Immediate Implant Placement : Success or Failure?

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ABSTRACT

Edentulism is most often the result of repeated tooth extraction from combined pathological process and/ or dental trauma. Dental implants have emerged to be a highly successful and predictable treatment modality for replacement of missing teeth. Dental implants are the devices that are surgically inserted into the jaw bone to support a single prosthetic tooth and serve as abutments or as cosmetic replacements for missing teeth. Timing of implant placement following tooth removal may be important and this concept has challenged the original treatment protocol. This article aims to present two case reports of immediate placement of implant.

INTRODUCTION:

The goal of modern dentistry is to restore the patient to normal function, contour, comfort aesthetics, speech and health. Edentulism is most often the result of repeated tooth extraction from combined pathological process and/ or dental trauma. Dental implants have emerged to be a highly successful and predictable treatment modality for replacement of missing teeth. Dental implants are actually the devices that are surgically inserted into the jaw bone to support a single prosthetic tooth and serve as abutments or as cosmetic replacements for missing teeth¹. Timing of implant placement following tooth removal may be important and this concept has challenged the original treatment protocol². The original treatment protocol includes the time gap between the extraction of the tooth and implant placement surgery so as to allow the bone to remode¹ and heal completely before the implant placement. On the other hand, in immediate implant placement, dental implant is immediately placed into the extraction socket so as to take advantage of the healing potential of the bone. Gian Peitro et al reported 93.5% survival rate of immediately placed implants for 5- year period³. This article aims to present two case reports of immediate placement of implant.

CASE PRESENTATION

Case 1:

A 34 years old female patient reported to the Department Of Periodontology and Oral Implantology of Luxmi Bai Institute of Dental Sciences And Hospital, Patiala with the chief complaint of carious left mandibular second premolar and first molar and wanted the replacement of the same. She did not present any relevant systemic and family history. Intra oral examination revealed that patient is having a good oral hygiene. Thorough clinical and radiographical assessment was done to assess any underlying pathology. Tooth root was unrestorable and surrounded by healthy bone.so, it was decided for the immediate implant placement with respect to left mandibular second premolar. Diagnostic casts were made and IOPA, RVG and OPG were taken so as

to assess the implant size to be placed. Blood examination revealed the normal hemogram. Informed consent was obtained after explaining the treatment protocol to the patient. Following local anesthesia, retained root was extracted non-traumatically with the help of periotome after raising the mucoperiosteal flap. Length of extracted root and width at cement enamel junction was measured with the digital vernier calliper. Pilot drill was used to establish the depth of implant recipient site. Then a series of drills were used sequentially so as to widen the osteotomy site. The implant was removed from the sterile package and delivered to the recipient site. Implant was driven to its final position with the help of ratchet. After determining the primary stability, the cover screw was placed on the implant. The flap margins were repositioned and sutured tension free. The patient was instructed to maintain the oral hygiene and recalled after 10 days for suture removal. She was prescribed antibiotics (azithromycin 500 mg OD for 5 days) and Ibuprofen 400mg BD for 5 days. IOPA, RVG and OPG were taken on the same day.

Fig.1
Pre-operative
Photograph

Fig.2
Pre-operative
IOPA Radiograph

Fig.3
Extraction done
with periotome

Fig.4
Extracted root
measured with digital
vernier callipers

Fig.5
Extracted root
measured with digital
vernier callipers

Fig.6
Osteotomy
site prepared

Fig.7
Implant delivered
at the prepared site

Fig.8
Post- operative
IOPA radiograph

Fig.9
Abutment
placed

Fig.10
Final prostheses
delivered

Fig.11
IOPA radiograph
after crown
placement

Case 2:

A 23 years old male patient reported to the Department Of Periodontology and Oral Implantology of Luxmi Bai Institute of Dental Sciences And Hospital, Patiala with the chief complaint of fractured right upper central incisor and wanted the replacement of the same. He didnot present any relevant systemic and family history. His history of present illness dates back to 2 months when patient had a fall from the scooter and his tooth got fractured. After referral from a local dentist to this hospital, dental examination revealed that patient is having a good oral hygiene and a complete set of dentition except for fractured 21. Diagnostic casts were made and IOPA, RVG and OPG were taken so as to assess the implant size to be placed. Meticulous scaling and root planning was done. Blood examination revealed the normal hemogram. Informed consent was obtained after explaining the treatment protocol to the patient. Following local anesthesia , retained root was extracted atraumatically with the help of periosteal elevator so as to preserve the bone of the alveolus. Length of extracted root and width at cement enamel junction was measured with the digital vernier callipers. Pilot drill was used to establish the depth of implant recipient site. Then a series of drills were used sequentially so as to widen the osteotomy site. The implant was removed from the sterile package and delivered to the recipient site. Implant was driven to its final position with the help of ratchet. The flap margins were repositioned and sutured tension free. The patient was instructed to maintain the oral hygiene and recalled after 10 days for suture removal. Patient was prescribed non-steroidal anti-inflammatory drug ibuprofen 600 mg thrice a day for 5 days.

Chlorhexidine gluconate 0.2% was prescribed for 2 weeks, soft diet instructions were given. After 5 months under sterile conditions, second- stage surgery was done using crestal exposure of implant cover screw. A healing abutment was placed with hex screw driver on the implant. Two weeks later impressions were made with open tray technique with impression coping placed into the implant. Shade selection was done. Healing abutment was replaced till prosthesis was manufactured. After a week, the healing abutment was removed and replaced by final abutment onto which final prosthesis was given.

Fig.12
Preoperative
photograph

Fig.13
Final prostheses
delivered

DISCUSSION

Placing an implant immediately or a short time after tooth extraction offer several advantages to the patient as well as for the clinicians. These include shorter treatment time, less bone resorption, fewer surgical sessions, earlier definition of implant position and perhaps, better opportunities for implant osseointegration because of healing potential of fresh extraction site^{4,5}. Therefore, this method of implant placement has become the procedure of choice.

Placement of an implant into fresh alveolus will usually result in a gap between the occlusal part of an implant and bone walls^{6,7}. To ensure entire osseointegration, synthetic bone substitutes, membranes or combination of these can be used to achieve bone formation in such defects. Although many animal studies have indicated that osseointegration of immediately placed implants in extraction sockets can be achieved without bone augmentation procedures, and with a success rate comparable to that of delayed implant placement^{8,9}.

Barzilay et al, Knox R et al and Warner et al conducted various experimental animal studies and concluded that osseointegration occurs after placement of implants into fresh extraction sockets^{6,7}. Rosenquint et al, Novaes AB et al and Pecora G et al have reported successful treatment outcomes related to immediate implantation at chronically infected site^{8,9}.

Nevertheless, it was concluded in a review of literature

that infection associated with an extracted tooth contraindicates immediate implant placement¹⁰.

CONCLUSION

The higher success rate of dental implants has changed the quality of life for many patients. dentists have recognised the challenge of providing anterior tooth replacements is in preserving hard and soft tissue components that exist around natural teeth. Immediately placed dental implants into fresh extraction sockets has the advantage of reduced number of surgical procedures, overall treatment time, lessened bone resorption and thus, achieving optimal results. Immediately placed dental implants can serve as a predictable procedure with higher patient acceptance and dentist's choice.

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