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Research Article

IATROGENIC ERRORS AND ITS MANAGEMENT: A LITERATURE REVIEW

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A R T I C L E I N F O

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Endodontics is currently amid

A B S T R A C T

Endodontics is currently amid its own "Industrial Revolution". The technological advances made routinely since the early part of the decade have far exceeded the progress made since the discipline was first recognized as a speciality. Nickle titanium files, rotary instrumentation, "Endosonics" radiovisiography, the endoscope, and the clinical microscope are just a few of the advancements that have revolutionised endodontics.. This progress has increased both productivity and quality of care.[1]

INTRODUCTION

During root canal therapy, as with other difficult dental professions, an operator may meet unwelcome or unforeseen conditions that can alter the prognosis. It is critical to understand the elements that contribute to procedural accidents in order to prevent them. In addition, methods of recognition and treatment, as well as the knowledge of effects of such accidents on prognosis is essential to circumvent these mishaps.[3]

The patient should be told about any accidents that occur during root canal treatment.

1. The incident and nature of mishaps
2. Procedures necessary for correction
3. Alternative treatment option
4. The effect of this incident on prognosis.[2]

Classification

1) According to Ingle and Bakland (5th Edition)

a. Access related
- Treatingthe wrong tooth
- Missed canals
- Damaged to existing restoration
- Access cavity perforations
- Crown fractures

b. Instrumentation related
- Ledge formation
- Cervical canal perforations
- Midroot perforations
- Apical perforations
- Separated instruments and foreign objects
- Canal blockage

c. Obturation related
- Over- or under-extended root canal fillings
- Nerve paresthesia
- Vertical root fractures

d. Miscellaneous
- Post space perforation
- Irrigant related
- Tissue emphysema
- Instrument aspiration and ingestion

2) According to Walton & Torabinajad (3rd Edition)

a. Perforations during access preparation

b. Accidents during cleaning and shaping
- Ledge formation
- Creating an artificial canal
- Root perforations
- Separated instruments
- Other Accidents

c. Accidents during obturation
- Underfilling
- Overfilling
- Vertical root fracture

d. Accidents during post space preparation

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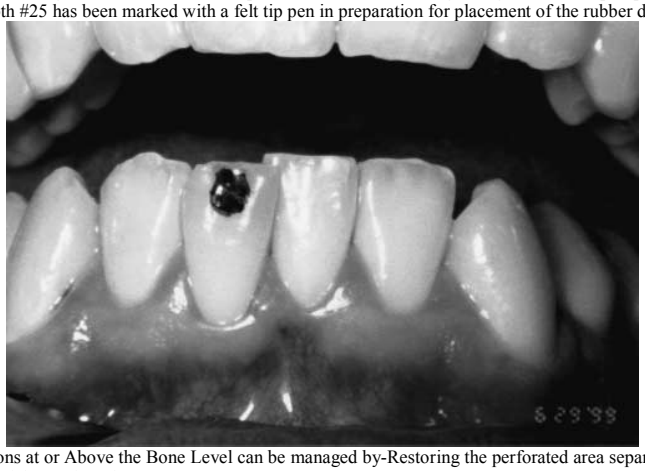
Prevention

Attention to detail and gathering as much information as possible before establishing a diagnosis can help to prevent diagnostic errors.

Treating the Wrong Tooth
treating the wrong tooth falls within the category of inattention on the part of the dentist.

Tooth #25 has been marked with a felt tip pen in preparation for placement of the rubber dam.



Access cavity perforation

Instrumentation related mishaps

Perforations

Cervical canal perforation

1. Coronal perforations at or Above the Bone Level can be managed by-Restoring the perforated area separately, or by making such restoration a part of the total tooth.

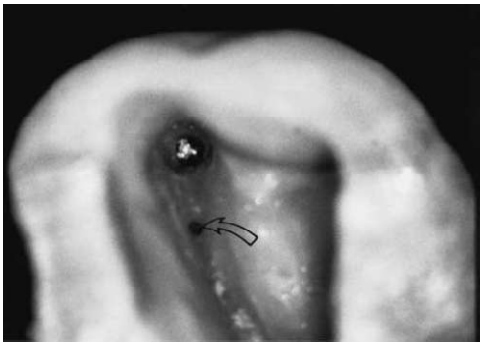
Several materials have been recommended for perforation repair: Cavit, amalgam, calcium hydroxide paste, Super EBA, glass ionomer cement, Instrumentation-related mishaps can often be associated with excessive and inappropriate dentin removal during the cleaning and shaping phase of endodontics. Most of the procedural mishaps in this section can in some way be related to over instrumentation. Excessive canal preparation to accommodate large pluggers or spreaders can lead to weakening of the tooth and even fracture of the root tip.[10]

Amalgam has been shown to provide a superior seal when compared with a number of other materials such as gutta-percha and Cavit.[11]

Correction of the perforation may include both internal and external repair. A small area of perforation may be sealed from inside the tooth. If the perforation is large, it may be necessary to seal first from the inside and then surgically expose the external aspect of the tooth and repair the damaged tooth structure; a material that has been recommended for this is Geristore (Den-Mat Corp., Santa Maria, Ca.). [12,13]

Missed canal

Locating all of the canals in a multi-canal tooth is the best prevention of treatment failure. **Adequate coronal access** allows the opportunity to find all canal orifices



Damage to Existing Restoration
An existing porcelain crown has its own set of problems for the dentist. Even when utilising the most meticulous procedure using water-cooled diamond stones to prepare an access cavity for a porcelain or porcelain-bonded crown, the porcelain can chip.

Access cavity perforations
An access cavity's primary goal is to offer an unobstructed or straight-line approach to the apical foramen.
Attempts to find canals may result in errors such as excessive dental structure removal or perforation.

Crown fracture
Crown fractures in teeth having root canal therapy are a common problem that can often be avoided. When the patient chews on the tooth, it may have a pre-existing infraction that becomes a genuine fracture when the tooth is weakened further by an access preparation.

Placing a rubber dam clamp on the porcelain crown's edge is a recipe for disaster. Justman and Krell proposed a procedure for removing temporarily cemented crowns that can help reduce porcelain crazing, margin damage, and patient aspiration of the crown.

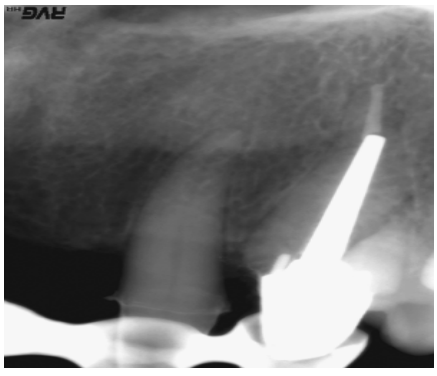
To avoid pulp chamber perforations, a thorough understanding of tooth morphology is required, encompassing both surface and interior anatomy and their interactions.

Instrument releated mishaps
Ledge

The solution is simple: minimise the occlusion before determining the working length. It will also help to reduce discomfort after endodontic therapy, in addition to preventing this mishap. As described above, bands and temporary crowns are also valuable.[1]

The best solution for ledge formation is prevention. Before the first instrument is inserted in the canal, the diagnostic radiographs should be accurately interpreted.

Perforation
The best solution for ledge formation is prevention.



Repair of perforations using a surgical approach. An apical perforation cannot be diagnosed on the radiograph of tooth 23.

CONCLUSION

Endodontic mishaps may present a Cul de Sac situation particularly if deemed untreatable thereby sabotaging long term prognosis. Sane judgement, compelled with a precise predominant of clinical expertise thus is necessary in preventing these mishaps.

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