

# Indication for Surgical Endodontics in accordance with NICE guidelines

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## Abstract

This study was conducted to evaluate referral of patients for surgical endodontics by general practitioner following the National Institute of Clinical Excellence (NICE) guidelines. Aim of the study was, to see, in the light of existing clinical guidelines provided by NICE and The Royal College of Surgeons, England, if the patients undergoing apicoectomy and retrograde filling at the Smile Line Dental clinic, Pakistan, fit the criterion. Do the referring doctors follow the guidelines. It was a retrospective study conducted in the year 2013-2014. 50 case notes of patients that had undergone apicoectomy and retrograde filling were retrieved from the medical record of the clinic. Inclusion criteria was- re-root canal treatment cannot be done or it is detrimental or failed; root canal treatment prevented by iatrogenic or developmental anomalies; Biopsy needed; visualization of periradicular tissue needed. The quality of root filling and the radiographic apical periodontitis was assessed according to the criteria proposed by De-Moor at el<sup>14</sup>. Out of 50 patients 46 were referred by General Dental practitioner; 03 by

General Medical Practitioner and 01 from Accident and Emergency of a local hospital. Only 46% patients fulfilled the criterion for indications as per guidelines. Re-root canal treatments shall be encouraged as GDP's refer patients mostly after 1<sup>st</sup> RCT fails.

**Keywords:** Surgical endodontics, NICE guidelines

## Introduction

This study was conducted on patients referred for surgical endodontics by general dental practitioners. Predominately these were the patients in whom periapical infection was not resolved with root canal treatment and orthograde filling. These patients were referred with a view of having apicoectomy and retrograde filling done under our care.

Endodontic surgery is a safe and adequate alternative when teeth are not responding to conventional treatment and endodontic re-treatment. It must only be applied in specific situations. Endodontic treatment failures can be related to: extra radicular infections such as periapical actinomycosis; to foreign body reactions that can be caused by endodontic material extrusion; to endogenous cholesterol crystal accumulation in apical tissues; and unresolved cystic lesion<sup>1-5</sup>. Endodontic surgery comprehends a set of procedures recommended in periapical diseases treatment, when traditional endodontic therapy does not obtain favorable outcomes. Traditional endodontic treatment aims to eliminate bacteria from root canal system and establish effective barriers against root recontamination<sup>6</sup>. To achieve success, cleaning, shaping and filling of the entire root canal system are considered essential steps in endodontic therapy. Teeth treated in conventional ways, which presents persistent periapical lesion, may have retreatment as first therapeutic alternative. Especially, accidents during conventional treatment may have negative effect over success, contributing to infection establishment in inaccessible apical areas, requiring surgical intervention<sup>7,8</sup>.

Because the majority of periapical lesions are associated with endodontic pathology except for cases of rare developmental cyst or tumors, the primary goal of treatment is orthograde occlusal approach for root canal instrumentation and obturation. However, in certain cases, endodontic treatment or retreatment is not feasible or is contraindicated and hence an indication for periradicular surgery arises, which could be;

Presence of periradicular disease, with or without symptoms in a root filled tooth, where non-surgical root canal retreatment cannot be undertaken or has failed, or when conventional re-treatment may be detrimental to the retention of the tooth ; presence iatrogenic or developmental anomalies prevent non-surgical root canal treatment being undertaken; Where a biopsy of periradicular tissue is required; Where visualisation of the periradicular tissues and tooth root is required when perforation, root crack or fracture is suspected; where procedures are required that require either tooth sectioning or root amputation; where it may not be expedient to undertake prolonged non-surgical root canal retreatment because of patient considerations.

Endodontic surgery is a widely studied procedure. According to the meta-analysis of Tsesis et al.<sup>9</sup> par endodontic surgery success rate is 91.6%, while failure rate is 4.7%. However, its prognosis is influenced by several factors, such as: different surgical procedures and materials, clinical and radiographic evaluation, demography, systemic conditions, local quality factors, for example, the involved teeth and their anatomy, conventional treatment or previous root canal retreatment and restoration quality<sup>9, 10, 11</sup>

Although there are few absolute contra-indications to endodontic surgery, a well-documented medical history is essential. In general, heart disease, diabetes, blood dyscrasias, debilitating illnesses and steroid therapy may contra-indicate surgery and special measures are necessary if surgery is contemplated. Consideration must also be given to psychological factors. As a rule, local anesthesia is preferable, but patients who are particularly apprehensive may wish to have any surgery carried out under sedation. The choice of anesthetic may also be governed by the nature of the operation, the site of the tooth and ease of access. A history of rheumatic fever is not a contra-indication for endodontic surgery, provided appropriate antibiotic cover is given. If there is any doubt about a patient's fitness to undergo any surgical endodontic procedure, then the patient's physician should always be consulted<sup>12</sup>.

Dental factors including unusual bony or root configurations, lack of surgical access, possible involvement of neurovascular structures, where the tooth is subsequently unrestorable, where there is poor supporting tissue, poor general oral status<sup>13</sup>.

## Methodology

The aim of this study was to see if the patients undergoing apicoectomy and root end filling fit the criterion given by National Institute of Clinical Excellence (NICE). It was aimed to see whether the referring doctors follow the guidelines before referring or not. It is a retrospective study carried out on medical record referred to the SMILELINE dental clinic Islamabad in the year 2014.

These were the patients undergoing apicoectomy and root end filling under our setup referred by general dental practitioners and general medical practitioners .Total number of cases taken was 50 , 46 out of 50 patients were referred by GDPs i.e. 92% of total ; 03 by GMPs and 01 by accident and emergency of a local hospital .

Factors considered in the study were number of RCT attempts, Is the tooth undergoing treatment a functional unit, Who sees them in clinic, who operates, GA/LA/IV sedation, histology results, follow up time and radiographs. The inclusion criterion was root canal therapy done more than six months ago, clinically pain on percussion, outcome of thermal test and presence of periradicular radiolucency. The quality of root filling and the radiographic apical periodontitis was accessed according to the criteria proposed by De-Moor at el.<sup>14</sup> Inadequate or over obturation, fractured instruments and missed canals were confirmed based on radio-graphical findings. Presence of post endodontic complaint and only two obturated canals in a mandibular or maxillary molar would signify at least one missed canal. Inadequate coronal seal was determined by the lack of a coronal restoration on the root canal treated tooth, provided all the other factors leading to root canal failure were not present.

Common findings between the three observers were then tabulated. All the recorded data was then transferred to SPSS software version 21. The level of significance for all tests was set at  $p < 0.05$ .

## Results

Out of 50 patients, 11 were in whom Re RCT cannot be done or failed or may be detrimental (22 %) ; 10 patients needed biopsy to be done (20 %) ; Apical extension of obturation material was present in 03 patients ( 06 %) ; Visualization of periradicular tissue needed in 01 patient (2%); RCT was prevented because of iatrogenic or developmental anomalies in 1 patient (2%); History of facial swelling was present in one case ( 2% ). Out of total 50 recorded cases 23 were in which first root canal treatment was failed and second one was not done or considered, which makes 46 % of total.

In 48 cases root canal treatment was done once, 04 out of these 48 cases had apicoectomy done twice but root canal treatment was done only once .Only two cases had Re-RCT done. All teeth considered were functionally important units.

15 patients were seen by senior house surgeons, 22 out of 50 were seen by middle grade trainee and 13 by consultants. 21 patients were treated by consultants, 08 by senior house surgeons and 21 by middle grade trainee .31 patients were treated under General anesthesia, 12 under local anesthesia and 07 under I/V sedation.

Out of 50, Specimens of 38 patients were sent for histology. 23 cases had granulation tissue, 10 cases had radicular cyst, 04 had benign dental cyst and 01 case had maxillary sinus polyp.

Follow up was done maximum for 18 months and minimum of 1 month average follow up period was 4.2 months. Post operative radiographs were taken by us in 13 cases. 33 cases were referred to GDPs for postoperative radiographs.

## Discussion

The purpose of our study was to highlight the issue related with referral of patients by general practitioners specially cases in which root canal treatment was done only once. GDPs should follow proper guidelines before making any referral for endodontic surgery. In this article proper indications for apicoectomy are mentioned, dentists should try non-invasive treatments before referring for surgical treatments. Only those cases which are not feasible for re-root canal treatment should be referred.

In well treated cases, failure of endodontic treatment is a result of microorganisms persisting in the apical portion of the root canal system or extra radicular infection<sup>15</sup>. Intracanal disinfection procedures or systemically administered antibiotics cannot easily affect the bacteria outside the apical foramen and also the placement of intracanal medicaments to eliminate microorganisms is inadequate because the antimicrobial effects of most medicaments are neutralized after apical extrusion. Therefore, extra radicular infections if present must be treated by means of periradicular surgery<sup>16</sup>.

## Conclusion

Only 46 % of patients fulfilled the criterion for indications as per guidelines for endodontic surgery, only 2 % patients had re-RCT done. Appropriate measures for the control and prevention of infection are essential to maximize the success of retreatment; including strict asepsis, complete chemo mechanical preparation using antimicrobial irrigants, intracanal medication, adequate root canal filling, and proper coronal sealing. Inadequate obturation and lack of a coronal seal were found to be the most common causes of endodontic failure. The endodontist should make sure that an adequate obturation is accomplished following cleaning and debridement. The permanent coronal restoration should be placed as rapidly as possible, ideally in the first week after treatment. If root canal treatment still fails, dentist should attempt re-RCT with strict measures. Patients should only be referred for apicoectomy and retrograde filling if absolute indication is present.

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