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Case Report

Apex resection treatment on tooth 21 and 22 with suspected radicular cyst

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ABSTRACT

Background: *Apex resection is the surgical removal of the apex or root end of a tooth root. Endodontic failure is the most usual reason of treatment being performed. Retreatment may be the first option for teeth which have been treated conventionally and exhibit a persistent apical lesion. In particular, failures during conventional therapy could hinder results by leading infections to spread to inaccessible apical regions, necessitating surgery.* ***Purpose:*** *This case report aims to describe the management of radicular cyst on previously treated tooth.* ***Case:*** *A 51-year-old male patient came to Soewandhie Hospital with a complaint of swelling on his hard palate from one year before. The left maxillary incisor has undergone root canal treatment about 1 year ago, but had not been permanently filled.* ***Case Management:*** *The treatments given were retreatment for 21 and root canal treatment for 22, then followed by cyst enucleation and apex resection on both teeth.* ***Conclusion:*** *Apex resection shows a satisfying result for treating previously treated tooth with persistent apical lesion.*

Keywords: *apex resection, endodontic failure, radicular cyst, endodontic surgery*

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INTRODUCTION

Periapical surgery is a subspeciality of endodontics that includes root or tooth extraction, perforation closure, incisions, and drainage. The goal of periapical surgery is to save teeth with endodontic lesions that cannot be treated with standard endodontic therapy by surgical approach.[1] The most commonly used surgical techniques to address endodontic failures, mishaps, and side effects of any conventional treatment include apicoectomy, apicoectomy with retro-instrumentation, curettage with periapical planning, apicoectomy with retro-filling, and canal retro-filling.[2]

Apex resection or apicoectomy is the surgical removal of the apex or root end of a tooth root. This procedure can be performed alone or in conjunction with the placement of a retrograde filling to seal the apical portion of the root. J. Farrar appropriately characterized the apex resection treatment in 1884 as a bold act, which removes the entire cause of disease which lead to a cure which may not be the best in the end, but the most humane.[2,3]

Reinfection in a previously treated canal (secondary infection) or the presence of leftover germs (permanent infection) are common causes of failure in traditional root canal treatment. Retreatment might be the first option for conventionally previously treated teeth and exhibit a persistent apical lesion. In particular, failures during conventional therapy could hinder results by leading infections to spread to inaccessible apical regions, necessitating surgery.[4]

CASE

A 51 years old male patient came to Soewandhie General Hospital with a complaint of swelling on his hard palate from a year ago (Figure 1). There were no complaints of

Figure 1. Clinical picture before treatment.

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Figure 2. Radicular cyst at the apices of teeth 21 and 22.

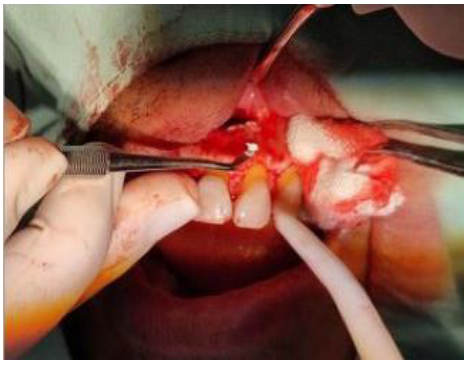

Figure 3. Cutting the root tip and MTA application.

Figure 4. Clinical picture after treatment.

Figure 5. Periapical radiograph taken after apex resection.

pain. The left maxillary incisor has undergone root canal treatment about 1 year ago, but had not been permanently filled. The swelling was initially small then grew bigger on the palate. Patient wanted to remove it. Radiographic examination showed an oval-shaped radiolucency with radiopaque borders at the apices of teeth 21 and 22, suggesting a radicular cyst (Figure 2).

CASE MANAGEMENT

The treatments given were retreatment for 21 and root canal treatment for 22, then followed by cyst enucleation and apex resection on both teeth. Sequence of treatments were done in five visits. It was initiated by extracting gutta percha with retreatment file, followed by root canal preparation on with Protaper gold up to F3. Irrigation sequence was done using sodium hypochlorite 2,5%, ethylene diamine tetra acetic acid (EDTA) 17%, chlorhexidine 2% and sterile aquadest. The root canals were filled with calcium hydroxide dressing.

Obturation with single cone technique using bioceramic gutta percha F3 and sealer was done in the next visit. Then, apex resection on 21 and 22 apices and cyst enucleation were done by collaborating with oral and maxillofacial surgeon. Surgery was done with local anesthesia. The apical part was cut by 3 mm and gutta percha was reduced using ultrasonic endodontic surgery tip. Retrograde filling was done using MTA (Figure 3).

Figure 6. Restoration of 21 and 22.

Figure 7. Radiographic examination at 3 months follow-up.

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After surgery, clinical photograph (Figure 4) and periapical radiograph (Figure 5) was taken. Bone graft and PRF membrane were applicated then surgery area was sutured. After the results of the surgery and root canal treatment were evaluated, 21 was restored with crown and 22 was restored with direct composite (Figure 6). Radiographic examination was done 3 months after endodontic surgery (Figure 7).

DISCUSSION

Periapical surgery, especially apicoectomy or apex resection is a procedure that performed when there is failure in endodontic treatment. A prolonged microbiological infection is one of the main reasons for endodontic failure. Bacteria have a well-established function in peri-radicular infections, and if microorganisms are still present in the canals at the time of root canal obturation, endodontic therapy will have a higher probability of failing. Disinfectants may be evaded by bacteria that are found in root canal locations like ramifications, dentinal tubules, and isthmuses.[5,6]

In this case, tooth 21 was previously treated but had not been permanently filled, which led to persistent periapical lesion, suspected radicular cyst, indicating periapical surgery. Apex resection is indicated[2,5] when periapical lesion with a size larger than 5 mm up to 2 cm remains following endodontic treatment; periapical disease prevents a tooth's apical portion from being able to be cleaned, shaped, and obturated; preventing proximate areas from maintaining proper hygiene; endodontic failures that cannot be solved by only retreatment.

Choosing a biocompatible substance that can create a hermetic seal which stop irritants and oral debris from leaving the root canals and getting into the peri radicular tissues is the aim of retrograde filling. Mineral trioxide aggregate (MTA) and interim restorative material (IRM) are the most often utilized materials. According to recent studies, MTA and IRM both produced positive healing responses in terms of radiography and histology. To guarantee a dense fill, use a tiny plugger to compact the root-end filling material. The excised root face shouldn't have any extra material on it.[3,7]

Commonly, post-operative reaction of periapical surgery are pain and swelling, particularly in the anterior maxillary region. Younger patients and women are more likely to experience these symptoms. Usually, patients are prescribed with analgesics and anti-inflammation to relieve the symptoms.[5]

Three months follow-up in this case showed a satisfying result, no complaints of pain and radiographic examination showed the lesion has been decreased in size. Periodic follow- up post-surgery is necessary. Post-operative healing is typically assessed one year after surgery, though minor periapical abnormalities (less than 5 mm) may resolve in a few months. When symptoms like pain, apico-marginal communication, nasal tract, oedema, and tenderness to palpation or percussion are absent, clinical healing has taken place.[3]

Apex resection has a relatively high success rate. A study conducted that anterior tooth had a far greater survival rate (84.0%) than posterior teeth, with the overall 3-year survival rate coming in at 81.6%. Numerous factors, including the patient's age and sex, quality of the retrograde root filling, timing of the root filling in relation to the periodontal status, operation, and size of the periapical destruction, have previously been examined as potentially influencing the outcome of apex resection. Overall, apex resection shows a satisfying result for treating previously treated tooth with persistent apical lesion.

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