

Endoscope-assisted Surgical Removal of an Ectopic Wisdom Tooth Below Lower Border of the Mandible - A Case Report

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Abstract

The Rationale: Presentation of a case where using an endoscope aided the removal of a significantly displaced mandibular third molar. **Patient Concerns:** Pain and infection associated with the ectopic wisdom tooth, increased risks with conventional surgical removal. **Diagnosis:** Chronic infection associated with the displaced, ectopic left lower third molar (LL8). Difficult surgical access and increased operative risk, with the tooth positioned lingually, below the lower border of the mandible. **Treatment:** Surgical removal was undertaken with the aid of a 30°-angled endoscope. This provided superior visualisation and allowed for a minimally invasive technique. **Outcomes:** The surgeon reported that the endoscope allowed for increased efficiency and ease of surgery. The patient experienced minimal postoperative pain and no long-term complications. **Take-away Lessons:** Endoscopes can aid surgeons in cases with difficult access and increased risks. In this case, the endoscope allowed for a minimally invasive technique, minimising the risks of surgery, and reducing postoperative morbidity.

Keywords: Endoscopic surgical procedures, impacted tooth, minimally invasive surgical procedures, oral surgery, tooth extraction

INTRODUCTION

Removal of wisdom teeth is one of the most common surgical procedures performed and is associated with various risks.^[1] It is the responsibility of the surgeon to investigate appropriately and plan the procedure to minimise the risk of any adverse events occurring.^[2] Various modifications to the surgical technique have been suggested, although none have been proven to reduce risk in a sample population.^[3] However, on a case-specific basis, alternate surgical techniques may need to be considered depending on the individual risk.

Endoscopes can be used to aid minimally invasive surgery, allowing direct visualisation through smaller incisions distant to the surgical site.^[4]

We present a case of endoscopically assisted removal of an ectopic lower third molar.

CASE REPORT

A 50-year-old male presented with recent pain and infection associated with the left angle of the mandible. He had a history of trauma to the region three years before his presentation.

His medical history was unremarkable; however, he did have a history of poor wound healing, with hypertrophic keloid scarring.

He was initially investigated with an orthopantomogram [Figure 1] which showed an ectopic left mandibular third molar. This tooth was positioned below the inferior dental (ID) canal at the lower border and anterior to the left angle of the mandible. There was an apparent radiolucency which extended superiorly above the crown of the tooth to the body of the mandible, with a partly corticated margin which extended around the tooth. The ID canal was visualised above the tooth but overlapping the associated radiolucency,

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there was no significant deviation, narrowing, or loss of the white lines.

A computerised tomography scan was taken to further assess the position of the tooth and the associated pathology, and to aid surgical planning [Figure 2]. This showed that the left lower third molar (LL8) was positioned at the lower border of the mandible, on the lingual aspect [Figure 3]. The buccal cortex of the mandible appeared intact, however, the lingual cortex appeared thin and incomplete around the third molar.

Due to the position of the tooth, various surgical options were considered for its removal. It was felt that a traditional intraoral approach would give limited access and would require

significant bone removal, increasing the risk of mandible fracture. An extraoral approach was considered, but the patient had a history of keloid scarring and preferred to avoid an extraoral incision. An extraoral incision also risks damage to the marginal mandibular or cervical branches of the facial nerve.^[5] Removing the wisdom tooth by performing a unilateral sagittal split osteotomy was considered. This technique is routinely



Figure 1: Orthopantomogram radiograph showing the ectopic position of the LL8, close to the left angle of the mandible, at the level of the lower border

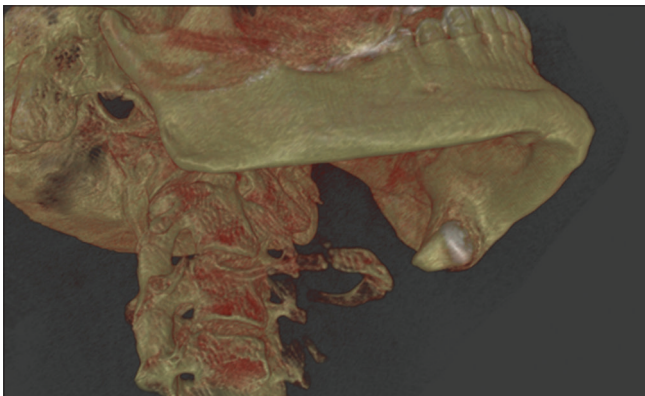


Figure 3: A dimensional model generated from the computerised tomography scan showing the relationship of the wisdom tooth with the lingual plate

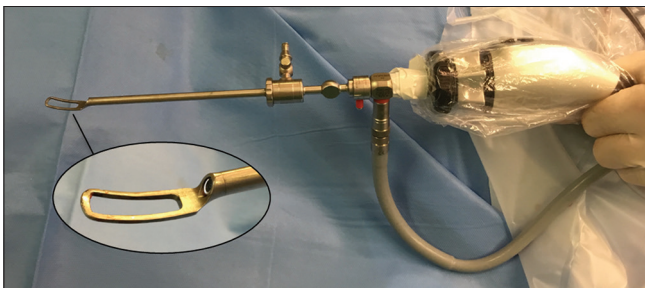


Figure 5: Endoscope used during the procedure, the attached guard allowed for retraction of the soft tissues

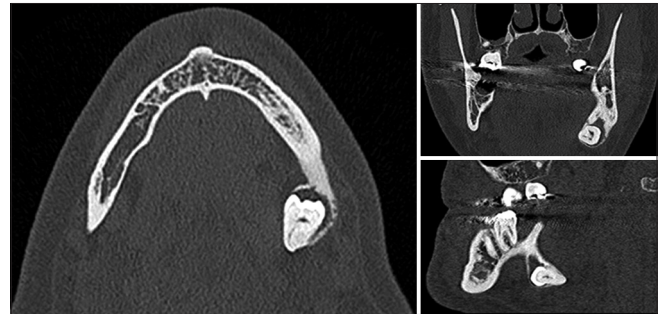


Figure 2: Computerised tomography scan showing the lingual position of left lower third molar (LL8)



Figure 4: Intraoperative photograph showing the lingual approach

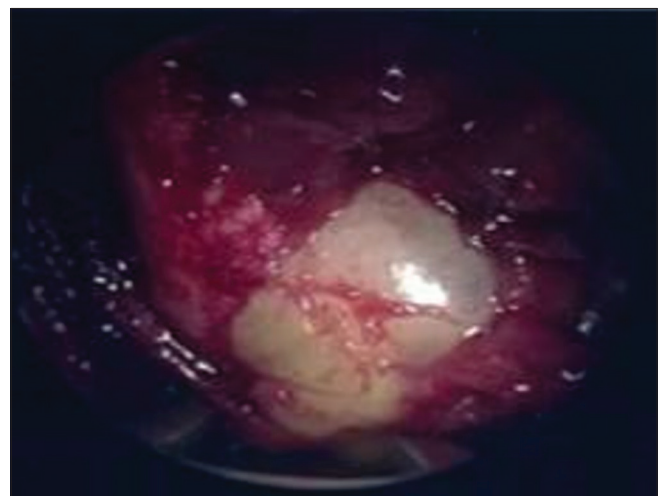


Figure 6: Endoscope image showing the ectopic left lower third molar (LL8)

used in orthognathic surgery and has also been used to access deeply impacted wisdom teeth.^[6] This provides increased visualisation of the nerve and minimises the amount of bone removal required, decreasing the risk of mandibular fracture. However, performing a sagittal split osteotomy has its own surgical risks, and it was felt this technique was unsuitable for this case due to the lingual position of the tooth.^[6] Finally, an intraoral lingual approach was considered, although typically this would mean poor visual access, the use of an endoscope would mitigate this. Following discussion, this option was favoured by the surgeon and patient.

The extraction was performed under general anaesthesia with nasal intubation. On induction, the patient was given 1.2g Co-amoxiclav and 6.6mg dexamethasone. To gain access, a gingival margin incision was made lingually from the left lower second premolar (LL5) to the distal of the left lower second molar (LL7) and then extended over the external oblique ridge. A subperiosteal flap was raised on the lingual aspect, down to the lower border of the mandible [Figure 4]. An endoscope with a 30° condylar attachment as shown in Figure 5 (Karl Storz, Germany) was used to allow direct visualisation down to the lower border. The endoscope enabled the surgeon to see the surgical site clearly [Figure 6], allowing for minimal bone removal over the tooth, performed using a bone chisel. The guard on the endoscope provided retraction of the soft tissues [Figure 5]. Once an adequate portion of the tooth was uncovered, a curved Warwick–James instrument was used to elevate the tooth [Figure 7]. It was ensured that the surrounding bone margins were smooth, and the site was closed with resorbable sutures.

Following the surgery, the patient had minimal postoperative discomfort and swelling, and there was normal sensation in both the lingual and inferior alveolar nerves.

DISCUSSION

The risks associated with surgical removal of wisdom teeth range from the more minor, transient risks of swelling, pain, trismus, and infection, to the more significant risks including injury to the ID or lingual nerves and mandibular fracture.^[7] The likelihood of any of these risks occurring varies depending on the complexity of the tooth being removed, and each case needs to be individually assessed.

For this particular case, as the wisdom tooth was positioned inferior and lingual to the lower border of the mandible, a more extensive flap and more significant bone removal would be required compared to an average wisdom tooth removal. This comes with increased risk of damage to the ID and lingual nerves, as well as increasing the risks of postoperative pain, swelling, and chance of infection. If accessed from a traditional approach, the increased bone removal required would put the patient at significant risk of mandible fracture. Therefore, alternative surgical options were considered.^[8]



Figure 7: The extracted left lower third molar (LL8)

Approaching the tooth from a lingual aspect was favoured, however, without using the endoscope, a significantly larger flap would have been required to adequately visualise the surgical site and perform the required bone removal, and elevation of the tooth safely.

Endoscopes are already in use for temporomandibular joint arthroscopy, sialoendoscopy and have potential uses for endoscopic maxillofacial surgery.^[4] There are few reports in the literature of endoscopes being used to aid in the extraction of ectopic or displaced teeth. Huang *et al.* reported the removal of the remaining roots of seven wisdom teeth within the lingual space.^[9] The authors did not report any complications with the procedure and concluded that the procedure is safe and time efficient, they highlight the importance of the light source in visualising the roots when access is difficult.^[9]

A review of the literature of ectopic third molars in the condyle suggested that the use of an endoscope could help overcome the poor visualisation associated with an intraoral approach. The benefits of magnifying the surgical field could spare the patient the morbidity associated with an extraoral approach.^[10]

CONCLUSION

In this case, the use of an endoscope with a 30° angle allowed for visualisation of an ectopic third molar, which was successfully accessed through an intraoral lingual flap and removed with minimal postoperative morbidity.

The endoscope allowed for a minimally invasive technique; without the endoscope either an extraoral approach or significantly increased access in the form of raising a more extensive flap and increased bone removal would have been required to access the surgical site.

The patient had a straightforward recovery with no postoperative complications and no nerve injury.

The use of an endoscope can improve visualisation in cases where access is difficult, allowing for more minimally invasive surgery, reducing risks, and postoperative recovery time.

Further studies are needed to assess the advantages of using endoscopes in oral and maxillofacial surgery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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