Immediate Implant with Immediate Loading- A Case Report

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ABSTRACT

Immediate implant placement and provisionalization following tooth extraction have been documented as a predictable treatment modality. This case report illustrates immediate implant placement and provisionalization to replace missing teeth on lower front teeth region. Atraumatic extraction of teeth were done, the socket was prepared to the required depth and implant was inserted and temporization by a bonded restoration was done day after. An impression was made 3 months after implant insertion, and a definitive restoration was placed. The dental implant and provisional restoration provided the patient with immediate esthetics, function, comfort and most importantly preservation of tissues.

Keywords: Implant, Immediate implant placement, immediate loading, provisionalization

INTRODUCTION

Since the beginning of mankind, humans have used dental implants in one form or another to replace missing teeth. The first evidence of dental implants is attributed to the Mayan population roughly round 600 AD where they excelled in utilizing pieces of shells as implants as a replacement for mandibular teeth.[1] The four treatment options for post-extraction implant placement as defined by the International Team for Implantology (ITI) in two ITI Consensus Conferences (2003 and 2008) are:

1. Immediate implant placement: same day of extraction
2. Early implant placement with soft tissue healing:4-8 weeks
3. Early implant placement with partial bone healing:12-16 weeks
4. Late implant placement with complete bone healing: >6 months

Immediate placement of a dental implant in an extraction socket was initially described more than 30 years ago by Schulte and Heimke in 1976. Lazzara later in 1989 reintroduced the method of immediate implant placement into fresh extraction sockets with three case reports. Immediate implant placement may be defined as implant placement immediately following tooth extraction and as a part of the same surgical procedure, or as implant placement immediately following extraction of a tooth which must be combined in most patients with a bone grafting technique to eliminate peri-implant bone defects. An abundance of literature supports the placement of immediate implants and almost all studies report high survival rates of immediate implants however case selection is necessary. [2]

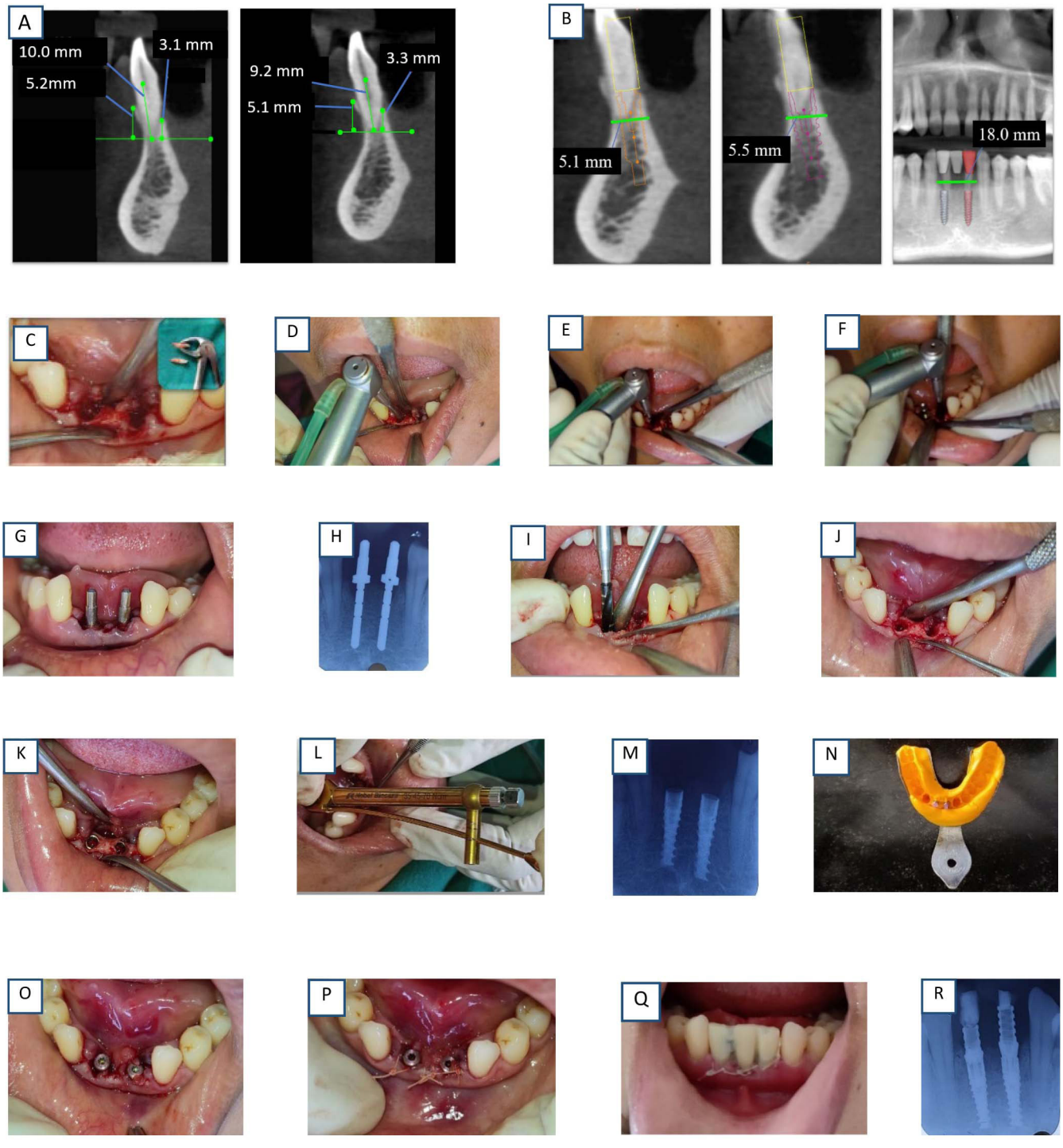
CASE REPORT

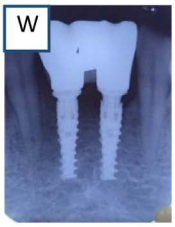
35 year old female patient reported to the Department of Periodontics in Kantipur Dental College with her chief complain of missing teeth on lower front teeth region since childhood. Due to which she was using removal prosthesis since 15 years. The removable prosthesis was uncomfortable and difficult to maintain therefore, she wanted the fixed prosthesis. No Significant medical history was reported. On examination, 31 and 41 were congenitally missing with Grade II mobile with respect to (w.r.t) 32 and 42.

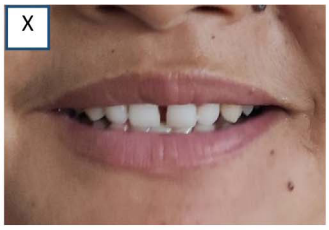
CBCT analysis along with clinical examination revealed poor periodontal prognosis w.r.t 32 and 42 (fig: A). Hence, treatment plan for the case consisted of extraction of 32 and 42 followed by immediate implant placement with immediate loading. Digital planning (fig: B) was performed along with mock up on diagnostic cast. 3.5 mm*13 mm implants were selected and due to lesser availability of space, 3 unit prosthesis was selected as prosthetic option.

After completion of Phase I therapy, extraction was done w.r.t 32 and 42 under local anesthesia. Flap was reflected and precision drill was performed followed by 1.5 mm and 2.0 mm drill. Parallel pins were placed and radiograph was taken. After verification of the implant placement sites and angulation, 2.4 mm drill was performed for preparation of final osteotomy site. Noble active implantof 3.5 mm*13 mm dimension was placed and 70NCm torque was achieved on both the sites. Post-operative radiograph was taken and temporary impression was made for the temporary prosthesis. Healing abutments were placed and suturing was performed (vicryl 5-0). (Fig: C-P) The patient was kept on antibiotic coverage for 7 days.

On the next day, immediate loading was performed. And patient was recalled for regular follow-ups. After 3 months of immediate loading. Final impression was made and final prosthesis was delivered. Fig Q- X)







DISCUSSION

Indications of immediate implants include tooth extraction done due to trauma or endodontic causes (root fracture/ resorption/ perforation), unfavourable crown to root ratio (not due to periodontal loss), intact bony walls of alveolus, intact facial bone wall with a thick wall phenotype (> 1mm), thick gingival biotype and sufficient bone volume apically as well as palatally of the extracted root to allow a correct three dimensional implant positioning with good primary stability.[3] Likewise, contraindications are presence of active infection, insufficient bone (<3 mm) beyond the tooth socket apex for initial implant stability, wide and/or long gingival recession and proximity to vital anatomic structures.[4]

Advantages of immediate implant placement includes reduction in the number of surgical interventions, treatment duration is reduced, bone width and height of the alveolar bone is preserved, enabling maximal utilisation of bone-implant surface area, ideal orientation of the implant can be achieved, preservation of bone at the extraction site, soft tissue aesthetics can be maintained and better patient acceptance[5,6] whereas its disadvantages are risk of partial alveolar bone resorption due to a pathologic process or to a traumatic damage during the extraction, difficulty to achieve a primary stability, gap between implant surface and socket wall, additional cost in cases of guided bone regeneration, difficulty to predict the final position of the implant, difficulty to achieve a complete closure of the implant site and need to raise a flap in order to cover the implant if two stage procedures is preferred.[7,8]

A systematic review investigated 26 randomised control trials and found a survival rate of 83.7–100% for immediately placed implants. Implant failure was not consistently reported and when reported, failure due to lack of osseointegration prior to placement of the definitive restoration was the most common descriptor. Others attributed reasons included infection abscess, mobility after immediate loading, and iatrogenic complication. Several factors may influence the survival of immediate implants, such as loading protocols, location of implants in the jaw, antibiotic protocol, grafting methods, and implant geometry.[9]

Immediate implants can be performed via flap elevation or flapless technique. In our case, we opted for flap elevation technique. However, flapless surgery resulted in more buccal bone preservation at immediate implants. The orofacial position of the implant shoulder and the tissue biotype are important contributory factors.[10] Immediate implant sites with soft tissue augmentation offers enhanced soft-tissue thickness and maintained soft-tissue contours but does not prevent peri-implant mucosal recession or interproximal bone resorption.[11]

Immediate loading is defined as a prosthesis being placed in occlusion within 48 hours of implant surgery[12] or after 72 hours of implant placement.[13] The survival rate of implants as well as marginal bone loss was not affected by the difference between immediate and early loading at 1 or 3 years. So, either the immediate or early loading of the implants should be considered. But patients always prefer to be rehabilitated as soon as possible, provided there is less risk of implant failure.[14]

CONCLUSION

Immediate implant placement with immediate loading allows a significant comfort to the patient, a reduction of the healing duration and preservation of the gingival architecture; which optimises the aesthetic outcomes.

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