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Research Article

USE OF AUTOGENOUS BONE GRAFTS IN IMMEDIATE IMPLANT PLACEMENT

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ABSTRACT

In our case autogenous bone grafts are taken from patient's buccal cortical plate, interdental and interradicular septum and placed in the areas surrounding the immediate implants.

INTRODUCTION

Per-Ingvar Branemark was the first to introduce endosseous dental implant, since then it continued to evolve. Implant by definition "means any object or material, such as an alloplastic substance or other tissue, which is partial or completely inserted into the body for therapeutic, diagnostic, prosthetic, or experimental purpose. The placement of a dental implant in an extraction socket at the time of extraction or explantation is known as immediate implant placement.

Earlier placement of endosseous implant was done in healed edentulous ridges but over years of studies it had been established that placement of implant immediately after tooth extraction is reliable. The protocol of placing implants was into the healed teeth sockets until 1989 when Lazzara placed implants at the time of tooth extraction. In the past few years numerous studies showed that immediate implant placement after tooth extraction is an acceptable, predictable and reliable treatment protocol. The greatest advantage being minimal requirement of using bone drills since the extracted tooth socket is already in the shape of the tooth root and hence needs minimal preparation for the root form endosteal implants except using the drills apically to increase the length for better initial stability of the implants.

It reduces the trauma and prevent necrosis and promotes better and faster osteogenic remodelling. Autogenous bone grafts obtained from edentulous ridges or interdental bone or other donor sites of the jaw can be used to fill in the small osseous defects. In this case report a patient with chronic generalised periodontitis full mouth extraction was done followed by immediate implant placement with autogenous bone grafts.

CASE REPORT

A 38 year old male patient reported, complaining of her missing tooth in the anterior upper teeth region and wants to replace it. OPG was obtained. Immediate implantation was planned after obtaining the appropriate consent. Under local anaesthesia the tooth was removed with extra caution to ensure the bone was not traumatized. Totally 12 implants were placed in the maxillary and the mandibular arch with 6 implants in each arch.

The implants were placed following the standard surgical procedure. Implant stability was sufficient (35 N/cm measured with a torque spring) for all 12 implants. Autogenous bone grafts were obtained from the interradicular septum, interdental bone and from the buccal cortical plate by using chisel and mallet. The obtained bone grafts were placed in the area surrounding the immediate implants. The wound closure was

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done with 3-0 silk sutures. Immediate complete denture was prepared for the patient for temporary use. 100th day postoperative healing was found to be excellent with negligible amount of marginal bone loss.

DISCUSSION

Studies shows that the stages of extraction socket wound healing involves the ostephyllic, osteoconductive and osteoadaptative stages. Misch and Judy, 2000 found out that if the buccal or facial cortical plate is lost during extraction it leads to reduced bone height and thickness for implant placement after the socket heals. Khalid S. Hassan and Adel S. Alagl, 2011 summed up that following an extraction, there is a 25% decrease in the width of the alveolar bone during the first year, and an average 4mm decrease in height during the first year following multiple extractions (Carlson & Persson,1967) and Misch (1999) have observed a 40%-60% decrease in alveolar bone width after the first two to three years post extraction, and Christensen (1996) reports an annual resorption rate of at least 0.5% to 1% during the remainder for the rest of a Patient's life[1]. Several studies revealed that immediate implant placement after tooth extraction helped preserving the alveolar bone height and width with reduced marginal bone loss[2].

Autografts are obtained from the patient's own body. In case of autogenous bone grafts for immediate implants the donor sites can be maxillary tuberosity, mandibular symphysis region, ramus of mandible and interdental, interradicular bone. The autogenous bone grafts being the natural bone grafts of the patients own body they have both osteogenic and osteoinductive potential. While the osteogenic potential of the autogenous bone grafts help new bone regeneration from the osteoblasts the osteoinductive potential helps to induce the pluripotential cells to differentiate into osteoblasts for further regeneration of bone.

The advantages of autograft bone material also includes that it maintains bone structures such as minerals, collagen and viable osteoblasts and bone morphogenic proteins (BMPs). Hassan *et al.*, 2008 demonstrated a comparative evaluation of immediate dental implant with autogenous versus synthetic guided bone regeneration. It was found out that autogenous bone grafts are further more superior in comparison to the synthetic bone grafts[3]. The combination of autogenous and synthetic bone grafts have also been tried[4]. Other studies with immediate implant placement followed by autogenous bone grafts showed excellent results of minimal or no bone loss at the time of loading of the implants[5,6,7].

The main advantage noticed in the immediate placement is that the patient need not wait for 4-6 months for the treatment to be started. Several clinical studies and trials have evaluated the effectiveness of the immediate implant placement of the implants[8,9,10,11].

CONCLUSION

In our case autogenous bone grafts are taken from patient's buccal cortical plate, interdental and interradicular septum and placed in the areas surrounding the immediate implants. Following which the postoperative healing was excellent and no crestal bone loss was found. Hence we concluded that immediate implant placement with autogenous bone grafts is treatmen of choice rather than delayed implant placement.

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