

Rate of complications associated with lower third molar coronectomy

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BACKGROUND

- Extraction of mandibular third molars is associated with risk of injury to the inferior dental nerve.
- Coronectomy is a technique which was developed to reduce the risk to the inferior dental nerve during treatment of high risk mandibular third molars (Fig. 1)¹.
- The concept of coronectomy is based upon the fact that broken fragments of vital teeth can be left in situ and mostly heal without complications.
- Coronectomy is often seen as a controversial technique.
- The coronectomy procedure involved removing the crown of the tooth only, leaving the roots immobilised in situ (Fig. 2)².

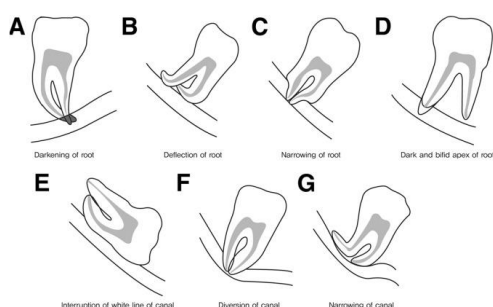


Figure 1. The radiographic relationship of high risk mandibular third molars to the inferior dental nerve.

OBJECTIVES

- To quantify the rate of complications and failure of lower third molar coronectomy under general anaesthesia to inform clinicians and improve patients' outcomes.

MATERIALS & METHODS

- Data was collected utilising the trust coding system to identify all patients who underwent coronectomy of a lower third molar under general anaesthesia over a five-year period between October 2018 – October 2023.
- Failure of coronectomy was defined as perioperative root mobilisation or postoperative complications resulting in extraction of the remaining roots within twelve months of the initial coronectomy.

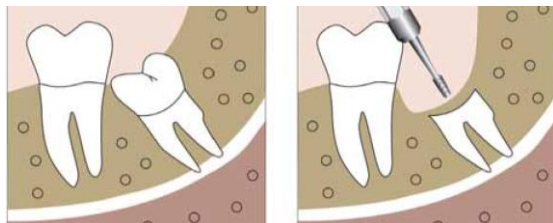


Figure 2. Coronectomy technique: resection of the crown 2-3mm below the alveolar crest, ensuring all enamel is removed.

RESULTS

- Sixty-two coronectomy procedures were performed on lower third molars under general anaesthesia over the five-year period. This represented 7.7% of all third molars managed surgically in the five-year period.
- Complications were as follows: persistent pain 6.5%; infection 3.2%; lingual nerve damage 1.6%; and inferior alveolar nerve damage 4.8%.
- Failure rate of coronectomy was 8.1%; 4.8% were a result of residual enamel, 1.6% due to infection, and 1.6% for roots mobilising perioperatively requiring extraction.
- 54.5% of patients had a postoperative radiograph at follow up.
- Of those followed up, 66.7% demonstrated root migration within twelve months following coronectomy.

Incidence of complications following coronectomies

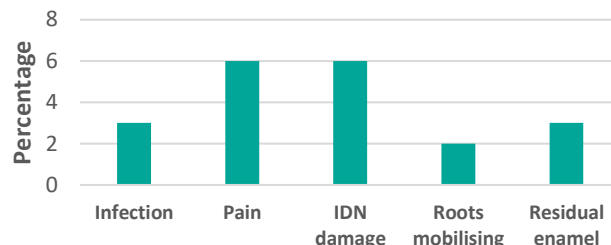


Table 1. Table demonstrating the percentage of postoperative complications following coronectomies

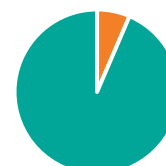
Percentage of patients followed up post-coronectomy



Yes No

Figure 4. Pie chart showing the percentage of patients followed up post-coronectomy.

Second procedure required



Yes No

Figure 5. Pie chart showing the percentage of patients requiring a second procedure.

DISCUSSION

- This data was collected from a maxillofacial unit where training of clinicians is undertaken, so clinician experience is an important factor that was not considered.
- Nerve damage complication rates were higher than expected at 4.8% for inferior alveolar nerve damage compared with incidence of injury to the inferior dental nerve during mandibular third molar extractions are up to 8.1% for temporary lack of sensation and 3.6% for prolonged symptoms.³
- Clinical and radiographic follow up protocols are not standardised, which may be a result of the fact this procedure is considered controversial and performed rarely or not at all depending on the clinician.
- Root migration is common within the first twelve months, so it is crucial to discuss with patients at initial consultation the potential need for a second procedure for extraction of migrated roots in the future.

CONCLUSION

This project found that coronectomy is a safe and effective treatment for lower third molars presenting higher risk of inferior alveolar nerve damage. Complication rates are similar to those seen in surgical removal of lower third molars, so the indications for the procedure must be carefully considered. There is a need to establish guidance for clinical and radiographic follow up of these procedures.

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