

## To assess cases of endodontic apical surgery- A clinical study

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### ARTICLE INFO



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Apical surgery, Missed canal, broken instrument

### ABSTRACT

**Background:** Apical surgery is often a last resort to maintain an endodontically treated tooth with a persistent periapical lesion. The present study was conducted to assess cases of apical surgery.

**Materials & Methods:** The present study was conducted on 126 patients who underwent apical surgery of both genders. Apical surgery was performed following standardized process. Patients were recalled regularly for 1 year to record treatment outcome.

**Results:** Age group 10-20 years had 20, 20-30 years had 32, 30-40 years had 40, 40-50 years had 19 and >50 years had 15 patients. The difference found to be significant ( $P < 0.05$ ). The reason of periapical surgery was missing root canal in 53 cases, material beyond apex in 50, broken instrument in 13 and unknown in 10 cases. The difference found to be significant ( $P < 0.05$ ).

**Conclusion:** Authors found that indication of apical surgery was missed root canal, broken instrument and maximum cases were seen in 30-40 years of age.

### INTRODUCTION

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%.<sup>1</sup> In order to enhance the outcome of a surgical procedure, three different strategies may be considered: (i) improvement of technical equipment/instruments, (ii) changes in surgical technique, and (iii) 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.

Conventional root-canal treatment is considered to be the best method of managing periapical disease, with success rates varying between 48%-98%.<sup>2</sup> If root canal treatment fails, the reasons for this must be accurately assessed before any further intervention. Whenever possible, nonsurgical retreatment is regarded as the treatment of choice. However, where nonsurgical retreatment is not an option, periapical surgery (endodontic surgery) is considered to be a viable alternative. 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

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experience of the clinician.<sup>3</sup> The present study was conducted to assess cases of apical surgery.

### MATERIALS & METHODS

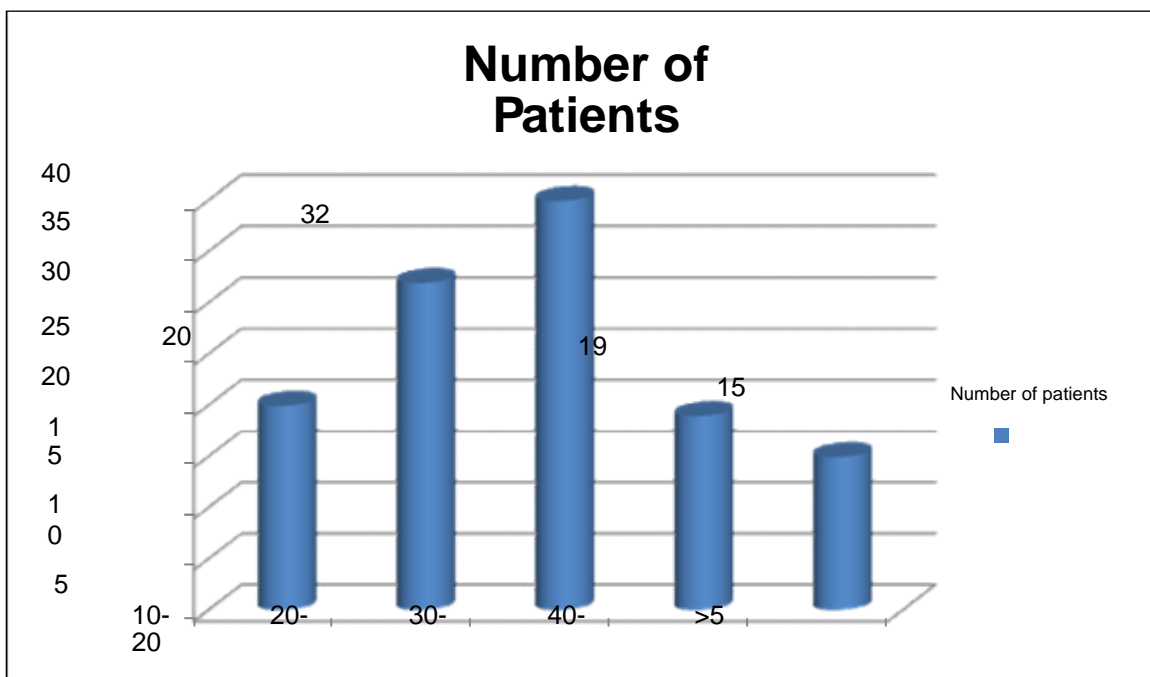
The present study was conducted in the department of Endodontics. It comprised of 126 patients who underwent apical surgery of both genders. The study was approved from institutional ethical committee. All patients were informed regarding the study and written consent was obtained. Data such as name, age, gender etc was recorded. The presence of periapical lesions was confirmed with intraoral periapical 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 less 0.05 was considered statistical significant.

### RESULTS

**Table I:** Age wise distribution of patients

| Age group (Years) | Number of patients | P value |
|-------------------|--------------------|---------|
| 10-20             | 20                 | 0.05    |
| 20-30             | 32                 |         |
| 30-40             | 40                 |         |
| 40-50             | 19                 |         |
| >50               | 15                 |         |

Table I shows that age group 10-20 years had 20, 20-30 years had 32, 30-40 years had 40, 40-50 years had 19 and >50 years had 15 patients. The difference found to be significant ( $P < 0.05$ ).



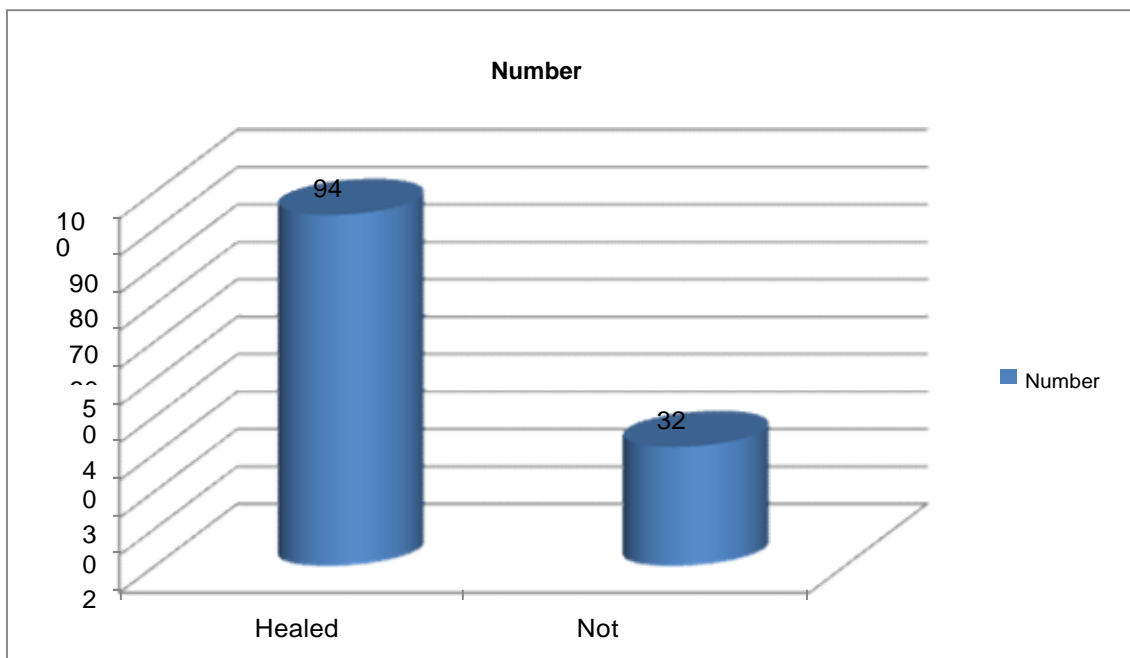
**Graph I:** Age wise distribution of patients

**Table II:** Reason of periapical surgery

| Reason               | Number | P value |
|----------------------|--------|---------|
| Missing root canal   | 53     | 0.02    |
| Material Beyond apex | 50     |         |

|                   |    |  |
|-------------------|----|--|
| Broken instrument | 13 |  |
| Unknown           | 10 |  |

Table II shows that reason of periapical surgery was missing root canal in 53 cases, material beyond apex in 50, broken instrument in 13 and unknown in 10 cases. The difference found to be significant ( $P < 0.05$ ).

**Table III:** Outcome after 1 year

Graph II shows that 94 cases showed healing and 32 had not. The difference found to be significant ( $P < 0.05$ ).

## DISCUSSION

Few previous studies have assessed the relative importance of the different factors involved in the decision to perform periapical surgery. Despite the fact that case and treatment selection represent the first stage of treatment, only three retrospective studies to date have investigated the decision-making process involved in

periapical surgery, which has been examined mainly in terms of contemporary microsurgical techniques and prognostic factors. Significant radiolucency per se does not constitute a contraindication for periapical surgery. Although there is insufficient scientific data to either support or reject a “size-based” attitude towards treatment of periapical disease and a number of studies have reported surgical success rates to be lower in teeth with larger lesions compared to teeth with lesions

smaller than 5 mm.<sup>4</sup> The present study was conducted to assess cases of apical surgery.

We found that age group 10-20 years had 20, 20-30 years had 32, 30-40 years had 40, 40-50 years had 19 and >50 years had 15 patients. Rahbaran et al<sup>5</sup> 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 cemento-enamel junction and root-end fillings with Pro Root MTA versus Super EBA.

In deciding whether or not to perform endodontic surgery, clinicians need to weigh a number of factors, including whether or not a patient's symptoms include discomfort; whether the goal of treatment is esthetic and/or functional improvement; whether or not surgery has been performed previously, and if so, the outcome; whether or not a patient has a medical history that might influence treatment; clinical and radiological findings; experience of the clinician; and the economic status of the patient.<sup>6</sup> Other patient-related factors that play a role in the choice between endodontic retreatment and surgical intervention include the risk of complications due to proximity to nerves and other structures and the presence of prosthetic restorations.<sup>7</sup>

We observed that reason of periapical surgery was missing root canal in 53 cases, material beyond apex in 50, broken instrument in 13 and unknown in 10 cases. Halse et al<sup>8</sup> found that out of 821 patients, 544 (66.3%) underwent endodontic treatment/retreatment, 204 (24.8%) were treated with coronal restorations and 60 (7.3%) were treated with post. Periapical surgery was indicated for biological reasons in 35% of patients and

for technical reasons in 17.9%. The common biological factor was persistent clinical symptoms (19.7%). The most common technical cause was failure of previous endodontic treatment (66.3%). Nearly half of all periapical lesions (45%) were >5 mm in size. Periapical surgery was justified in only 434 (52.9%) subjects.

Abramovitz et al<sup>9</sup> 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<sup>10</sup> found 50% of periapical surgery patients had teeth with post/screw.

## CONCLUSION

Authors found that indication of apical surgery was missed root canal, broken instrument and maximum cases were seen in 30-40 years of age.

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