



## Case Report

# The treatment strategy of an oblique complicated crown-root fracture: A case report

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### ABSTRACT

A crown-root fracture is defined as a fracture which involve enamel; dentin and root cementum with or without the involvement of pulp. If pulp is involved it is known as complicated crown-root fracture. It is usually oblique in nature involving both crown and root. In this case report we have a case of 20 year old female with oblique complicated crown-root fracture and an irreversible pulpitis of maxillary left canine. In this case endodontic therapy followed by reattachment of fractured fragment with a prefabricated fiber post followed by PFM crown was the treatment plan for the patient and patient responded successfully to treatment..

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## 1. Introduction

The most commonly involved teeth in dental trauma are maxillary incisors. During dental trauma sometimes a complicated crown-root fracture occurs which is characterized by a fracture that involve enamel, dentin, cementum with pulpal involvement. Crown-root fractures extending apically towards both the gingival margin and the alveolar crest pose a great challenge.<sup>1-3</sup> Gingivectomy, osteotomy, orthodontic extrusion, surgical extrusion, intentional replantation or extraction are various methods for the management of complicated crown-root fracture.<sup>4</sup> Whenever there is no or minimal invasion of the biological width and fragment of tooth is intact, reattachment of fractured fragment of tooth by fiber post is most favourable treatment procedure.<sup>4-6</sup>

## 2. Case Report

A 20 year-old female patient presented at to the Department of Conservative dentistry and endodontics of Saraswati dental college and hospitals lucknow, and complains of pain

in maxillary left canine. The patient had a history of accident 2 days ago.

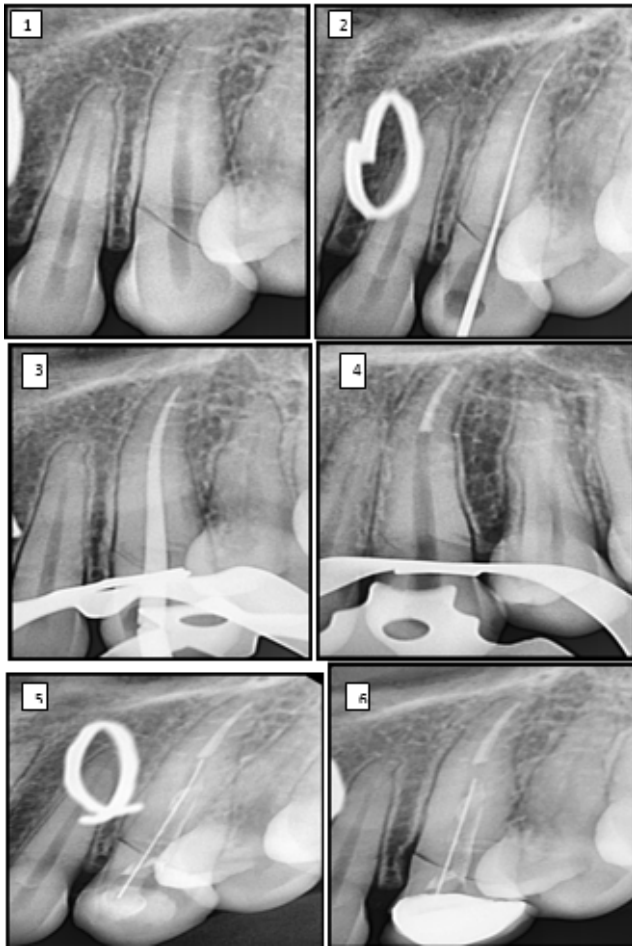
There was nothing significant in past medical history. The soft tissue, temporomandibular joint and osseous structures did not show any injury on initial clinical examination Left maxillary canine was tender on percussion and slightly mobile but not displaced on intraoral examination. Cold test was used to check the pulp vitality of maxillary left canine and showed intense pain response. Intraoral periapical radiographic examination revealed an oblique crown root fracture in maxillary left canine by taking radiograph from different angles., A diagnosis of oblique crown-root fracture and irreversible pulpitis in maxillary left canine was made based on the clinical and radiographic examination. Treatment plan selected for patient was root canal treatment followed by reattachment of the crowns by using fiber-reinforced post followed by PFM crown.

Root canal treatment was performed in single appointment under local anesthesia. The pulp was extirpated and the root canal was cleaned, shaped and filled. Post space was prepared and fiber posts of corresponding size was positioned in the canal and its fit was checked by radiograph. Tooth preparation was done in next appointment

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and was restored by PFM crown.



**Fig. 1:** 1: Radio graph no.1: pre operative view of 23. Radiograph no. 2: Working length in 23. Radiograph no. 3: obturation in 23. Radiograph no. 4: post space preparation in 23. Radiograph no. 5: Fiber post cemented in 23. Radiograph no. 6: PFM crown in 23.



**Fig. 2:** Fiber post cemented in 23



**Fig. 3:** Tooth preparation done in 23



**Fig. 4:**

### 3. Discussion

Crown-root fractures include enamel, dentin, and cementum; & depending upon the pulp tissue involvement are differentiated as complicated and uncomplicated and may present below the gingival margin. The upper central incisors within the dental arch are most often traumatized teeth in each primary and permanent dentition because of its prominent position in dental arch.<sup>7,8</sup> The main treatment options for complicated crown-root fracture are crown lengthening by gingivectomy and ostectomy, orthodontic or surgical extrusion and extraction of traumatized tooth followed by surgical implants placement on the bases of advantages, disadvantages, limitation, prognosis and cost of each treatment procedure.<sup>9</sup>

Gingivectomy and osteotomy (crown lengthening) are indicated in unaesthetic areas and are quick and simple methods.<sup>10,11</sup> Orthodontic extrusion is indicated for the treatment of subgingival fractures. Its disadvantage is that it requires longer period of time for extrusion and stabilization and may also effect the occlusion.<sup>12</sup> The best option of the treatment when fractured fragment is intact is reattachment by fiber post. The advantages of this procedure are: better

esthetics, less time consuming and preservation of natural tooth structure.<sup>13</sup> This treatment method is atraumatic, inexpensive and also eliminates the problems of differential wear of restorative materials.<sup>14</sup>

The key for achieving success in adhesive dentistry is a dry and clean working field and the proper use of bonding protocol and materials.<sup>15</sup> In this case, pulpal involvement was revealed by clinical examination confirming that endodontic treatment was necessary. The use of post disperses the stress along the root and increases its retention form. The fractured crown can be permanently bonded to the root by fiber post providing a monoblock effect.<sup>16</sup>

#### 4. Conclusion

The present clinical report describes the successful therapeutic treatment of complicated crown-root fractures by single visit root canal treatment reattached by fiber post followed by PFM crown.

#### 5. Source of Funding

None.

#### 6. Conflict of Interest

None.

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