Norina Consuela Forna. Treatment plan proposals to the patient with partial edentation. Romanian Journal of Medical and Dental Education Vol. 8, No. 1, January 2019: 44-53.
6. Frăţilă Dragoş, Scutariu Monica Mihaela, Forna Norina. Clinical and paraclinical indicators in the establishment of an oral diagnosis with high predictability. Romanian Journal of Oral Rehabilitation Vol. 6, No. 2, April - June 2014: 100-105.
7. Salama H, Salama MA, Garber D. The interproximal height of bone: a guidepost to predictable aesthetic; strategies and soft tissue contours in anterior tooth replacement. Pract Periodontics Aesth Dent. 1998;10:1131–1141.
8. Livia Bobu, Carina Balcoş, Dana Bosînceanu, Magda Călina Bârlean. The prevalence of edentations in young adults in Iasi. Romanian Journal of Oral Rehabilitation Vol. 10, No. 1, January-March 2018: 80-87.
9. Tudorici Teona, Feier Ramona, Balcos Carina, Forna Norina. Socio-demographic factors and the partial edentulism in the adult population from Iasi, Romania. Romanian Journal of Oral Rehabilitation Vol. 9, No. 2, April - June 2017: 68-72.
10. Joanna Kuć, Teresa Sierpińska, Maria Gołębowska. Alveolar ridge atrophy related to facial morphology in edentulous patients. Clin Interv Aging. 2017; 12: 1481–1494.
11. Popescu MR, Dăguçi C, Dragomir LP. Occlusal Screening as Basis for the Integration of Conjoint Gnatho-Prosthetic Devices. Curr Health Sci J. 2010 Jul-Sep; 36(3): 148–152.
12. Tiwari B, Ladha K, Lalit A, Naik D. Occlusal Concepts in Full Mouth Rehabilitation: An Overview. J Indian Prosthodont Soc. 2014 Dec; 14(4): 344–351.
13. Norina Forna, Monica Tatarciuc, Anca Vitalariu, Raluca Baci, Diana Diaconu Popa. The influence of the technological parameters on the characteristics of cast dental bridges. Romanian Journal of Oral Rehabilitation., Vol.10, No.4 October- December 2018