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Rehabilitation of an Edentulous Maxilla in a Patient with Isolated Cleft Palate

Abstract: This article aims to discuss the use of short dental implants in cleft patients, the construction of an implant-retained obturator and the use of a Createch® milled titanium bar with three Locator® overdenture attachments incorporated within the bar.

CPD/Clinical Relevance: Implant-retained obturators offer a possible solution for treating patients with isolated cleft palate who are struggling with dentures due to the unfavourable soft and hard tissue profile. This paper demonstrates how to manage such patients and shows all the clinical and laboratory stages involved.

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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

Case description

A 71-year-old man was suffering from an unrepaired palatal cleft with three remaining teeth and one retained root with grade II mobility and severe bone loss (Figures 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 patient with a cleft palate, presented a significant challenge in the rehabilitation of this patient.

Treatment

- All the remaining upper teeth were extracted and the immediate complete denture, which was not retentive due to the lack of sulcus depth and unfavourable soft and hard tissue profile, was constructed.

- CBCT scan showed a reduced bone height. Therefore three 6 mm and two 8 mm Straumann SLActive tissue level implants were placed in the maxilla (Figure 3).
- The implant in the UL4 area failed to osseointegrate 8 weeks after placement. It was decided to continue the treatment with four remaining implants.
- A 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 4).
- Createch® titanium bar with 3 Locator® attachments bar (Createch Medical SL, 20850 Mendaro, Spain) was constructed using the CAD-CAM technique followed by fabrication of a high-impact acrylic implant-retained obturator (Figures 5–8).
- The patient was reviewed after 2 weeks and regular review appointments at 3, 6 and 12 months

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Figure 1. Pre-operative: labial view.



Figure 2. Palatal cleft: occlusal view.

were scheduled to monitor the implants and prosthesis and maintain the oral hygiene.

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 9) 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 (<10 mm) 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

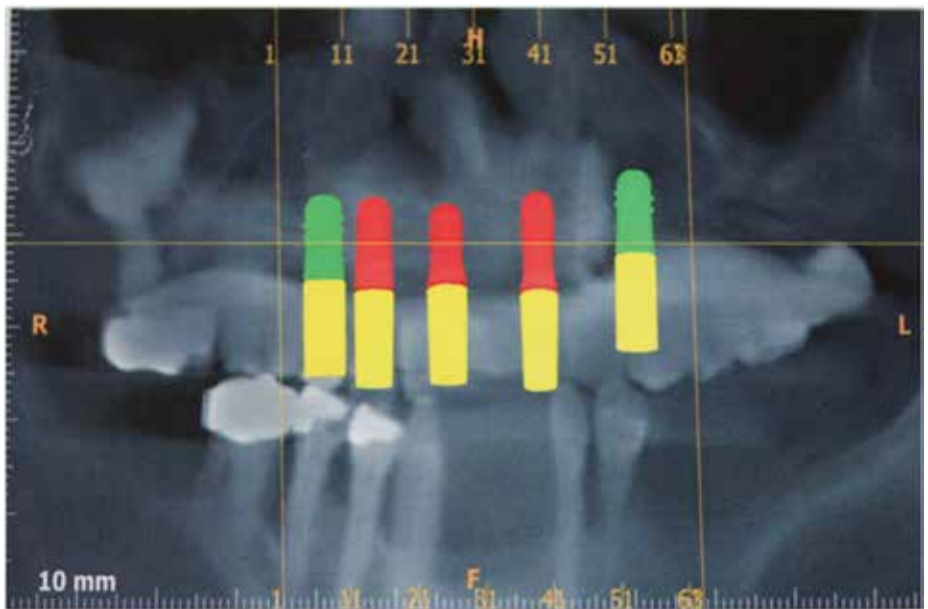


Figure 3. Planning of the implant placement on CBCT.

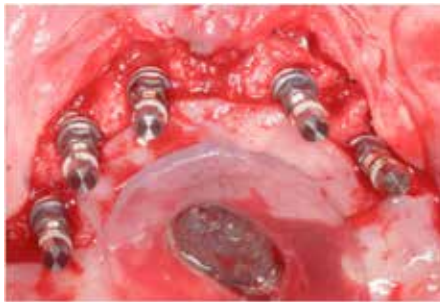


Figure 4. Implant placement surgery with covering plate.



Figure 5. Verification jig.

acetate and thermo-forming technique) to seal the defect during surgery (Figure 3).

- 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



Figure 6. Milled Createch® bar with locator attachments: occlusal view.



Figure 7. Milled Createch® bar with locator attachments: labial view.



Figure 8. Implant-retained obturator.

novel techniques used by clinicians in managing these patients.



Figure 9. Post-operative: labial view.

■ This article 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.

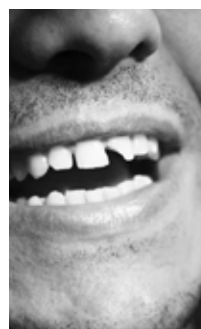
Conclusion

An implant-retained obturator

on short implants (<10 mm) and a 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 an unrepaired cleft palate.

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