Innovative Bone Mill Concept Simplifies Augmentation

A user report by: Dr. med. Dr. med. dent Andres Stricker (M.D., D.D.S.)

Fig. 1: Exploded drawing of the ERGOPLANT Micro Bone Mill made by Aesculap

In augmentative procedures in order to improve the bone bed, the use of autologous bone is still regarded as the “gold standard“. The major advantage, compared to using bone replacement material, is a substantially shorter healing period with a reliable prognosis. At the same time, the question of the harvest site and the consistency of the bone used are always put forward as a disadvantage.

In particular, bone from the retromolar region or the chin region shows a high constancy of bone volume and is perfectly suited for use in block transplantation, whereas the highly cortical structure is also negatively regarded for the use in sinus augmentations or augmentations with particulate material.

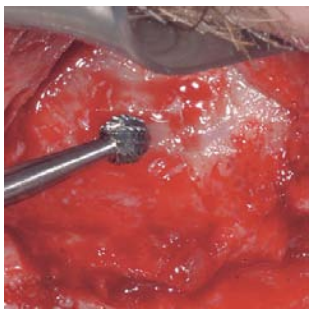

Fig. 2: Creating the facial window in the maxillary sinus

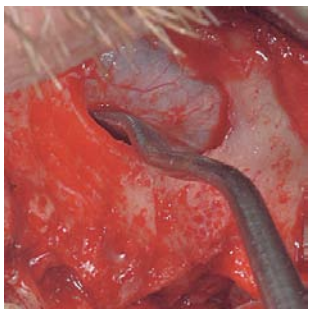

Fig. 3: Removing the unperforated mucous membrane in the maxillary sinus up to the palatine bone wall

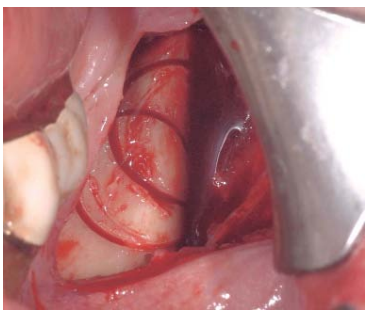

Fig. 4: Depiction of the retromolar donor region

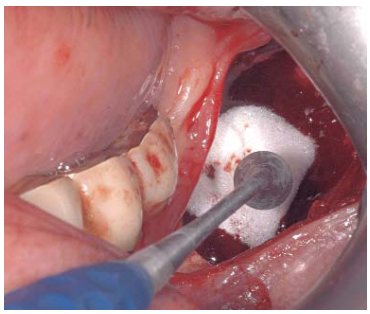

Fig. 5: Collagen is inserted to assist the regeneration of the donor area

The practitioner faces the problem of sensibly milling and segmenting the harvested graft. A particle size of about 50 micrometers should be the ideal, since smaller structures are absorbed too quickly and larger structures offer less contact canal area to the outside. So the question arises for the surgeon of how to achieve the most ideal particle size using the simplest possible means.

The ERGOPLANT Micro Bone Mill is developed and produced by AESCULAP. It is possible to acquire the bone mill just with the microsieve, but it is undoubtedly more practical to buy the total package offered. The total package is available as a modular tray system for easier reprocessing, together with a second (larger) sieve and special "pestle-spatula" instruments. These instruments enable virtually an 100% yield (out of the bone mill).

The different sieve inserts (diameter 1.5 mm and 2.5 mm) make it possible to produce different bone consistency depending to the indication. To fill furcation defects, or for bone material for vestibular periimplant augmentations in periodontal surgery, the small sieve is certainly highly recommended. The larger sieve with a pore size of 2.5 mm is highly recommended to produce more bone volume for sinus floor elevations using exclusively autologous bone, or alternatively as a mixture with heterologous replacement materials.

The individual components are provided as a set in a tray which fits in the sterile container. The surgeon can assemble all the parts to be used within 20 seconds. The harvested bone graft is placed in the mill and the plunger is put on. The compact handling makes it possible for the surgeon to determine the consistency of the bone by the manual pressure exerted. The surgeon takes the mill in both hands and must make several twisting movements until the graft is processed to the desired particle size. This takes no longer than 1 – 2 minutes.

In contrast to many other bone mills with their rather robust appearance, the AESCULAP mill's compact size means that no table or holding device, and therefore no additional space, is necessary.

The compact Bone Mill offers the possibility of individual configuration of particle size

Fig. 6: The harvested bone is placed in the bone mill

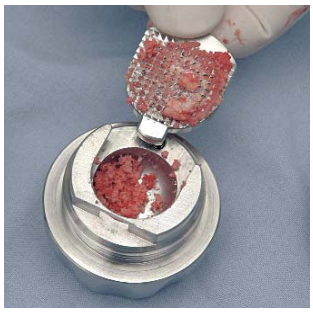

Fig. 7: The complete transplant can be milled with no residue

After the plunger has moved to the intended lower level it is removed and the ground bone chips are pressed out of the sieve using pestle instruments specifically designed for this purpose. This is also a very easy procedure, with the result that the complete material from the sieve can be collected in the dish in approx. 30 seconds and is then available for the surgeon to proceed with the augmentation. The size and the design and arrangement of the components make it possible to process the complete bone graft into particles with practically no residue, making it available for the rest of the augmentation procedure. After the operation is complete the bone mill can be taken apart into its individual components without any difficulty, placed in the holders provided in the instrument set and then sent for sterile reprocessing without any problem.

To summarize it can be said that the newly developed Bone Mill, with its very small, compact design and the possibility of individual configuration of the particle size, represents a clear and vast improvement in the preparation of bone grafts. The minimalist will cope very well with the smaller solution, although it is certainly recommended to take advantage of the modular arrangement of the tray system.

A boon for everyone who wishes to perform augmentations.

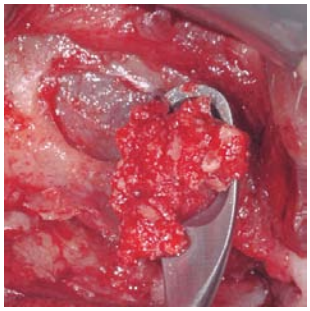

Fig. 8: Introducing the particulate bone into the prepared sinus cavity

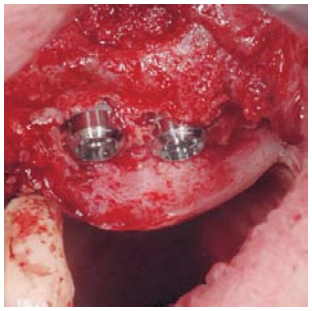

Fig. 9: Exposed implant loops after insertion of the implants

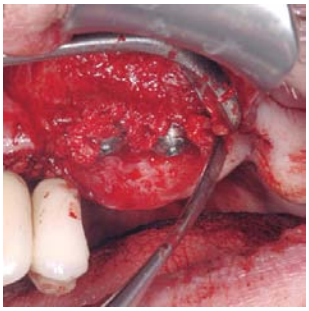

Fig. 10: Vertical crest construction using autologous particulate material

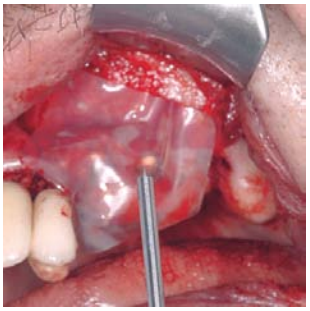

Fig. 11: Covering the augmentation with a resorbable collagen membrane material

Significant simplification in the preparation of bone transplants

DX801R
ERGOPLANT
Micro Bone Mill

DX800
ERGOPLANT
Micro Bone Mill Kit

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>>>Dr. Andres Stricker is working as assistant professor at the clinic and policlinic of Oral- Maxillofacial Surgery at the University Hospital of Freiburg. Moreover since 2003 he is running his own Practise Clinic specialized on Implantology and Periodontology in Konstanz.

Dr. Stricker studied dental medicine and medicine at the Albert-Ludwig-Universität in Freiburg, with additional studies at Michigan University in Ann Arbor, Harvard University, University of Louisville and the University of Miami.
Publications and lecturing in Germany and abroad.

Main research interests: implantology, augmentation methods, distraction, soft tissue management and tissue engineering.<<<