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# A supernumerary ectopic mandibular molar

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## Abstract

Supernumerary teeth are those considered in excess of the normal for the permanent dentition. They are relatively common, being reported in up to 2% of the general population (Refoua and Arshad, 2006). Likewise, impacted third molars are a common presentation with the incidence being reported in up to 20-30% of the population (Andreasen et al., 1997). Ectopic mandibular molars are however, much less common with approximately 15 cases described in the literature. There are no cases of supernumerary and ectopic mandibular molars reported. Consequently, the aetiology and optimal management remains unclear. The management of a 59-year-old female with a supernumerary, ectopic mandibular molar is discussed.

## Introduction

Ectopic eruption of teeth, especially supernumerary teeth, is a rare phenomenon (Saleem et al., 2010). Eruption has been described in both dental and non-dental sites, particularly the mandibular condyle, coronoid process, palate, nasal cavity and maxillary antrum (Srinivasa et al., 2007). Clinical presentation can be varied and includes chronic and recurrent sinusitis, sepsis, nasolacrimal duct obstruction, facial pain and numbness and osteomeatal complex disease (Saleem et al., 2010). The aetiology of ectopic teeth is thought to occur secondary to disruption in the interaction between oral epithelium and underlying mesenchymal tissue (Saleem et al., 2010; Srinivasa et al., 2007). Traditionally, the management of ectopic teeth has involved surgical extraction, especially when associated with cystic structures (Medici et al., 2001). Alternative and more novel treatments will be described later in the Discussion.

## Case Report

A fit and well 59-year-old female was referred to an oral and maxillofacial surgeon for the surgical removal of the retained roots of tooth 17 following attempted extraction by a general dentist. She was noted to have a supernumerary, ectopic, right mandibular molar. Initially asymptomatic, she elected to manage this conservatively due to the complexity of its surgical removal. However, over subsequent years she developed worsening right-sided jaw pain and intermittent temporomandibular joint (TMJ) symptoms, particularly jaw locking. She was consequently referred to the outpatient clinic for surgical management.

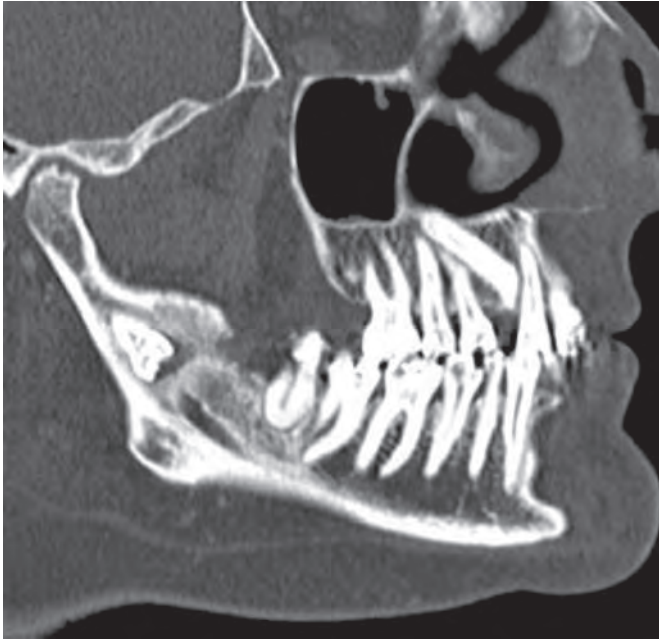
On clinical examination, she appeared to have a small intraoral communicating sinus. Examination was

otherwise unremarkable, with normal mouth opening and no signs of infection. Occlusion was stable and she had no neurological deficits, particularly in the right mandibular region.

A dental panoramic radiograph (DPR) showed an impacted tooth 49 in the posterior right ramus, with the crown facing the lingula and mandibular foramen with an associated small pericoronary cystic lesion (Figure 1). A computed tomography (CT) scan was performed showing the impacted right mandibular molar with a 7 mm radiolucency associated with the crown, consistent with the cystic lesion (Figure 2). A small sinus tract arising from the lingual aspect of the right mandible communicating with the cystic region was also demonstrated. The ectopic molar was noted to come in contact with the mandibular foramen and potentially with the inferior alveolar nerve. There was no evidence to suggest infection in the region or destructive bony changes.



**Figure 1.** Dental panoramic radiograph showing ectopic molar within the right mandibular ramus



**Figure 2.** Pre-operative CT scan showing ectopic molar with associated cystic lesion



**Figure 3.** Pre-operative marking and approach to ectopic molar

The patient was consented for surgical extraction of 49 via a transcutaneous and transparitid approach with or without bone graft and surgical plating under general anaesthetic. Risks of the procedure including, but not limited to, jaw fracture, facial and inferior alveolar nerve paraesthesia and parotid fistula were discussed with the patient.

Under a general anaesthetic, the mandible was outlined and a retro-mandibular skin incision marked (Figure 3). A transparitid approach to the right ramus/condyle unit was performed following dissection through the pterygomasseteric sling to expose the right ramus. Following removal of the overlying buccal bone, the tooth was identified (Figure 4) and the crown decoronated and root elevated completing surgical removal (Figure 5). Curettage of the follicle and epithelial tract remnants was then performed and a Penrose drain inserted. The drain was removed one day post-operatively and the patient discharged without complication.

The patient was reviewed one week later. She reported no mental nerve paraesthesia or weakness in the distribution of the marginal mandibular nerve, no facial numbness or weakness, and minimal pain. On examination, she had mild residual swelling around the surgical incision and no signs of infection, trismus or TMJ dysfunction. She was discharged from the clinic. Histopathology confirmed a dentigerous cyst.



**Figure 4.** Removal of buccal cortex to expose the tooth



**Figure 5.** Tooth decoronated and removed

## Discussion

### Prevalence

There have been only a handful of cases in literature describing third molar impactions in the ramus, condylar and coronoid region, with no cases of supernumerary, ectopic, mandibular molars reported. Most of these cases have been associated with dentigerous cysts (Burton and Scheffer, 1980). Wang et al. (2008) described 13 cases of ectopic mandibular molars, which included one found in a dry skull and one in a cadaveric mandible. Of these cases, eight demonstrated an associated radiolucent area on imaging and five confirmed the diagnosis of dentigerous cyst on histopathology. There was variable position of the teeth with four having an upward position and the remaining having a downward inclined crown position (Wang et al., 2008). Of the 13, 10 were female and two were males, with the remaining case from the dry skull. Consequently, ectopic mandibular molars are thought to be more prevalent in female populations, however this is deduced from a limited number of studies.

### Aetiology

The aetiology of ectopic, supernumerary molars remains unclear however it may be comparable to that of ectopic third mandibular molars. Across the literature, it is widely hypothesised that ectopic molars arise from either malposition of tooth germs or an abnormal eruption pattern (Andreasen et al., 1997; Toranzo Fernandez and Terrones Meraz, 1992). In the case of ectopic third molars, a lack of space between the second molar and ramus has also been hypothesised (Capelli, 1991). Cystic lesions have also been considered an alternative trigger for malpositioned ectopic molars (Wang et al., 2008). As the cyst develops, pressure placed on the crown may force the tooth into an abnormal path of eruption (Wang et al., 2008). In our case and many others reported it is noted that the associated cysts are relatively small. In this instance, it is assumed the cyst has previously occupied a larger portion of the mandible prior to perforating the cortex causing drainage, followed by decompression (Wang et al., 2008). Compared to the aetiology of ectopic teeth, the cause of supernumerary teeth is better understood and thought to result from a horizontal proliferation or hyperactivity of dental lamina (Refoua and Arshad, 2006).

### Signs and Symptoms

The most common signs of ectopic mandibular molars are ipsilateral pain and swelling, trismus, pain on mastication and TMJ dysfunction (Wang et al., 2008). It is proposed that ectopic molars can cause irritation of the attachment fibres of temporalis during mastication (Anagnostopoulou, 1991). Other and more systemic infective symptoms, including fever and purulent discharge from an intra- or extraoral sinus tract have also been reported, although much less commonly (Bux and Lisco, 1994). Alternatively, the literature includes a case of an ectopic molar in the subcondylar region that was completely asymptomatic (Chongruk, 1991). Consequently, it is possible that the true incidence

is higher in the general population due to unreported asymptomatic cases.

### Investigations

Historically, investigating ectopic molars was performed using simple diagnostic imaging, namely two-dimensional plain film imaging. Today, three-dimensional imaging has become a key diagnostic tool to aid with surgical planning. This provides superior anatomical visualisation, potential links to associated pathology and proximity to neurovascular structures (Okuyama et al., 2016). It can also provide direction in planning the surgical approach (Wang et al., 2008). Radiographically, dentigerous cysts appear as symmetrical, usually well-circumscribed and demarcated, radiolucent lesions arising from the cemento-enamel junction of an unerupted or impacted tooth (McCrea, 2009).

### Management

Management of ectopic mandibular molars is divided. The severity of the associated symptoms and nature of concomitant lesions will ultimately determine management. Traditionally, surgical removal of the ectopic mandibular molar with the associated cystic lesion was thought to be mainstay treatment, performed to prevent potential further complications including, condylar process deformity, bone resorption and diffuse osteolysis (Medici et al., 2001; Szerlip, 1978).

The options for surgical management include extraoral or intraoral approaches. An extraoral approach has the benefit of a superior exposure to the surgical site, along with an easier extraction (Wang et al., 2008). Commonly, submandibular, retromandibular and preauricular incisions are used as extraoral approaches (Bux and Lisco, 1994). These however can result in complications including visible scar formation, cranial nerve injury and disruption of joint components (Medici et al., 2001). Specifically, there is risk to the temporal and zygomatic branches of the facial nerve with a preauricular access and similarly to the marginal mandibular nerve with a submandibular approach (Medici et al., 2001). In an attempt to reduce such complications, endoscopic approaches can be employed. Endoscopy reduces the risk of facial nerve injury or scar formation whilst providing clear and magnified visualisation of the operating field with good illumination (Suarez-Cunheiro et al., 2003). Although found to have favourable outcomes, this approach is dependent on surgical experience with endoscopy and availability of resources.

An intraoral approach can avoid these potential complications but results in more difficult access. Attempts to improve intraoral exposure include surgical excision of the coronoid process and mandibular sagittal split osteotomies (Medici et al., 2001; Wassouf et al., 2003). Osteotomies have been found to be useful in avoiding extensive alveolar bone removal (Jones et al., 2004). In the 11 cases described by Wang et al. (2008), eight underwent surgical extraction with the majority of these performed via an intraoral approach.

Depending on the location of the ectopic mandibular molar, risk of post-operative fracture should be considered. For molars extracted from the condylar neck where the



remaining bone can be thin and prone to fracture, packing of the defect with cancellous bone or cortical bone chips can be performed (Wassouf et al., 2003).

The association of an odontogenic cyst was originally thought as a strong indication for surgical removal, however Adams and Walton (1996) described a case where a radiolucent cyst associated with an ectopic third molar was monitored over a six-year period. As a result, it is now thought that asymptomatic, ectopic molars can be followed up annually to monitor the size of the associated cyst (Chongruk, 1991; Wassouf et al., 2003). If however extraction is performed, histopathological examination of the cystic lining is necessary to exclude other potential, although unlikely, lesions including ameloblastoma or squamous cell carcinoma (Maxvimiw and Wood, 1991; Houston, 2007). Consideration of

underlying systemic diseases and risk of potential complications from the ectopic molar must also play a role in management (Burton and Scheffer, 1980).

## Conclusion

Supernumerary ectopic mandibular molars are extremely rare. Presentation can vary, with many cases likely to be asymptomatic and consequently, management approaches are varied. Current thoughts tend towards conservative management and annual monitoring for asymptomatic cases. Surgical excision is generally recommended for symptomatic presentations, if there is change in clinical or radiographic signs or if there is developing risk to associated structures. Nevertheless, the risks of surgery should be carefully considered on an individual basis.

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