

**Removal of metal post and fractured instrument using ultrasonic – A case report**

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**Introduction**

Incidence for the need of endodontic retreatment is estimated around 8-15 % because of new pathology or failed restoration. Re-treatment gets complicated in cases of post and fractured instruments. Most common causes of fractured instrument include improper use, excessive pressure, inadequate access opening etc and prognosis depends on which stage of instrumentation did the instrument fractured.<sup>(1,2)</sup> Post are required to retain core for the restoration of root filled teeth but post can fail due to loss of retention , core fracture ,bending of post etc. In such cases every attempt should be made to save the tooth either by removing the post or by bypassing the instrument.<sup>(3,4)</sup> Sometimes surgery may be required to remove the obstruction but surgery has the risk of damaging the anatomical structures and can also lead to gingival recession, papilla shrinkage etc. Initially non-surgical management should be considered as it has a high

success rate before moving to surgical method.<sup>(5,6)</sup> Hence ,this case report represents the non-surgical approach for removing the metal post and fractured instrument using ultrasonic.

**Case Report 1**

A 44 year old male was referred to the Department of endodontics with discomfort and pain in upper front tooth region from past 7 days. On examination patient gave a history of root canal treatment in 21 which was done 5yrs back. Intraoral examination revealed tenderness on percussion with no mobility and no sinus tract but radiograph revealed peri apical changes and apical root resorption in the same tooth (figure 1)



Figure 1

After thorough examination, treatment was planned and it was decided to retrieve the post. Procedure was explained to the patient with possible risk including fracture of tooth during post removal before stating the treatment.

After administration of local anesthesia, the crown was removed and the tooth revealed that amalgam was filled inside the canal into which metal post was screwed (figure 2).



Figure 2

Dentsply ultrasonic tips (figure 3) were used to remove excess amalgam around the metallic post. Then, troughing was started with pro ultrasonic tip (figure 4) around the post, after sufficient troughing, an attempt was made to unscrew the post using artery forcep and some movement were seen. Excessive pressure was avoided as it could have fractured the tooth so troughing was increased and

second attempt to unscrew the post helped in retrieving it safely (figure 5). After removing the post, pus started oozing out (figure 6) and as the canal was sufficiently wide, the filling material was removed, canal was irrigated thoroughly (figure 7) and two weeks dressing was given.



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

### Case Report 2

A 38 year old male reported to the Department of endodontics with difficulty in chewing in lower left back tooth region from 2 days because of dislodged restoration. On examination patient told that he had undergone a root canal treatment 6 months before. Intraoral examination revealed deep cavity in 37, missing 36 and couple of more decayed teeth. On radiographic examination a broken instrument was seen in mesio-buccal canal (figure 1).

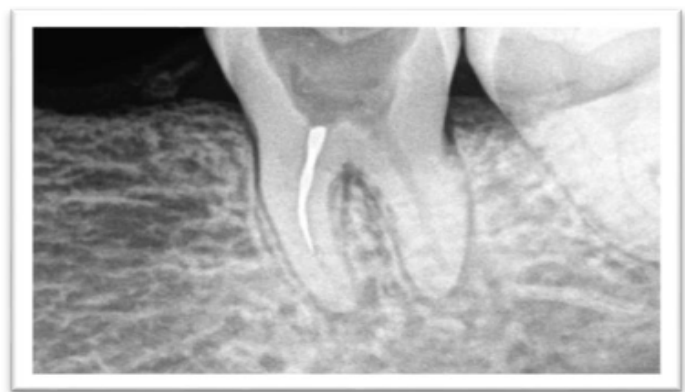


Figure 1

After carefully examination, it was decided to do a re-root canal treatment. So local anesthesia was administered and rubber dam was placed on 37. Access was refined and orifices were located. Except for mesio-buccal canal remaining orifices were sealed with teflon tape then with the help of loupes and ultrasonic (figure 2), troughing was started around the broken instrument in intermittent motion. Slowly as the instrument was getting loose inside the canal, with the help of twizzer the instrument was pulled out (figure 3). Teflon tape was removed and the working length was taken (figure 4). After shaping and thorough cleaning with 5.25% Naocl the tooth was obturated (figure 5).



Figure 2

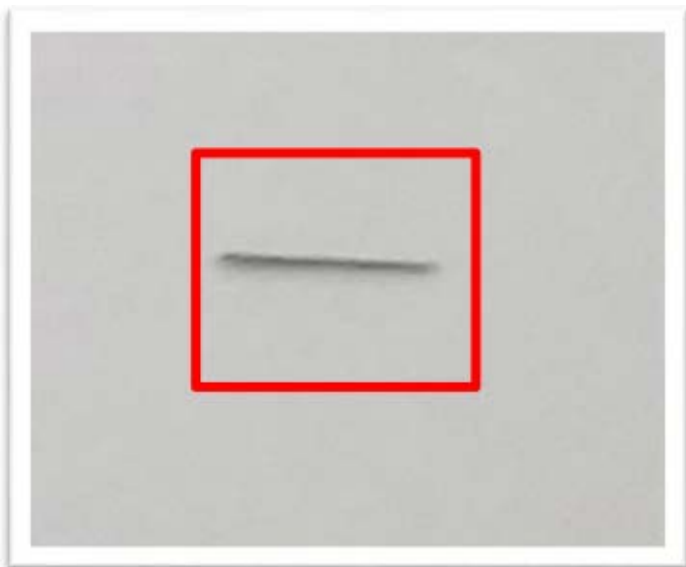


Figure 3

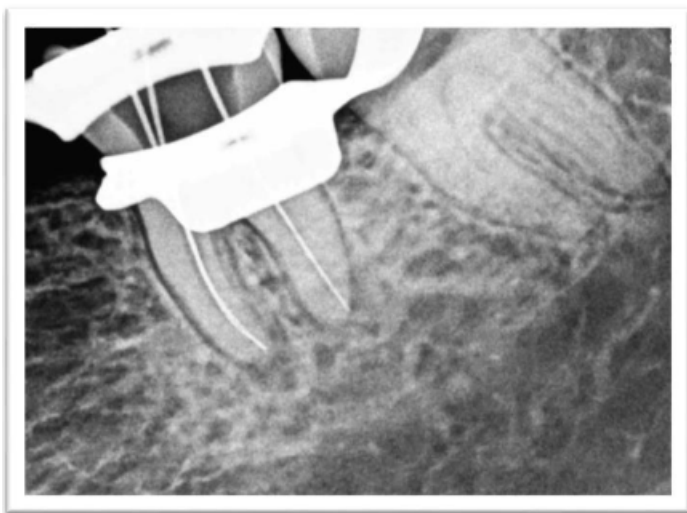


Figure 4



Figure 5

### Discussion

Repeating non-surgical root canal treatment in endodontics involves removing the crown, identifying and locating missed canals, gutta percha removal, managing obstructions, retrieving post and fractured instruments.<sup>(7,8)</sup>Intra-radicular post are the most commonly used post which can be cylindrical, conical, screwed or cemented, Their radio-capacity is similar to dentin but modulus of elasticity is different from dentin. Several factors impact the removal of post like decision of the operator, skills, and the best available technique. Several methods have been described for removal of separated

instruments and post from the root canal such as Masserann kit, Endo Extractor, wire loop technique, and ultrasonic. However, successful removal of fractured instrument relies on factors such as length, type, and position of instrument in relation to canal curvature.<sup>(9)</sup>An instrument can be easily removed if it lies in the straightway portion of the canal and one-third of its overall length is exposed. If the instrument lies beyond the curvature then it is difficult to retrieve it. Advancement in technologies and magnification aids has made instrument retrieval possible in majority of cases. The use of microscope or magnifying loupes guides the instrument retrieval and minimizes the damage to the canal dentine. According to Nevareset al. when the separated fragment was visible with a dental microscope the success rate of retrieval was 85.5% in comparison to when the fragment was not visible wherein the success rate was 47.7%.<sup>(10,11)</sup>The use of ultrasonic in endodontics was first described by Richman in 1957. Initially, the frequencies employed in ultrasonic units were 25–40 kHz, but subsequently, ultrasonic handpiece operating at 1–8 kHz were developed which produce less shear stresses causing less alteration to the canal surface. In the present case, the separated instrument is removed with the Acton Satelec P5 neutron which is piezoelectric ultrasonic generator. The tips of these units work in a linear, back and forth, “piston-like” motion, which is ideal for endodontics.<sup>(12)</sup>Separation of file can be prevented by adhering to the concepts of bio-mechanical preparation and discarding endodontic instruments after each case. Magnification contributes to major part of success in endodontic treatment. So, combining magnification with ultrasonic not only helps in preserving dentin but will also help in giving predictable outcomes.

## **Conclusion**

Post, instrument removal and managing other challenges inside the canal depends upon the clinician's judgment, training, experience and ability to use the available instruments.

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