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NICE Guidance on the Extraction of Wisdom Teeth – Time for a Rethink?

Abstract: Mounting evidence has found the retention of asymptomatic, impacted third molars has potentially placed a generation of patients at risk of distal surface caries (DSC) in the second molar. DSC is frequently identified late, and consequently has a poor prognosis. We provide an overview of the ongoing debate, discuss the potential for DSC, and present a typical situation where asymptomatic third molar retention led to the preventable loss of a second molar, and significantly compromised subsequent orthodontic management.

CPD/Clinical Relevance: Appropriate consideration of the risk posed by impacted wisdom teeth, which do not necessarily meet the present NICE indications for removal, could prevent future second molar loss and the need for the prolonged and complex orthodontic treatment required to align a third molar.

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The removal of asymptomatic third molars remains a contentious issue in dentistry.^{1,2} Some evidence-based guidance suggests prophylactic removal may, in some instances, prevent the possible pathology associated with retaining these teeth,^{3,4} but a more conservative approach was recommended in guidelines from the National Institute for Health and Care Excellence (NICE), first published in March 2000.⁵ This guidance emphasized the risks associated with the extraction of third molars, and called for an end to their prophylactic removal in the National Health Service (NHS).

We offer an overview of the ongoing debate, discuss the potential for third molar retention to give rise to distal surface caries (DSC) in the second molar, and present a typical clinical scenario where the conservative approach has led to the preventable loss of a second molar and the requirement for prolonged and extremely complex orthodontic treatment.

The NICE guidance

NICE was launched 26 February 1999, and although its name has slightly changed over the years, briefly adding H for health to the acronym, the organization has always aspired to provide guidance on the delivery of care within the NHS through appraisal of efficacy and cost-effectiveness. NI(H)CE guidance has covered all manner of topics and each anatomical area has its own collection of recommendations and advice; the orofacial region being no exception.

The very first therapeutic guidelines provided by NICE concerned wisdom tooth removal and contained the following statements:

1. Third molars that are free from disease should not be removed in the NHS.
2. The standard routine programme of dental care need be no different, in general, for pathology free impacted third molars.
3. There is no reliable evidence to support a health benefit to patients from the

prophylactic removal of pathology-free impacted third molar teeth.

4. Every procedure for the removal of an impacted third molar carries risk for the patient, including temporary or permanent nerve damage, alveolar osteitis, infection and haemorrhage as well as temporary local swelling, pain and restricted mouth opening. There are also the possible general anaesthesia risks, including rare and unpredictable death.

NICE argued that based on 'the available evidence' there was no clinical indication for the removal of up to 44% of third molars. They also suggested that cessation of prophylactic removal could save an annual £5 million for the NHS.⁵

In the initial period after their publication, the guidelines curtailed the lucrative private practice of third molar removal, and reduced the total number of asymptomatic third molars extracted in the UK.^{6,7} A 'watch and wait' approach was

subsequently favoured, and presently third molars are no longer routinely extracted if asymptomatic.

The NICE debate

A recent Cochrane review highlighted the insufficiency of evidence to favour either removal or retention; emphasizing the lack of an evidence-base for the NICE guidelines at the time of their publication.⁸ This dearth of evidence will likely persist, as the funding required for robust research in this area is allocated to higher priority health issues, such as dementia and antimicrobial resistance.⁹

NICE emphasizes the risks of surgery, but makes no mention of the possible future pathology and morbidity associated with third molars which are presently asymptomatic. Clinicians have previously expressed concerns on how leaving these teeth *in situ*, often in positions not amenable to adequate plaque control, is akin to a 'ticking time-bomb' which risks the eventual development of periodontal pathology, caries or cystic change.^{2,10-13} In addition, the potential for medical comorbidities to complicate wisdom tooth removal increases as patients age, and what may have been a relatively straightforward procedure may require more complex management at a later stage. Research also supports the notion that older individuals suffer more surgical complications, and are more likely to have prolonged recovery time.¹⁴⁻¹⁶

In contrast to NICE recommendations, guidelines issued by organizations in both the United States and Scandinavia have advised prophylactic third molar removal after clinicians have duly considered local and patient risks.^{1,3,4}

In October 2014, NICE elected to leave their recommendations unchanged after reviewing the available 'evidence'. They did, however, invite comment from relevant stakeholders on the appropriateness of this decision. Several organizations, including the Faculty of Dental Surgery and the British Association of Oral Surgeons, strongly voiced their opposition to NICE's decision and, in response, NICE decided that the guidance did require updating, although this update is still pending.¹

The NICE impact

Research evaluating the impact of the NICE guidelines found that, after an initial decline in wisdom tooth removal following their publication, the incidence of third molar surgery recovered to previous levels, thus rendering any financial savings short-term.^{6,7} In addition, third molar surgery,

rather than being done in a general practice setting, is now more frequently performed in secondary care, likely resulting in costs significantly greater than those seen prior to the introduction of the guidance.^{6,7}

The average age of patients experiencing third molar removal has increased from 26 to 32, and caries is much more frequently seen as an indication for third molar removal. The data suggest that the guidelines have influenced the management of third molars, but have not resulted in an overall reduction in the number of patients ultimately requiring third molar removal.^{6,7,17}

Electing to leave partially erupted, mesioangularly impacted, but asymptomatic third molars has the potential to jeopardize the adjacent second molars through the development of distal surface caries (DSC).^{10-13,16,18-20} The evidence for this being a relatively frequent occurrence has built steadily since the publication of the NICE guidance in 2000. It seems increasingly tenable that an entire generation of patients have been left at risk of DSC as a result of this short-sighted guidance.

Distal surface caries in the second molar

Distal surface caries occurs where partially erupted, impacted mandibular third molars contact the second molar. Mesioangular impaction of the third molar against the second molar exposes the latter's distal root surface to the oral environment and creates a food trap. Plaque forms and persists here, as the food trap formed is not readily cleanable, and DSC develops (Figure 1).¹⁰ Research has found DSC in second molars to be particularly associated with the presence of a long-standing, mesioangular impacted third molar.^{10-12,16,18-20}

The susceptibility to DSC appears to be separate from a high susceptibility to caries in general.^{7,10} Those able to maintain a level of oral hygiene adequate for the prevention of pericoronitis are likely to retain their third molars for longer, as this NICE endorsed indication for their removal is not encountered. It follows that these individuals are then more susceptible to slow-developing DSC, as the unfavourable and inaccessible relationship between second molar and impacted third molar persists. When these teeth become symptomatic, the extent of decay may necessitate removal of both molars;¹⁸ a situation which could have been prevented through prophylactic removal of the third molar at an earlier asymptomatic stage.

In 2006, McArdle and Renton¹³ found patients requiring third molar removal, specifically for DSC, tended to be older



Figure 1. Intra-oral radiograph showing a mesioangularly impacted wisdom tooth with DSC in LL7.

and have better dental health. The authors suggested a non-intervention approach may ultimately necessitate restoration or loss of the second molar as a result of DSC, and so prophylactic removal of a mesioangularly impacted third molar could have been justified.

In an update to the above study, 288 mandibular third molars, extracted as a result of DSC in the second molar, were analysed.¹⁰ All of the third molars were partially erupted, mesioangularly impacted and contacting the second molar. This strengthens the argument that retention of such a wisdom tooth, despite it initially being asymptomatic, may ultimately be detrimental to patients.

In a sample of 267 mesioangular third molars, Allen *et al*¹² found 42% of adjacent second molars to have radiographic evidence of DSC. These carious lesions typically become symptomatic only when relatively advanced, making restoration extremely difficult and the long-term prognosis poor.

Research in other nations has confirmed this association between mesioangular impaction and distal caries.^{16,19,20} The overall prevalence of DSC in these studies ranged from 13.4–20%, and DSC was consistently associated with mesioangular impaction. The authors found the mean age of patients with DSC to be higher, giving further credence to the notion that the development of DSC is a slow process and risk increases with the length of time the impacted third molar is retained.

A recent article studied the reported prevalence of distal cervical caries in the literature, both before and after the publication of the NICE guidelines, and reported 1–4.7% before to 15.7–51% after.¹⁸ This added to the existing evidence, and the authors stated long-standing, partially erupted third molars undoubtedly increased



Figure 2. Lower occlusal photo showing the start of a long and complex course of orthodontic treatment.

the caries susceptibility of the adjacent second molar.

Though undeniably a significant problem, it is difficult to gauge the extent to which DSC affects those patients with third molars accurately. Presently, there are limitations in the specificity of coding systems used in the NHS to record the indications for third molar removal. The coding system does not describe the exact nature of the decay, and so it is not possible to determine what proportion of the noted increase in third molar associated caries is the result of DSC in the adjacent second molar.^{6,7}

The consequence of distal cervical caries

The clinical scenario presented illustrates the consequences of maintaining a partially erupted, mesioangularly impacted, lower third molar. The development of distal surface caries in LL7, after retaining LL8, rendered LL7 unrestorable and necessitated its extraction. As a consequence, the space created through extraction of the second molar was nowhere near the area required to provide relief of anterior crowding (Figure 2) and, in addition, the LL8 requires orthodontic uprighting. Achieving a good orthodontic result will be an extremely challenging and lengthy process, as it requires significant movement, both of the crown but, more particularly, the roots of the wisdom tooth, as well as translating four lower teeth distally to gain space in the anterior region. This requires a skilled operator who has mastered the difficult techniques of molar uprighting, as well as a very understanding patient who will see almost none of the movements achieved with the complex orthodontic treatment.

Prophylactic removal of this mesioangular wisdom tooth would almost certainly have been carried out prior to the publication of the NICE guidelines, and the second molar would be perfectly healthy. As

a consequence, the orthodontic treatment required by the patient would have been much more simple and straightforward.

Conclusion

NICE guidance on the extraction of wisdom teeth has had little long-term impact on the number of patients requiring third molar removal. In favouring the retention of asymptomatic, partially erupted, mesioangular impacted third molars, this guidance has placed a generation of patients at risk of DSC in the second molar. DSC is frequently identified late, it often has a poor prognosis, and overall caries risk does not appear to capture the risk of DSC accurately.

Updating of the NICE guidance is pending, and professional bodies have drawn attention to the existing oversight concerning DSC. Presently, this guidance contrasts with the evidence-based guidelines of other nations, and appears to dismiss the substantial evidence for DSC in instances where third molars are retained.

When the second molar is lost to DSC, orthodontic treatment time is significantly lengthened and the attendant risks of orthodontic treatment are borne by the patient for longer.

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