

## Anterior morphofunctional reconstruction - a case report

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### Summary

**Introduction.** Occlusion represents a peculiar factor in dental treatment. Both orthodontics and surgery, as interventions necessary before prosthetic treatment, are very important interdisciplinary partners for the successful functioning of dental-maxillary apparatus.

**Objectives.** This presentation has the goal to illustrate a case report of partial fixed reconstruction of anterior teeth with metal-ceramics. Principles, esthetics and biofunctional occlusion were followed. At the same time orthodontics results were stabilized.

**Material and methods.** The examination of the 35-year-old woman was done both extraorally and intraorally, using study models and radiographs. The oral rehabilitation was a complex orthodontic, surgical, prosthetic and periodontal treatment.

**Results.** After approximately 3 years, the patient's functions are in standard parameters.

**Conclusions.** 1) The patient age was not an obstacle to orthodontic therapy.

2) Oral prosthetic therapy was a major factor in rehabilitation of anterior teeth.

**Keywords:** anterior teeth, occlusion, esthetics, orthodontics.

### Summary

A 35 years old woman comes to our department for solving esthetic and masticator malfunctions.

#### **Complaint**

The patient does not wish to have gaps between her upper front teeth.

#### **History of complaint**

Her permanent teeth erupted at a normal age with large spaces between them. The deciduous predecessors had all been present and were exfoliated normally. She had pursued a prosthetic treatment in the lateral side 1 year before coming to our department. Partial fixed restorations were done: a metal-ceramic crown on the first right maxillary molar and a metal-ceramic bridge on the second right mandible bicuspid and the sec-

ond right mandible molar. The patient did not accept the therapeutic solution proposed for the anterior area: extraction of all four maxillary incisors and a metal-ceramic bridge on upper cuspids. This was the clinical situation of the patient when she came to our clinic asking for another dental opinion.

#### **Medical history**

Her medical history reveals no illness. She is a non-smoker and drinks alcohol occasionally.

#### **Extraoral examination**

She seems a healthy woman with no obvious skin lesions. She has a skeletal class II appearance without facial asymmetry. No submental, submandibular or other cervical lymph nodes are palpable and the temporomandibular joints appear normal [1].

**Intraoral examination**

Special investigations are required: study models, radiographs (panoramic tomography and periapical views) and photos. The intraoral examination reveals [2]:

- a) permanent dentition, including wisdom teeth;
- b) class II Angle malocclusion with overjet of 15 mm;
- c) overbite 1/1, lower frontals being in contact with palatal mucosa;
- d) diastema of 13 mm; the lip insertion is low and excessively developed due to occlusal trauma;
- e) lower incisors are vertical and over erupted due to overjet; the occlusal

plane is modified;

- f) odontal lesions are partially treated;
- g) lateral incisors are nanoid;
- h) chronic superficial periodontitis and probing depths are 3 mm or less.

The appearances of the dentition are shown in *Figures 1* and *2*. We noticed the diastema both in the oral cavity and on the study models (*Figures 3, 4, 5* and *6*).

Both diastema and proalveolodentia are the reasons for patient's request for dental treatment. Upper and lower jaws are "V"-shaped and respectively "U"-shaped (*Figures 7* and *8*). Curves of Spee are lowered (*Figures 9* and *10*).

**Figure 1.** Buccal view before treatment



**Figure 2.** Buccal view of lower teeth before treatment



**Figure 3.** Diastema of 13 mm - buccal view in oral cavity

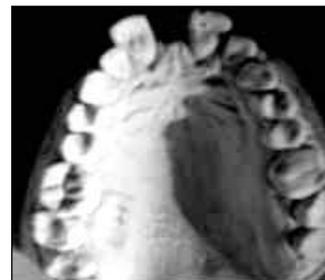


**Figure 4.** Diastema of 13 mm - lateral view in oral cavity



**Figure 5.** Diastema of 13 mm - buccal view on study models

**Figure 6.** Diastema of 13 mm - palatal view on upper study model



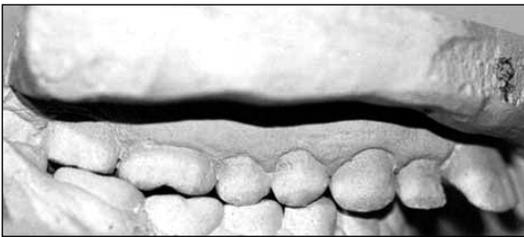
**Figure 7.** Upper jaw is "V"-shaped



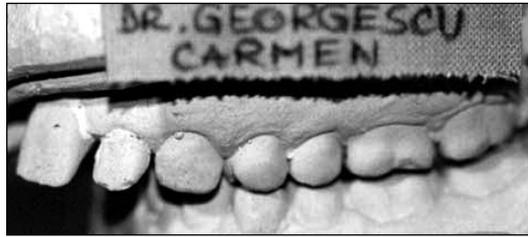
**Figure 8.** Lower jaw is "U"-shaped



**Figure 9.** Curves of Spee are lowered (study models - lateral right view)



**Figure 10.** Curves of Spee are lowered (study models - lateral left view)



### **Investigations**

The dental panoramic tomography shows that maxilla is intact with a metallic post and a metal-ceramic crown on first right molar. Lower jaw has unidental right lateral edentulous area restored with metal-ceramic partial fixed prosthesis (*Figure 11*).

There is chronic superficial periodontitis and the interalveolar septums are round-shaped [3]. Periapical radiographs reveal radiolucencies of alveolar bone (*Figures 12 and 13*).

The complexity of the clinical case explains the necessity of a well-led collaboration with other dental specialties. So, the analysis of the study models of lateral sides is performed. We noticed the presence of gaps between the anterior teeth. The overjet is 15 mm (*Figure 14*).

### **Treatment plan**

The discussion with the orthodontist led to the proposed treatment with fixed brackets on the anterior maxillary teeth for reduction

of the overjet and closure of gaps between the anterior teeth [4]. It was considered that the patient's age was not a problem in solving the clinical case by orthodontics means. If the patient did not agree to orthodontics treatment it was possible to do only prosthetics: reconstruction of the vertical axis of anterior teeth by angular metal posts and metal-ceramic crowns. I have to mention that complete treatment would have been orthodontic, surgical, prosthetic and periodontal. The purpose would have been the protrusion of the lower jaw and the increase of the vertical occlusion by changing central relation.

On the following visit we explained to the patient the treatment plan with advantages and disadvantages. We took into account the financial aspects, profession, personality, and the patient's expectations.

### **Patient's motivation**

We explained that the age is not an impediment in solving the problems with ortho-

odontics, which implies not only longer treatment but also social and financial acceptance.

We got the patient's informed consent for the fixed orthodontics instead of the sur-

gical one. She decided to follow orthodontics before prosthetic treatment to improve recovery of the upper anterior teeth long axis.

**Figure 11.** The panoramic tomography



**Figure 12.** Periapical radiograph of upper incisors



**Figure 13.** Periapical radiograph of lower incisors



**Figure 14.** The overjet is 15 mm



### **Treatment**

We started with cleaning, prophylaxis and anti-inflammatory treatment, fluoridation, and the patient oral health education (*Figure 15*).

We did restorative work with tooth colored fillings. The decays were treated with compomer (Dyract, Denstply, DeTrey) for fluoride release.

We also did selective grinding on the central incisors to improve the occlusion plane (*Figures 16, 17 and 18*).

We could see the results after 14 months of orthodontic treatment (*Figures 19, 20 and 21*). The space was redefined and the diastema was almost completely closed. The overjet was reduced from 15 to 8 mm and the long axes of the teeth were normalized.

At the end, the patient got correct dental contacts, the rehabilitation of the maxillary jaw shape with healthy gums and right anterior guidance [5]. The results were maintained with metal-ceramic united crowns.

During this time the patient came for regular cleaning and periodontal treatment with L.P.C. Pyocid paste (Speiko) with visible improvement of periodontal status.

The next step was the surgical reshaping of the lip frenum, which was done by horizontal incision followed by vertical suture (*Figure 22*) [6]. The suture was removed 10 days after. We waited 3 weeks for healing before starting the prosthetic approach.

In *Figures 23 and 24* we noticed the teeth prepared with circular shoulder followed by temporary resin crowns (Protemp, 3M Espe). We did addition silicone impression with Aquasil (Dentsply DeTrey) [7]. Adopting the concept of universal precautions, one of the methods of cross-infection prevention in dentistry is disinfection of dental impressions (with sodium hypochlorite 1:10 by immersion for 10 minutes) [8].

The final prosthetics constituted in metal-ceramic united crowns (*Figures 25, 26, 27, 28*). We noticed the correction of protrusion of the upper jaw with the overjet reduction (*Figures 29, 30, 31 and 32*). Almost two years after that the complex treatment was completed, the patient is

happy with good results (*Figures 33 and 34*).

### Conclusions

1. We cannot achieve good results of difficult clinical cases without interdisciplinary cooperation.

2. From orthodontics point of view, age is no longer an obstacle if the patient is motivated.

3. The cooperation with the patient is valuable all along the treatment. He should accept the length of the treatment, the numerous visits with orthodontics and prophylaxis, and the value of good oral hygiene.

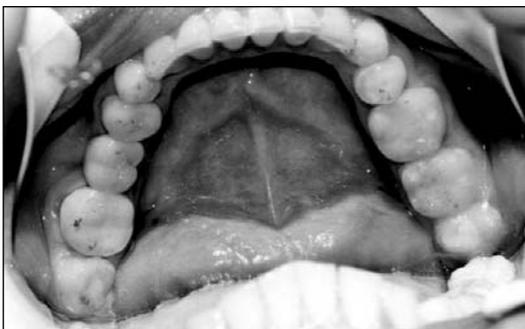
**Figure 15.** Lingual view of lower teeth after cleaning treatment.



**Figure 16.** Treatment of decays on upper teeth with compomer



**Figure 17.** Treatment of decays on lower teeth with compomer



**Figure 18.** The occlusion plane of lower incisors, improved



**Figure 19.** The results after orthodontic treatment (buccal view)



**Figure 20.** The results after orthodontic treatment (lateral view)



**Figure 21.** The results after orthodontic treatment (palatal view)



**Figure 22.** The surgical reshaping of the lip frenum



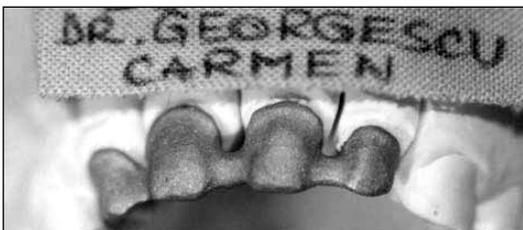
**Figure 23.** Teeth preparations with circular shoulders and cord retractions before impression (buccal view)



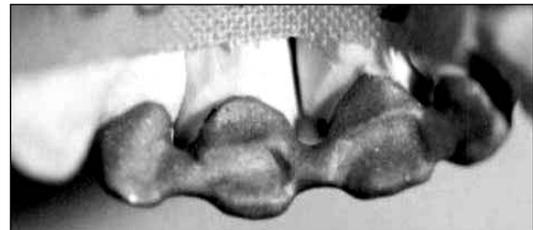
**Figure 24.** Teeth preparations with circular shoulders and cord retractions before impression (palatal view)



**Figure 25.** The metal try-in on the cast (buccal view)



**Figure 26.** The metal try-in on the cast (palatal view)



**Figure 27.** Final result with esthetic recovery (buccal view)



**Figure 28.** Final result with esthetic recovery (palatal view)



**Figure 29.** Upper jaw curve is normalized, view of both arches



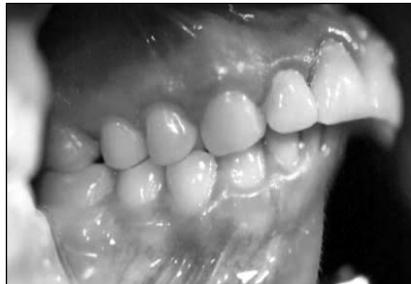
**Figure 30.** Upper jaw curve is normalized



**Figure 31.** Overjet reduction (lateral left view)



**Figure 32.** Overjet reduction (lateral right view)



**Figure 33.** The results after 4 years from the onset of the treatment (palatal view)



**Figure 34.** The results after 4 years from the onset of the treatment (buccal view)



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