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A cosmetic replacement of anterior teeth

Zillah Horn
Cape Peninsula University of Technology
A COSMETIC REPLACEMENT OF ANTERIOR TEETH
A Dental Laboratory Perspective
Zillah Horn
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The case deals with a professional individual who has lost two of his anterior teeth. This loss has had quite a negative impact on his appearance. Through the work on this case, the dentist and technician team attempted to restore his smile.

The 23 year old patient’s home country is Zimbabwe. He fell from a waterfall in Zimbabwe, in January 2002.

Due to the fall two fractures occurred: a Le Fort III fracture and a compound fracture of the mandible. A Le Fort III fracture is a high-level or suprazygomatic fracture. It commences near the frontonasal suture nasal bones and lacrimal bone it runs across the thin orbital plates of the ethmoid, downward to the inferior orbital fissure. The fracture separates the zygomatic bone from the frontal bone. The entire middle third of the facial skeleton becomes detached from the cranial base. The mandibular compound fracture is a triangular fracture

On the day of the accident, the patient was taken to Harare hospital where they treated the open wounds only. Then he obtained a removable 2-tooth partial denture at a private practice as a temporally solution. His maxillary, left central- and lateral incisors were lost due to the fall. His remaining anterior teeth have a yellowish color and the midline is incorrect. He wasn't happy with his appearance.

Almost a year later (May 2002) he came to Tygerberg Hospital for his 1st visit which involved a consultation and diagnosis of his condition. The medical team discovered the Le Fort III fracture only at this late stage. Luckily the fracture wasn’t complicated and had reattached perfectly. Then the patient returned more than a year later (in November 2003) and the
medical team performed surgery involving a bone transplant from the patient's right hip to the maxillae because there wasn't enough bone retention for a prosthesis. Two screws were placed in the maxillae to secure the bone. The sizes of the screws were 7mm and 11mm.

Option 1: Partial Denture Therapy (R 3466).
Advantages:
- It will be the lowest in cost of all the options. It is simple to fabricate
- It can easily replace missing tissues.

The disadvantages are:
- It provides poor aesthetics.
- It is very bulky and not fully stable.
- It is removable.
- And the patient is also too young to wear a RPD for the rest of his life.

Option 2: Anterior bridge unit (R5 202).
Advantages:
- There is no need for the trauma of implants.
- It provides good aesthetics.
- It is secured fairly quickly in the mouth.

Disadvantages:
- Tooth preparation is required on 1.1 and 2.3.
- The pontics will appear elongated due to the tissue resorption.
- Tooth discoloration may also occur.

Option 3: Two implant-supported porcelain crowns (R4788).
Advantages:
- It provides good stabilization in the mouth.
- It is durable and will remain in a good condition over a long period of time.
- The restoration will also appear more natural.

Disadvantages:
- An operation should be performed.
- And the body may reject the implants.
**Option 4**: Porcelain veneer on the 1.1 and implant-supported porcelain crowns on the 2.1 & 2.2 (R5367).

**Advantages**:
- It will provide better aesthetics than the previous options due to the 1.1 that will be crowned.
- It is stable in the mouth.
- It is durable and will remain in a good condition over a long period of time.
- The restoration will also appear natural.

**Disadvantages (Due to the characteristics of the porcelain veneer)**:
- The method involved in the fabrication of a veneer is very technique-sensitive.
- It is very time-consuming.
- It is extremely fragile.
- And if the veneer is damaged, it is complicated to repair.

**Option 5**: Porcelain crown on the 1.1 and implant-supported crowns to replace 2.1 & 2.2 (R5560).

**Advantages**:
- It is very stable in the mouth.
- It is durable and will remain in a good condition over a long period of time.
- The restoration will also appear natural.
- It will provide better aesthetics due to the 1.1 that will be crowned.
- The midline can be corrected by the broader 1.1.

**Disadvantages**:
- It is more expensive than the previous options.
- An operation should be performed.
- And the body may reject the implants.

There are two possible technical treatment options. The first one is an improved RPD, and the second one will include:
1. an improved RPD
2. a stent
3. temporary crowns
4. implant-supported porcelain crowns to replace 2.1 and 2.2 and a full porcelain crown on the 1.1.

The most suitable option will be the implant-supported porcelain crowns, because click it embraces:
1. Stability
2. Durability
(3) Unobtrusive in the mouth
(4) Appears natural

The chosen option is a porcelain crown on the 1.1 and implant-supported crowns on the 2.1 and 2.2. It includes:
(1) an improved RPD
(2) a stent
(3) temporary crowns
(4) And then finally the implant-supported porcelain crowns.

The reasons for the chosen option are:

(1) it is very stable in the mouth
(2) It is highly durable and will remain in a good condition for a long period of time.
(3) It is also unobtrusive in the mouth and actually has a very natural feel.
(4) It appears very natural due to the porcelain which simulates natural teeth almost 100% accurately.
(5) It provides an aesthetically acceptable tooth color.
(6) And, very important, it corrects the midline.

Once I had received the impressions, the normal disinfecting procedures were followed. After that the models were cast. A 2-tooth RPD was click waxed-up. It consists of three components which are:

(1) Acrylic base.
(2) Ball-clasps between 1.4 and 1.5 and between 2.4 and 2.5.
(3) Acrylic teeth.

An alginate impression was taken from the 2-tooth RPD wax-up in place. The RPD wax-up was then removed from the model. A stent simulating the RPD was then fabricated. The RPD wax-up were then invested, processed and finished.
A preparation was done on the model on 1.1. A diagnostic wax-up was done on 1.1, 2.1 and 2.2. It was done to correct the midline by waxing the 1.1 broader mesio-distally. A diagnostic wax-up was shown to the patient to give him an idea of what the final restoration will look like.

The diagnostic wax-up of the 2.1 and 2.2 was then removed from the model and an impression was click taken. A stent simulating the diagnostic wax-up of the 2.1 and 2.2 (corrected midline) was fabricated.

In April this year the medical team performed surgery which involved the removal of the screw in the 2nd quadrant because it would interfere with the placing of the implants. The stent simulating the diagnostic wax-up of the 2.1 and 2.2 was placed. The surgeon used this stent rather than the one simulating the RPD because it simulated a corrected midline and was in the arch.

The stent was used as a guideline to place the implants. The implants were placed parallel to each other. The wound was closed.

In September this year the implants were sealed with healing caps, until after the healing period.

The caps are selected according to two factors:

- The thickness of the mucosa and,
- The insertion depth of the implant.

Once the healing period has passed, the healing caps were removed. A choice was made by all three parties, the dentist, technician and patient, to whether cementable/screw-retained implants will be used. The cementable option was preferred due to the position of the implants.

The interior of the implants has been cleaned thoroughly and dried. The abutment was placed. The transfer copings were placed on the implants and secured with the longest possible screws.
Impression tray being used to take the impression had holes that guide the screws. Once the impression material has set, the guide screws were removed. Protective caps were placed on the abutments whilst the superstructure is being fabricated. The implant analogs were then secured in the impression. Standard techniques and extra hard stone were used to cast the working model. Gingival mask was used. The copings were fixed in place with occlusal screws and copings were then reduced beneath the occlusal plane.

The framework was waxed up according to standard guidelines. The framework was then invested. The metal framework was cast. After the divesting of the framework, it was trimmed. Porcelain was then applied and fired. Stain and glaze were applied prior to final bake. The metal colors were then polished to a high shine and inferior of metal frameworks were sand-blasted and cleaned thoroughly to be send to the dentist. The implant-supported crowns were cemented in October this year. Figure 2.

**Discussion**

**References**

9. Patient File. Hook A. Tygerberg Hospital; No.: 14818.0.