

# Bone Harvesting— nice and easy

**Authors** \_Dr Steffen Hohl, Germany & Dr Anne Sophie Brandt Petersen, Denmark

**Figs. 1 & 2** \_Initial situation in region 031, 041. State 3 months after the removal of the teeth 31, 41. In region 041 the vestibular lamella has completely collapsed.

**Fig. 3** \_Noticeably visible three wall bone defect in region 031 vestibular.

**Fig. 4** \_After drilling the implant shafts, region 031 showed to be significantly atrophied.

**Fig. 5** \_The implant shafts are dilated using condensers and the periimplantational bone is condensed.

**Fig. 6** \_Implant insertion in the regions 031, 041. In region 031 it is visible that a vestibular augmentation must take place.

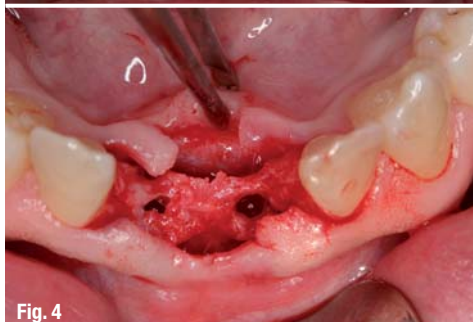
## \_Introduction

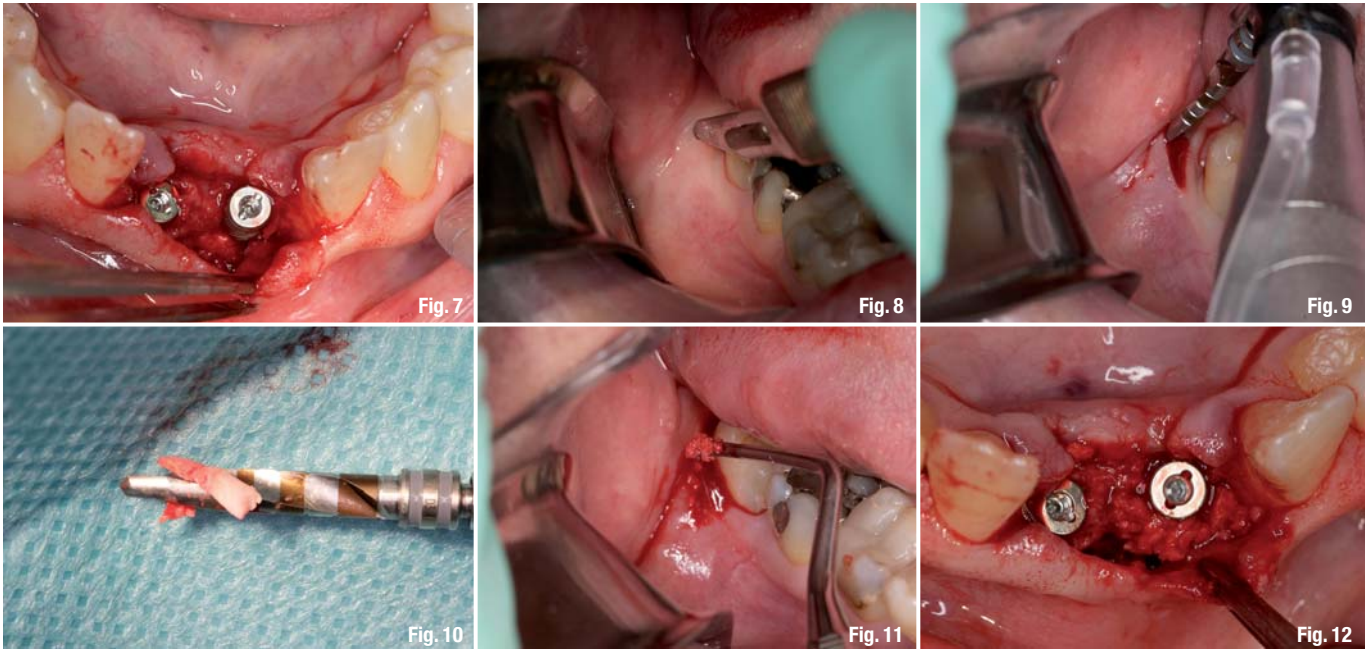
The desire to use bone from your own body to build new bone in another place is almost as old as humanity itself. We call this procedure autologous bone grafting.

In the case of autologous bone grafting the bone is removed from the same organism that the graft is to be incorporated in. The body's own bone cells have the greatest potency for rebuilding of bones and are the gold standard in oral augmentation surgery. Donor areas are: the tuber maxillae, the retromolar space, the chin region or the iliac crest, the ribs or the shin. Gaining the required quantity is sometimes elaborate (large

surgical interventions, in patient stay) and afflicted with particular problems, especially when it comes from regions far away from the oral cavity (e.g. the iliac crest). The extraction of autologous bone grafts from the retromolar space find the best acceptance with patients.

Particularly in implantology lateral augmentations are necessary in more than 75 per cent of cases. These augmentative measures mostly require low bone volumes of less than 0.3 mg. If the decision is made intraoperatively, that the patient's own bone must be used, as a rule the following question must be asked: "Which region should the bone be taken from and how can it be removed quickly?"





The retromolar space is chosen here in more than 70 per cent of cases. Until now exclusively block grafts have been used.

### Case description

The 36 year old patient wants the gaps in his teeth in the regions 031, 041 to be filled with implants due to his otherwise intact dentition. However in this situation the question is raised of whether implantation and necessary augmentation of the crestal jaw line can occur synchronously. It was planned for the patient to have autologous bone adhered in the region of the 031

vestibular. Hereby the right retromolar space and the right tuber area were considered as donor areas. The patient could be assured pre-operatively that an extraction defect of bone extraction would only involve few complaint symptoms. Intraoperatively the crestal incision was begun in the areas 031 and 041. After forming a minimally invasive mucoperiosteal flap, in particular region 031 showed strong vestibular atrophies. Initially implant drilling was carried out and the bore shaft was extended using bone condenser, i.e. the periimplantational bone was condensed. Subsequently, the implant bodies were inserted. Here it became obvious that the implant

**Fig. 7\_** the implant body in region 031 must be vestibularly covered with autologous bone over approx. 2/3 of its surface.

**Fig. 8\_** Retromolar stab incision with an 11 scalpel.

**Fig. 9\_** A conventional implant drill is used to drill directly in the area of the linea obliqua through the stab incision. A "two spade drill" is excellently suited to bone extraction.

**Fig. 10\_** Bone excavation via simple shaft drilling with the conventional "two spade drill".

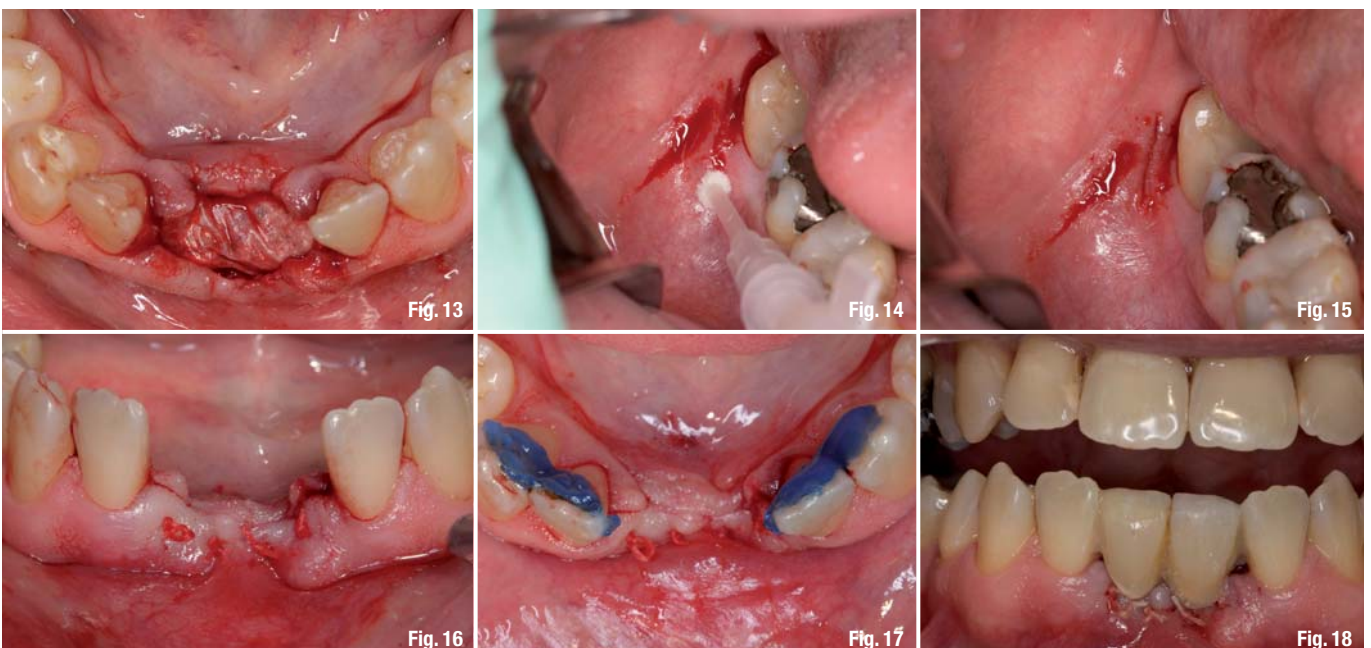




Fig. 19

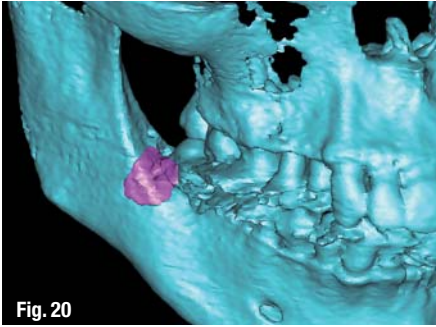


Fig. 20

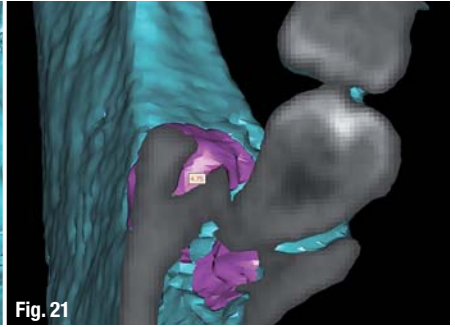


Fig. 21

**Fig. 11** additional bone excavation by hollowing out the shaft drill hole in the linea obliqua with the excavator.

**Fig. 12** Implants and autologous bone augmentation in situ. In order to achieve this result it was only necessary to drill into the retromolar!

**Fig. 13** Covering the implants and augmentations with a simple collagen membrane.

**Figs. 14 & 15** The stab incision of the retromolar extraction region is glued with cyanoacrylate. Hereby the patient only incurs a microscopic extraction defect.

**Figs. 16 & 17** The soft tissue in the implant region is closed with absorbable suture material. The neighbouring teeth 43,42,32,33 are lingually cauterised.

**Figs. 18 & 19** Insertion of a Maryland provisional prosthesis, directly after the augmentative-implantological intervention.

**Fig. 20** DVT of excavation defect.

was 2/3 exposed on its vestibular side in region 031. Both implants were primarily stable. After measuring the missing bone volume, a stab incision was made in the right retromolar. Then a conventional implant drill was driven through the gums and drilled precisely 9 mm deep. When withdrawing the drill the bone meal was already able to be retained. Additionally further spongiose bone was extracted with a mini-excavator.

The transplant bone was able to be adsorbed into the implant body in an ideal manner. Finally a thin collagen membrane was applied for complete coverage. The soft tissue defects were closed with absorbable materials. The stab incision in the retromolar was glued with cyanoacrylate. In regions 031/041 the wound closure was carried out using absorbable suture material and horizontal mattress stitches.

Finally as a provisional restoration a Maryland temporary prosthesis was affixed, which additionally ensured a good soft tissue stabilisation. A digital volume tomography (DVT) was produced in order to evaluate the removal defect and document the augmentative result.

### Summary

Autologous bone grafting represents the gold standard in augmentation surgery. Particularly with implant operations it is often only shown intraoperatively that a small quantity of autologous bone is needed for augmentation. In this situation quick

reaction is often indicated. The retromolar space is frequented most often for this purpose. As the patient should have the least possible discomfort due to the bone extraction, minimally invasive procedures are the means of choice.

The technique presented above is a new method which is impressive due to its minimally invasive and simple characteristics. The shown procedure is especially ideal for augmentation planning with volumes up to 0.5 mg. Of course larger bone volumes can also be extracted using this minimally invasive method. Soft tissues can be closed discreetly and so that they are hardly noticeable to the patient using adhesive techniques. Minimally invasive procedures in implantology can be perfectly planned and executed by including modern 3-D-diagnostics (DVT).

### contact

### implants

#### **Dr Dr Steffen Hohl**

DIC Dental Implant  
Competence  
Estetalstr. 1  
21614 Buxtehude, Germany  
www.dr-hohl.de

#### **Dr Anne Sophie Brandt Petersen**

Tandlaegerne I Kogade  
Kogade 4  
6270 Tonder, Denmark  
www.dentist.dk



Fig. 22

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