

# International Journal of Research in Health and Allied Sciences

Journal home page: [www.ijrhas.com](http://www.ijrhas.com)

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

ISSN: 2455-7803

## ORIGINAL RESEARCH

### Evaluation of various causes of endodontic failures- A clinical study

Rohit Chauhan<sup>1</sup>, Rohit Singh<sup>2</sup>, Padam Singh<sup>3</sup>, Saryu Dawar<sup>4</sup>, Sony Chauhan<sup>5</sup>, Archi Kumari<sup>6</sup>

<sup>1</sup>Reader, Department of Periodontics, <sup>2</sup>Reader, Department of Conservative Dentistry and Endodontics, <sup>6</sup>BDS Intern, Institute of Dental Education and Advance Studies, Gwalior, M.P., India,

<sup>3</sup>Reader, Department of Periodontics, ITS Dental College, Greater Noida, U.P., India,

<sup>4,5</sup>Private practitioner, New Delhi, India

#### ABSTRACT:

**Background:** Increased dental patient education and awareness in conjunction with technological advancements have helped to promote the view that dentition should remain throughout people's lives. The present study was conducted to evaluate the causes of endodontic failures. **Materials & Methods:** The present study was conducted on 64 patients of both genders. A total of 120 endodontic treated teeth were evaluated. General information such as name, age, gender etc was noted. Intraoral periapical (IOPA) radiograph was used for assessment of missed canal, inadequate obturation and fractured coronal obturation. **Results:** out of 64 patients, males were 32 and females were 32. Males had 70 and females had 50 teeth. common reason of endodontic failure was missed canal 25% in males and 38% in females, inadequate obturation 35% in males and 10% in females and fractured coronal obturation 40% in males and 52% in females. The difference was significant ( $P < 0.05$ ). **Conclusion:** Author found that endodontic failure is a common phenomenon. The most common reasons are missed canal, inadequate obturation and fractured coronal obturation.

**Key words:** Endodontic, Failure, Missed

Received: 4 February, 2019

Revised: 24 February, 2019

Accepted: 27 February, 2019

**Corresponding author:** Dr. Rohit Chauhan, Reader, Department of Periodontics,, Institute of Dental Education and Advance Studies, Gwalior, M.P., India

**This article may be cited as:** Chauhan R, Singh R, Singh P, Dawar S, Chauhan S, Kumari A. Evaluation of various causes of endodontic failures- A clinical study. Int J Res Health Allied Sci 2019; 5(1):108-110.

#### INTRODUCTION

The non-specific term "success" is ambiguous — it has a different meaning when referring to different dental treatment procedures, such as endodontic therapy, periodontal therapy or implants. Undiscerning use of the term "success" confuses communication within the profession and it may misguide patients contemplating alternative treatments, particularly endodontic therapy versus extraction and tooth replacement. The definition of "success" and the related rates differ considerably for the various procedures in dentistry.<sup>1</sup>

Endodontic therapy or root canal therapy is a treatment sequence for the infected pulp of a tooth which results in the elimination of infection and the protection of the decontaminated tooth from future microbial invasion. It is widely used phenomenon in cases of apical periodontitis,

periapical abscess, granuloma and cysts. The effectiveness of the treatment depends upon the careful following of all steps such as access opening, biomechanical preparation, obturation and restoration.<sup>2</sup>

Increased dental patient education and awareness in conjunction with technological advancements have helped to promote the view that dentition should remain throughout people's lives. As a result, the need for performing conventional non surgical root canal therapy also has increased dramatically. Endodontic treatment has failure rates also.<sup>3</sup> The present study was conducted to evaluate the causes of endodontic failures.

#### MATERIALS & METHODS

The present study was conducted in the department of Endodontics. It comprised of 64 patients of both genders. A

total of 120 endodontic treated teeth were evaluated. All patients were informed regarding the study and written consent was obtained.

General information such as name, age, gender etc was noted. Intraoral periapical (IOPA) radiograph was used for assessment of presence or absence of periapical

radiolucency, quality of obturation, missed canal, dislodged/fractured restorations, iatrogenic problems: perforation, file separation, ledges etc. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Total-64		
Gender	Males	Female
Number of patients	32	32
Number of teeth	70	50

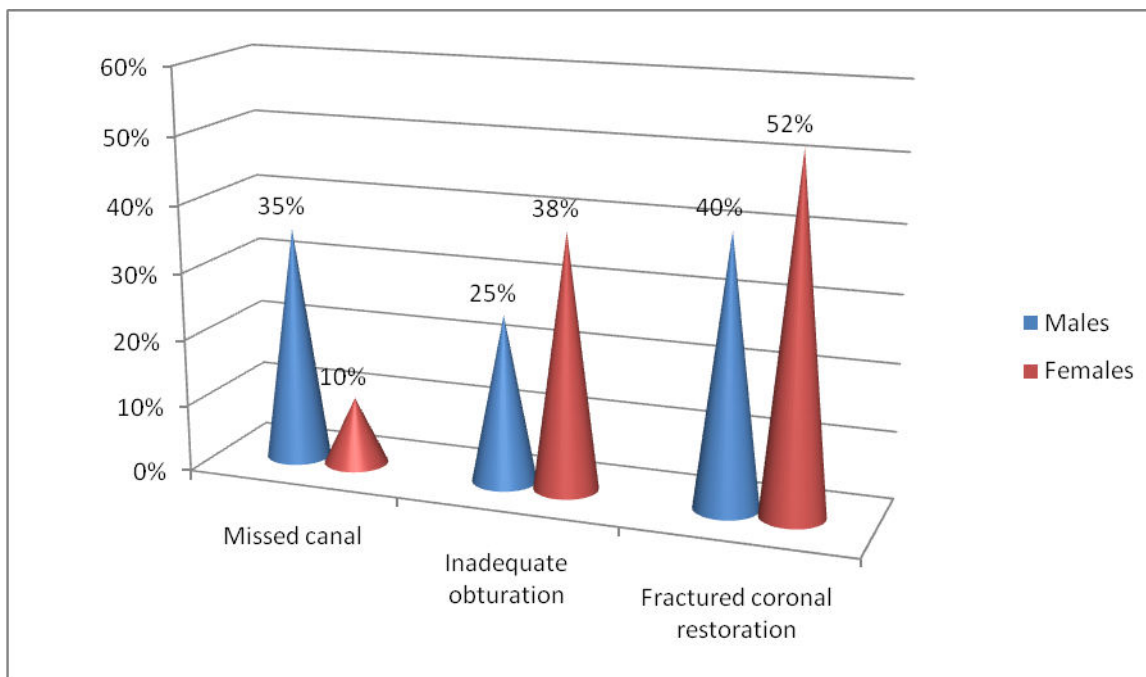
Table I shows that out of 64 patients, males were 32 and females were 32. Males had 70 and females had 50 teeth.

**Table II Reason of endodontic failures**

Reasons	Males	Females	P value
Inadequate obturation	35%	10%	0.021
Missed canals	25%	38%	
Fractured coronal restoration	40%	52%	

Table II shows that common reason of endodontic failure was missed canal 25% in males and 38% in females, inadequate obturation 35% in males and 10% in females and fractured coronal obturation 40% in males and 52% in females. The difference was significant (P<0.05).

**Graph I Reason of endodontic failures**



## DISCUSSION

The potential for healing and functional retention of endodontically treated teeth can be gleaned from numerous follow-up studies of selected populations, exposed to initial treatment. Endodontic failure related to microorganisms can be caused by anatomical difficulties such as apical ramification, isthmuses, and other morphologic irregularities as well as procedural errors such as missed canals, root perforation, ledge formation, and separated instruments.

Treatment is considered failed if treated tooth is symptomatic or has an abnormal appearance. Soft tissue response abnormally to manual examination. Radiographic changes also reveal the failure when a lesion remains the same radiographically or become diminished in size only, after the treatment, it indicate incomplete repair. When periapical lesion appears subsequent to endodontic treatment or if a pre-existing lesion increases in size.

Endodontic failure still occurs for a variety of reasons, and presence of clinical signs and symptoms along with radiographic evidence of periapical bone destruction indicates the need for reintervention. The first and most important step is to determine the cause of endodontic failure. Normally, the etiologic factors of endodontic failure can be placed into four groups: (1) persistent or reintroduced intraradicular microorganism, (2) extraradicular infection, (3) foreign body reaction, and (4) true cysts.<sup>4</sup>

In present study, out of 64 patients, males were 32 and females were 32. Males had 70 and females had 50 teeth. This is in agreement with Ebek T et al.<sup>5</sup> common reason of endodontic failure was missed canal 25% in males and 38% in females, inadequate obturation 35% in males and 10% in females and fractured coronal obturation 40% in males and 52% in females. The difference was significant ( $P < 0.05$ ). This is similar to Ishley et al.<sup>6</sup>

Instruments may break during root canal treatment. The file segment may be left behind if an acceptable level of cleaning and shaping has already been completed and attempting to remove the segment would risk damage to the tooth. While potentially disconcerting to the patient, having metal inside of a tooth is relatively common, such as with metal posts, amalgam fillings, gold crowns, and porcelain fused to metal crowns. The occurrence of file separation is proportional to the narrowness, curvature, length, calcification and number of roots on the tooth being treated. Complications resulting from incompletely cleaned canals, due to blockage from the separated file, can be addressed with surgical root canal treatment.<sup>7</sup>

Another common complication of root canal therapy is when the entire length of the root canal is not completely cleaned out and obturated with root canal filling material (usually gutta percha). The X-ray in the right margin shows two adjacent teeth that had received bad root canal therapy. The root canal filling material does not extend to the end of

the tooth roots. The dark circles at the bottom of the tooth roots indicated infection in the surrounding bone.<sup>8</sup>

## CONCLUSION

Author found that endodontic failure is a common phenomenon. The most common reasons are missed canal, inadequate obturation and fractured coronal obturation.

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