

# Use of Single Unit Implants to effectively treat cases – Case Study & Discussion

## GenXT/ROOTT Dental Implant System

**Abstract:** Immediate Loading is widely being practiced today all over the world. It is the treatment of choice for most implantologists. Especially with highly specialised designed implants making this treatment modality easier and more reliable. The main risk to a successful immediate loaded implants is micro - movement, more so during the first sigma of bone healing . Splinting helps prevent micro movement and helps distribute stresses. This article outlines the use single piece implants to restore cases faced in the clinic.

**Keywords:** Immediate loading, splinting of implants, prevention of micro movement at bone implant interface, single piece implants, basal Implants , Compressive Implants.

### 1.Introduction

The two critical factors that determine the success of an immediate functional loaded case is the proper insertion of the implant into sound bone to achieve high primary stability(1,2) and then the prevention of micro movement along the bone implant interface so as to allow for good healing(3,4).

During the first sigma of bone remodelling, in first week there is an onset of osteoclastic activity(5). This causes the decrease in the primary stability (Fig1.). Traditionally Its not until the completion of 3 - 6 months that the implant is considered integrated and has adequate bone implant contact to sustain masticatory loads(6,7). It is within this period that an immediate functionally loaded implant is at a risk to become mobile as a result of the micro movement at the bone implant interface caused by masticatory forces and a decreasing primary stability due to ongoing osteoclastic activity and bone remodelling(3,4).

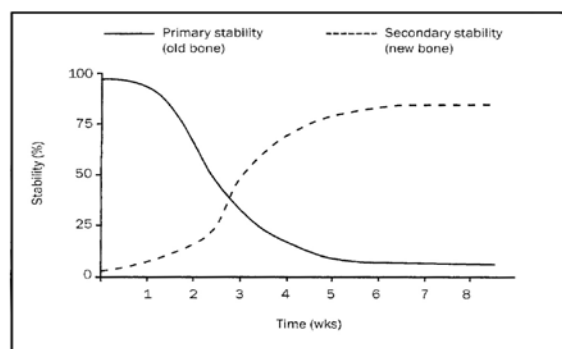


Fig. 1

Hence the 2 most critical steps in immediate loading are proper placement of the implant with high primary stability – progressive insertion torque up to 60 Ncm and there after good occlusal adjustment of the immediate loaded prosthesis , so as to prevent over load , which can cause micro movement in the bone implant interface.

Below are some case successfully restored using this technique.

### Case 1



Fig 2



Fig 3



Fig 4



Fig5



Fig 6

Fig 2 – Pre op OPG

Fig 3 – Intra oral picture of decayed teeth under the bridge

Fig 4 – Immediate placement of compression implants following extraction

Fig 5 – Final PFM bridge in place after 5 days

Fig 6 – Post operative OPG

Discussion: The Mandibular anterior region has good quality and quantity of bone and is not limited by any vital structures , this makes it an ideal site for immediate loading as implants can be placed with high primary stability and longer implants can be placed in cases post extraction so that the implant threads can engage sound bone below the extraction sockets.

## Case 2



Fig 7



Fig 8



Fig 9



Fig 10

Fig 7 – Pre operative OPG

Fig 8 – Pre operative Intra oral picture

Fig 9 – Post operative Intra oral picture

Fig 10 – Post operative OPG

## Discussion:

Geriatric cases with health and cost concerns can be easily treated with single piece implants. This combination of teeth and implants can be used to create limited objective shortened arch restoration so that basic masticatory function and also aesthetics can be easily provided in few easy steps. However careful planning is required - proper selection of teeth to retain, only rigid and healthy teeth can be used, implants must be strategically placed so that they can support the masticatory load and margins of the prosthesis must be good especially around the natural abutments so as to prevent cervical decay in the future.

### Case 3

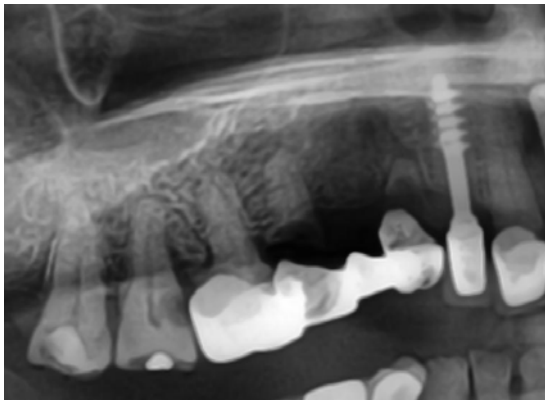


Fig 11



Fig 12



Fig 13

Fig 11 – Pre operative Xray showing failing bridge 13,14,15,16

Fig 12 – Post operative picture of immediate provisional post immediate implant placement

Fig 13 – Post operative Xray showing use of basal single piece implants to engage the corticals near the sinus floor and welded together with an intra oral syncrystalliser.

#### Discussion:

Basal implants engage the dense cortical bone, the apical thread of the implants engage bone beyond the extraction socket and the cortical bone giving the implant good primary stability. The micro movement at bone implant interface can further be reduced by rigid splinting by use for titanium bar which has been welded across the abutments intra orally by use of syncrystalliser. This combination is now safe for immediate loading and provides a simple practical solution to the case.

Case 4



Fig 14



Fig 15



Fig 16



Fig 17



Fig 18

Fig 14 – Pre operative OPG

Fig 15 – Pre operative intra oral picture

Fig 16 - Immediate implant placement after extraction of upper teeth

Fig 17 – Post operative OPG

Fig 18 – Post operative intra oral picture

Discussion:

Here a combination of single piece implants and 2 piece implants have been used to achieve the treatment objectives. The upper arch was immediately loaded. Basal implants due to their unique design are ideally suited for narrow ridges and immediate extraction cases. An important point is that they have to be placed so that the apex engages the cortex in that region – sinus floor / nasal floor . Placing them palatally also helps stability as palatal bone is denser .

Case 5



Fig 19

Fig 20

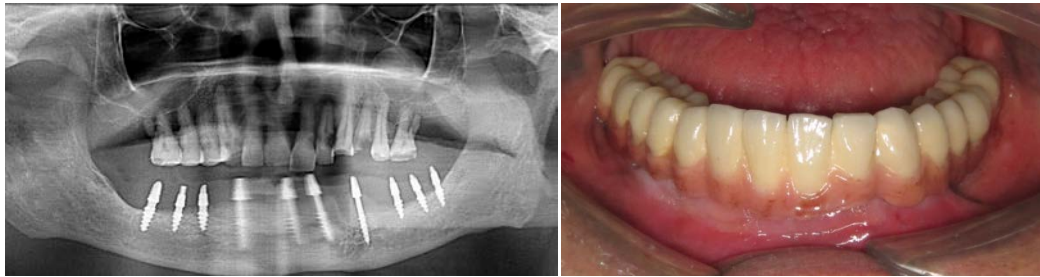


Fig 21

Fig 22

Fig 19 – Pre operative picture

Fig 20 – Post operative picture

Fig 21 – Post operative OPG

Fig 22 – Post operative picture

Discussion:

The single piece implants provide us with the option of an easy flapless approach. This dramatically reduces post operative pain and swelling and also makes the implant procedure itself much more comfortable and shorter. Typically 8 – 10 implants can be used for an immediate functionally loaded

Case 6

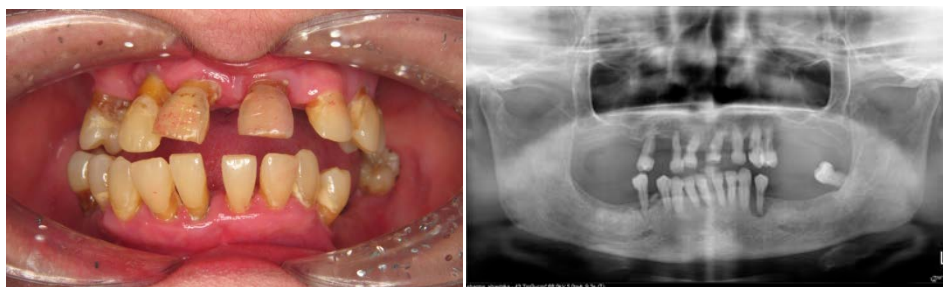


Fig 23

Fig 24



Fig 25



Fig 26



Fig 27

Fig 23 – Pre operative picture

Fig 24 – Pre operative OPG

Fig 25 – Post op 3 days

Fig 26 – Immediate prosthesis on day 7

Fig 27 – Post op after 1 year OPG

Discussion:

Combination of basal and compressive implants can be used very successfully to rehabilitate cases that have severe periodontal problems. Implants can be placed into the basal bone immediately post extraction. All active infection must be removed using curettes and betadine irrigation prior to implant placement. Group function occlusal scheme should be given and cuspal inclinations and incisal guidance must be as low as possible.

**Authors:**

Dr Sacheev Nanda , et al Nanda Dental

M.D.S Oral Implantology & Prosthodontics

201, Chetna Apartments, East Street,

Pune - 411001, India.

Tel: +919822291447

Email: sacheev@gmail.com

## References:

1) Eur J Oral Implantol. 2012 Winter;5(4):333-42. Immediate loading of single implants inserted flapless with medium or high insertion torque: a 6-month follow-up of a split-mouth randomised controlled trial.

Cannizzaro G1, Leone M, Ferri V, Viola P, Gelpi F, Esposito M.

2) Del Fabbro, M., Testori, T., Francetti, L., Taschieri, S. & Weinstein, R. (2006) Systematic review of survival rates for immediately loaded dental implants.

International Journal of Periodontics and

Restorative Dentistry 26: 249–263.

3) In Vitro Evaluation of Horizontal Implant Micromovement in Bone Specimen With Contact Endoscopy Engelke, Wilfried DrDrMed\*; Decco, Oscar A. DDS†; Rau, María José DiplIng‡; Massoni, María Clara Acosta Bioing§; Schwarzwäller, Wolfgang DrRerNat¶

4) Biomechanical Aspects of Primary Implant Stability: A Human Cadaver Study Ilser Turkeyilmaz DDS, PhD1,\*, Lars Sennerby DDS, PhD2, Edwin A. McGlumphy DDS, MS3 and Tolga F. Tözüm DDS, PhD4

Clinical Implant Dentistry and Related Research Volume 11, Issue 2, pages 113–119, June 2009

5) Szmukler-Moncler, S., et al. "Timing of loading and effect of micromotion on bone-dental implant interface: review of experimental literature." Journal of biomedical materials research 43.2 (1998): 192-203.