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Navigating the Challenges of Intraradicular Threaded Metal Post Removal in Endodontic Retreatment: Clinical Insights and Considerations

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Abstract

Introduction

The success of nonsurgical endodontic retreatment relies heavily on the removal of intraradicular posts, which are often placed in teeth with extensive crown damage. These posts can obstruct access to the root canal system, complicating thorough cleaning and disinfection. This article presents two clinical cases demonstrating the removal of metal posts and subsequent retreatment.

Observation

In the first case, a threaded metal post in tooth 34 fractured during removal using Stiglitz forceps. Ultrasonic tips applied in a counterclockwise motion successfully dislodged the fragment, allowing for complete retreatment and obturation. In the second case, tooth 13 was treated, and the metal post was successfully removed using forceps without complications. Both cases involved thorough root canal cleaning with RCS retreatment files, followed by irrigation with Sodium

Hypochlorite, EDTA, and Chlorhexidine, and obturation using bioceramic or resin-based sealers.

Discussion

The successful removal of intraradicular posts depends on operator expertise, understanding of root canal anatomy, and appropriate tool selection. Optical aids and ultrasonic devices play a critical role in overcoming challenges. Proper technique minimizes risks such as root fractures and ensures effective retreatment. These cases highlight the importance of a patient-centered approach and meticulous execution in achieving optimal outcomes.

Keywords: Endodontic retreatment, intraradicular posts, ultrasonic tips, metal post removal, nonsurgical endodontic

Introduction :

The key to achieving success in the retreatment of teeth with prior unsuccessful endodontic procedures lies in the effective removal of various materials from the root canal. These materials typically include gutta percha, broken endodontic instruments, and, in some cases, silver points. Notably, metal posts are often inserted into root canals, particularly in teeth with extensive clinical crown damage, and their removal is a critical step for gaining access to the endodontic space and ensuring the thorough cleansing and disinfection of the root canal system.

The primary objective of this article is to present clinical cases that involve the removal of intraradicular posts, followed by subsequent endodontic retreatment. These cases highlight the significance of addressing intraradicular posts and the challenges associated with their removal in the context of endodontic retreatment procedures.

Clinical cases :

Case 1 :

The patient sought dental care, presenting with tooth 34, which had undergone previous endodontic treatment, displayed a periapical image (fig1), and exhibited insufficient endodontic treatment. The tooth was also restored with an exposed metal screw post. To prepare for prosthetic restoration, an endodontic retreatment was initiated.

Initially, a pre-operative periapical X-ray (fig1) revealed the presence of a threaded metal post. The procedure began by removing all restorative materials to expose the head of the post (fig2). During the first attempt using Stiglitz Forceps (fig3), the head of the metal post fractured (fig4).

Figure 1: Preoperative Xray showing a metal post with threads

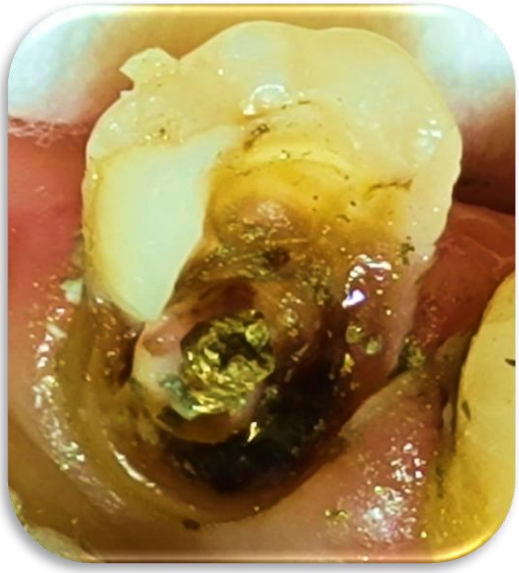

Figure 2: Removing all retorative materials exposing the head of the post

Subsequently, ultrasonic tips (ET18D, ET25) (fig5) were employed in a counterclockwise motion around the post(fig6) while continuously irrigating with Sodium Hypochlorite. Once the post became loosened and mobile with a probe, the fragment was successfully removed using forceps (fig.7).

Another X-ray was taken after the post removal (fig.8).

Pre-endodontic reconstruction was carried out using glass ionomer. Following this, the gutta-percha was removed (fig.9) using RCS retreatment files, and final irrigation was performed with Sodium Hypochlorite, EDTA 17%, and Chlorhexidine 2%. A master cone fit X-ray(fig10) was taken, and the root canal was subsequently obturated using a resin-based sealer, as shown in the post-operative X-ray (fig11).

Figure 3: At the first attempt using Stigliz Forceps, resulting in the fracture of the metal post head

Figure 4: Ultrasonic Tips (ET18D,ET25) were used in counterclock motion arround the post associated with continuous irrigation of ClONa

Figure 7: Once the post is loosened and can be moved with a probe, the fragment was removed with a forceps

Figure 8: PA xRay

After Post removal

Figure 9: PA xRay

After Gutta percha removal

Figure 10: Master cone fit xRay

Figure 11: Post Operative xRay

Case 2 :

The patient sought dental care, presenting with tooth 13, which had undergone previous endodontic treatment. The tooth displayed a periapical image and exhibited insufficient endodontic treatment. It was restored with a screw post and amalgam(fig12). To prepare for prosthetic restoration, an endodontic retreatment was initiated.

A pre-operative periapical X-ray(fig13) revealed the presence of a metal post with threads and an amalgam restoration. The procedure began with the removal of all restorative materials using a trans-metallic burr, exposing the head of the post (fig14).

Figure 12: Pre Operative PA xRay showing a metal post with threads

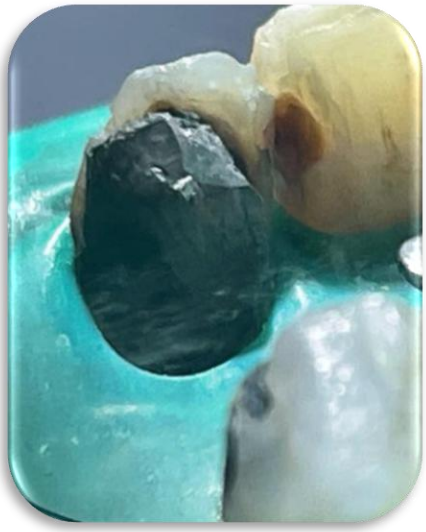

Figure 13: Pre Operative clinical view of an amlgam restoration

Figure 14: After Removal of the Amalgam and exposing the head of the metal post

A Stiglitz Forceps (fig.15) was employed in a counterclockwise motion to successfully remove the post in its entirety (fig16). Gutta-percha was removed using RCS retreatment files and FKG Endoshaper, followed by a final irrigation was performed with Sodium Hypochlorite, EDTA 17%, and Chlorhexidine 2%.

A master cone fit X-ray (fig.17) was taken, and the root canal was subsequently obturated using a bioceramic-based sealer, as demonstrated in the post-operative X-ray (fig 18).

Figure 15: Using a Stigliz Forceps in a counterclock motion, removing the post in its entirety

Figure 16: Clinical view after post removal

Figure 17: Master cone fit xRay

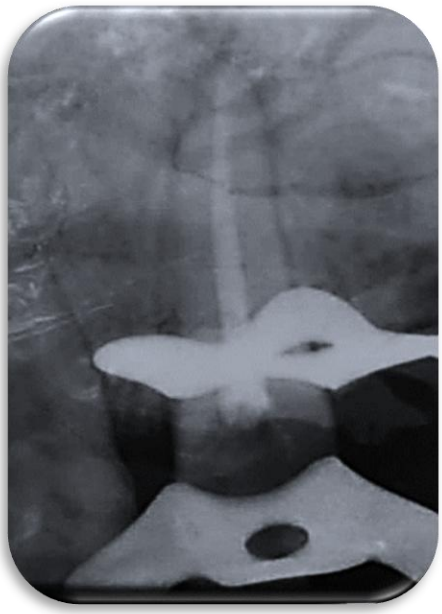

Figure 18: Post Operative xRay

Discussion

Nonsurgical repeat root canal treatment in the field of endodontics encompasses a broad spectrum of procedures. These include crown disassembly, the exploration and identification of canals missed during prior endodontic treatments, gutta percha removal, the management of obstructions, negotiation around blocks, perforation repair, addressing ledges, treatment planning for fractured teeth, and the retrieval of intra-radicular posts and separated instruments. The most commonly used intraradicular posts are prefabricated metal posts, which can have cylindrical-conical, screw-type, or cemented circular cross-sections. These posts share similar radiopacity characteristics with gutta percha and fixing cement but possess a modulus of elasticity that differs from that of dentin. Intraradicular metal posts can introduce tension and, in active points, may experience overload during threading, potentially posing a risk of root fracture.

The successful removal of posts is influenced by various factors, including the operator's decision-making, skill, experience, and the selection of appropriate technologies and methods. A comprehensive understanding of both the internal and external dental anatomy, along with awareness of variations in internal root canal anatomy associated with different teeth, is essential.

In the context of establishing trust, it is crucial to conduct the entire endodontic retreatment under local or locoregional anesthesia. Many manuals correctly state that the absence of pulp vitality during retreatment enables the removal of coronoradicular structures and canal procedures without the addition of anesthetic agents. Furthermore, the resulting operative silence following injection reduces patient discomfort and significantly enhances the practitioner's efficiency by minimizing interruptions.

Operative ergonomics and patient protection are enhanced by :

- Wearing protective eyeglasses to prevent ocular injuries during metal drilling.
- Employing a four-handed technique or, when feasible based on the remaining dental structures, utilizing a dental dam.

The acquisition of orthocentric and eccentric peri-apical X-rays informs the practitioner about root anchorage, including type and shape, such as smooth prefabricated posts, threaded prefabricated posts, simple anatomical posts, multiple post restorations, prefabricated carbon fiber posts, prefabricated quartz fiber posts, and prefabricated ceramic posts. These X-rays also provide details about post length, shape, and canal adaptation, with longer and more anatomically shaped posts increasing the complexity of the removal process.

Threaded posts are classified as active posts and can often be the easiest type of post to remove. The ease of removal depends on whether or not the coronal aspect of the post is damaged, if it is accessible and what material has been used to

cement it in situ. One very important point to note is that post pullers should never be used to remove active posts as their use will generate excess forces which could easily cause a root fracture. If the head of the post is accessible, not damaged and a nonadhesive resin luting cement has been used to cement it, removal is usually a simple case of unscrewing it in an anticlockwise direction.

The initial step involves removing all impacted restorative materials (e.g., amalgam or composite reconstructions) using appropriate burs attached to a turbine with a coolant spray. The post heads are preserved to facilitate subsequent removal.

Optical aids, such as magnifying loupes or an operative microscope, are valuable tools in separating the post from the restorative material.

A Stiglitz Forceps was employed at first in a counterclockwise motion trying to remove the post in its entirety

In cases where it is challenging to remove the post, ultrasonic removal tips (ET18D, ET20) are used to further disintegrate the cement while applying a counterclockwise motion around the post. The threads primarily serve to retain the cement rather than anchor it in the dentin.

In the current cases, we used traditional ultrasonic tips in combination with Stieglitz forceps to unscrew the posts. Despite these challenges, we were able to successfully remove the posts with minimal equipment, accomplishing a nonsurgical retreatment that relieved the patient's pain and resolved the periapical infection.

If the post remains firmly in place, the 10-minute ultrasound rule is implemented, using high-power removal inserts in the same counterclockwise motion. Beyond this time frame, any failure suggests the need for additional techniques, which are performed using the Gonon® kit. This kit comprises an extractor, burs of various sizes, and corresponding reamers . It also includes silicone washers of varying

diameters, flat and concave metal washers, a diamond-tipped round bur, a pilot drill, and a PEESO drill #2. This kit has been in use for over 40 years and has recently undergone improvements, making the entire kit sterilizable and enhancing its usability. The purpose of this system is to apply traction to dislodge the post while taking support from the dental structure.

Conclusion :

In conclusion, the successful removal of posts in the field of dentistry depends on a combination of factors, including the operator's sound judgment, comprehensive training, and valuable experience. Most importantly, it relies on the clinician's proficiency in utilizing the available instruments within a clinical context. Clinicians should make every treatment decision after a careful assessment of the associated risks and benefits. Ultimately, this thoughtful consideration enables them to deliver the highest standard of care to patients who trust in their expertise and commitment.

References :

1. Rollings S, Stevenson B, Ricketts D. Posts – When it all goes wrong! Part 2: Post removal technique. Br Dent J 2023; 234(4): 210−214.

2. Ruddle CJ. Nonsurgical retreatment. J Endod 2004; 30(12): 827−845.

3. Smith BJ. Removal of fractured posts using ultrasonic vibration: an in vivo study. J Endod 2001; 27(10): 632−634.

4. Stamos DE, Gutmann JL. Survey of endodontic retreatment methods used to remove intraradicular posts. J Endod 1993; 19(7): 366−369.