Interdisciplinary treatment of a complex case: 8-year follow-up

Dr Emiliano Zanaboni

Introduction

The traditional approach of a complex Implant/prosthetics full mouth rehabilitation involves the extraction of all the hopeless teeth,, aesthetic /phonetic try –in appointment , the construction of a surgical stent which resembles the final position of the teeth and the placement of the implants prosthetically guided.

In the case shown, the chosen sequence of treatment allowed a reduction of the try-in appointments and it is mainly based on the radiographic diagnosis, the axiography analysis and the planning on the articulator.

The case,

The patient

The patient (54 year old) presented complaining of acute swelling at the 2.3. She also reported dental migration, gingival swell. Past dental history showed that the extracted teeth were removed because of periodontal disease. Her mother lost all her teeth in relatively young age. (40 years) . The patient is fit and well. Apart for Hypothyrodism, for which she is taking medications. She is an irregular attendant of the dental office and her last check-up was done in 1998. No others risk factors were present.

Clinical examination showed Keratinized gingival hyperplastic tissue, which caused tooth migration at the upper right side and bone loss could also be detected. The lesion was removed and the histology confirmed the diagnosis of Epulis .

Clinical examination showed also the following:

1. Dental diastemas (not pre-existent)
2. Midline shift (dental e/or skeletal)
3. Deep overbite with overeruption of Upper and Lower teeth
4. Periodontal abscess at the interproximal area of the 2.3 and 2.4.

Clinical examination post-surgical removal of the Epulis

Periodontal Diagnosis

- Pockets ranging from 4 to 12 mms at all the teeth
- Recessions up to 9 mms
- Mobility Grade III at 1.4, 1.5, 1.3, 2.5, 2.6, and 4.4 . All the others presented with mobility II.
- Subgingival calculus not compatible with the advanced periodontal destruction.

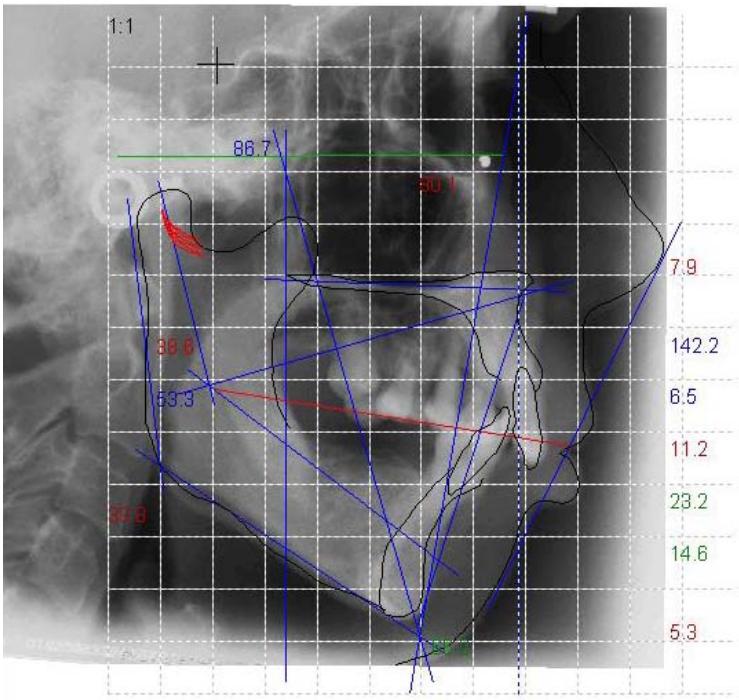
The diagnosis of Generalized Aggressive Periodontitis has been made.

The prognosis of all the teeth is hopeless. .

Radiographic Diagnosis and axiographic exam

Slavicek analysis showed

1. Skeletal class II
2. The maxilla has a tendency to prognatic
3. The mandible is positioned strongly retrognatic
4. Lower facial height is increased
5. Interincisal angle is increased
6. The protrusion of the upper incisors is increased
7. The protrusion of the lower incisors is normal
8. The inclination of the upper and lower incisors is normal
9. Lip embrasure: open
10. Inverse Slavicek occlusal plane



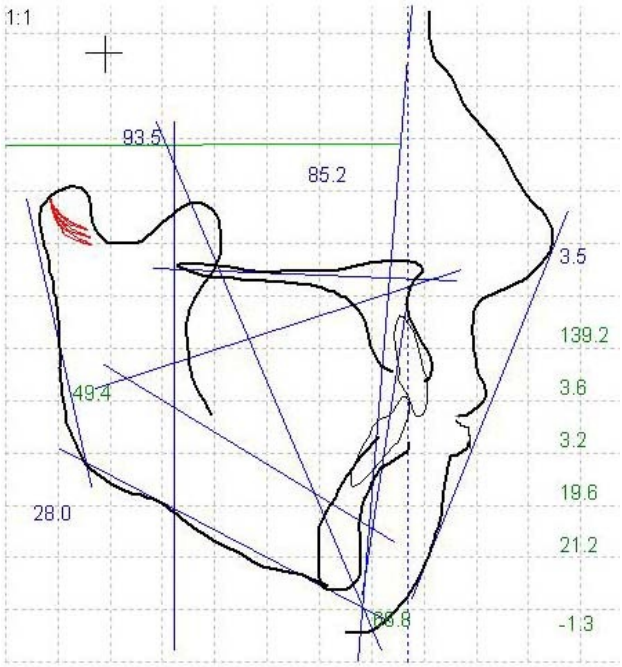
Initial Cephalogram

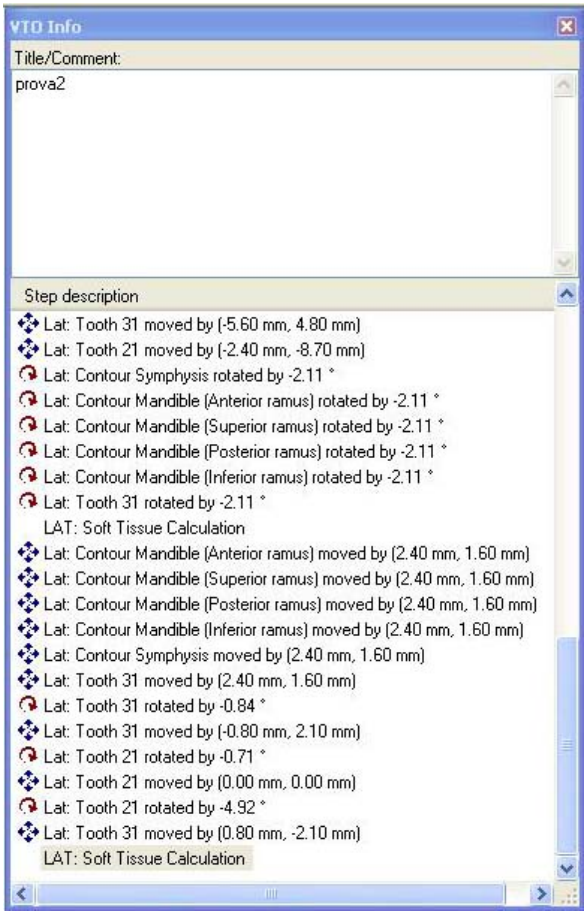
Gnatologic Diagnosis:

The patient presented with pain at bilateral the TMJs in particular during mandibular movements and before the clicking.. She has also been suffering from recurrent migraines form many years and pain at the Omoideus , in particular at the left side, was present. Both the Lateral Pterigoideus and Digastricus muscles were painful on palpation.

Treatment Plan

V.T.O.

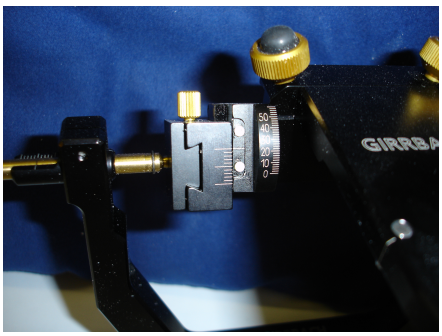


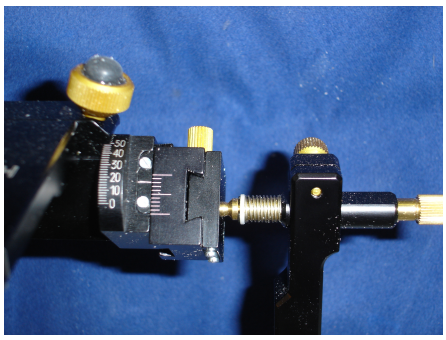


In accordance with what previously exposed the following alterations have been made:

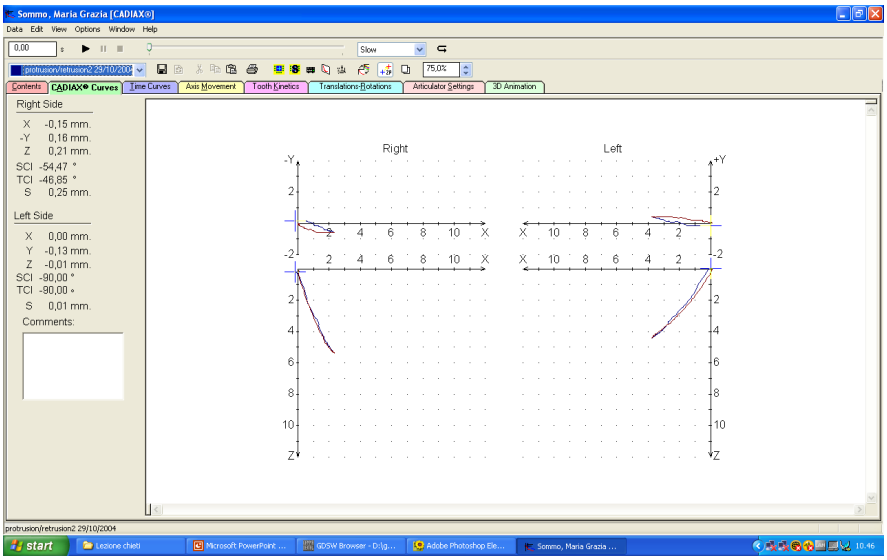
1. As showed on the VTO the upper and lower incisors have been intruded . The Upper incisor has been palatally placed without changing the axis.
2. The interincisal angle has been corrected
3. The vertical dimension has not been changed initially
4. In the maxilla, as showed on the VTO, only the gingival reduction would be sufficient
5. In the mandible , as showed on the VTO, a combination of soft and hard tissue reduction is necessary.. An apically repositioned flap is require.
6. As previously discussed (point 4 and 5) the reduction of the vertical dimension has been not performed initially in order not to change too many variables.
7. The Axiography tracings in conjunction with all the other exams, showed the place where to relocate the condiles: anterior to the point where the disc is closed in the closure movement,
8. The functional condilar inclination was too steep (behind the disc). An average inclination of 60° to the Frankfort plane has been considered (typical in a class II division 2 eminenece) .

Condilar repositioning

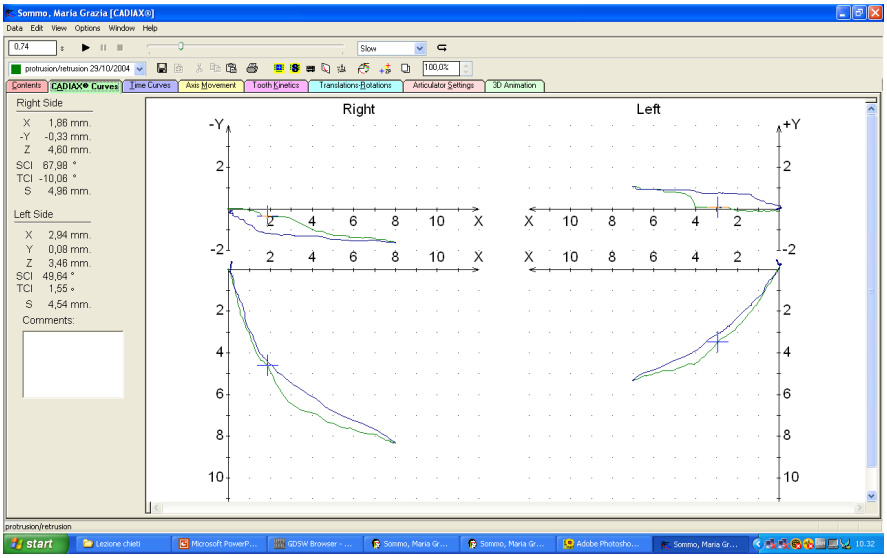




Protrusion/retrusion limited by pain



Forced Protrusion/ Retrusion . (the analysis of the relation rotation/protrusion shows shows no tooth interference).)



<u>Construction of a temporary Full denture</u>

The use of the method showed below (based on Slavicek confluent analysis) allows to build a prosthesis (immediate, in this case) without try in the mouth the new tooth position, try the aesthetic and phonetics (which would need the extraction of the teeth first). It also allows to correct the deranged condilar position using the articulator, the axiography and the VTO.

The starting point to is to position the lower central incisor in accordance with the VTO.. The cervical margin s more apical compared to the clinical situation: It has been necessary to remove some of the cast in order to relocate the tooth in the model. The longitudinal axis of the tooth is 85° to the line drawn from the hinge axis- incisal edge of the lower incisor. In a class I the value is 90° but the tooth compensation in a Class II, with a retruded skeletal mandible position, reduces this angle.

The occlusal table has been positioned 10° to the Axis-orbital plane. The ideal occlusal plane has been determined keeping in accordance the Spee curve (by varying the buccal cusps of the occlusal plane), the differential angle by Othlieb (mesial inclination of the lower teeth) and the Wilson curve, which was adjusted in accordance with the protrusive and mediotrusive guides. The posterior teeth are then mounted following the Slavicek occlusal concept.

The Red Protrusive Insert has been used to mount the upper central incisor (2 mm) and the inclination has been determined on the VTO. Also in this case the removal of some part of the cast.

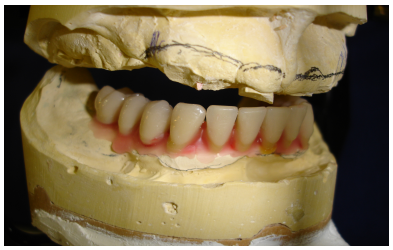
The posterior teeth are then mounted following the progressive functional guidance, thank to the inserts suggested in the VTO. The final denture has been processed keeping as a support (which will not be changed the day of the surgery) the posterior edentulous area in the mandible and the palate in the maxilla.

Complete immediate Dentures

Surgical Part

The surgical part involves the extraction of al the teeth, the gingival remodelling (only) in the maxilla (the extent determined in the wax up) and the removal of soft/hard tissue in the mandible..

A surgical stent showed the new height of the soft tissue (and therefore of the bone) has been fabricated and used the day of the extraction of the teeth.



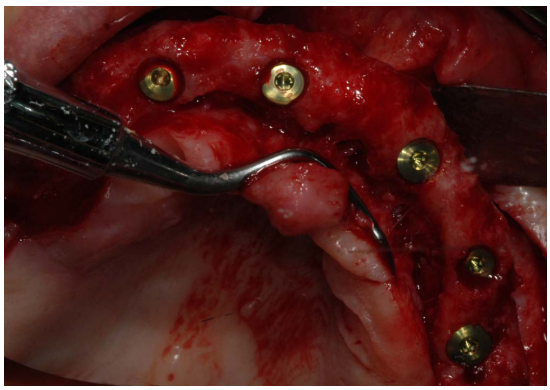
Cephalometric evaluation after the insertion of the denture.

The cephalometric analysis confirmed the correct position of the incisors. It is a skeletal Class II. The vertical dimension is increate. The soft tissue profile confirms the result.

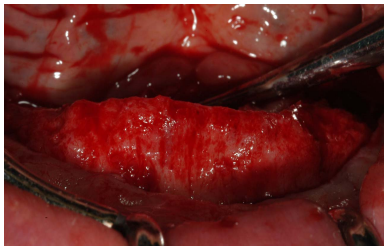
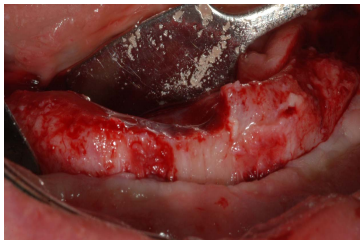
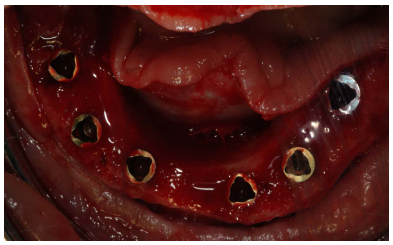
The next step involves the planning of the implants. The final position of the teeth (and therefore of the implants) has been studied on the VTO, transferred on the articulator. The following parameters have been considered to build the surgical stent:

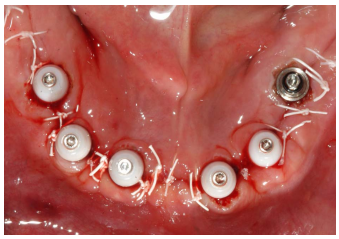
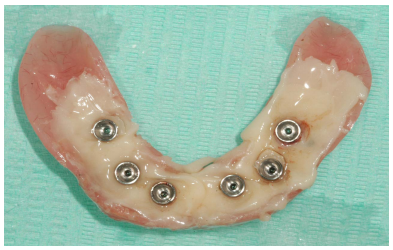
- maxilla: the surgical stent is a copy of the immediate denture. The implants have been immediately loaded. An impression has been taken the day of the implant placement and the lab made temporary has been inserted the following day.
- mandible: the surgical stent has been fabricated after reducing the vertical dimension , the bone height , in accordance with the VTO. on the articulator. The full denture has been transformed in a screw retained temporary.

Upper Implants



Lower Implants and hard tissue remodelling as planned in the DVO

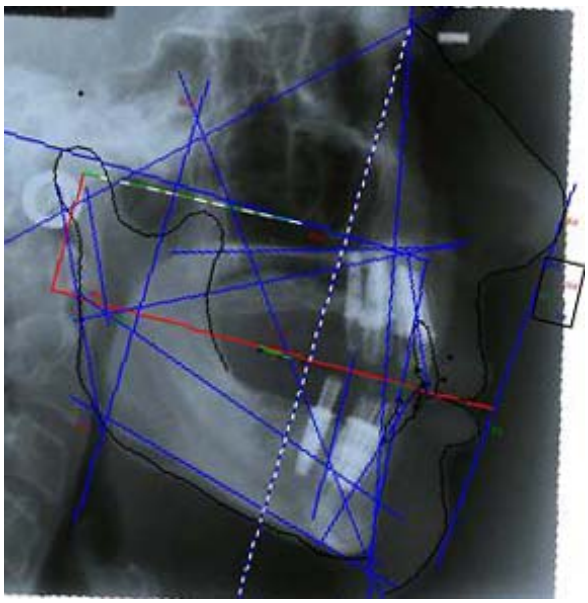



Variation of the Vertical Dimension and Axiographic follow-up

In the following pictures it is shown a wax-copy of the temporaries. which have been recorded in the cephalogram and an axiography The VTO has showed the amount of vertical reduction needed to achieve normal value for a class II skeletal class. Prior to the variation of the vertical dimension a custom tray screwed to the implant has been created and an axiography performed.

Cephalometric evaluation with implant-retain temporaries

The cephalometric analysis reveals the achieved normal values a part from the inter-incisal angle and the inclination of the lower incisor. These modifications will be applied to the final prosthesis



Initial-final pictures

The 8-year follow up shows stable-healthy bone level. No probing beyond 3-4 mms with no bleeding. Plaque control is very good and the patient sees the hygienist every three months and myself once a year.

Bibliografia

1. Cuman, Masnata, Nannini, Baldin. Full denture by Slavicek 2002
2. R. Slavicek .The functional determinants of the masticatory organ.
3. Post-Graduate course 2003-2006. R Slavicek