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Fabrication of an Implant-Supported Prosthetic Ear

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FABRICATION OF AN IMPLANT-SUPPORTED PROSTHETIC EAR

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SUMMARY

The patient has lost his left ear (Fig. 1). He had to wear a prosthesis with mechanical retention for 4 years, due to active hepatitis that the patient had at the time when the first prosthesis could be fabrication. His first prosthesis could be replaced this year. Implants were now placed in the left side of his skull, for retention of the new prosthesis. A dolder bar attachment was fabricated to attach the prosthesis to the implants. A new prosthesis was fabricated.

Patient’s background

The patient had lost his left ear in a motor vehicle accident he was involved in, in 1999. As a result of this accident he also fractured his mandible severely. After the accident the medical team in which care the patient was, placed implants into his mandible to support a denture that he had to wear. However they soon realized that the patient’s body rejected all of these implants. They ran tests and soon discovered that the patient suffered from active hepatitis B, which caused the rejection of the implants.
The internal implant rejection meant that external implants for the retention of an auricular prosthesis could also not be considered as treatment option to replace his lost ear. This was in 2000. It was decided to fabricate a prosthetic ear and to use mechanical retention to keep the prosthesis in place. The patient’s spectacles were used to aid in this retention.

Due to ultraviolet light exposure and normal weathering the prosthesis needed to be replaced. This time however implant retention could be considered as a treatment option, as the patient has recovered from hepatitis B.

TREATMENT OPTIONS

There were three treatment options to considered before the fabrication of the prosthesis.

The first option was to use the same retention as has been used with the first prosthesis. This meant re-using the patient’s spectacles (Fig. 2).

The second option was to use medical adhesives for the retention of the prosthesis all though this seemed like a highly unlikely choice.¹
The last option to consider was the implants with dolder bar attachment for retention (Fig. 3).  

THE CHOSEN TREATMENT OPTION

The chosen treatment option for this patient was also the most suitable option. It was decided that the implants with the dolder bar would be used for the retention of the prosthesis. There are three main reasons why this option was chosen. First offal this option provides the best retention for the prosthesis. It needs a reasonably excessive force to remove the prosthesis from the dolder bar, which is attached to the prosthesis. The second reason is that this option would provide the patient with a lot of confidence, as he would now be able to move around in public without the fear of embarrassment. With the mechanical retention there is always the risk of the appliance moving or following of with the spectacles, however with the implant retention there are no such risks. Lastly this option would be extremely comfortable to the patient as the prosthesis can easily be removed, cleaned and replaced in exactly the same position.  

LABORATORY PROCEDURES
The impression of the left side of the patient’s skull arrived at the laboratory. A model was poured with laboratory analogues imbedded in the plaster. Special plastic sleeves that are specially made to fit perfectly into the analogues were attached to the analogues with special small titanium screws that are also supplied in the implant analogue kit (Fig. 4).

A dolder bar was waxed up by connecting the plastic sleeves with a specific gauge plastic post material. After the bar was finished in wax, the bar was carefully removed from the analogues by unscrewing the small titanium screws and invested. It was then cast in metal. The cast bar was finished and polished. The bar was now tried onto the implants placed into the patient’s skull.

A prosthetic ear was sculpted on the model. The sculpting could be done with either dental wax or modelling clay, or a combination of the two. The sculpted ear was then tried on the patient to see if it had the right dimensions and that it fitted with the facial features of the patient (Fig. 5).  

After the patient, medical team and laboratory staff was satisfied with the sculpted prosthesis a mould was made in which silicone rubber would be packed to finish the prosthesis. The mould was made in three sections to aid in the removal of the finished prosthesis from the mould, as the many undercuts of an auricular prosthesis could cause removal problems (Fig. 6).
The mould was packed with silicone rubber, which is the material of choice for most maxillo facial prosthesis at the moment. After polymerisation of the silicone the prosthesis was finished with abrasive wheels (Fig. 7) Extrinsic colouring was added to the prosthesis with the patient present so that the colour, hue and tone of the patients skin could be matched perfectly. The prosthesis was then placed on the patient.

CONCLUSION

The implant supported prosthesis works very well. After the patient’s body accepted the implants the entire team was confident that the whole treatment plan would be a resounding success. The most difficult task of the whole treatment was to match the colour of the prosthesis exactly to that of the patient’s skin. With experience the task would however become much easier.

REFERENCES

