



# Ridge regeneration

## With a titanium membrane

**Dinesh Vegad** describes a implant case with bone regeneration using a new design of titanium membrane to promote bone growth



➤ **Dinesh Vegad BDS** qualified from Birmingham in 1976, going on to work in the NHS across all aspects of general dentistry, including oral surgery. Since 1992 his post graduate education has included intensive training courses here and in the USA in implant dentistry, including a certificate in implantology with Dr Hilt Tatum. [dazzlingsmile.co.uk](http://dazzlingsmile.co.uk)

**P**re-surgical planning, soft tissue management and aesthetic bone grafting are mandatory for an ideal outcome for dental implants. Good bone regeneration is the key to final success, 'tissue is the issue but bone sets the tone.' Unfortunately many resorbable membranes collapse too easily to be able to achieve good 3D bone regeneration, while traditional titanium membranes require a complicated fixing procedure and removal is also difficult and invasive. I-Gen (Megagen) is a new flexible membrane which is easy to place and fix and create 3D bone shape and can be removed in two minutes!

### SURGERY

This article describes a case of implant placement at LL6 (first molar) where the bone ridge width is compromised. This 50-year-old male had this tooth extracted two years previously and whilst the height of the alveolar ridge was adequate, placing a 5.0mm diameter implant in the ideal bucco-

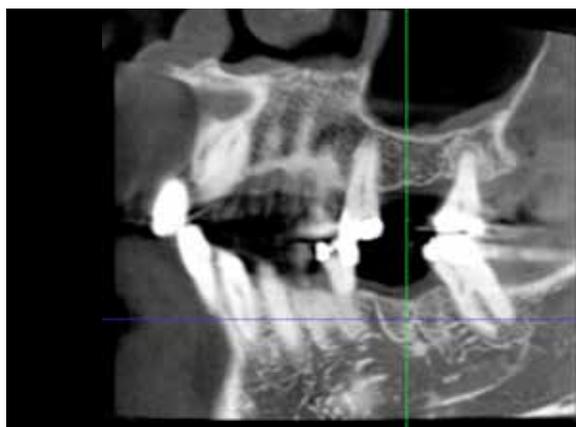
lingual position meant a large surface of this implant was left devoid of any bone support. A buccal sub-periosteal flap was raised with vertical relieving incision made far from the edge of the I-membrane to avoid exposure.

The implant, placed sub-crestal (1.00 - 1.5mm), was a Megagen Anyridge 5.00mm x 11.5mm. The design of this implant allowed a regular core diameter of 3.3mm with wide threads. The implant is also narrower at the two uppermost thread aspects and so avoids any pressure on cortical bone here. Primary stability was over 50Ncm.

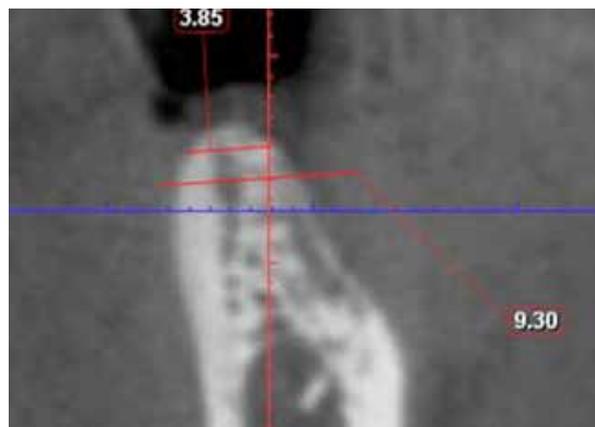
A flat abutment of 3.5 x 1mm height was first screwed into the implant to create at least 1mm space between the implant and the I-Gen membrane.

The I-Gen membrane (Type A wide) is wide and suitable for molar region. This membrane was tried in by placing the occlusal hole over the flat abutment and lightly tightening a 3mm high healing abutment over it. The I-Gen membrane can then be manually shaped to adapt well over the buccal

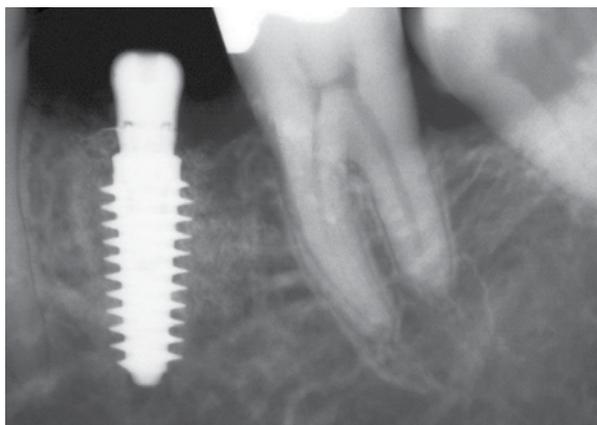




**Figure 1:**  
LL6  
extracted  
due to  
abscess



**Figure 2:**  
Narrow  
ridge at LL6.  
Large buccal  
defect



**Figure 3:**  
Anyridge  
implant  
placed



**Figure 4:**  
Megagen  
implant  
has no  
buccal  
bone  
coverage

'THERE WAS NO BINDING OF THE MEMBRANE TO THE NEWLY FORMED, HARD, SHINY BONE WELL IN EXCESS OF 4MM WIDTH'

defect. Once satisfied with this, the I-Gen membrane was removed and bovine bone granules (Cerabone) was augmented around the defect and slightly overfilled. The I-Gen membrane was then replaced, 4.0 x 3.0 healing abutment hand tightened and excess bone granules cleared. Tension-free primary closure of the soft tissue was achieved easily, and with the healing abutment this would allow a single-stage protocol.

### HEALING

The patient was seen at two weeks and then again at eight weeks and healing was uneventful. Patient reported no swelling or pain and the I-Gen remained unexposed until five months later when, for study purposes, a flap was raised, the healing abutment

removed and the I-Gen membrane was simply 'picked up' with tweezers.

There was no binding of the I-Gen membrane to the newly formed, very hard, shiny cortical bone, well in excess of 4mm width. Some cerabone granules remained and these were cleaned off.

This bone was very hard and the buccal defect was completely filled. In addition the implant head had more bone over it. This is fine since the implant head is narrower and the healing abutments for Any Ridge are also platform switched for avoiding stress here and allowing for a larger volume of soft tissue cuff for better aesthetics and healthier peri-implant soft tissue, this is very important especially in the aesthetic zone.<sup>1</sup>

Tension free; primary closure of





# 'BONE VOLUME WILL BE THE MOST CRITICAL FACTOR IN ENSURING EXCELLENT AESTHETIC OUTCOME'

flap was carried out after placing a 6x3mm healing abutment and patient dismissed. A CT scan was taken at eight weeks after this exposure and clearly shows adequate bone volume and good quality bone around the implant at impression stage. The soft tissue looked very healthy and with good bone support this implant has a very good long-term prognosis, provided restoration follows normal good design and occlusal considerations, a must for any implant.

## DISCUSSION

Bone quality and quantity are critical for implant success and these can be assessed by the use of a dental CT scan. This allows for determining the need for bone grafting and is fundamental to the decision making process for functional and aesthetic reasons. Therefore, this is the stage at which bone regenerative augmentation procedures should be considered. As for the decision of the stage approach versus the non-stage approach, that is the clinician's decision and is dependant on a number of factors, eg soft tissue quantity and quality, tissue biotype, emergence profile, lip line and smile line.<sup>2</sup> Bone volume will be the most critical factor in ensuring excellent aesthetic outcome, because it is the hardware that will support the software on top of it. 'Tissue is the issue, but bone sets the tone!'

Implant positioning has to be correct in the apico-inisal, mesio-distal and bucco-lingual dimensions. To achieve the proper emergence profile and

optical emergence, 2mm of bone should be kept labial to the implant. Placing an implant too palatally will result in a ridge lap restoration hindering good oral hygiene.<sup>3</sup> Too buccal and the restoration will be over contoured and buccal bone and soft tissue will be lost eventually. Implant placed palatally due to a thin ridge will need to be placed 1.0mm apically for every mm that it is placed palatally.

Hence the I-Gen membrane allows a good volume and quality of bone for placing implants without the compromises listed above. The different heights of flat abutments means an increase in height up to 3mm can be achieved. Also unlike other non-resorbable titanium-based membranes the I-Gen membrane allows for simultaneous implant placement and bone grafting.

Moreover the unique design allows this to be a single-stage procedure by using the healing abutments, or a two stage procedure with a cover screw.

It is very important to place the I-Gen flush with bone to avoid membrane exposure and this is easily achieved. The I-Gen membranes come in three categories: anterior (4.5mm wide), premolar (5mm) and molar (6.5mm), with each available in four types: type A and B membranes are only to cover single wall defects; type C has a lingual extension to cover lingual wall defects; and type D has no hole for a flat abutment, so it can be used for ridge augmentation of multiple teeth.

Click here to see the I-Gen catalogue [www.megagen.co.uk/file\\_upload/48\\_i-gen-membrane-catalog\\_520\\_.pdf](http://www.megagen.co.uk/file_upload/48_i-gen-membrane-catalog_520_.pdf) ■

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**Figure 5:**  
Cerabone  
and IGen  
membrane  
in place



**Figure 6:**  
Excellent  
healing  
around  
abutment



**Figure 7:**  
Evidence of  
new good  
buccal bone  
formation