

# Management of Rare Complication of Implant Fracture After Road Side Accident: A Case Report

Gaurav Gupta<sup>1</sup>, D.K. Gupta<sup>2</sup>, Neelja Gupta<sup>3</sup>, Priyanka Gupta<sup>4</sup>, Parth Shah<sup>5</sup>, Kuldeep Singh Rana<sup>6</sup>

Professor<sup>1</sup>,  
BDS, MDS

Dept. of Paediatric & Preventive Dentistry  
Jaipur Dental College  
Jaipur, Rajasthan  
Senior Consultant<sup>1</sup>,  
MDS

Dept. of Oral & Maxillofacial Surgery  
Wisdom Dental Clinics,  
Jaipur, Rajasthan  
Senior Consultant<sup>2</sup>

BDS (Cosmetic and Esthetic Dentist)  
Wisdom Dental Clinics,  
Jaipur, Rajasthan  
Sr. Demonstrator<sup>4</sup>  
MDS

Dept. of Pedodontics & Preventive Dentistry  
RUHS SDCS Govt Dental College,  
Jaipur, Rajasthan  
Senior Consultant<sup>5</sup>

Saanchi Pediatric Hospital  
Surat, Gujarat

Assistant Professor<sup>6</sup>  
Dept. of Cons. Dentistry & Endodontics,  
Govt College of Dentistry,  
Indore

## Abstract

Implant fracture is a rare but possible complication that leads to implant failure after prostheses delivery. Trauma plays one of the role in failure of dental implant systems. The main etiologic factors of maxillofacial injuries are motor vehicle accident. This article reports on the fracture of a dental implant due to car accident and its management.

**Keywords:** Dental implant, implant fracture, motor vehicle accident

## INTRODUCTION

According to WHO, motor vehicle accidents are the sixth leading cause of death in India with a greater share of hospitalization, deaths, disabilities, and socioeconomic losses in the young and middle-aged population.<sup>1</sup> As the maxillofacial area is the most traumatized and exposed, prompt, and appropriate management is necessary to significantly improve the prognosis for many dentoalveolar injuries.<sup>2</sup>

Implant fractures are a problem not only for patients but also for clinicians since they usually involve loss of both the implants and prostheses.<sup>3</sup> Implant fractures constitute clear implant failures and, in most cases, they require implant removal.<sup>4</sup>

Management of implant fracture may pose a challenge to the clinician because of its surgical, rehabilitative, and emotional implications. Such complication poses a management crisis even for the most experienced clinician. In this case, Patient was given 3 implants retained overdenture in the upper arch and fixed hybrid over 5 implants in the lower arch around 5 years back. Couple of years back he met with a car accident where his blow on face resulted in the fracture and loosing of the implant in the upper arch. The upper denture also broke along with the damage of certain teeth and acrylic of the lower prosthesis. This case report highlights the management of a case of fractured endosseous dental implant and prosthesis.

with complain of looseness of upper and lower removable denture and inability to eat food and maintaining proper hygiene. He was wearing removable partial dentures in upper and lower jaws since 15 years with compromised form and function.

He was very apprehensive toward implants. On intraoral examination we noticed poor stability i.r.t removable partial dentures and grade III mobility of remaining teeth (13,14,15,18,23,24,25, 33,34,38,43,44,45) with gross decay and poor oral hygiene. **(Figure 1)**

Patient was advised for OPG and CBCT to evaluate amount of bone to see the positioning of anatomic structures. **(Figure 2)**

After careful evaluation and motivation of patient, we planned for extraction of all remaining teeth followed by implant retained and implant supported complete overdenture in maxilla and fixed hybrid prosthesis in mandible to maximize the area of support for prosthesis. Implants will aid in the retention of prosthesis.

We placed three Nobel Bio Care Active implants in maxilla **(Figure 3a)** and five Nobel Bio Care Active implants in lower anterior region between the inter-mental foramina to take the advantage of sufficient bone available due to the fact that mandibular anterior teeth are usually the

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## CASE REPORT

A 62-year-old diabetic and hypertensive male patient visited our clinic 6 years ago

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last teeth to be lost. With this positioning we could place implants away from fulcrum line also in order to avoid denture rotation. (Figure 3b)

Patient was given implant retained and implant supported complete overdenture in maxilla and fixed hybrid prosthesis in mandible uneventfully. Full mouth rehabilitation was done. (Figure 4a,4b,4c) Follow up was done in every 3 months and revealed satisfactory results. (Figure 5)

Unfortunately, after 3 years patient met a motor vehicle accident, which resulted in fracture of 2 implants in maxillary anterior region with some part of implants retained in maxilla and mobility in third implant was also evident. Patient was advised for CBCT to evaluate the status of remaining implants and bone. (Figure 6a, 6b)

After careful evaluation we planned for surgical removal of remaining parts of broken maxillary implants. Under local anaesthesia surgery was carried out and maxillary implants were removed completely with immediate placement of 5 implants in maxilla to maintain retention. (Figure 7, 8)

Patient was not willing for replacement of lower fractured overdenture because only few teeth were fractured, not the whole denture. (Figure 9) After 6 months patient came presented with chief complaint of ill fitted lower denture that was causing irritation and inflammation of gums. So fractured lower denture was relined. (Figure 10a,10b) Occlusion was checked. Continuous follow up and motivation of patient was done to maintain oral hygiene to obtain satisfactory results.



Figure 1: Pre-op intraoral condition



Figure 2: Pre op OPG

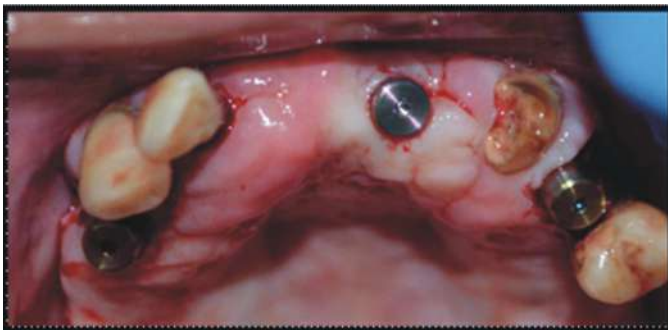


Figure 3a: Implants placement in maxilla

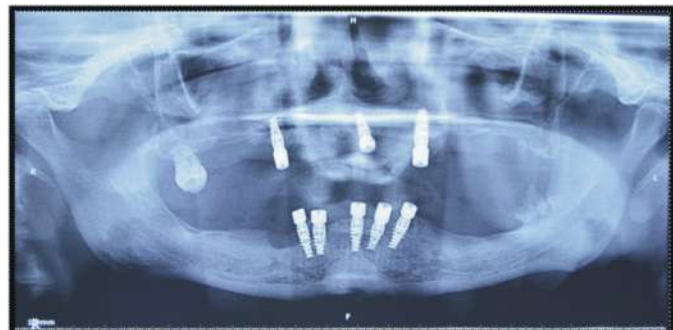


Figure 3b: Placement of implants in maxilla and mandible



Figure 4A,4B,4C: Locator abutment over-denture in maxilla and hybrid prosthesis in mandible



Figure 5: Full mouth rehabilitation



Figure 6a: Intra -oral condition after motor vehicle accident

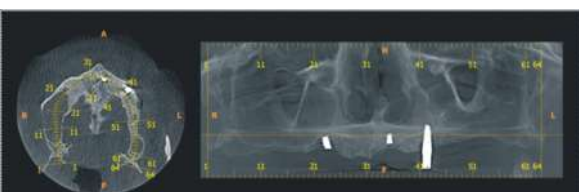


Figure 6b: CBCT to evaluate the status of remaining implants & bone.

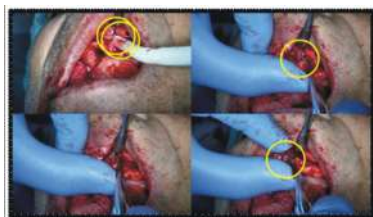


Figure 7: Surgical removal of remaining implants fragments after accident



Figure 8: Immediate placement of 5 implants in maxilla



Figure 9: Locator abutment over-denture in maxilla



Figure 10A, 10B: Reline of mandibular denture after 6 months

## DISCUSSION

Success and survival rates of the osseointegrated dental implants have been reported close to 90–95%.<sup>5</sup> One of the infrequent yet important causes of failure of dental implant is a fracture. Implant fracture Incidences reported by Pylant et al. and Goodacre et al. are 0.98%, and 1.5%, respectively.<sup>6,7</sup> In spite of the low incidence rate, implant fractures lead to invasive and complex procedures having questionable predictability.

Implants fracture is a serious complication, which leads to implant and prosthesis failure. In case of peri-implantitis, several approaches have been proposed based on the severity of the bone loss around the implant, the only possible treatment for the fractured implant is its removal. Hence, its prevention is mandatory. There are two main causes of implant fracture: one is biomechanical overloading and other is peri-implant vertical bone loss.<sup>8</sup>

Traumatic dental injuries (TDIs) have different frequencies Etiologic factors of TDIs are various from country to country and with age groups<sup>9</sup>. Globally the most common aetiology of TDI is violence, violence falls and traffic injuries<sup>10</sup>. In present case cause of implant fracture is car accident trauma.

For management of implant fracture 3 options have been reported in literature:<sup>11,12,13</sup>

(a) Complete removal of the fractured implant. (b) Removal of the coronal portion of fractured implant with the purpose of placing a new prosthetic post. (c) Removal of the coronal portion of the fractured implant, leaving the remaining apical part integrated in bone.

Complete removal of fractured implant is the ideal treatment option for this patient. In this case complete removal of the fractured implant was done, placing two more new implants immediately in same surgical bed to improve

retention and stability of prosthesis. This treatment was timesaving for the patient and clinician and that the prosthesis was repaired in the shortest time possible.

Dental implant fracture is an infrequent but important cause of implant failure, adequate measures should be adopted to prevent implant failure. In this case cause of implant fracture was found to be car accident. An accurate analysis of the situation and the treatment time available will guide which course of action to take in cases of implant fracture: (1) removal of the implant, (2) modification of the prosthesis, or (3) modification of the fractured implant. Clinical and radiographic implant findings for the maintenance and monitoring of implant restorations should be implemented as the way to prevent and detect any complication in dental implants.

## CONCLUSION

Implants fracture is a dramatic complication that leads to implants and prostheses failures. Mechanical properties play a key role. Immediate and comprehensive treatment involving multiple disciplines is needed to successfully restore the function and aesthetics, in maxillofacial injuries resulting from motor vehicle accidents. An accurate analysis of situation and treatment time available will guide choice of which course of action to take in cases of implant fracture. Clinical and radiographic implant support therapy for the maintenance and monitoring of implant restorations should be implemented to prevent and detect any complication in implant dentistry.

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