Horizontal bone augmentation

Dr Riz Syed discusses the importance of general bone augmentation in the arena of implantology and some treatment options

Dental implants require sufficient bone to be adequately stabilised. For some patients, implant treatment would not be an option without horizontal or vertical bone augmentation. Therefore, general bone augmentation is an area of immense importance in implantology.

A variety of materials and surgical techniques are available for bone augmentation, depending on the case and patient—after all, each case is different.

One option is a block graft, a bone augmentation technique ideally suited for simply building up bone matter. Firstly, the area to be augmented is measured and then cortical blocks are harvested from either the chin or the ramus of the mandible. First the area to be augmented is measured. After raising a flap from the donor site, a block is cut either by using a piezo-surgical instrument or by drilling small holes to trace the outline of the block. A fissure bur then links these holes and the block is separated from the underlying bone using chisels.

The donor site can be filled with collagen sponges to aid healing, before being sutured.

On the host site, the cortical plate is perforated numerous times to promote bleeding using small diamond burs. The block is then shaped using large burs to fill the void and follow the curve of the dip. Small holes are drilled through the block and the cortical plate to allow for a screw to secure the block in place.

Particulate bone can be used around the block and a resorbable membrane draped over the graft. This is left for at least six months before implant placement.

Non-resorbable membranes

A more tricky technique is to use non-resorbable membranes to build up the bone mass. The use of these membranes is technique sensitive and in inexperienced hands can easily lead to failures, resulting in the removal of grafts.

Generally there are two types of commonly used membranes. One of which is titanium reinforced, while the other is not. In areas of augmentation, xenografts alone with these membranes cannot be used. In my experience, although the ridge will augment, the quality of bone formed is very poor and unsuitable for implant placement.

It is therefore important to mix autogenous bone and xenografts together with an equal ratio to achieve better results. The autogenous bone can be taken from the tuberosity or ramus and crushed.
using a bone mill. Safe scrapers can also be used to harvest a large volume of autogenous bone. The host site is prepared in the same way as for the block graft by perforating the cortical plate. The bone is placed over the void and covered. The membrane is then cut into the desired shape and tacked into position. This stage is very important to prevent movement and exposure.

A tension-free flap is then sutured over the graft, and left to heal for at least six months before the membrane is removed – a vital stage in all augmentation cases. The perios- tum at the base of the flap can be scored using a scalpel to al- low for greater flexibility.

Alternatively, ridge augmentation can also be achieved using resorbable membranes. An example would be a severely atrophic posterior ridge. Once the cortical plate is perforated, a mixture of autogenous bone and particulate bovine bone can be mixed and placed onto the atrophic ridge. A resorbable membrane can then be secured over the augmented area and left for a period of six months.

**Demineralised Bone Matrix**

A relatively new concept to enter the arena is the use of Demineralised Bone Matrix (DBM). Al-

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**Module 1 Clinical Leadership and Service Delivery**

This module will cover the five leadership domains outlined in the Medical Leadership Competency Framework (2009): namely demonstrating personal qualities, working with others, managing services, improving services and setting direction.

**Module 2 Achieving Clinical Excellence**

Through an evidence-based understanding of the dental literature, this largely hands-on skills laboratory based module will provide a comprehensive review of the diagnosis, treatment planning and management of patients within the scope of NHS general dental practice. The challenges presented by both young and old patients, as well as those who may require special care in the community, will also be considered.

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**OUTCOMES**

This programme is designed to support dental professionals:

- to lead the delivery of dental health services
- to manage the dental team
- to deliver effective prevention
- to improve oral health
- to deliver quality dental care

**Course fees:** £8,960 (to be confirmed by fees committee).

Individual modules may be taken by those who have a specific training need.

Closing date for applications: 31st August 2010

For further information or to register, please contact:

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**About the author**

Dr. Ria Syed qualified at the Royal London Hospital in 1989 and was enrolled in clinical training in Islington and Waltham- en-Thames. As one of the first surgeons in the country to use NobelGuide he is a mentor for Nobel Biocare, helping to train 18 implant surgeons. Regularly consulted for complex treatment planning cases, Dr. Syed lectures internationally on guided implant surgery. He is a member of the Association of Dental Implantology, the International Congress of Oral Implantologists and Fellow of the Royal Society of Medicine, and has been awarded the Clinic of Excellence in Implant Dentistry. To contact Dr. Syed, visit www.leadingdentists.com.

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This innovative programme is offered by the UCL Eastman Dental Institute with the support of the Chief Dental Officer and the Department of Health in order to encourage and support the whole dental team in their desire to deliver effective leadership and clinical excellence within the NHS whilst improving oral health through the delivery of effective preventive dentistry.

**WHO IS THE COURSE FOR?**

This programme is designed for NHS general dental practitioners who wish to embrace the delivery of clinical excellence through a commissioning framework and introduce new concepts and approaches to leadership, clinical management and team development within the primary care setting. DCps working with course participants will be invited to attend selected training sessions.

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