

## OBSERVATIONS ON SUCCESSION OF THE CLINICO-TECHNICAL STEPS OF FUNCTIONAL IMPRESSION OF THE MAXILLA WITH LIBRA CREST AND ACCENTUATE BUNOID PAPILLA

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### ABSTRACT

The aging process is viewed as a complex phenomenon of anatomical, physiological, metabolic and psychological decline of the human subject. Examination of the prosthetic field in the elderly must take into account the local anatomical peculiarities of the hard and soft oral structures. To obtain a correct functional impression a thorough history and physical examination are essential for finding out the characteristics of each field prosthetic in part. To obtain a correct final impression, a wide range of impression materials and techniques is available. Most often, to obtain the desired result several materials with different consistencies are used, and impression techniques are combined. A prosthetic restoration can become "part" of the stomatognathic system being assimilated and perfectly tolerated by the body or, on the contrary, it can cause patient discomfort and iatrogenesis. The quality of restoration depends on the selected treatment plan, practitioner knowledge and skills on the one hand, and patient status and responsiveness, on the other hand.

**Keywords:** bunoid papilla, functional impressions, libra crest, maxillary edentation

### INTRODUCTION

The aging process is viewed as a complex phenomenon of anatomical, physiological, metabolic and psychological decline of the human subject.

Constantly increasing number of elderly people worldwide, their integration, physically and intellectually, into active social life is accompanied by the desire to maintain a vigorous and pleasant somatic aspect. In this respect, the restoration of the anatomy of the middle and lower thirds of the face, both by plastic surgery (rhitidectomie) and by various dental techniques has a special

place [Brånemark et al., 1977, Philippe, 1995].

Dental treatment in the elderly involves three major problems that should receive special attention: changes caused by aging, both physiological and pathological, existing medical problems and the treatment administered to control or treat them, based on which a personalized care can be provided.

### MATERIALS AND METHODS

The clinical study was carried out in elderly edentulous patients examined at the Mobile Dentures Clinic Constanta and three private

clinics (a total of 8 patients). The detailed examination and clinical and technical steps in the prosthetic treatment of patient BV, 81-year-old, who presented to the Mobile Denture Clinic for old denture restoration and functional disorders: physiognomy, phonation, mastication and swallowing.

**History of edentation:** tooth loss by complicated dental caries and periodontitis.

Previously prosthetic treatment: total adjunct prosthesis. Overall assessment does not recommend a delayed prosthetic treatment.

## RESULTS AND DISCUSSIONS

Face inspection shows oval face with slight asymmetry right / left, clogged facial appearance, decreased inferior floor (Fig. 1) and in profile, inferior floor with concave profile and inverted labial step (Fig. 2).

Temporo-mandibular joint examination reveals a deviation of the mandible to the left by 2 mm at closure with the presence of joint noises.

### *Intraoral examination of edentulous patient (Fig. 3, 4)*

The oral orifice presents low muscle tonicity, flattening Cupid's bow, marked perioral ditches.

*Labio-jugal and oral cavity mucosa* present areas of local inflammation.

Stensen's duct orifice is free.

*Examination of the functional areas of upper jaw:*

- a. right/left retrozygomatic area - code 2, reduced depth and magnitude, reduction of passive-mobile mucosa surface, more active folds with lower insertion
- b. right/left lateral area- code 3, vestibule below 4-5 mm in depth, the presence of adhesion brackets very close to the top of edentulous ridge;
- c. frontal area - code 2 - reduced depth and magnitude, reduction of passive-mobile mucosa surface, more active folds with

lower insertion;

- d. AH area (posterior palatal seal area) – code 3, oblique insertion;
- e. vomiting reflex – score 3 - vomiting reflex provoked when palpating the soft palate and posterior areas of the oral cavity.

*Examination of edentulous ridges and assessment of prosthetic value:*

- a. Right lateral edentulous ridge - group 3 - very atrophied edentulous ridge, with much reduced vestibular walls.
- b. Frontal edentulous ridge- group 4 - edentulous ridge requiring pre-prosthetic surgical treatment.
- c. Left lateral edentulous ridge - group 3 - very atrophied edentulous ridge, with much reduced vestibular walls.

*Examination of right/left maxillary tuberosity* - group 2: Neutral tuberosity, smaller in height, irretentive vestibularly and distally, pterigomaxillary fissure present.

*Examination of palatine vault*

Extended vault, flat, deleted relief, absent torus.

*Examination of mucosal support:*

- a. morphologic appearance - Class C: thickened fibro-mucosa, deformable, with the presence of pain on palpation.
- b. degree of resilience - Class III Lejoyeux, ridges with low prosthetic value, increased resorption.

*Exam of the floor of the mouth:* supple, mobile, without injuries or pathological formations.

*Tongue exam*

- insertion, mobility, size are normal
- appearance - without papillae due to tobacco consumption.

*Salivary secretion exam.* Transient xerostomia as a result of the treatments administered and tobacco consumption.

*Local assessment* reveals negative clinical and biological indicators: transient xerostomia as a result of administered treatments, treatment of liver disease and

hypertension, high values of the prosthetic field, thickened fibro- mucosa, mucosal hyperplasia in the frontal area, with anatomic elements on the ridge, prominent bunoid papilla and situated on the midline of the ridge.

*Local status diagnosis:*

- anatomico-clinical diagnosis: total maxillary edentation; total mandibular edentation;
- topographic diagnosis: maxillary and mandibular edentation;
- functional diagnosis: mastication, physiognomy, phonation, swallowing disturbances;
- clinical diagnosis (or prosthetic) - deficient prosthetic field.

The prognosis of edentation status is favourable if treated correctly.

*Dental treatment* included local

preprosthetic treatment for restoring mucosa in the prosthetic field by rinsing with antiseptic solutions and curative treatment: upper complete acrylic prosthesis associated with lower complete acrylic prosthesis.

Next, a succinct presentation of the clinical and technical steps in the prosthetic treatment of total edentation and restoration of facial anatomy is made.

1. Preliminary maxillary impression (Fig. 5) by: using the old prosthesis as impression tray, with irreversible hydrocolloid (alginate); open-mouth muco-dynamic impression.
2. Preliminary mandibular impression (Fig. 6) by: standard impression tray with irreversible hydrocolloid (alginate); open-mouth muco-dynamic impression.



**Fig. 1. Patient examination: the frontal norm, reduced inferior floor, flattening of the Cupid's bow, increased perioral ditches.**



**Fig. 2. Patient examination: lateral norm, inferior floor with concave profile and inverted labial step.**



**Fig. 3. Examination of maxillary prosthetic field. In the frontal area the mucosa is hyperplastic with anatomical formations on the ridge; pronounced bunoid papilla, located on the ridge**



**Fig. 4. Examination of mandibular prosthetic field. Atrophied ridge, submandibular gland herniation**



**Fig. 5. Preliminary maxillary impression**



**Fig. 6. Preliminary mandibular impression: emphasizing the prosthetic field limits and anatomical formations.**



**Fig. 7. Maxillary individual spoon.**



**Fig. 8. Mandibular individual spoon**



**Fig. 9. Composed maxillary functional impression (with two materials)**

3. As functional impression we chose a composed impression (two materials with different textures). Modeling and marginal closure are made with thermoplastic material (green Kerr).
4. Modeling and marginal closure are made with thermoplastic material (green Kerr).
5. The final imprint was made with elastic

material (silicone) with fluid consistency (light body) in order to not distort the mucosal hyperplasia (Fig. 10). As impression technique it was used open-mouth muco-dynamic impression.

6. Cranial-mandibular relationships: before functional impression with bite registration rims (bite blocks) (Fig. 11).
7. Clinical adaptation of the master cast: testing the wax master cast, clinical assessment of vertical dimension (Fig. 12).
8. Clinical adaptation of the finished dental prosthesis (Fig. 13): insertion in the oral cavity and functional adaptation.

The problems the dentist is faced with in classical complete prosthetic treatment are influenced by several factors: retention, stability, shape of the prosthesis, shape and position of artificial teeth, intermaxillary relations and occlusion, vertical dimension of occlusion, and aesthetics.



**Fig. 10. Maxillary and mandibular final impressions are made with condensation silicone with fluid consistency.**



**Fig. 11. Dentist's markings on the models and bite rims: midline, canine line, smile line, occlusal plane**

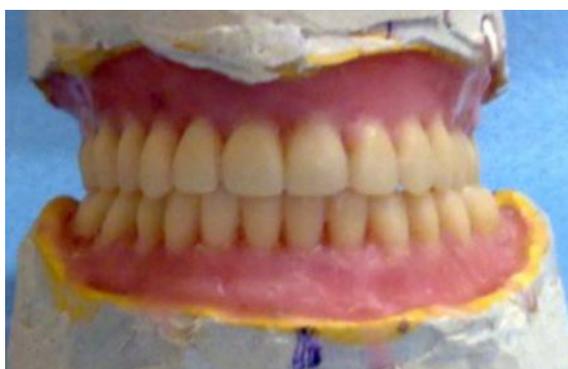
Often, a medically adequate total prosthesis is not accepted by the patient who has some complaints. Therefore, to assess the quality of a dental prosthesis the following parameters should be considered:

- Supporting tissue quality (morphology,

presence of ulceration, hyperaemia and mucosal hyperplasia, resorbed residual ridge);

- Administered medication, which may influence the tissue quality, amount and quality of saliva;
- Physical, biological and psychological changes that occur with age.

A positive attitude and willingness on the part of the patient as well as his ability to adapt are essential to accept the dentures. Dentures, having a considerable volume, are inserted into one of the most reflexogenic areas of the body. New reflexes and neuromuscular coordination need to be developed for keeping the dentures in place. The patient must develop other functional skills and also the psychosomatic acceptance of prosthetic appliances.



**Fig. 12. Testing the wax master cast**



**Fig. 13. Clinical adaptation of finished prosthesis**

From observation sheets we found other reasons for referral such as abnormal physiognomy, phonation, gastrointestinal complications, and previous prosthetic restorations. Patient age may considerably influence the prosthetic treatment. In general, muco-osseous structures are less resistant in the elderly than in the young patients, and their general health status contraindicates multiple, long visits. Very often, total edentation is accompanied by functional disorders and injuries to the muscles and temporo-mandibular joint characteristic to in dento-maxillary dysfunction syndrome. After collecting all data required developing the treatment plan and taking the decision to solve the case, we return to the prosthetic field and individual characteristics of that case. Any clinical situation has more therapeutic solutions, depending not only on the local and loco-regional findings, but also on age, gender, occupation, physical and psychological status, and financial situation of the patient.

Prosthetic restorations and especially the materials used to produce them have to meet the following requirements: mastication, preservation of occlusal stops and vertical dimension of occlusion, good hygiene, physiognomy (especially in certain professions). Artificial arches require reduction of masticatory forces, which act as functional stimuli for bone and mucosa trophicity. Restoration of arch integrity refers to the development of stable, simultaneous and balanced lateral occlusal contacts in centric relation and of a balanced occlusion.

From hygienic viewpoint, removable dentures are superior to dental bridges, being very easy to clean by brushing with water and soap or toothpaste. In terms of physiognomy mechanical strength is low as they are manufactured from acrylic resin. Acrylate has the advantage of reproducing the natural colour of teeth and mucosa, with good

physiognomic effect.

Functional impression, which is perhaps the most important step in total prosthetic treatment, should record all details in the prosthetic field for the final result to be the best. To obtain a correct final impression a wide range of impression materials and techniques is available. Most often, to obtain the desired result several materials with different consistencies are used, and impression techniques are combined.

## CONCLUSIONS

1. The management of oro-dental diseases in the elderly involves the changes caused by aging, existing medical problems and their treatment, the personalized treatment depending on them.
2. Maxillary prosthetic field examination in the elderly must take into account the local anatomical peculiarities, the hard and soft structures being assessed by the use of some classifications that allow a rapid and accurate assessment.
3. To obtain a correct functional impression a thorough history and physical examination are essential for finding out the characteristics of each field prosthetic in part.
4. Open-mouth muco-dynamic impression was the most suitable in the presented case taking into account the characteristics of the prosthetic field: thickened fibro-mucosa, mucosal hyperplasia in the frontal area, with anatomic elements on the ridge, prominent bunoid papilla and situated on the midline of the ridge.
5. Monitoring consists in active visits at 24 hours, 7 days, 1, 3, 6, 9 and 12 months and has the following objectives: buccodental (orodental) hygiene, adaptation and periodical evaluation of the periodontal support tissue status.
6. A prosthetic restoration can become "part" of the stomatognathic system being

assimilated and perfectly tolerated by the body or, on the contrary, it can cause patient discomfort and iatrogenesis. The quality of restoration depends on the

selected treatment plan, practitioner knowledge and skills on the one hand, and patient status and responsiveness, on the other hand.

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