

Awareness on use of iliac crest graft in implantology among dental practitioners- a question naire based survey.

RUNNING TITLE: Awareness On Use Of Iliac Crest Graft In Implantology Among Dental Practitioners

Sanjog Agarwal

Saveetha Dental college and hospitals,
Saveetha Institute of Medical and Technical Sciences,
Saveetha University,
Chennai-600077, TamilNadu ,India.
Contact: 7204914145
Email id: 151909002.sdc@saveetha.com

Dhanraj Ganapathy

Professor and Head of Department,
Department of Prosthodontics,
Saveetha Dental college and hospitals,
Saveetha Institute of Medical and Technical Sciences,
Saveetha University,
Chennai-600077, TamilNadu ,India.
Contact: 9841504523
Email id- dhanraj@saveetha.com

Subhabrata Maiti

Assistant Professor,
Department of Prosthodontics,
Saveetha Dental college and hospitals,
Saveetha Institute of Medical and Technical Sciences,
Saveetha University,
Chennai-600077, TamilNadu ,India.
Contact: 9007862704
Email id- drsubhoprosth@gmail.com

Vatika Agarwal

Saveetha Dental college and hospitals,
Saveetha Institute of Medical and Technical Sciences,
Saveetha University,
Chennai-600077, TamilNadu ,India.
Contact: 9620721155
Email id: 151909003.sdc@saveetha.com

Corresponding author

Dhanraj Ganapathy

Professor and Head of Department,
Department of Prosthodontics,
Saveetha Dental college and hospitals,
Saveetha Institute of Medical and Technical Sciences,

Saveetha University,
Chennai-600077,TamilNadu ,India.
Contact:9841504523
Email id- dhanraj@saveetha.com

ABSTRACT:

Introduction :Bone grafting is a popular surgical method used in orthopaedic surgery to help with bone repair. The most reliable therapeutic option for repairing and reconstructing bone for implant placement is autologous bone graft harvesting, and the iliac crest is the most common harvesting site.

Aim:The aim of this study is to evaluate the awareness about iliac crest grafting in implantology among dental practitioners.

Material and Methods:This study was done on an online google survey.This questionnaire based study was performed on dental specialists to analyze the awareness of iliac crest graft and its use in implantology and its correlation between demographic data.. The responses were collected ,tabulated and subjected to statistical analysis.There were three reviewers involved to examine the results of the study. The data included in the study was from June 2019-March 2020.

Results:Out of 103 dental practitioners who answered the survey 98.1% answered iliac crest as the preferred site for harvesting large amount of autogenous graft but there was no significance among different specialities(p-value 0.008).99% dental practitioners answered PCMB(Particulate Cancellous Bone Marrow) as the kind of graft harvested but there was no significance among different specialities(p-value 0.41).

Conclusion:This study concluded that dental practitioners were aware about iliac crest grafting in dental implant surgical procedures.However the levels of surgical expertise required for performing this procedure is inadequate among the respondents.More dental practitioners need to be trained in iliac crest graft harvesting.

KEY WORDS: Iliac crest; Paresthesia;Autogenous graft;dental practitioners ,implants

INTRODUCTION:

In reconstructive oral and maxillofacial surgery, bone grafts are frequently employed. The type of donor location chosen is mostly determined by the amount of bone needed. Grafts from the iliac crest are frequently used to heal somewhat significant deformities. There is gradual atrophy of the maxilla and mandible following tooth removal.¹⁻⁵ Alternative procedures must be assessed against autogenous iliac crest bone transplants, which are widely recognised as the gold standard.

Complications linked with iliac crest bone graft harvest have mostly been regarded as costs linked with the better success rates bone grafts confer on primary orthopaedic surgeries. Bone transplant treatments have obviously been linked to discomfort, and they may also be linked to other, less prevalent but more dangerous side effects. As the success rates of bone graft substitutes approach those of autogenous grafts, understanding the dangers and costs of iliac crest bone grafts will become increasingly relevant.Serious problems are uncommon with bone grafts, but when they do occur, they have a significant impact on the result. Many of the most serious complications of bone transplant surgery are caused by the proximity of the graft site to arterial and neural systems. Pseudoaneurysm of the pelvic vasculature has been reported as a serious problem⁶, arteriovenous fistula⁷, massive blood loss⁸, pelvic instability presenting as low back pain⁹, avulsion of the anterior superior iliac spine^{10,11}, ureteral injury⁷, hernia^{7,12}, and neuropathy¹³. Previous research done related to the topic¹⁴⁻²⁰ and made us worked on this topic.

Periodontal disease, trauma, congenital defects, and/or resorption atrophy can all cause insufficient alveolar bone volume, which can make it difficult to insert dental implants for prosthetic rehabilitation. In such circumstances, alveolar bone augmentation with autologous bone, allogeneic, xenogeneic, or alloplastic biomaterials is required before implant

placement.^{21,22,23}The aim of this study is to evaluate the awareness about iliac crest grafting in implantology among dental practitioners as there have been very less studies to evaluate this knowledge.

MATERIAL AND METHODS

This questionnaire based study was performed on dental specialists to analyze the awareness of iliac crest graft and its use in Dental implantology and its correlation between demographic data. There were three reviewers involved to examine the results of the study. The data included in the study was from June 2019-March 2020. Measures which are taken to minimize sampling bias are simple random sampling and a second reviewer to evaluate the sample size which was selected was 103 out of 200 people to whom this online survey was sent most of which comprised students both undergraduates and postgraduates ,faculty and specialists.

Validation was checked by three observers(Prosthodontist ,Implantologist and Periodontist) faculty with minimum of 5 years experience.Data collection was done through google forms.Google sheet tabulation and SPSS importing of the data was done. Descriptive statistics tests were performed. Software used - SPSS version 23 was used. Independent variable being race and time; Dependent variable being Age, sex and socioeconomic status. Chi Square test and frequency analysis was used to evaluate the data.

RESULTS:

Out of 103 dental practitioners who answered the survey 98.1% answered iliac crest as the preferred site for harvesting large amount of autogenous graft but there was no significance among different specialties(p-value 0.008).99% dental practitioners answered PCMB(Particulate Cancellous Bone Marrow) as the kind of graft harvested but there was no significance among different specialties(p-value 0.41).66% dental practitioners told that the procedure was done under General Anesthesia But there was no significance among different specialties(p-value 0.223).47.6% answered anterior iliac crest as the most preferred site but there was no significance among different specialties(p-value 0.223).49.5% answered anterior iliac crest site contains most amount of PCBM but there was no significance among different specialties(p-value 0.961).54.4% dental practitioners selected 5 days post operative antibiotic prophylaxis regimen but there was no significance among different specialties(p- value 0.343).54.4% dental practitioners selected meralgic paresthesia,gait disturbance,pain and bleeding all of them as the most common postoperative problem but there was no significance among different specialties(p-value 0.248).Only 13.6% dental practitioners have received training in harvesting iliac crest graft but there was no significance among different specialties(p- value 0.014).84.5% dental practitioners wish to be trained in the procedure to harvest iliac crest graft but there was no significance among different specialties(p-value0.115).45.6% dental practitioners selected 2mm as resorption rate of augmented iliac crest graft at the end of a year but there was no significance among different specialties(p- value0.591).36.9% dental practitioners selected healing period of iliac crest graft but there was no significance among different specialties(p- value0.143)(Table 1).

Table 1: Showing the correlation between different groups of dental practitioners and the awareness about iliac crest graft.

Variables	Options	Which practitioners group do you belong to?					Chi square value	P value
		Prosthodontist	Periodontist	Oral Surgeon	General Practitioner	Undergraduate Student		

Most common site for harvesting large autologous bone graft.	Ramus	21.6%	16.6%	0%	11.1%	16.6%	26.73	0.008
	Symphysis	13.5%	50%	33.6%	2.7%	0%		
	Iliac crest	68.4%	33.4%	66.4%	80.5%	83.3%		
	femur	0%	0%	0%	5.5%	0%		
Kind of graft material is harvested from an iliac crest.	Cancellous	10.8%	0%	25%	8.3%	16.6%	12.35	0.41
	Cortical	18.9%	0%	0%	22.2%	16.6%		
	PCBM(particulate cancellous bone and marrow)	70.2%	100%	75%	66.6%	66.6%		
	Only marrow	0%	0%	0%	2.7%	0%		
Reason for iliac crest to be the most preferred site.	Accessibility	0%	0%	8.3%	0%	16.6%	23.4	0.024
	Bone volume							
	Bone quality	16.2%	33.3%	0%	5.5%	0%		
	All of the above	8.1%	8.3%	0%	2.7%	0%		
		75.6%	58.3%	91.6%	91.6%	83.3%		
Anaesthesia under which is the iliac graft harvested.	General anesthesia	67.5%	58.3%	91.6%	61.1%	50%	15.3	0.223
	Local anesthesia	13.5%	16.6%	0%	27.7%	0%		
	Conscious sedation	2.7%	0%	0%	2.7%	0%		
	Any of the above	16.2%	25%	8.3%	8.3%	50%		

Most preferred site for harvesting iliac crest graft.	Anterior	48.6%	50%	75%	36.1%	50%	6.72	0.567
	Posterior	29.7%	33.3%	25%	38.8%	33.3%		
	Any of the above	21.6%	16.6%	0%	25%	16.6%		
Part of ilium which contains the most amount of PCBM(particulate cancellous bone and marrow).	Anterior	51.3%	41.6%	66.6%	44.4%	50%	2.508	0.961
	Posterior	37.8%	41.6%	25%	38.8%	33.3%		
	Both contain same amount	10.8%	16.6%	8.3%	16.6%	16.6%		
How many days is the post operative antibiotic prophylaxis given.	5 day	62.1%	33.3%	58.3%	52.7%	50%	8.992	0.343
	3 days	2.7%	0%	0%	11.1%	16.6%		
	2 days	35.1%	66.6%	41.6%	36.1%	33.3%		
Most common postoperative problem.	Meralgic paresthesia	18.9%	16.6%	8.3%	11.1%	16.6%	14.87	0.248
	Gait disturbance	2.7%	8.3%	25%	8.3%	33.3%		
	Pain and bleeding	13.5%	33.3%	25%	27.7%	0%		
	All of the above	64.8%	41.6%	41.6%	52.7%	50%		
Any training in harvesting iliac crest graft?	Yes	10.8%	8.3%	41.6%	5.5%	33.3%	12.55	0.014
	No	89.1%	91.6%	58.3%	94.4%	66.6%		
Any wish to be trained in the procedure to harvest iliac crest graft.	Yes	89.1%	75%	91.6%	86.1%	50%	7.42	0.115
	No	10.8%	25%	8.3%	13.8%	50%		

Awareness about the healing period of iliac crest graft.	3 weeks	8.1%	8.3%	25%	19.4%	0%	17.18	0.143
	6 weeks	8.1%	41.6%	25%	22.2%	16.6%		
	3 months	37.8%	25%	8.3%	33.3%	16.6%		
	6 months	45.9%	25%	41.6%	25%	66.6%		
Awareness about the resorption rate of augmented iliac crest graft at the end of a year.	2mm	48.6%	41.6%	33.3%	41.6%	83.3%	10.28	0.591
	2.5mm	24.3%	25%	50%	36.1%	0%		
	3mm	21.6%	33.3%	8.3%	16.6%	16.6%		
	3.5mm	5.4%	0%	8.3%	5.5%	0%		

DISCUSSION:

Iliac crest bone grafts are well recognized as the gold standard to regenerate bone in orthopedic surgery.²⁴The iliac crest graft was chosen by 98.1 percent of dental practitioners as the best option for collecting significant amounts of autogenous graft. Because the operation is performed under general anaesthesia, the patient has less discomfort during the process. The majority of the iliac crest graft is PCBM (Particulate Cancellous Bone Marrow), which is obtained from the anterior ilium. Harvesting iliac crest graft has a number of risks, including meralgic paresthesia, gait disturbance, discomfort, and bleeding. Complications linked with iliac crest bone graft harvest have been mainly regarded as costs connected with the increased success rates bone grafts confer on primary orthopaedic procedures. Bone transplant treatments have obviously been linked to discomfort, and they may also be linked to other, less prevalent but more dangerous side effects. As the success rates of bone graft substitutes approach those of autogenous grafts, understanding the dangers and costs of iliac crest bone grafts will become increasingly relevant.

Since, harvesting of iliac crest bone graft is associated with higher success rates of bone graft, the complications of grafting have been accepted largely as a technique in orthopedic operation.²⁵ Iliac crest bone grafts have become increasingly important because the results of bone graft approaches. Pain was the most frequently cited complication of harvesting iliac crest bone graft.²⁴ While Palmer et al. reported 6.16 %, Schwartz et al. reported 19%, and Schaaf et al. reported only 4% of their patients having had chronic pain, our study showed the lowest level of donor site pain^{21,26,27} have a high rate of success; low risks and associated costs.²⁴ Numbness as another complication of iliac crest bone grafts showed that 3.27% of patients had temporary numbness. This result is consistent with the study of Schaaf, who reported 2.7% of their patients had numbness.^{21,26,27} However, as Schwartz reported that numbness exists in 24% of their patients^{21,26,27}, we believe Assessing scar appearance showed that 3.27% of patients had unsatisfactory scars and this result is consistent with Palmer and Schwartz reports (3% and 5%, respectively).^{21,26,27}

Pain is the most frequent complication of harvesting iliac crest bone grafts. Very few dental practitioners are trained in harvesting iliac crest graft and more need to be trained as it gives enormous amount of graft to fill major defects especially, after surgical interventions. The wide variations in complication rates associated with bone grafting procedures and the emergence of substitute materials as potential alternatives to iliac crest bone grafting point to the need for a better understanding of the risks associated with iliac crest bone grafts.

Overall knowledge regarding iliac crest graft is still very less, very few professionals are familiarised with the technique of harvesting iliac crest graft. As the procedure requires an expensive setup and multidisciplinary approach it has been

practised in very few clinical set up, it is mostly practised in clinics attached with hospitals. More awareness is needed so that the gold standard of grafting is religiously practised even when graft is required in large amounts. The limitation of this study is the sample size as it was less. Majority of the dental practitioners who answered the survey were Prosthodontist and General practitioners, so the majority of the questions answered may be biased towards that speciality.

CONCLUSION:

This study concluded that dental practitioners were aware about iliac crest grafting in dental implant surgical procedures. However, the levels of surgical expertise required for performing this procedure is inadequate among the respondents. More impetus should be given in enriching the knowledge and clinical skills associated with iliac crest grafting among the dental practitioners.

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