

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Block versus particulate autogenous bone graft in maxillary alveolar ridge augmentation.

(A Clinical Study)

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of the requirements of
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Table Of Contents

Introduction	1
Review of Literature	4
Aim of the Study.....	25
Patients & Methods	26
Results	59
Discussion	71
Summary & Conclusion	77
References.....	79
Appendix	90

List of Tables

Table (1-1): Showing the immediate postoperative & six months postoperative width measurements of the onlay block & the particulate bone grafts.....60

Table (1-2): Showing the linear reduction in graft width (degree of change).....62

Table (1-3): Showing the immediate postoperative & six months postoperative height measurements of the onlay block & the particulate bone grafts.....64

Table (1-4): Showing the linear reduction in graft height (degree of change).....66

List Of Abbreviations.

ABBM	Anorganic bovine bone mineral
ABG	Autogenous bone graft
ASA	American Society of Anesthesiologists
BMP	Bone morphogenic protein
DO	Distraction osteogenesis
EC	Endochondral
e-PTFE	expanded-polytetrafluoroethylene
GBR	Guided bone regeneration
GTR	Guided tissue regeneration
IM	Intra-membranous
PMCB	Particulate marrow cancellous bone
P-value	Probability value
SD	Standard deviation
Ti-mesh	Titanium mesh

List of Figures

Figure 1: Cawood and Howell classification of resorption of maxillary alveolar ridge.....	5
Figure 2: Cawood and Howell classification of resorption of the mandible.....	5
Figure 3: Photograph showing front view of the presurgical maxillary alveolar ridge.....	29
Figure 4: Panoramic radiograph showing the deficient alveolar ridge height in the right anterior maxillary region.....	29
Figure 5: Photograph (top view) showing the preoperative cast of the upper jaw.....	30
Figure 6: Photograph (front view) showing the preoperative casts of both the upper and lower jaws in articulation.....	30
Figure 7: Photograph showing the preoperative casts mounted on hing articulator with the deficient area waxed up to simulate the planned augmentation.....	31
Figure 8: Photograph showing the tin foil adapted over the cast in the previously waxed up area.....	31
Figure 9: Photograph showing the tin foil flattened against the Ti-mesh stock.....	32
Figure 10: Photograph showing the Ti-mesh after being cut on the tin foil bias.....	32
Figure 11: Photograph showing the resulting mesh cut-out wedged on the waxed up cast.....	33
Figure 12: Photograph showing the measuring of the molded wax using a caliper to determine the dimensions of the desired graft.....	33
Figure 13: Photograph showing the ascending ramus after reflection of a full thickness mucoperiosteal flap at its lateral surface	36

Figure 14: Photograph showing the microsaw loaded on a straight hand piece.	36
Figure 15: Photograph showing the microsaw cutting through the cortex of the bone under saline irrigation.	37
Figure 16: Photograph showing the ramus osteotomy with the cuts delinating the graft made through the cortex.....	37
Figure 17: Photograph showing the ramus graft after being separated by chiseling along the previous cuts through the cortex.....	38
Figure 18: Photograph showing the ramus after removing the graft.....	38
Figure 19: Photograph showing the vestibular incision through the mucosa apical to the mucogingival junction.	40
Figure 20: Photograph showing the reflection of a full thickness flap exposing the mandibular symphysis donor site.....	40
Figure 21: Photograph showing the four cuts marking a rectangle (the graft margins) at the symphysis.....	41
Figure 22: Photograph showing the harvested block of bone graft.....	41
Figure 23: Photograph showing the symphysis after removing the bone block.....	42
Figure 24: Photograph showing the harevested bone fragmented into smaller pieces.....	42
Figure 25: Photograph showing the preparation of the particulate bone using the bone mill.....	44
Figure 26: Photograph showing the reflection of the mucoeriosteal flap at the anterior maxilla for placing the particulate bone graft.....	44
Figure 27: Photograph showing the perforation of the bed of the graft to facilitate its revascularization.....	45

Figure 28: Photograph showing the titanium mesh filled with particulate bone and fixed by titanium microscrews.....	45
Figure 29: Photograph showing the reflection of the mucoeriosteal flap at the anterior maxilla for placing the block onlay graft.....	46
Figure 30: Photograph showing the block graft placed for evaluation of its contours in relation to the surgical stent prior to recontouring and fixation.....	46
Figure 31: Photograph showing the drilling through the block under saline irrigation for screws fixation.....	47
Figure 32: Photograph showing the tightening of the micro screw to fix the graft.....	47
Figure 33: Photograph showing the block graft fixed by titanium micrew screws.....	48
Figure 34: Photograph showing wound closure using vicryl sutures.....	48
Figure 35: Photograph showing the mucosa over the graft site six months after augmentation.....	49
Figure 36: Photograph showing graft site six months after augmentation with onlay bone block. Note the bone resorption around the screws.....	49
Figure 37: Photograph showing endosseous implants inserted into the grafted bone.....	50
Figure 38: An axial Ct cut of the maxilla used for localization of parallel oblique cuts at the target area.....	53
Figure 39: Panoramic cuts of the maxilla showing the preoperative deficient height of the anterior maxillary region.....	53
Figure 40: Axial CT image showing the preoperative deficient width of the anterior maxillary region.	54
Figure 41: Sagital CT cuts of the determined segment showing the linear measurements of the alveolar ridge.	54

Figure 42: Reconstructe 3D radiographic image (top view) showing the preoperative deficient alveolar bone.	55
Figure 43: Reconstructe 3D radiographic image (front view) showing the preoperative deficient alveolar bone.	55
Figure 44: Axial CT image showing the postoperative particulate bone graft filing the gap between the Ti-mesh and the native bone of the anterior maxillary region.....	56
Figure 45: Reconstructed 3D radiographic image showing the postoperative view of the Ti-mesh filled with particulate bone graft.	56
Figure 46: Reconstructed 3D radiographic image showing the postoperative view of the block bone graft with the PMCB filling the discrepancies over the graft.....	57
Figure 47 ; Reconstructed 3D radiographic image showing the Ti-mesh from palatal view.....	57
Figure 48: Bar-graph representing the mean linear block graft width (mm) immediate postoperative and six months postoperatively.....	61
Figure 49: Bar-graph representing the mean linear particulate graft width (mm) immediate postoperative and six months postoperatively.....	61
Figure 50: Bar-graph representing the mean linear width measurements of the particulate graft versus the block graft.....	63
Figure 51: Bar-graph representing the mean linear reduction (degree of change) in width of the particulate graft versus the block graft.....	63
Figure 52: Bar-graph representing the mean linear block graft height (mm) immediate postoperative and six months postoperatively.....	65
Figure 53: Bar-graph representing the mean linear particulate graft height (mm) immediate postoperative and six months postoperatively.....	65
Figure 54: Bar-graph representing the mean linear reduction in height of the particulate graft versus the block graft.....	67
Figure 55: Bar-graph representing the mean linear height measurements of the particulate graft versus the block graft.....	67

Figure 56: Photomicrograph of the block graft showing compact bone with few marrow spaces (H&E x100).....69

Figure 57: Photomicrograph of the block graft showing high magnification of compact bone with entrapped osteocytes (H&E x200).....69

Figure 58: Photomicrograph of the particulate bone graft showing compact bone surrounded by woven bone with large marrow spaces. (H&E x100).....70

Figure 59: Photomicrograph of the particulate bone graft showing high magnification of compact bone with entrapped osteocytes surrounded by woven bone . (H&E x200).....70

Introduction

One of the main diagnostic factors in patient evaluation for the placement of dental implants is the available bone at the desired implant location. Insertion of an endosseous implant requires sufficient bone volume for complete bone coverage. Based on clinical experience, the minimum required dimensions of bone include a ridge width of 5 mm, allowing for bone on the facial and lingual aspects of the implant and a vertical bone height of 10 mm. **(Misch, 1990).**

The reconstruction of the compromised maxilla for conventional implant placement has become a challenging aspect in oral rehabilitation. In patients with advanced maxillary ridge atrophy, reduction of the residual bone height results in a lack of primary stabilization of implants installed by conventional methods. Numerous bone grafting techniques with and without immediate implants placement have been used in such cases **(Boyne 1992).**

Bony defects in the cranio-maxillofacial skeleton may arise as a result of congenital areas of failed development such as cleft palate, the results of ablative surgery in which segments of bones are resected to treat cysts or tumors, and due to trauma in which case osseous tissue may have been traumatically avulsed **(Peterson, 1983).**

Several augmentation techniques have been proposed, even in cases with limited bone support and inadequate nourishment. Before the establishment of dental implants useage, numerous surgical techniques were developed to improve the foundation for prosthetic rehabilitation

(Jennings, 1989). These techniques included; sulcoplasties **(Hillerup, 1994)**, Shortening of the narrow alveolar ridge until reaching the required width **(Watzek 1996)** and various grafting procedures **(Lekkas and Wes, 1981; Peterson, 1983)**. Only temporary improvement of dentures retention and stability were achieved **(Stoelinga et al.,1986)**.

Since the introduction of the concept of osseointegration in 1982, dental implants have proven to be a reliable treatment for fixed and removable prostheses. The scope of reconstructive preprosthetic surgery has changed from providing adequate osseous and mucosal support for a conventional denture to providing sufficient bone volume allowing implant insertion into the best prosthetic position **(Stellingsma et al., 2004)**.

Autogenous bone grafts or bone substitutes have been used to augment the alveolar ridge. The use of autogenous bone grafts for ridge augmentation is, on the other hand, recommended by most authors, due to the intrinsic osteogenic properties. However, the augmentation of the alveolar ridge by the use of fixed or non-fixed onlay bone grafts often results in partial or complete resorption of the graft and lack of bony union between the graft and the recipient site **(Jensen et al. 1994)**.

Clinically, when an extraoral site is employed, the large availability of bone does not put the operator into the necessity of protecting the graft, since whenever achievable, over contouring is the most common way to deal with the expected resorption of grafted bone **(Chiapasco et al. 1999; Jakse et al. 2001)**. The situation is completely different in

case of intraoral harvesting, where bone is available in more limited quantities (**Montazem et al 2000**).

Autogenous bone can be grafted in the form of block or particulate form. An autogenous particulate bone graft heals by immediate and continuous bone formation that results in a larger and more rapidly consolidated graft. Autogenous onlay block grafts may resorb more rapidly and usually do take a longer time to integrate than autogenous particulate bone grafts (**Boyne et al. 1997**).

One of the disadvantages of the use of particulate grafts is the lack of structural integrity. Without a containment system, soft tissue collapse can result in compression or displacement of the graft and inability to achieve the desired results (**Buser et al. 1996; Donos et al. 2002**) .

Porous titanium mesh has been previously reported as a containment system for particulate grafts used in the augmentation of the maxilla and mandible (**Schopper 2001**).