Mandibular third molars: 'naughty' or NICE?

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Key points

- Encourages debate regarding the management of carious mandibular second molars and associated impacted third molars.
- Discusses the issues relating to radiographic imaging of possibly carious mandibular second molars with an associated impacted third molar, as well as the possible uses for CBCT.
- Considers the multi-factorial input into management decisions of caries in mandibular second molars with an associated impacted third molar.

Abstract

The 20-year anniversary of the implementation of NICE TA1 – Guidance on the Extraction of Wisdom Teeth – arrived in March 2020. Since its implementation, impaction of erupted or partially erupted mandibular third molars and the associated increased caries risk in second molars has been a topic widely debated in both general practice and hospital settings. This has led to significant variation in the management observed. Radiographic examination of carious second molars with an associated impacted third molar is not routine and is commonly a coincidental finding following routine bitewing examination in an otherwise symptom-free, healthy mouth. Caries in mandibular second molars is a clear oversight in NICE guidance, with management decisions influenced by personal philosophy, clinical judgement and experience. NICE guidance is exactly that; guidance, an aid to help our and the patient's decision-making. Consideration should be given to caries risk assessment and the judicious use of radiographs as well as clinical expertise, taking account of patient values on a case-by-case basis when deciding if teeth should be kept or removed.

March 2020 signified the 20-year anniversary of the implementation of NICE TA1 – *Guidance on the Extraction of Wisdom Teeth*.[1] Since its introduction, impaction of erupted or partially erupted mandibular third molars and the associated caries risk in mandibular second molars has been a topic widely debated in both general practice and hospital settings. Treatment planning can depend on personal philosophy as well as clinical judgement, experience and expertise. As is commonplace throughout dentistry, significant variation in treatment plans has been observed regarding caries risk in second molars associated with impacted third molars.[2]

Figure 1 highlights a common presentation; the unrestored dentition of a young patient with good oral hygiene and a partially erupted, mesioangular impacted third molar, a coincidental finding in a patient with no presenting complaints and asymptomatic mandibular second and third molars. An absence of symptoms should, however, not be equated with an absence of disease. So, what next? Remove the third molar, assess and/or restore the second molar? Watch and monitor? Remove the second molar and monitor movement of the third molar? The debate rests firmly around the NICE guidance.

NICE advises a 'standard routine programme of dental care' for pathology-free, impacted third molars, with only one mention in the entire document to the possibility of caries in adjacent teeth when a third molar is impacted.[1] Whereas dental radiography is a widely accepted adjunct to clinical examination in caries diagnosis, this is not straightforward with regards to examination of second molars with an impacted mandibular third molar.[3] The potential utilisation of supplemental bitewing radiographs when treatment planning should be considered, even though bitewing and periapical radiographs alone are not routinely advantageous for radiographic examination of mandibular third molars.[3,4] Dental panoramic tomography (DPT) facilities are not present in all general dental practices and limitations have recently been highlighted where false-positive caries was detected in a mandibular second molar when caries diagnosis was based solely on information from a DPT; a commonality in secondary care.[4]

Cone beam computed tomography (CBCT) is commonly used to assist in the planning of third molar surgery. New evidence-based recommendations advocate that CBCT imaging of third molars should not be used routinely before their removal and should only be used when a specific clinical question cannot be answered by conventional (panoramic and/or intraoral) imaging alone.[5] In a scenario like Figure 1, however, could a DPT be bypassed in favour of CBCT when possible caries is observed on the second molar? From this, we could assess the presence or absence of a distal radiolucency in the second molar, alongside all the conventional information CBCT provides for treatment planning, without the need for an intermediary DPT. First-line DPT may advocate further imaging anyway, if the third molar appears 'high risk' and in close relation to the inferior alveolar canal. With the

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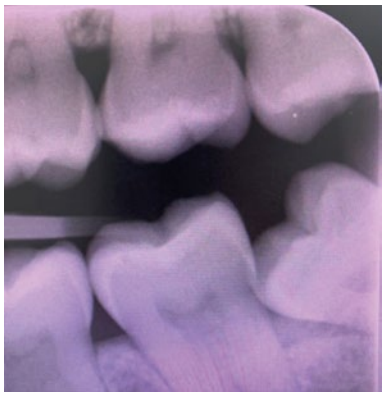

Fig. 1 Bitewing radiograph with possible distal radiolucency in second molar with neighbouring mesioangular third molar

aforementioned limitations on DPT facilities, this would rely solely on the availability of CBCT equipment, probably most relevant to secondary care. CBCT does have limitations, such as clarity being affected by artefacts, noise and poor soft tissue contrast.[6] Given, however, that CBCT effective doses are now comparable with DPT and computer software advances continue to lower the dose with minimum-dose protocols that are task-specific,[7] are we missing a trick in cases like Figure 1 with CBCT? A debate for another time.

Is it then reasonable to consider distal caries in second molars associated with erupted or partially erupted, impacted third molars an indication for third molar removal? If so, when do we intervene? We need to define the 'optimum' time for treatment – either at time of presentation or even before any damage being caused.[5]

While this creates a dilemma regarding the patient with an unrestored dentition and good oral hygiene, what about individuals with moderate to increased caries risk? Should a patient's overall oral health be taken into account when considering extraction of impacted lower third molars? Do we consider poor oral health, diet and caries elsewhere in the mouth as indications for prophylactic removal of impacted third molars, or focus on the delivery of effective preventative advice to lower the patient's caries risk?[8]

The NICE guidance has created a treatment planning headache. It is, however, just that; guidance – an aid to help decision-making and one from which any deviation must be justified. While no dentist would encourage the needless removal of a tooth, not least an impacted third molar, we owe it to patients to enable them to make fully informed decisions based on valid risks and benefits.[8,9]

The number of mandibular second molars damaged or removed due to caries as a consequence of difficulty cleaning mesial to an impacted third molar is increasing.[8] Consideration should be given to caries risk assessment and the judicious use of radiographs and clinical expertise, taking account of patient values on a case-by-case basis.[8] Long-term monitoring and valid consent as to the risks of leaving an erupted/partially erupted, impacted third molar *in situ* must be discussed with the patient.[3,8] Caries in mandibular second molars is a clear oversight of NICE guidance and something that hopefully, with a review currently in development, will be rectified in a future guidance update.[8,9,10]

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