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Reconstruction of the facial profile and dentition

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Case Study Electronic Copy:

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The reconstruction of the facial profile and dentition

Introduction

The patient discussed in this case study, is a 52 year old female (Fig 1). She was involved in a serious car accident, where she suffered multiple fractures to the skull and fractures to the hip. The fractures to the hip have been attended to, but the fractures to the skull, are still in the process of recovery.

Patient History and Treatment

X-rays were taken, and the fractures to the skull were diagnosed as Lefort I and Lefort III fractures (indicated With Red arrows on Fig 2). The Lefort I fracture, is a classification of a fracture that was suffered on the maxillary arch, just below the Zigomatic bone. The Lefort III fracture, in turn, would be the classification of a fracture that was suffered on
the maxillary arch over the bridge of the nose, between the eyes. The Lefort I fracture was restored by transplanting bone into

the area mentioned, and so reconstructing the profile of the anterior part of the maxillary arch. The thickness of the bone in this area, proved to be too thin as a cause of the accident and as a cause of the resorption of the bone itself, after teeth loss. This could prove to be a problem in later stages of treatment, for too little space would be left for implants. The treatment to the Lefort III will be discussed in a later stage.

Pre-treatment

Pre-treatment to patient included a Lefort I osteotomy, root canal apicectomy, rib transplant, and a cartilage transplant. In the figure below the rib and cartilage is visible (Fig. 3). At the time the patient’s dentition consisted of a three-unit bridge in the first quadrant (right part of the upper arch), a few single crowns on the maxillary arch, a chrome-cobalt partial denture on the maxillary arch, and an acrylic partial denture on the mandibular arch.²
This x-ray (Fig. 4) was taken after the Lefort I osteotomy was done. The red arrows indicate the connecting plates that were used to stabilize the bone that was transplanted. This connecting plate will later be removed, after sufficient healing has taken place.
Cartilage (Fig. 5) was transplanted to transform a collapsed nose bridge profile (Fig. 7), to a normal nose bridge profile (Fig. 8). This collapsed nose bridge was caused by the Lefort III fracture, suffered in the car accident. A small incision (Fig. 6) was made at the base of the nose, through which the cartilage could be inserted. The surgery was very successful, both to the surgeon, and to the patient’s satisfaction.²
**Treatment Options**

Treatment to the patient, after this pre-treatment to restore the facial profile, involves the reconstruction of the dentition. Possible treatment options to the maxilla, involve 4 titanium implants, plus a multi unit bridge, or a combination appliance. The second option could be a partial denture. Optional could be to construct an appliance for the mandibular arch. The possible options for this treatment could be a chrome-cobalt partial denture, or an acrylic partial denture.

Treatment options to the maxilla that was discarded, involved the 4 titanium implants plus the combination appliance, because of the high cost, (which could add up to an amount exceeding R20000), and special skills would be needed in the construction of this appliance. A chrome-cobalt partial denture was being worn at the time, and the patient longed for an improvement of this appliance.

The best treatment option for the maxillary appliance would be the 4 titanium implants plus the multi unit bridge, because it would be a stable appliance, it would last a long time, and excellent aesthetics could be achieved. The disadvantages of this option include a rather high cost (in the region of R19000), and long surgery- (±6 hours) as well as long healing time is needed.
The optional best treatment option for the mandible, is the chrome-cobalt partial denture, because it is a very stable appliance, it is much stronger than the other option, as well as a longer lasting appliance. The disadvantages of this option are that it is quite expensive, in relation to the other option, and the aesthetics achieved, could be dissatisfying.

Out of this treatment options, an option should be chosen for the maxilla, as well as the mandible. The option chosen for the maxilla, was the 4 implants plus the multi unit bridge, because of the excellent aesthetics, superior stability, and it would have been an improvement on the previously worn appliance. The option chosen for the mandible was the chrome-cobalt partial denture, because of the superior stability and strength, and it would have been an improvement on the previously worn appliance.

**Placement of implants**

The first steps in the making of the maxillary appliance, was the placement of the implants. Four 3.25∅ Sterri-Oss implants were used, two of which were 11mm long, and two of which were 13mm long. ¹
They were placed in the anterior part of the maxillary arch, in the area of the incisors (Fig. 9).

The first step in the procedure of placing the implants, is to remove the soft tissues from the ridge, and to place the implants into carefully drilled holes, placed into the bone.

To finish the procedure, healing attachments is put into place, and covered with the soft tissues again, and left to heal. (Fig. 10)

Due to the nature of this treatment, this case study was not completed in the designated year, and so the final placement of the constructed appliance was not done. Therefore the proposed treatment involved the following.
**Proposed Treatment**

The proposed treatment to the patient included a healing period of 4-6 months, during which the old chrome-cobalt appliance was slightly modified, and worn as a healing appliance. Unfortunately complication set in, which involved the detaching of the two middle implants. This was caused by infection in the particular area, and the bone was too thin to hold the two implants. These two implants were removed.

A second osteotomy will be done, in order to widen the ridge, after which the two removed implants, will be replaced in the intended area. After this treatment and surgery, the patient will be allowed a healing period again, under close observation of the surgeon.

After sufficient healing has taken place, without any complications, the healing attachments will be replaced with specialized attachments, on which a temporary bridge will be constructed, to be worn during the manufacture of the ceramo-metal multi unit bridge. A optional procedure will include the manufacturing of the chrome-cobalt mandibular appliance.
Conclusion

The mentioned case study was not completed in the designated time, and will be carried over to the next year, for the completion by another student.

The case should be very successful for there are no immediate complications or diseases. The patient also is very cooperative, and undergo good health care.

A proposed placement of the final appliance will ensure excellent aesthetics.
References


2. Sterri-Oss Implants