

Rehabilitation of an edentulous maxilla in a patient with isolated cleft palate using short dental implants, a Createch® milled titanium bar with Locator® attachments and an implant retained obturator prosthesis.

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Introduction

The challenges often faced in restoring patients with an unrepaired cleft of the palate can be:

- Poor oral hygiene and periodontal problems
- Unfavourable abutment teeth
- Unfavourable soft and hard tissue profile.
- Communication between the nose and oral cavity

Often the biggest challenge lies in providing adequate support, stability and retention for a conventional prosthesis.

Advances in implant dentistry have provided a predictable alternative solution to help retain the removable prostheses (1).

This poster aims to discuss the following:

- The use of short dental implants in cleft patients
- The construction of an implant retained obturator
- The use of a Createch® milled titanium bar with three Locator® overdenture attachments incorporated within the bar

Case Description

- A 71 year old man suffering from the unrepaired palatal cleft with three remaining teeth and one retained root with grade II mobility and severe bone loss (Figure 1-2)
- Following clinical and radiographic examination the remaining teeth were deemed to have poor prognosis. There was significant bone loss and lack of sulcus depth. These features as well as a patent cleft of the palate presented a significant challenge in rehabilitating this patient.

Treatment

- All the remaining upper teeth were extracted and the immediate complete denture was constructed which was not retentive due to the lack of sulcus depth and unfavourable soft and hard tissue profile
- CBCT scan showed a reduced bone height. Therefore three 6mm and two 8mm Straumann SLActive tissue level implants were placed in the maxilla (Figure 4)
- The implant in the UL4 (24) area failed to osseointegrate 8 weeks after placement. It was decided to continue the treatment with four remaining implants
- Master impression was taken with a custom tray using an open tray technique with medium body addition-cure silicon impression material
- A resin verification jig was used to check the accuracy of the impression (Figure 5)
- Createch® titanium bar with 3 Locator® attachments was constructed using the CAD-CAM technique followed by fabrication of a high-impact acrylic implant retained obturator (Figure 6-9)
- The patient was reviewed after 2 weeks and regular review appointments at 3, 6 and 12 months were scheduled to monitor the implants and prosthesis and maintain the oral hygiene.

Clinical Procedure



Fig 1: Preoperative photo (labial view)

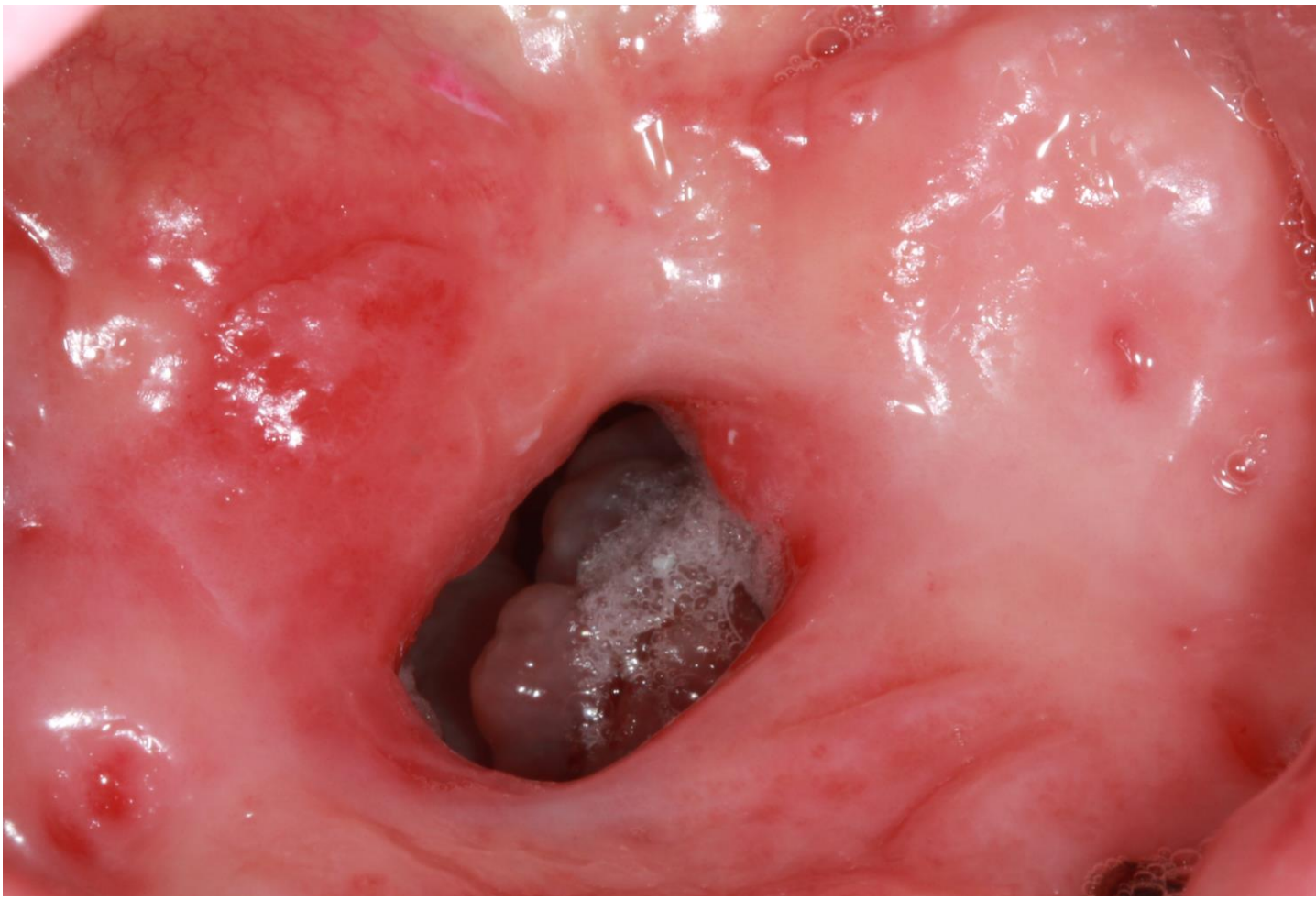


Fig 2: Preoperative photo (occlusal view)

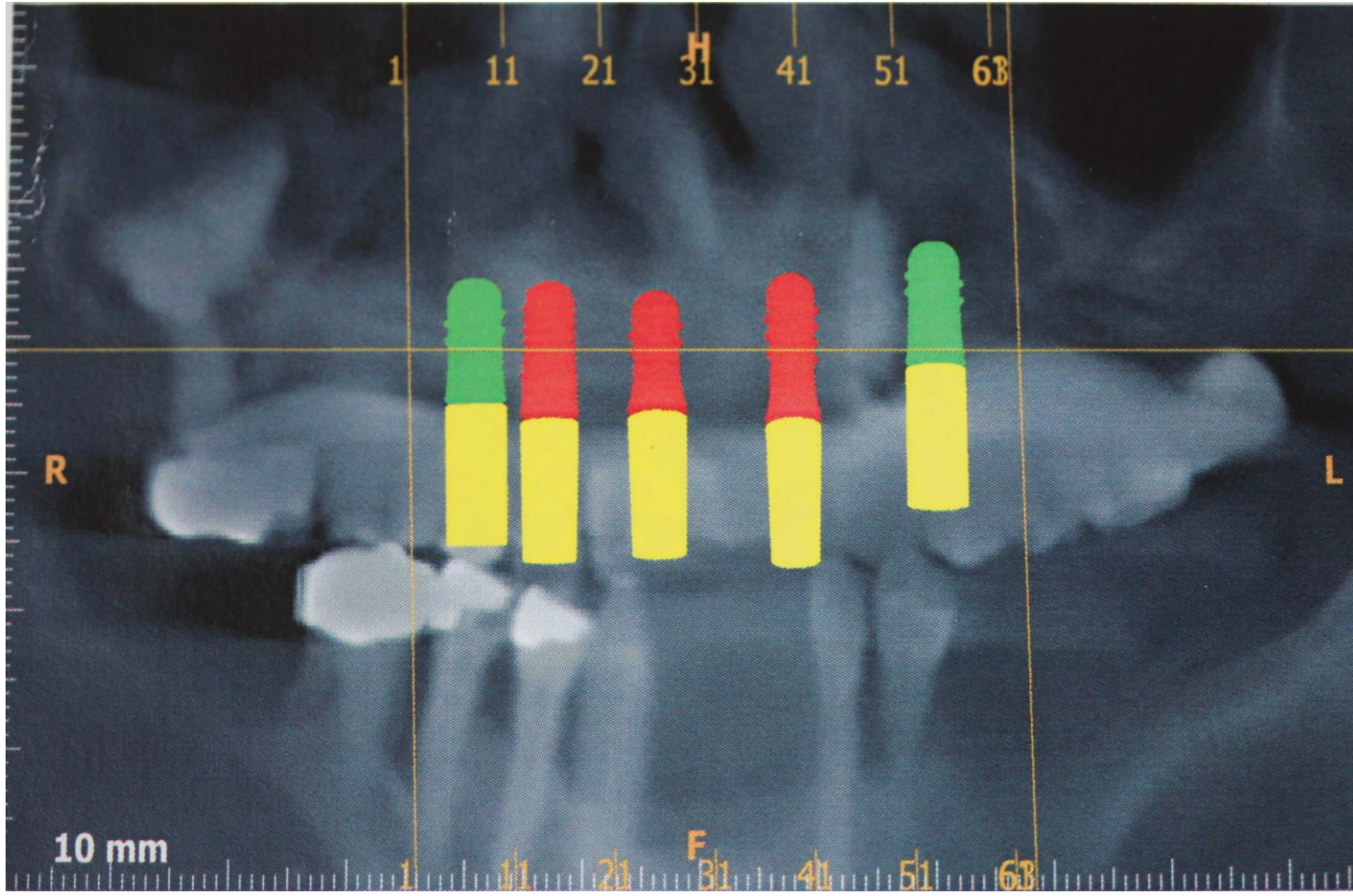


Fig 3: Planning of the implant placement on CBCT

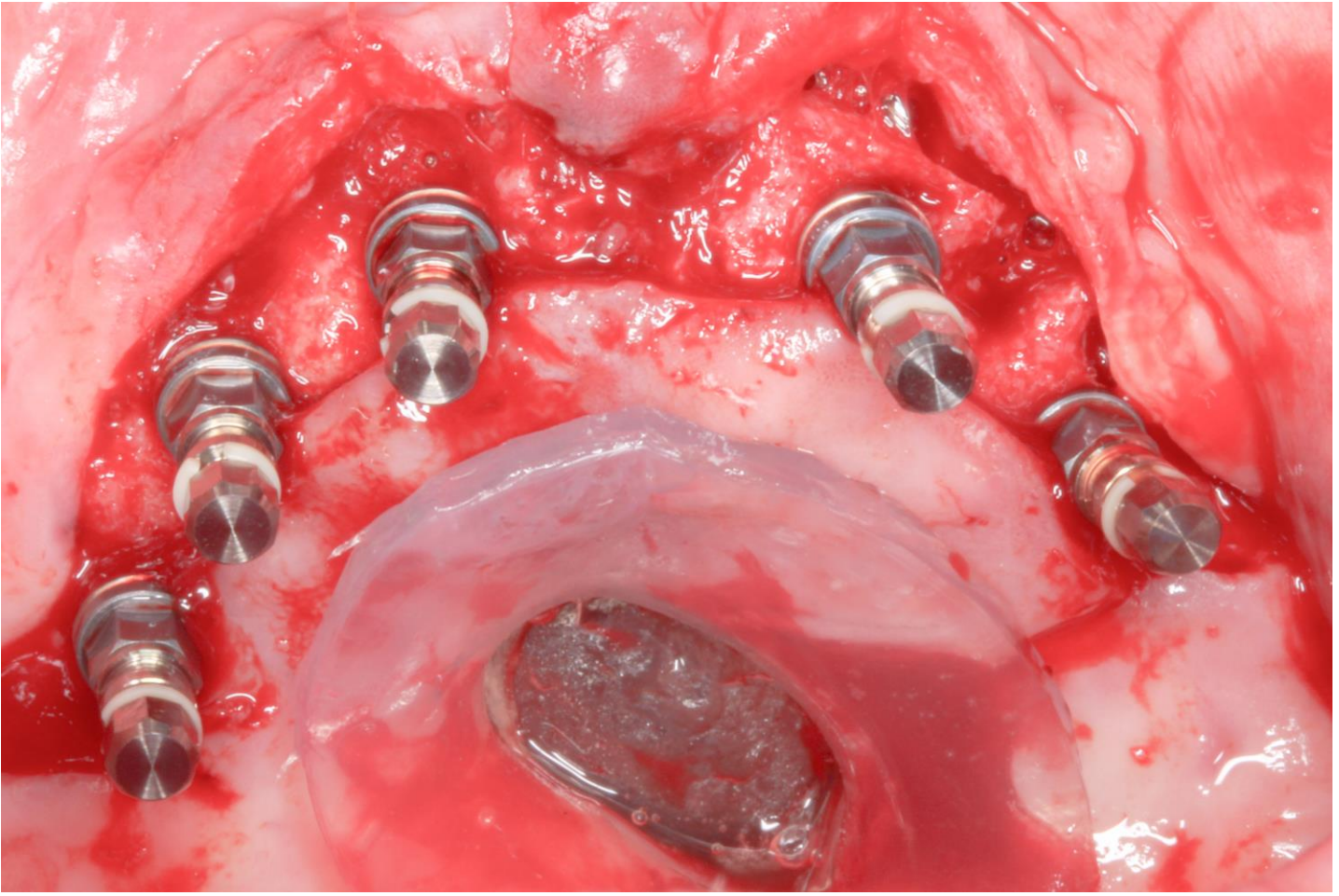


Fig 4: Implant placement surgery with covering plate

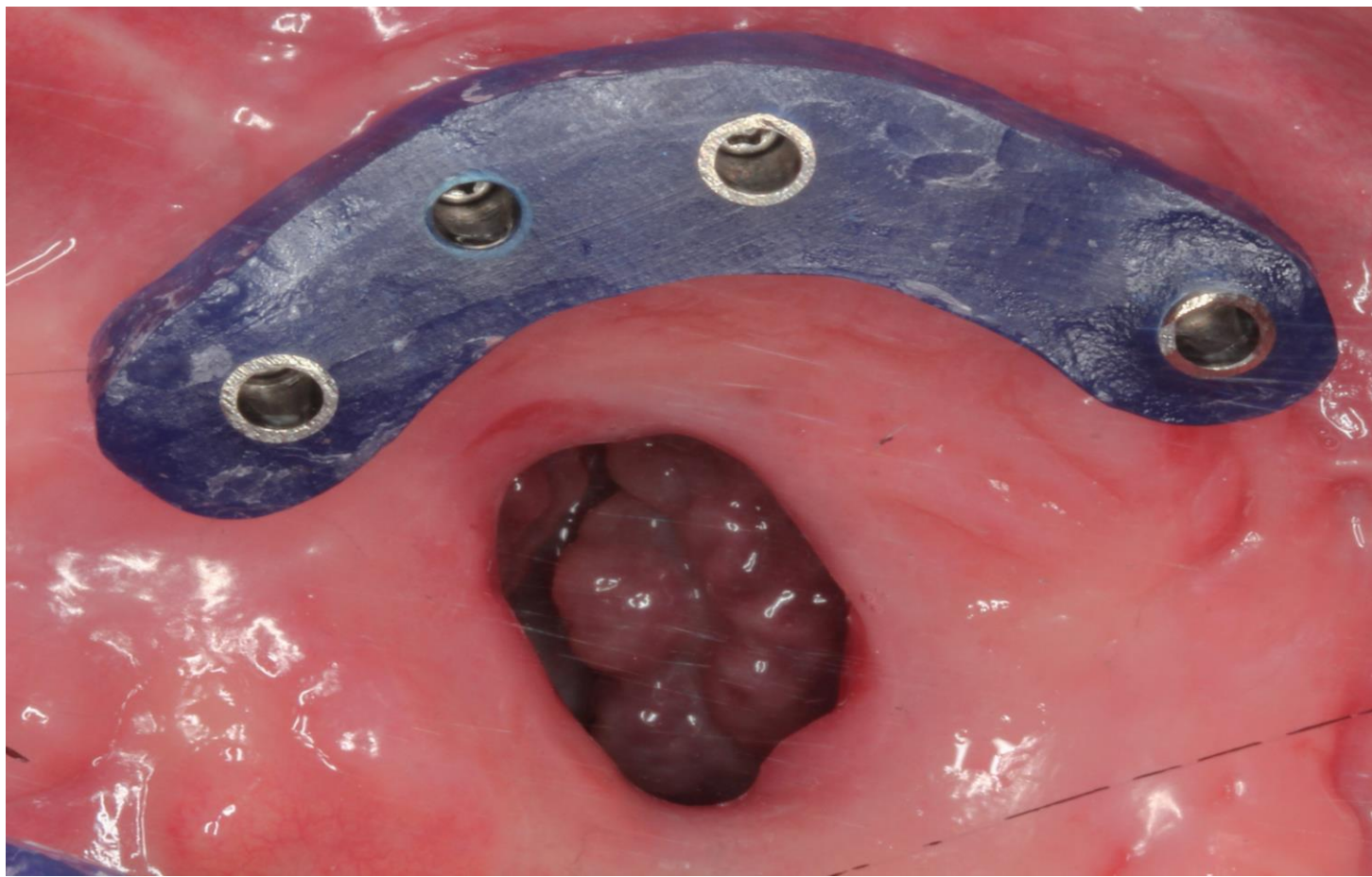


Fig 5: Verification jig in the mouth

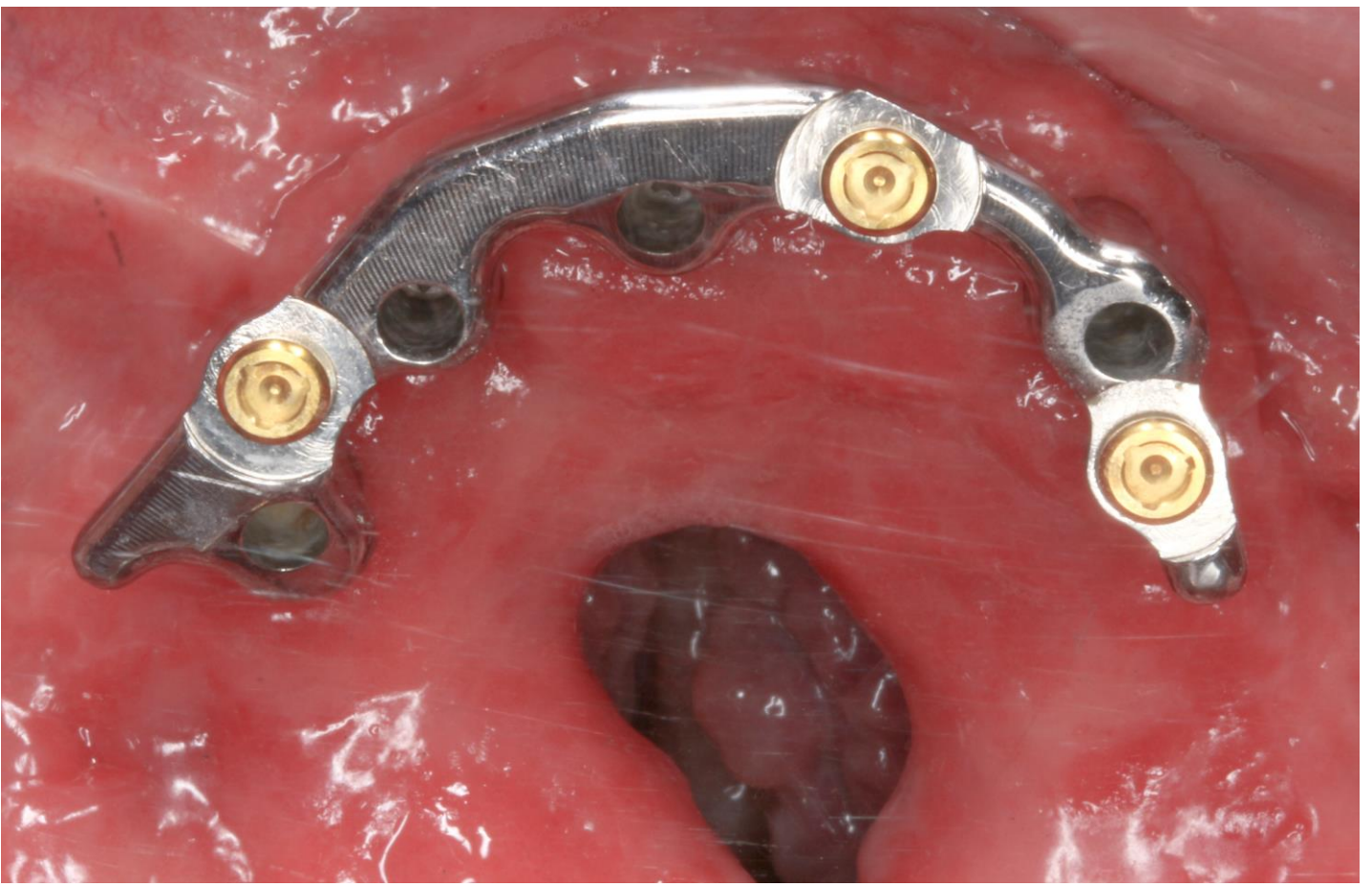


Fig 6: Titanium Bar in the mouth (occlusal view)



Fig 7: Titanium Bar in the mouth (labial view)



Fig 8: Implant retained obturator



Fig 9: Implant retained obturator in the mouth (frontal view)

Discussion

- Lack of adequate alveolar ridge height and width, compromised bone quality, and scarred soft tissues in patients with cleft palate defects can limit the use of implants or at least makes planning (Figure 3) and placement of dental implants increasingly difficult.
- Bone grafting can be considered only in a very few cases, again due to the poor soft tissues, inability to graft into the sinus and unpredictable nature of vertical bone augmentation (2).
- The development of and growing evidence for the use of short implants (<10mm) has created new solutions for managing complex cases (3,4) such as patients with extensive cleft defects.
- This combined with cheaper and more streamlined milled titanium bars can provide excellent rehabilitation solutions for these challenging cases.
- The Oro-nasal communication in cleft patients can make the surgery uncomfortable for them. In order to solve this problem the covering plate was made (using the sheet of ethyl vinyl acetate and thermo-forming technique) to seal the defect while surgery (Figure 4).
- The dental literature regarding the rehabilitation of cleft lip and palate patients is weak. This is mainly due to the small number of cases that present requiring complex rehabilitation. Often published papers are either case reports or case series type articles highlighting novel techniques used by clinicians in managing these patients.
- This poster does not provide a higher level of evidence but it does offer the restorative team another possible prosthetic solution to consider when faced with such challenging cases.

Conclusions

- Implant retained obturator on short implants (<10mm) and CAD-CAM Createch® milled titanium bar with incorporated Locator® overdenture attachments can address the problem of lack of stability, support and retention of prosthesis whilst improving the aesthetics, function and quality of life in a patient with unrepaired cleft palate.

References

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- 4- Srinivasan M, et al. 2013. Survival rates of short (6 mm) micro-rough surface implants: a review of literature and meta-analysis. Clinical oral implants research. May;25(5):539-45.