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Intraoperative fixation of bone blocks – easy and efficient

A user report by:
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Figure:
New innovative Bone Fixation
Forceps of Aesculap AG, Germany

The aesthetic success and long-term stability of any implant treatment crucially depends on the quality and quantity of the osseous foundation. However, in many cases the ridge is often too narrow in transversal direction, not allowing implant insertion without augmentative procedures. In these situations simultaneous augmentation by guided bone regeneration (GBR) or, alternatively, bone splitting, is indicated. However in cases of severe alveolar crest atrophy, transplantation of autogenous bone blocks is still considered as the gold standard.

Here, in this technique, a transplant is grafted from a suitable autologous source location and fixated at the deficient implantation region. After a healing period of three to four months, an optimally ossified bone bed is created, allowing implant insertion in ideal three-dimensional alignment. One of the most important criteria for a successful bone transplantation, however, is the safe and predictable fixation of the transplant.

Due to the characteristics of the bone transplant and the deficient osseous support base, surgeons often find it difficult to hold the transplant in the correct position while drilling the screw holes and, immediately afterwards, inserting the osteosynthesis screws.

The application of the bone fixation forceps (Aesculap AG, Germany) significantly improves intraoperatively the initial stability of the bone transplant. The image sequences presented here demonstrate the ease of application and show how this instrument set facilitates bone transplantations to a considerable extent.

Conclusion

This bone fixation forceps (Aesculap AG, Germany) enables the surgeon to perform bone transplantations in an easier, more efficient and, consequently, less time-consuming manner by providing initial fixation of the bone transplant on the deficient foundation. The two joints allow proper compensation of spatial incongruencies so that the transplant is always held securely, without slipping. The serration points ensure safe seating in the hard osseous bed.

Alternatively, as demonstrated here, fixation can also be applied in the soft, mucous region, so that the procedure can proceed without flap removal towards lingual or palatal.

Initial pilot drilling through the transplant is carried out as soon as the bone transplant is fixated on the highly atrophic site, where it remains secured through the entire drilling procedure and the insertion and fastening of the osteosynthesis screws. This technique allows safe and predictable bone transplantation, as required for the long-term stability of implant-based restitutio ad integrum for the patient.

Figure 1:
Severe alveolar crest atrophy precluding primary implant insertion – a block transplant and a sinus grafting procedure are necessary.



Figure 2:
Grafting of the bone transplant – here from the retromolar donor area.



Figure 3:
Fixation of the bone transplant – watch here the fixation of the forceps (Aesculap AG, Germany) on palatal mucosa.



Figure 4:
Fixation of the bone transplant with the bone fixation forceps before drilling and screwing



Figure 5:
Drilling through the bone transplant while the transplant is fixated with the bone fixation forceps.



Figure 6:
Immediate insertion of the osteosynthesis screws through the transplant...



Figure 7:
...which is safely fixated during the whole drilling and screwing procedure



Figure 8:
Postoperative view of bone block osteosynthesis combined with...



Figure 9:
... a simultaneous sinus lift procedure with autogenous bone particulated in the bone mill and alloplastic material.



Literature available through the author:

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