International Journal of Research in Health and Allied Sciences

Journal home page: www.ijrhas.com

Official Publication of "Society for Scientific Research and Studies" [Regd.]

ISSN: 2455-7803

Original Research

Assessment of outcome of apical surgery in 124 patients- A clinical study

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***ABSTRACT*:**
Background: Endodontic treatment is usually performed in teeth with periapical lesions. The present study was conducted to assess outcome of 124 apical surgery. **Materials & Methods:** 124 patients who underwent apical surgery were included. The occurrence of periapical lesions was established with panoramic radiograph. Apical surgery was performed following standardized process. **Results:** Age group 10-20 years had 22, 20-30 years had 30, 30-40 years had 38, 40-50 years had 21 and >50 years had 13 patients. The indication of periapical surgery was missing root canal in 52 cases, material beyond apex in 48, broken instrument in 14 and unknown in 10 cases. 94 cases showed healing and 30 had not. The difference found to be significant (P< 0.05). **Conclusion:** Missed root canal, broken instrument were the most common indication of the apical surgery. Most the of cases showed healing after 1 year.
Key words: Apical surgery, Missed canal, Endodontic surgery

Received: 12 December, 2020 Accepted: 26 December, 2020

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This article may be cited as: Purkayastha RS, Hasan S, Jindal H, Fernandes M, Biswas A, Pandita V. Assessment of outcome of apical surgery in 124 patients- A clinical study. Int J Res Health Allied Sci 2021; 7(1):57-60.

INTRODUCTION

Endodontic treatment is usually performed in teeth with periapical lesions. In some cases, root canal treatment can result in failure. The main factors of endodontic failure are microbial infection in the root canal system and/or the periradicular area. The clinician thinks that the direct causes of endodontic failures are procedural errors such as broken instruments, perforations, overfilling, underfilling, and ledges. Nevertheless, there are some cases in which the treatment has followed the highest technical standards and yet treatment can result in failure. They include microbial factors, comprising extraradicular and/or intraradicular infections, and intrinsic or extrinsic nonmicrobial factors. In case of failure, one of the treatment choices is retreatment by an orthograde approach

Apical surgery is often a last resort to maintain an endodontically treated tooth with a persistent periapical lesion. After the introduction of microsurgical principles and new materials for apical obturation in endodontic surgery in the early 1990s, healed rates of apical surgery with root-end filling have improved but remain around 80% to 90%.[1] In order to enhance the outcome of a surgical procedure, three different

strategies may be considered improvement of technical equipment/instruments changes in surgical technique and appropriate case selection. The choice of treatment, however, is often based on individual experience and skill rather than on evidence based prognostic factors. The latter would allow narrowing the indication for a certain treatment by weighing various predictors and thereby increasing the likelihood of a favorable outcome.

The decision to perform periapical surgery should be based on comprehensive examination of the patient's dental, oral and medical conditions. In fact, however, treatment decisions are often based on the preferences and experience of the clinician.[3] The present study was conducted to assess outcome of 124 apical surgery.

MATERIALS & METHODS

The present study was conducted among 124 patients who underwent apical surgery of both genders. All patients were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc was recorded. The occurrence of periapical lesions was established with panoramic radiograph. Apical surgery was performed following standardized process. Patients were recalled regularly for 1 year to record treatment outcome. Results were subjected to statistical analysis. P value < 0.05 was considered statistical significant.

RESULTS

Table I Distribution of patients

Age group (Years)	Number of patients	P value
10-20	22	0.01
20-30	30	
30-40	38	
40-50	21	
>50	13	

Table I shows that age group 10-20 years had 22, 20-30 years had 30, 30-40 years had 38, 40-50 years had 21 and >50 years had 13 patients. The difference was significant (P< 0.05).

Graph I Age wise distribution of patients

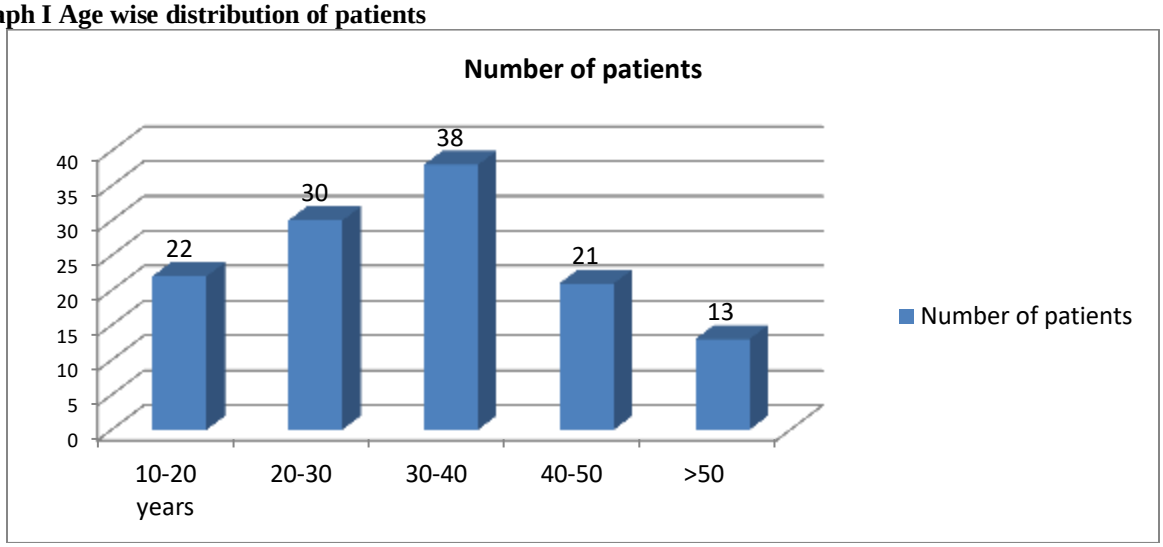


Table II Indication for periapical surgery

Indication	Number	P value
Missing root canal	52	0.04
Material Beyond apex	48	
Broken instrument	14	
Unknown	10	

Table II, graph II shows that indication of periapical surgery was missing root canal in 52 cases, material beyond apex in 48, broken instrument in 14 and unknown in 10 cases. The difference was significant (P< 0.05).

Graph II Indication for periapical surgery

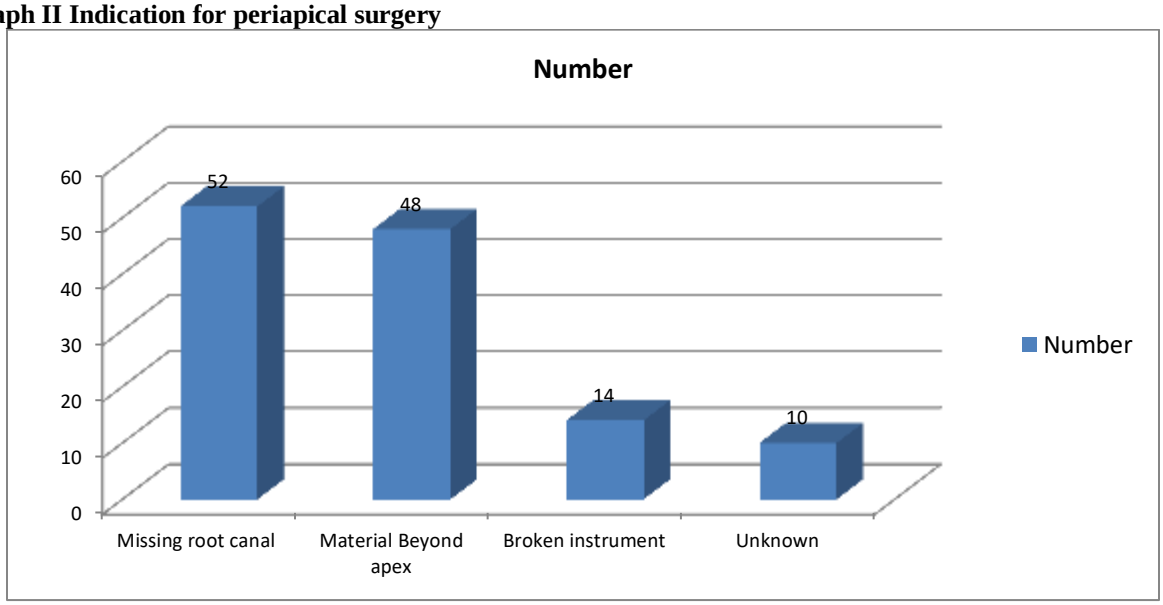
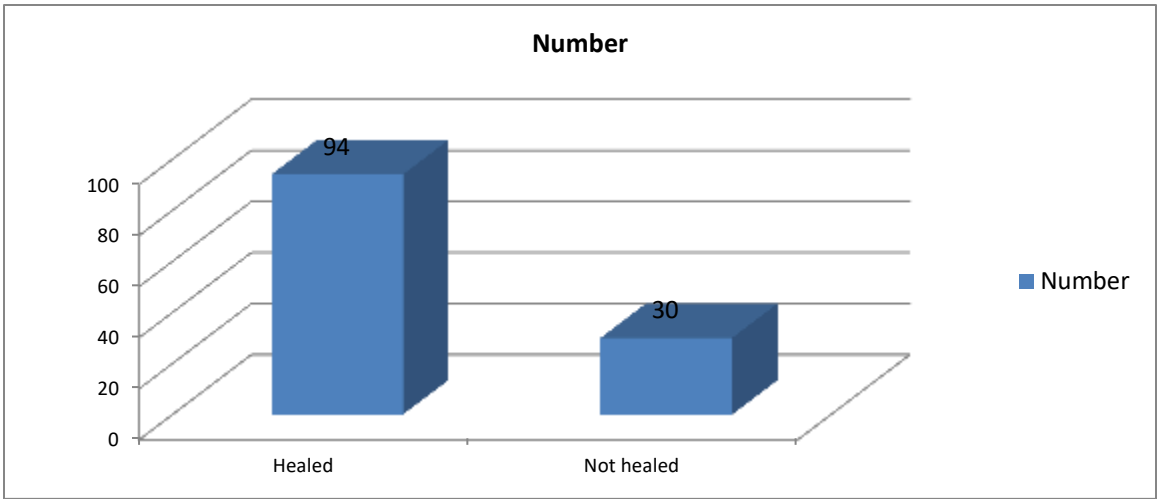


Table III Assessment of outcome of treatment



Graph III shows that 94 cases showed healing and 30 had not. The difference found to be significant (P< 0.05).

DISCUSSION

The main goal of surgical endodontic treatment is to prevent the invasion of bacteria and their by-products from the root canal system into the periradicular tissues of teeth with apical periodontitis. Various techniques have been suggested that provide apical surgery procedures to become easier to perform, ensure safer treatment outcomes for the patients and has more predictable results. For years, the modern approach for root-end filling was accepted to be the traditional approach with round surgical burs and amalgam. The preparation of root-end cavities with burs brings about some problems such as difficult access to the apices of the roots, inability to prepare a cavity parallel to the canal, and the risk of perforation of the root. The present study was conducted to assess outcome of 124 apical surgery.

We found that age group 10-20 years had 22, 20-30 years had 30, 30-40 years had 38, 40-50 years had 21 and >50 years had 13 patients. Öğütlü[7] evaluated the clinical and radiographic outcomes and periotest values of apical surgery treatment. A total of 112 teeth were included. SuperEBA and MTA were used as root-filling materials. The recorded parameters were gender, age, location of the tooth, the presence/absence of a post, coronal restoration of the tooth, previous surgical/nonsurgical treatment of the tooth, the size of periapical lesions, histopathology of periapical lesions, smoking habits. Also the periotest values were recorded. The overall success rate was 88.4%. With

regard to the evaluated variables, only one parameter (tooth type) was found statistically significant. Although the periotest values were decreased after 6 months compared to immediately postoperative measurements, the values were still significantly higher than preoperative measurements.

We found that indication of periapical surgery was missing root canal in 52 cases, material beyond apex in 48, broken instrument in 14 and unknown in 10 cases. Rahbaran et al[8] found that at the 5-year follow-up, 9 of 191 teeth were unavailable, 12 of 191 teeth were extracted, and 170 of 191 teeth were examined (87.6%). A total of 129 of 170 teeth were healed (75.9%) compared with 83.8% at 1 year, and 85.3% were asymptomatic. Two significant outcome predictors were identified: the mesial-distal bone level at #3 mm versus >3 mm from the cementoenamel junction and root-end fillings with Pro Root MTA versus Super EBA.

We observed that 94 cases showed healing and 30 had not. Wesson et al[9] recommended the use of modern apical surgery instead of traditional root-end surgery. Both techniques aim to obtain good periapical healing results; however, they are significantly different from each other considering the methods used. Abramovitz et al[10] found 70% of teeth were indicated for periapical surgery due to technical factors, with 40% involving coronal restorations with posts and 30% involving coronal restorations without posts, while a retrospective study by Beckett[10] found 50% of periapical surgery patients had teeth with post/screw.

Song et al[11] stated that the outcome of the apical surgery is not influenced by preoperative signs and symptoms. Von Arx et al[12] reported that pain and tenderness at the initial examination were shown to be effective only in the 1-year prognosis after apical surgery; however, after 5-year follow-up these findings lost their prognostic value.

CONCLUSION

Authors found that missed root canal, broken instrument were the most common indication of the apical surgery. Most of the cases showed healing after 1 year.

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