



## A CASE REPORT ON APECOECTOMY FOLLOWED BY RETROGRADE FILLING AND PERFORATION REPAIR

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### Abstract:

Nonsurgical endodontic treatment is a highly predictable treatment option in most cases, but surgery may be indicated for teeth with persistent periradicular pathosis unresponsive to non-surgical approaches. Surgical root canal therapy including root-end resection has been practiced since at least the mid 1800s. Over past 2 decades, periradicular surgery has continued to evolve into a precise, biologically based adjunct to nonsurgical root canal therapy. Periradicular surgery, when indicated, should be considered an extension of non surgical treatment, because the underlying etiology of the disease process and the objectives of treatment are the same: prevention or elimination of apical periodontitis. When indicated, periapical surgery involves removal of diseased soft tissue, root resection followed by retrograde root filling, which enhance new bone formation at site of defect.

**Keywords:** Apical surgery, Apicoectomy, endodontic surgery.

### Introduction

Untreated pulp tissue necrosis may lead to periapical periodontitis, which represents a response of the bone around the apex to restrain the local infective offence. Periapical healing can be achieved by root canal treatment, whose purpose is to remove bacteria and remnants of infected tissue by shaping, cleaning and filling with an inert material the entire root canal system.<sup>1</sup> Nonsurgical endodontic treatment is a highly predictable treatment option in most cases, but surgery may be indicated for teeth with persistent periradicular pathosis unresponsive to non-surgical approaches. Surgical root canal therapy including root-end resection has been practiced since at least the mid 1800s.<sup>2</sup> Apical surgery refers to the surgical management of a tooth with a periapical or periradicular lesion that cannot be resolved with an orthograde endodontic approach. Apical surgery is often considered as a last resort to preserve a tooth when conventional endodontic retreatment is not feasible or is associated with therapeutic risks (Kim and Kratchman, 2006). The treatment alternative would be tooth extraction, or in multi-rooted teeth, root or tooth resection. The main objective of apical surgery is to create an optimal environment for periradicular tissue healing. Removing pathology or removing inaccessible parts of the root canal system, and by preventing reinfection from the root canal system usually accomplishes this. For this purpose, a retrograde cavity is prepared following root-end resection, and a filling material is placed into this cavity to completely seal the root canal system at the resection level (European Society of Endodontology, 2006). The healing outcome of

apical surgery is normally assessed by a clinical and radiographic re-examination 1 year post-surgery.<sup>3</sup>

### Case Report:

A 30yr patient came to the Department of conservative dentistry and endodontics with a chief complain of discharge in his upper anterior tooth. After examining the patient had undergone RCT. When the IOPA was taken it was found that the root canal treatment was incomplete and there was a perforation also in the cervical area of the tooth. After examination the whole pulp was removed and copious irrigation was done. First all the non surgical methods were tried but the patient was still symptomatic. So it was decided to go for the surgical method. Patient's consent was taken prior to the surgery. Preoperative radiograph and OPG were taken. Indicated teeth were endodontically treated. Also Blood heamogram tests were conducted prior to surgery. On the day of surgery patient was administered local anesthesia. Full thickness mucoperiosteal flap was reflected by giving two horizontal incisions and a horizontal incision. Osteotomy will be performed under copious water spray using straight micromotor handpiece with bone cutting bur. Root was resected up to 3mm. Removal of granulation tissue was done using curettes. Retro cavity preparation was done using micromotor contra angle handpiece and round bur. Retrograde Root filling was done using MTA at root end with the help of MAP system. And the perforation site which was present at the cervical area of the tooth was also restored with MTA.



A



B



C



D



E



F



G



H



I



J

**Figure 1:** (a) Preoperative clinical photo (b) Pre operative radiograph (c) Obturation done (d) Incision given (e) Flap raised (f) Window created at apex (g) Retrograde cavity preparation (h) MTA retro filling done (i) Radiographic picture of MTA at apex and at perforation area (j) Flap approximation done and sutures given

### Discussion:

When indicated, periapical surgery involves removal of diseased soft tissue, root resection followed by retrograde root filling and application of different graft material, which enhance new bone formation at site of defect. Earlier the root end obturation was done by various materials like Amalgam, glass ionomer cement and composites. After them the other materials which were used are SuperEBA or IRM.<sup>4</sup> These two zinc oxide eugenol based cements were found to be more biocompatible and less soluble than other zinc oxide eugenol formulations.<sup>5</sup>

A new root-end filling material that has received much recent attention is Mineral Trioxide Aggregate.<sup>6</sup> Mineral trioxide aggregate (MTA) as a root-end filling material was introduced to endodontics by Torabinejad et al in 1993. MTA was shown to have excellent sealing ability and promoted osteoblast activity. It was less cytotoxic than amalgam, IRM, or SuperEBA and had an antimicrobial effect. Results of MTA studies in dogs and monkeys showed that MTA caused significantly less inflammation than amalgam. More importantly, cementum bridges formed directly over the MTA root-end fillings confirming the tissue friendliness of this material and its potential cementogenic property.<sup>7</sup> It is said in some studies that this material induces cementogenesis with the deposition of new cementum on the retrofilling material surface.<sup>8,9</sup>

In the created cavity at the apex the root end filling material is placed in order to close the communication between the periradicular tissues and the infected root canal.<sup>10</sup>

### Conclusion:

The treatment outcome of the surgery depends upon the root canal filling material. That means the material should have all the ideal properties like dimensionally stable, non-absorbable, non-cytotoxic in nature, biocompatible, easily manipulated, antibacterial, not affected by moisture and should induce cementogenesis.

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