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### RESEARCH ARTICLE

#### PROSTHETIC MANAGEMENT OF MAXILLARY ALVEOLAR DEFECT CAUSED BY DENTOALVEOLAR TRAUMA: A CASE REPORT.

**Dr. Romesh Soni<sup>1</sup>, Dr. Aditi Priya<sup>2</sup>, Dr. Nitesh mishra<sup>3</sup> and Dr. Himanshi yadav<sup>4</sup>.**

1. BDS, MDS, Assistant Professor, Department of Prosthodontics, Faculty of Dental Sciences, Institute of Medical Sciences, Banaras Hindu University.
2. BDS, MDS, Department of Prosthodontics, Faculty of Dental Sciences, Institute of Medical Sciences, Banaras Hindu University.
3. BDS, MDS, Department of oral and maxillofacial surgery, Faculty of Dental Sciences, Institute of Medical Sciences, Banaras Hindu University.

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#### Abstract

Dentoalveolar trauma is very common in trauma patients and it negatively effect patient's self esteem and quality of life. Patient's emotional trauma gets an add on effect when it involves esthetic area i.e front teeth . Due to los s of anterior teeth patient loose their self confidence and social life. The aim of this study was to report a case of dentoalveolar trauma having dento alveolar defect which is rehabilitated with implant –supported prosthesis and appeared as predictable and successful treatment modality in the patient.

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#### Introduction:-

Dentoalveolar traumas are very common, and mainly affect children and youngsters. The main causes are road traffic accidents, sporting activities and fall. There may be some predisposing factors associated with these conditions, such as increased overjet, incompetent upper lip<sup>1</sup>. The defect caused by dentoalveolar trauma often result in loss of alveolar bone ,tooth and gingival tissues<sup>2</sup> which in turn results in compromised oral function, esthetics and self-esteem of the patient<sup>3,4</sup>. These cases have always been challenging situations in restorative procedures. There are different treatment modalities to replace missing teeth and soft and hard tissues, such as removable partial dentures, fixed partial dentures or implant-retained prosthesis<sup>5,6</sup>.

Removable partial dentures are advantageous in context of maintaining oral hygiene, cost efficient treatment modality and reduced treatment time<sup>5</sup> but lack in esthetic outcome and discomfort to the patients often cause rejection<sup>7</sup>.

Conventional tooth supported fixed partial dentures have may be used in such cases for replacement of single and multiple missing teeth<sup>8,9</sup> where implants are contraindicated or patients refuse the implant therapy but insufficient bone support in abutment teeth limits this treatment modality.

Dental implants are successful and predictable treatment modality because of enhanced esthetic outcome and biomechanical advantages<sup>10</sup>. Their clinical applications has increased considerably now a days due to increased esthetic and function demands of the patients which leads to considerable reduction in the use of removable prosthesis.

**Corresponding Author:-Romesh Soni.**

Address:-BDS, MDS, Assistant Professor, Department of Prosthodontics, Faculty of Dental Sciences, Institute of Medical Sciences. Banaras Hindu University.

This article describes the prosthetic management of a maxillary dentoalveolar defect caused by road traffic accident by two wheeler in a young female patient. The defect area was restored with implant-supported metal-ceramic fixed partial denture with gingival-colored porcelain.

### **Case report-**

A 29-year-old female patient was referred to the Department of Prosthodontics faculty of dental sciences, institute of medical sciences ,BHU for rehabilitation of missing teeth which was lost following a road traffic accident by two-wheeler 5 months back .The patient was in good systemic as well as oral health.

Intraoral examination revealed atrophic maxillary anterior alveolar ridge , with the loss of 12,11,21,22 and 41(Figure 1 and 2). The patient was informed about all types of treatment modalities but she was reluctant for all other options and wants to go for implant supported fixed partial denture. Following routine medical and dental evaluation, informed consent has been taken prior to the surgical procedure and initial periodontal therapy was done.

### **Surgical procedure-**

Surgical area was scrubbed by betadine scrub and patient was draped. The surgical site was anesthetised by infra orbital nerve block on both sides of maxilla and for mandibular site inferior alveolar block of right side has been given with local infiltration of 2% lignocaine with 1:80,000 adrenaline. Implant surgery was performed via a flapped approach (Figure 2). After adequate anesthesia was achieved, crestal incision along with releasing incision from 13 to 23 was given in maxilla and crestal incision with releasing incision from 31 to 42 was given in mandible. After desired incision full thickness mucoperiosteal flap was raised in both the sites (figure 3). A buccal plate defect (figure 4) was seen after flap reflection in left side of maxilla which was thoroughly debrided and irrigated with saline. Consequently ,implants were placed at 12 , 22 and 41( 4.2x11.5 wrt 12 and 3.75 x11.5 wrt 12 double piece,ADIN;Touareg™-S and 3x11.5 wrt 41,single piece implant, one™ Dental implant ). Healing cap was placed wrt 12 and cover screw was placed wrt 22. Implants threads were exposed in the defect area which was managed by application of bone graft and Platelet rich fibrin (PRF) ( Figure 5).

Tension free flap closure was accomplished with interrupted sutures (Interrupted sutures were performed by 3-0 silk suture).Post –operative instructions were given and the patient was prescribed antibiotics, analgesics, anti-inflammatory and chlorhexidine mouth rinses for 7 days. Patient was recalled after 7 days for suture removal and further evaluation.

After uneventful healing for 4 months second stage surgery was done and healing abutment was placed wrt 22 and sutures were performed. Medication were prescribed and oral hygiene measures were explained. After second stage surgery when adequate healing was obtained ( Figure 6),prosthesis is planned.

### **Restorative procedure-**

The metal-ceramic fixed partial denture was constructed on both maxillary implants for the replacement of the missing teeth by the help of open tray transfer technique. Impression were made using putty and light body impression material ( coltene affinis addition silicon).The prosthesis was also constructed with the use of gingival-colored porcelain to compensate the hard and soft tissue loss. The prepared abutments were seated intraorally and the prosthesis was then inserted, the occlusion was checked to obtain a canine guided occlusion and the abutments were screwed in its place at the manufacturer-recommended force of 35 Ncm and after the closure of screw access hole the prosthesis is cemented with glass ionomer cement (GC Fugi CEM, GC Corporation, Tokyo, Japan)(Figure 7). For mandibular implant abutment is prepared intra-orally under copious irrigation and direct impression is made. Here also the prosthesis is cement retained metal ceramic crown. The patient was given oral hygiene instructions including dental floss and interproximal brushes designed for fixed partial denture.

### **Discussion:-**

In dentoalveolar trauma cases various treatment options<sup>5,6</sup> are available for prosthetic rehabilitation of patients having dentoalveolar defects. Removable partial dentures are advantageous and may be treatment of choice in this type of cases.

Easy maintainance of oral hygiene ,cost efficient treatment and reduced treatment time are benefits of this treatment modality<sup>5</sup> but their esthetics impairment and discomfort<sup>7</sup> leads to non acceptance of prosthesis by the

patients. Conventional tooth –supported fixed partial denture is the other treatment option but abutment bone support is the question.

Due to increased esthetic and functional expectations of the patients dental implant treatment has become a frequent restorative procedure now a days<sup>10</sup>. In this case, the patient was informed about all types of treatment modalities but she was reluctant for all other options and wants to go for implant supported fixed partial denture. Metal ceramic-fixed partial denture was constructed and gingival –colored porcelain was applied to compensate soft tissues on the maxilla. At recall visit after 6 months ,good oral condition is observed in the patient.

### **Conclusion:-**

This clinical report presents a prosthetic rehabilitation of a patient following the traumatic loss of several maxillary teeth and supporting tissues. Prosthetic rehabilitation was done by implant supported metal-ceramic fixed partial denture in conjunction of the use of gingival colored porcelain . The patient’s functional and esthetic expectations were adequately achieved in this case.

### **Disclaimers:**

The authors do not have any personal and financial interests in the products or information listed in the paper.

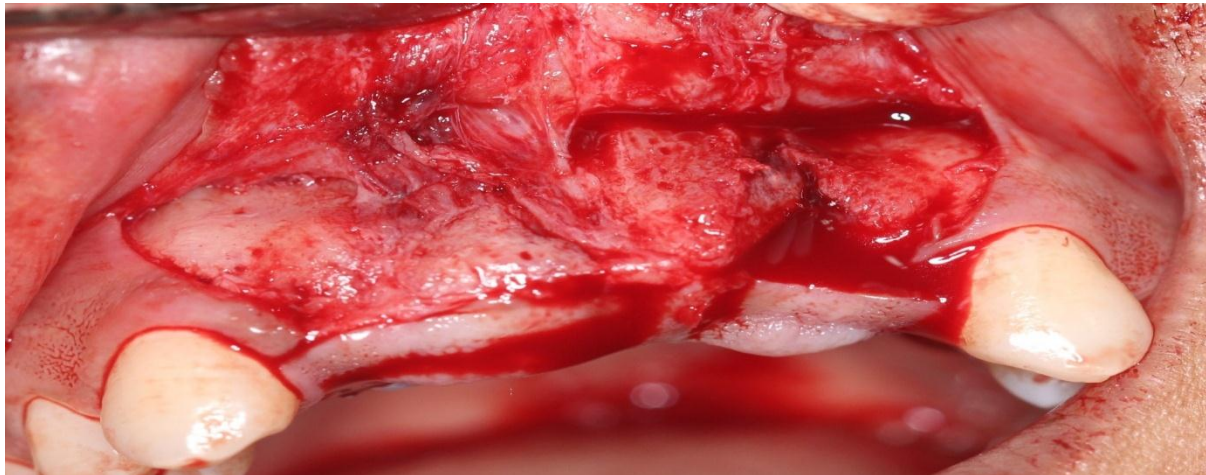
### **Conflict of interest:**

Authors declare no conflict of interest.

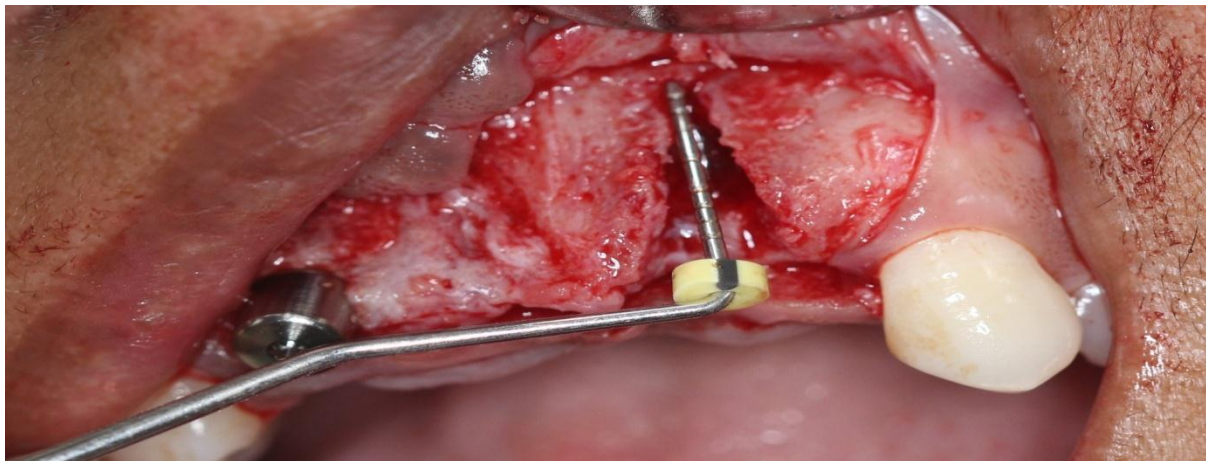


**Figure 1 ,2:-** Intra-oral preoperative photographs.

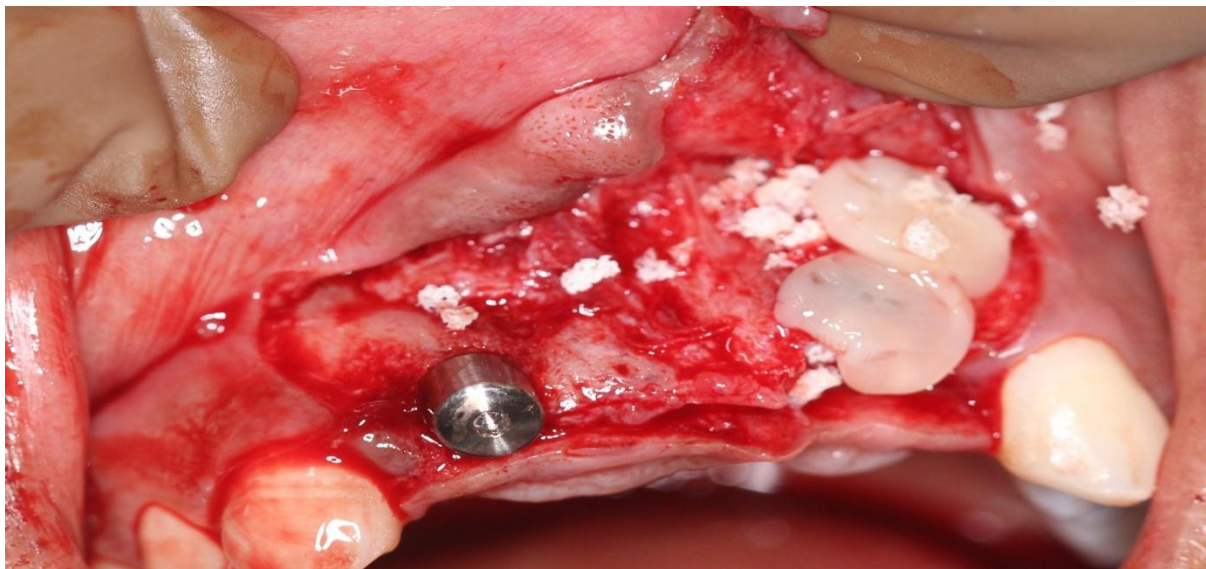




**Figure 3:-** Photograph after full thickness mucoperiosteal flap reflection.



**Figure 4:-** Photograph showing the defect area



**Figure 5:-** After bone graft and PRF application.



**Figure 6:-**Healing after second stage surgery.



**Figure 7:-** Photograph after prosthetic rehabilitation.

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