Case Report

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Coming of Age of The Third Dentition : Multi-unit Immediate Loading Protocol

Abstract:
Evolution in implant dentistry has been unprecedented. Several protocols have been proposed in field of implant rehabilitation. Concepts have been redefined considering heightened patient anticipation of alleviation of discomfort, better esthetics, shorter lag time period of treatment. Immediate loading is one such area of interest increasingly done as a substitute for conventional loading. Immediate loading has considerably lessened the lag period between surgical phase and restorative phase. Here presenting a case report of a partially edentulous 33 year old male who underwent implant surgical procedure conforming to immediate loading protocol.

Key-words: immediate loading, dental implant.

Introduction:

Since Branemark introduced the classic concept of osseointegration in 1970's many new criteria have emerged.[1] Basically three loading protocols for implant rehabilitation have been defined viz conventional loading (two months post implant placement), early loading (one week to two months) and immediate loading (within one week of implant placement).[2] Once ossseointegration occurs, no substantial difference was observed among these three loading patterns keeping in view implant stability, health of peri-implant tissues and marginal bone loss.[3] Considering those areas which require significant bone regeneration, conventional loading implants should be the primary treatment option. However, over the last decade or so, we can easily say that immediate loading protocol is " trending". Research in the last decade has supported the positive effect of minor occlusal forces in increasing osseointegration. The immediate loading protocol involves pre-surgical assessment, surgical manipulation of bone and soft tissues for implant placement, closure of implant site, immediate provisional restoration and the final prosthesis. The inherent advantages of provisional restoration are manifold like 1) esthetically pleasing. 2) second surgical procedure involving placements of healing abutments is avoided (stage 2); 3) emergence profile is established. Implants have been rightly named the third dentition.

Here presenting a case report of the same.

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Case Report:

A 33 year old partially edentulous male patient reported to Department of Periodontology and oral Implantology, Bharati Vidyapeeth Deemed to be University, Dental College and Hospital, Pune , with primary complaint of several mobile and missing teeth. Past medical and family history were non-contributory. Patient had not visited any dentist in the past. No tissue abuse habits were reported by the patient. General physical examination was normal. Extra-oral examination revealed no dysfunction of temporomandibular joint. Lymph nodes were non-palpable. In intra oral examination, several mobile and missing teeth were noted. Oral hygiene index was good. Full mouth rehabilitation treatment plan was explained to the patient. All prosthetic treatment options were explained to the patient including the pros and cons of each. Patient insisted on getting treatment of missing lower anteriors for esthetic reasons. He refused to get the mobile upper anteriors extracted for the same reasons.

Figure 1

Figure 1

Investigations:

Routine laboratory blood investigations were carried out as well as full mouth CBCT was obtained.

Available bone dimensions for area of interest (31,32,41,42) are as follows (approximately)

Width- 5.35 mm

Height- 15.65 mm

Treatment protocol:

Phase 1 periodontal therapy was completed.

Surgical Phase

Infection control protocol was strictly adhered to. Written informed consent was taken from the patient. Pre-operative soft tissue assessment was done (Figure1,2). Pre-procecdural mouth rines with 0.2% chlorhexidine glouconate was done for a min . Local anaesthesia was injected, 2 ml of lignocaine HCl with adrenaline in the ratio 1:100000 by weight. In the mean time, alginate impression was taken for both upper and lower arches (Figure 3).

Figure 3

Figure 4

Figure 5

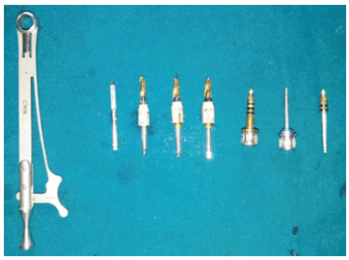

Figure 6

Crestal incision (slightly towards the lingual) was given with #15 blade and full thickness flap raised buccally and lingually (Figure 7,8).

Figure 7

Figure 8

Osteotomy site was prepared (using physiodispenser) with copious amount of saline (Figure 9). Both implants were placed (3.5mm x 12mm) and torque achieved to the tune of 35 Ncm (Figure 10). First abutment placed (Figure 11). Second abutment placed (Figure 12).Putty impression taken (Figure 13). Silk sutures placed (Figure 14).

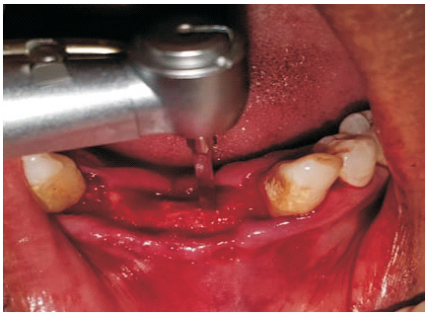

Figure 9

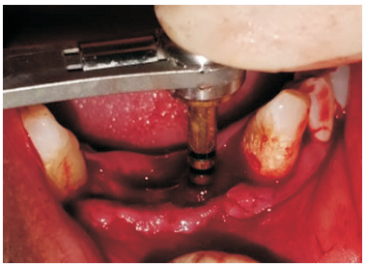

Figure 10

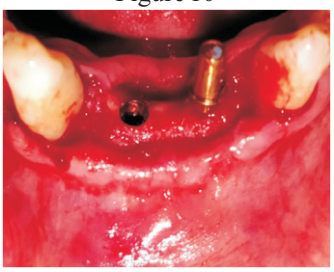

Figure 11

Figure 12

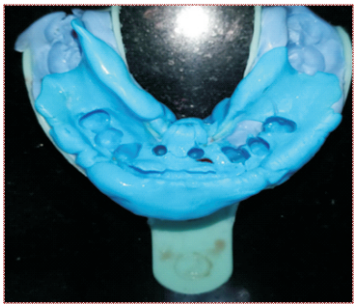

Figure 13

Figure 14

Figure 15

Figure 16

Provisional temporary restoration was seated with temporary cement (Figure 15). Patient was given analgesics, antibiotics, and instructed to use 0.2% chlorhexidine mouth wash for two weeks. Patient was motivated to maintain proper oral hygiene. Screw retained four unit fixed final prosthesis was placed after a month (Figure 16). During this time, patient got upper anterior teeth extracted.

Discussion:

Three types of loading protocols have been proposed. Irrespective of the choice of protocol, the key factor governing the success of immediate loading is primary stability.[4] Here in this case report, we have discussed the immediate loading of implant. The biological principle behind this approach is that tolerated micromovement threshold in the range of 50-150 micrometres would stimulate the osseointegration process by accelerating rate of remodeling of newly formed bone.[5] Overall success of immediate loading is controlled by many clinical variables such as quality and quantity of available alveolar bone, good primary stability as well as amount of soft tissue scaffold around tissues.[6] Immediate loading is not new to complications with this technique reporting utmost number of abutment and crews related complication.[7,8] However, these complications are adjustable without affecting the success rate of implant.[9]

Conclusion:

Sufficient data supports the fact that immediate loading provides practical advantages for rehabilitation of partially edentulous patients. It provides prompt improvement in patients' speech and masticatory efficiency. It also provides swift improvement in soft tissue profile. The wonders it does to the patients' confidence is unprecedented.

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