

## Importance of Pre Prosthetic Evaluation of Endodontically Treated Tooth: A Case Report

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### Abstract

Endodontic treatment success depends on good access and visibility to entire root canal system, aseptic technique of canal preparation, fluid tight seal during obturation and reinforcement of the tooth structure by appropriate restoration. Before the prosthesis placement, the endodontic and periodontal conditions have to be evaluated. The present case is a case of incomplete silver point obturation which was prepared to receive a crown with a temporary restoration in place. Silver points were retrieved and obturated using gutta percha following which full metal crown was cemented. This highlights the importance of pre prosthetic evaluation of an endodontically treated tooth.

**Keywords:** Post Endodontic Restoration; Retreatment; Silver Cone Obturation

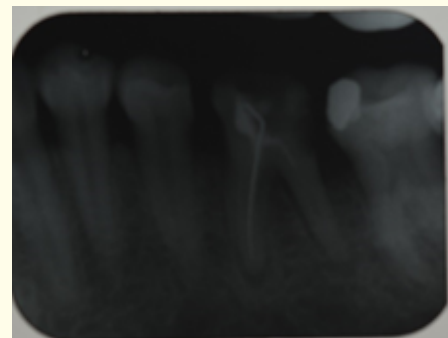
### Introduction

Endodontic therapy is performed to increase longevity of the tooth, which otherwise would have been indicated for extraction for various reasons such as fracture, infection, or periodontal problems leading to further complications like tooth migration and space loss. Failure in endodontic therapy can be due to incomplete disinfection, lack of coronal/pical seal and absence of post endodontic restoration. A study analysed the reason for extractions of endodontically treated teeth and revealed that almost 60% of failures were unrestorable tooth fractures, 32% involved periodontal problems and 7% were endodontic failures. Failure can be due to less than optimal endodontic therapy but inadequate or unsuccessful restorative treatment is the major issue [1]. The present case report describes the management of failed endodontic therapy due to less than optimal endodontic therapy and inadequate post endodontic restoration.

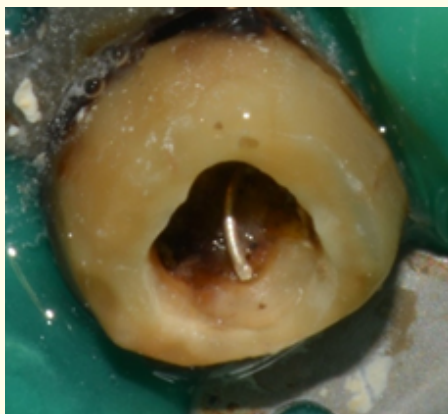
### Case Report

A 44 year old lady came to the Department of Conservative Dentistry and Endodontics, with a history of root canal treatment done for her lower left back tooth a month prior to her dental visit in want of a crown for the same. Clinical examination revealed lower

left first molar was asymptomatic with temporary restoration (Figure 1). Tooth was prepared for receiving a crown. Periapical radiograph of 36 revealed an incomplete silver point obturation in the mesial canal and under obturated distal canal (Figure 2). Periapical radiolucency was seen with respect to the mesial and distal root apices. It was diagnosed to be a case of chronic apical periodontitis with incomplete silver point obturation.



**Figure 1:** Silver cone under obturation of the mesial root, unobturated distal canals.



**Figure 2:** “Handle” of the silver cone obturation can be seen.

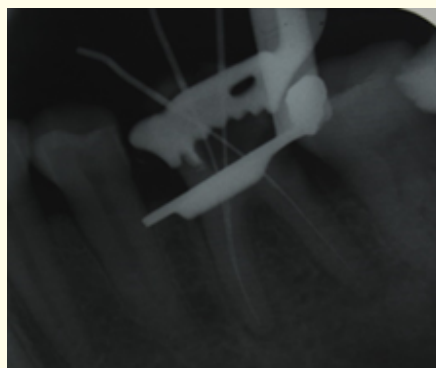
**Treatment planned:**

- Retreatment by retrieval of silver points, followed by thorough disinfection of root canal system and fluid tight obturation.
- Post endodontic restoration to improve coronal seal and to achieve the resistance form for tooth by full coverage ceramic crown.

Temporary Zinc oxide eugenol was removed with a round bur attached to a high speed handpiece (NSK Co., Japan). Rubber dam (Hygiene rubber dam kit, Coltene) was applied and secured with a premolar clamp, since tooth preparation was already done (Figure 3). Using ultrasonic tips (ProUltra ENDO Tips, Dentsply Tulsa Dental, Tulsa, Oklahoma) mounted on a ultrasonic handpiece (EMS, Nyon, Switzerland) and 17% EDTA irrigation (B. N. Laboratories), silver points were retrieved from the mesio-lingual canal (Figure 4). Chamber was de-roofed and four canals were located. Working length was determined by Ingle’s method which was 20 mm for all canals (Figure 5). Glide path obtained with 15K hand files (Dentsply, York, PA, USA) Canal preparation was done using ProTaper Universal file system (Dentsply York, PA, USA) till F2 and 5.25% NaOCl (Vishal Dentocare Pvt. Ltd, India) (Figure 6). Calcium hydroxide (Calcicur®, VOCO, America, Inc.) dressing was given. After a final rinse of 17%EDTA, (B. N. Laboratories, India) canal was dried with paper points (Dentsply, York, PA, USA) and obturation was done using lateral condensation technique using Zinc oxide eugenol sealer (Kerr) and F2 Guttapercha cones (Dentsply, York, PA, USA) (Figure 7). Orifice was sealed with Type II GIC (GC Fuji II, Japan) and core build up done using Composite resin (3M, Filtek™ Z350 XT Universal Restorative). Tooth was then prepared to receive a full metal crown and metal crown was cemented using Type I GIC (GC Fuji I, Japan) (Figure 7).



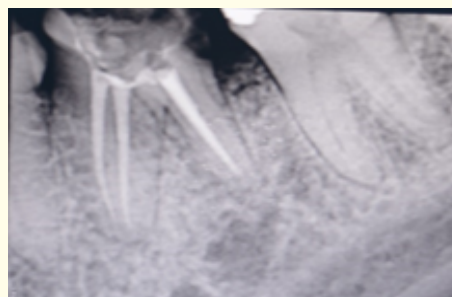
**Figure 3:** Intact silver cone retrieved from the mesial root canal.



**Figure 4:** Working length determination. All canals, the two mesial and distal measured to be 20 mm.



**Figure 5:** Master cone radiograph.



**Figure 6:** Post obturation radiograph.



**Figure 7:** Post crown cementation with respect to 36.

**Discussion**

Endodontic evaluation for prosthetic rehabilitation of the present case with silver point obturation revealed: Incomplete Silver point obturation; Persistent periapical lesion which was evident in the IOPA radiograph; No acceptable coronal restoration to provide the coronal seal.

Since first molar is an important tooth for mastication and occlusal balance, it is necessary to save the tooth. Hence it was decided to perform retreatment for the tooth. It was doctor Jasper in 1933 who first introduced silver cone as an obturating material for narrow, tortuous canals [2]. The rationale was that silver has more rigidity than gutta-percha and hence can be pushed into tightly fitting canals and around curves where it is difficult to force gutta-percha. But they lack adaptation to the canal walls, is round in cross section, and disintegrates over time [3]. Unfortunately, silver point has been misused due to its ease of canal preparation and obturation leading to its failure worldwide. However, problems associated with microleakage, cement dissolution, corrosion and the potential adverse effects of the resultant toxic salts on the periapical tissues have resulted in a decline in their popularity [4]. Silver point obturations fail because of the minimal preparation failing to remove the irritants from the root canal system. To add to this, their tight frictional fit and hardness, silver points are difficult to remove totally or partially [3].

Additionally, silver cones make post and core treatment difficult, due to difficulty in retrograde preparation and improper apical seal, apical surgery gets complicated; moreover, corrosion by-products can induce root resorption through a process of peri radicular inflammation. Today, silver cones are universally considered obsolete [5].

Based on the rate of bacterial and endotoxin penetrations, obturated canals which have been exposed to the oral environment for 2 - 3 months or longer need endodontic retreatment [6]. In the present case post endodontic coronal restoration was missing. This also might have contributed for infection. Ray and Trope, concluded that apical periodontal health depended significantly more on the coronal restoration than on the technical quality of the endodontic treatment [7-12]. In the present case tooth was not restored with full coverage crown. However, presence of intact four dentinal walls provided enough micro mechanical retention for the composite core without a need for a post. Endodontically treated posterior tooth may have a cavity depth 3 - 4 times greater than a vital tooth risking fracture due to cuspal deflection. The use of crowns can significantly improve the success for posterior teeth [13]. Hence retreatment was done with lateral compaction technique, followed by full coverage metal crown to improve the longevity of the tooth in the arch.

## Conclusion

Silver points do not adequately seal the apical foramen nor conform to the canal taper corroding over time leading to microleakage and peri apical inflammation complicating retreatment. Therefore silver points are an absolute contraindication in today's endodontics. The success of endodontic therapy depends on eradication of irritants from root canal and periapical space and subsequent maintenance of the sterile atmosphere with adequate apical and coronal seal. However long term success of endodontic therapy depends mainly on prosthetic rehabilitation due to the inherent brittleness of a nonvital tooth.

## Conflict of Interest

None.

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