

Autogenous Bone Graft And Freeze Dried Demineralized Bone Graft In Direct Sinus Lift Technique- Sreview

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Abstract:

Over the past few years there has been a large change in the outlook and treatment modalities used in dentistry. Implants are considered to be the major breakthrough in the replacement of a lost tooth as, it has lots of pros and less of cons as explained earlier. After the loss of the maxillary molar tooth, the alveolar bone shows rapid resorption, and the size of the maxillary sinus also increases.

Keywords: sinus lift ,bone graft,dental implant

INTRODUCTION

Implant Is seen an ascending phase in its development . Branemark et al in the 1960's demonstrated the ability of natural bone to accept implanted titanium during its remodelling stages leading to osseointegration. **Branemark's** original protocol recommends complete implant after tooth extraction; this process requires 6 to 12 months. The requirement for successful osseointegration of dental implants is a sufficient osseous tissue to ensure the stabilization of implant and to allow for bone-to-implant contact of the entire surface intended for osseointegration, which is 6 months from placement of implants. The first maxillary sinus floor augmentation procedure was performed by **Oscar Hilt Tatum, Jr. in 1974**. Dr. Hilt Tatum Jr was first performed SINUS LIFT The inadequate bone volume is a result of ongoing maxillary sinus pneumatization and remodelling of the alveolar crest. Augmentation of the maxillary sinus floor with autogenous bone is a frequently used method where the bone graft have been harvested from the both extraoral and intraoral donor site. Common intraoral donor site include the maxillary tuberosity, zygomatic maxillary buttress, the zygoma, the mandibular symphysis, the body of the mandible and the ramus of the mandible. Intraoral donor site is suitable and local anaesthesia is sufficient for such procedure. **Becktor et al** used particulate autogenous bone from the mandibular body for sinus floor augmentation where the residual vertical bone height varied between 2.6 and 6.5 mm. He reported an implant survival rate of 98.9% after a follow-up of 12 months with minimal postoperative complications. Demineralized freeze dried bone allograft (DFDBA), demineralized bone matrix (DBM), formation proceeds.

REVIEW OF LITERATURE

Etruscan population in **(500 BC)** as quoted by **Ring M** utilized soldered gold bands incorporating pontics from animals to restore masticatory function as bridge. Evidence exist that Egyptians in **(2500 BC)** as quoted by **Ring M** attempted to stabilize periodontally compromised teeth with use of gold ligature wire. The first evidence of the use of implants was by Mayan population in **(600 AD)** as quoted by **Ring M** they utilized pieces of steel to replicate three lower incisor teeth.

Alvin Strock (1938)56 as quoted by Rasmussen R.A. designed the first successful vitallium screw implant which provided anchorage for replacement of a missing tooth.

Goldberg and Gershkoff (1948)56 as quoted by Rasmussen R.A. described subperiosteal implant with extension of framework to the external oblique ridge.

Lee (1950)56 as quoted by Rasmussen R.A. introduced the use of endosseous implant with the central post and circumferential extensions.

R. Earl Robinson et al (1969) 61 first introduced the term osseous coagulum in his paper Osseous Coagulum for bone induction. He described that at 25,000 to 30,000 rpm, using a no. 6 or no. 8 round carbide bur, a bone dust is obtained which when coated with blood becomes a coagulum. The donor bone is obtained from any intraoral source. Usually it is obtained from areas where there is a requirement for osseous correction such as the removal of lingual ridges, exostoses, palatal excrescences. This technique is based on two assumptions: (1) that the smaller resorption and replacement; and (2) that mineralized fragments can induce osteogenesis as other investigators have reported. The results of osseous coagulum bone induction are fairly consistent and the technique offers considerable promise in the osseous regeneration procedures.

Rowland a. Hutchinson et al (1973) 53 first described the use of an osseous coagulum filter for collection of osseous coagulum during osteotomies.

Schulte et al (1978)57 clinically tested 95 Tuebinger immediate implants of different types. The longest time of observation was 2 and 1/2 years.

M. Hodosh et al (1980)33 conducted a study where composite polymer material composed of poly (methyl) methacrylate (PMMA) and silica microspheres was developed for use in dental implants as a possible alternative to the highly successful vitreous carbonpolymethacrylate (VC-PMMA) dental implant

Boyne and James (1980) 2 reported on the elevation of the maxillary sinus floor in patients with large, pneumatized sinus cavities in preparation for the placement of blade implants.

Sture Lundqvist et al (1983)59 reported that most striking result of this short -term longitudinal study is the overwhelmingly positive rehabilitation effect resulting from the substitution of a complete upper denture with a fixed prosthesis. This verifies earlier results obtained in crosssectional investigations after significantly longer periods of observation. Clinical and technical procedures used in the production of fixed prosthesis on osseointegrated implants in the edentulous maxillae were described. The subjective evaluation and some clinical recordings in 21 treated patients were reported. Initial results were very favorable.

P. Kavanagh et al (1985)48 reported that a large number of dental implants and percutaneous devices have been placed in humans, little are known of many aspects of One advantage is that wide variety of techniques has been developed for observing cell behaviour that would be inappropriate or unethical to apply to humans. Moreover, relative to large animals such as dogs or primates, rodents are inexpensive to purchase and maintain, and as a consequence a greater number of animals can be used for study.

Tatum(1986)3 first proposed dental implant placement through the lateral window approach technique and its clinical application. This technology expanded the implant indication of the posterior maxillary region, having the advantages of direct vision when performing surgery, control of the elevated height, effective protection

Sarupinder Singh et al (1989) 54 did a study on the , but it lacks validation of its sterilization capabilities. 48 titanium implants were contaminated with spores of biological indicator bacillus stearothermophilus and subjected to —dynamic sterilized by UV light. 47 of as indicated by not producing turbidity in a suitable growth medium. This sterilization technique only requires a 20 -second exposure.

Thomas GJ. Et al (1990)51 stated that the AMBE technique with augmentation has been a highly successful and predictable procedure. It facilitates lifting the sinus membrane gently and displacing it upward.

Pallesan et al (2002)20 concluded the early stages of bone regeneration were positively influenced by autogenous bone graft with smaller particle sizes **21**. Graft harvesting methods can be successfully used for sinus floor augmentation in patient with inadequate alveolar bone height which provide a adequate graft volume for implants. Morbidity is minimal and the survival of the grafts, implants and prosthetic constructions is satisfactory.

Wallace and Froum(2003) 4, they showed a high success rate using this technology for implant restoration. autogenous bone graft through the lateral window approach

Urist et al first described the osteoinductivity of DFDBA, after observing endochondral bone formation on DFDBA when placed in soft tissue. It has since been discovered that BMPs are the factors responsible for the novo bone formation.**12**

Malcolm P. J. Young et al (2002) 36 carried out a study for clinical and histological evaluation of bone collected in filters. The aims of this study were 1) to compare the clinical performance of two bone collectors Thirty -eight patients (paired for implant site) were categorised into three clinical groups. Patients underwent bone collection with the . With regard to the mean mass of bone that was collected for each clinical group, the Osseous Coagulum Trap collected greater mass and this reached statistical significance (P 0.025) for samples that were collected during the insertion of four maxillary implants. With regard to the histological nature of the tissue that was collected, bone and coagulum predominated in most samples, while muscle and fibrous tissue were found only occasionally.

Wilson TG Jr et al (2003) conducted a study to improve the bone-to-implant contact and the initial bonetoimplant contact in a vertical dimension. The implant surface, the type of membrane, and the method of membrane placement used in a previous study by his group were modified. Osseointegration occurred across all Horizontal defect, with the percentage of bone -to-implant contact in the range of 0.05 to 1.5 mm. The first bone -to

Stephen T. Chen et al (2004)60 published an article along with the clinical procedures and outcomes associated with immediate and delayed implant placement. Results showed Peri - implant defects had a high potential for healing by regeneration of bone, irrespective of healing protocol and bone augmentation method. spontaneous bone fill when implants with rough surfaces were used. In the presence of HD's larger than 2 mm, or when socket walls were damaged, concomitant augmentation procedures with barrier membranes and bone grafts were required.

Springer et al (2004)58 analyzed the bone vitality of the bone particles obtained through bone filters, osteoblast like cells were able to express alkaline phosphatase, osteocalcin and collagen type 1 which are markers of cell differentiation. Data from various studies confirmed the presence of osteoblast like cells, which could proliferate and differentiate along the osteogenic lineage suggesting they are capable of regeneration after transplantation.

Clark M. Stanford et al (2010) 14 reviewed the recent developments in titanium implant surface technology and to discuss the role in mediating macrophage biology in the wound healing site around the implant. Implant macro retentive features, implant micro-retentive features, implant wound healing and the potential role of surface modification were reviewed in the article.

Mario Santagata (2010)39 concluded that simplified treatment modality can make implant rehabilitation of the atrophic maxillary premolar region more accessible in a single stage with immediate loading to facilitate bone density improvement.

R. Vijayalakshmi et al (2012) 52 reported a case in by GBR with PRF (Platelet Rich Fibrin)enhanced bone graft and the Platelet Rich Fibrin smeared barrier membrane for guided bone regeneration dehiscence or fenestration defect.

Johannes Kутtenberger et al (2012) 28 showed the graft collected through coagulum to contain high number of cells and they bridge the spaces between the bone chips, as well as covering the bone chips. The fibrin matrix was partially replaced with newly formed; non-calcified, collagen type I -containing extracellular matrix, and collagen type IV -positive structures were identified. The study positively identified the presence of endothelial cells. Since collagen type IV is found in basal lamina, we hypothesise that these two findings are suggestive of vessel -like structures. Furthermore, the growth factor pattern observed (IL - 8+ , HGF+, VEGF+ and active TGFβ1-) is indicative of a pro - angiogenic environment.

Wang peng (2013) stated that maxillary sinus floor elevation with autogenous bone graft through the lateral window approach technique is feasible and safe, and that the elevation of maxillary sinus floor is predictable in implant rehabilitation for patients with reduced vertical bone height in the posterior maxillary region.

Mark rowan et al (2014)37 conducted a study and the purpose was to objectively measure the stability of immediately placed implants compared to implants placed at healed sites using ISQ values obtained via RFA. Data was collected from 137 Nobel Replace Tapered Groovy Implants placed in 85 patients, ages 19-93.

CONCLUSION: Demineralized freeze dried bone allograft & autogenous graft both were convenient grafting method and aided in faster osseointegration around the implant.

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