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# Fabrication of an Implant-retained Maxillary Restoration

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# Case Report: Fabrication of an Implant-retained Maxillary Restoration

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## SUMMARY

**This is a report on a case study done on the fabrication of an implant-retained maxillary porcelain restoration and all the factors that played a contributing role resulting in the need for specialized oral treatment. The end result of the completed treatment is mentioned in the conclusion.**

## Keywords:

- Porcelain restoration
- Maxillary implants
- Bone graft

## INTRODUCTION[2,3,5]

Motor vehicle accidents (MVA) are the main cause of facial fractures sustained by woman. Abuse is the second most common cause of facial injuries occurring in woman. The patient, a 52 year-old female, was involved in a serious MVA in which she sustained multiple facial fractures, resulting in the need for specialized oral treatment.

The MVA caused the loss of the four anterior maxillary teeth. After major facial reconstructive surgery, it was decided place four Southern Implants into the edentulous anterior area in order to preserve the remaining bone as far as possible and to attempt to restore the lost oral functions. The placement of the implants was also

done to achieve improved aesthetics with the placement of the prosthesis onto the implants.

Unfortunately the two central implants were rejected due to insufficient bone availability (Fig. 1). A bone graft was then done by taking bone segments from the patients' hip area and grafting it to the maxilla. The operation proved to be unsuccessful after no bone augmentation took place.

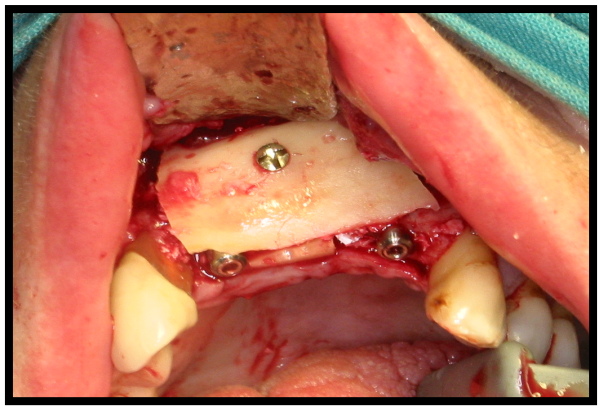

**Fig. 1**

**DISCUSSION**[1,2,4]

After the first bone graft failed the maxillofacial surgeon was left with two possible clinical treatment options. He could attempt to perform another bone graft by taking bone segments from the ramus area of the mandible and grafting it to the edentulous area between the two remaining implants in the maxillary arch. If this were to be successful, the two rejected implants could be replaced and further reconstruction could be done.

A second option would have been to use the remaining two implants still embodied in the maxillary arch and construct an appropriate prosthesis that could be placed onto these implants.

It was however opted for the second bone graft option and was performed at the Dental Faculty of Stellenbosch University South Africa. The operation proved to be a success after bone augmentation took place and the two rejected implants were replaced(Fig. 2).

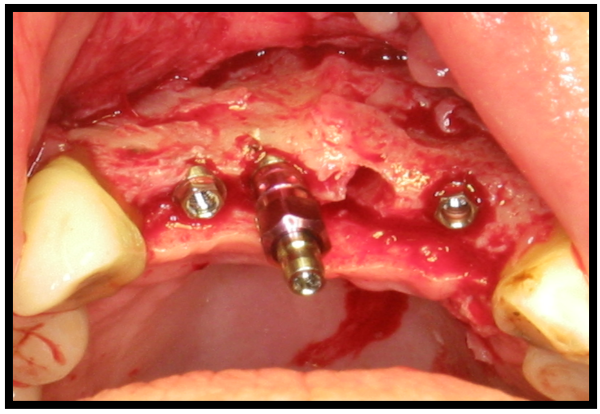

**Fig. 2**

**TECHNICAL TREATMENT OPTIONS**

After completion of the necessary surgery required for the construction of an implant retained anterior restoration, the case was referred to a dental technology student at the Department of Dental Services of Peninsula Technikon South Africa. Three possible technical treatment options were available to the technician. The options were as follows:

**Option 1**: The first option was the construction and fitment of implant-retained acrylic denture retained by screws. This option was not chosen due to the poor aesthetics that is obtained with the fitment of such a denture into the mouth (Fig. 3).

**Fig. 3**

**Option 2**: Construction of a fixed porcelain bridge prosthesis retained by screws. This also was the option of choice due to the good aesthetics that is obtained with this type of prosthesis. The porcelain bridge also provided the required lip-support that was lost after all the reconsctuctive surgeries.

**Option 3**: Fixed individual porcelain crowns also retained by screws would have been a good choice, but due to the rejection of two implants, the possibility of implants being rejected by the body still exists, making this option too risky (Fig.4).

**Fig. 4**

**LABORATORY PROCEDURES**

The relevant laboratory procedures in the construction of the implant-retained porcelain bridge were as follows:

**Step 1**: The first step was to construct a modified special tray that is able to carry the impression-posts of the implants with relative ease yet extreme precision.

**Step 2**: The working model was then cast and prepared for further construction. The model contained the analogues representing the implant positions as they are in the mouth (Fig. 5).

**Fig. 5**

**Step 3**: During this step the metal substructure was waxed-up, cast and prepared for porcelain covering and build-up. The metal substructure was designed in such a way that only two of the four implants were used for attachment.

**Step 4**: The bridge was build-up with porcelain to the correct contour and size. It was placed in a furnace and sintered.

**Step 5**: The rough unit was then trimmed, glazed and finished of for final placement (Fig. 6).

**Fig. 6**

## CONCLUSION

After the porcelain unit was completed it was placed in the mouth to determine if any alterations were required. After placement of the prosthesis, the patient was asked to comment on the final product. She expressed her satisfaction with the prostheses and thanked every person responsible for the restoration of here lost aesthetical appearance (Fig. 7).

**Fig. 7**

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