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[Intervention Review]

Surgical removal versus retention for the management of asymptomatic disease-free impacted wisdom teeth

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ABSTRACT

Background

Prophylactic removal of asymptomatic disease-free impacted wisdom teeth is surgical removal of wisdom teeth in the absence of symptoms and with no evidence of local disease. Impacted wisdom teeth may be associated with pathological changes, such as pericoronitis, root resorption, gum and alveolar bone disease (periodontitis), caries and the development of cysts and tumours. When surgical removal is carried out in older people, the risk of postoperative complications, pain and discomfort is increased. Other reasons to justify prophylactic removal of asymptomatic disease-free impacted third molars have included preventing late lower incisor crowding, preventing damage to adjacent structures such as the second molar or the inferior alveolar nerve, in preparation for orthognathic surgery, in preparation for radiotherapy or during procedures to treat people with trauma to the affected area. Removal of asymptomatic disease-free wisdom teeth is a common procedure, and researchers must determine whether evidence supports this practice. This review is an update of an existing review published in 2012.

Objectives

To evaluate the effects of removal compared with retention (conservative management) of asymptomatic disease-free impacted wisdom teeth in adolescents and adults.

Search methods

We searched the following electronic databases: Cochrane Oral Health's Trials Register (to 24 May 2016), the Cochrane Central Register of Controlled Trials (CENTRAL) (2016, Issue 4), MEDLINE Ovid (1946 to 24 May 2016) and Embase Ovid (1980 to 24 May 2016). We searched ClinicalTrials.gov and the World Health Organization International Clinical Trials Registry Platform for ongoing and unpublished studies to 24 May 2016. We imposed no restrictions on language or date of publication in our search of electronic databases.

Selection criteria

Studies comparing removal (or absence) with retention (or presence) of asymptomatic disease-free impacted wisdom teeth in adolescents or adults. We included randomised controlled trials (RCTs) with no restriction on length of follow-up, if available. We considered quasi-RCTs and prospective cohort studies for inclusion if investigators measured outcomes with follow-up of five years or longer.

Data collection and analysis

Eight review authors screened search results and assessed the eligibility of studies for inclusion according to the review inclusion criteria. Eight review authors independently conducted risk of bias assessments in duplicate. When information was unclear, we contacted study authors for additional information.

Main results

This review includes two studies. The previous review included one RCT with a parallel-group design, which was conducted in a dental hospital setting in the United Kingdom; our new search for this update identified one prospective cohort study conducted in the private sector in the USA.

Primary outcome

No eligible studies in this review reported the effects of removal compared with retention of asymptomatic disease-free impacted wisdom teeth on health-related quality of life

Secondary outcomes

We found only low to very low quality evidence of the effects of removal compared with retention of asymptomatic disease-free impacted wisdom teeth for a limited number of secondary outcome measures.

One prospective cohort study, reporting data from a subgroup of 416 healthy male participants, aged 24 to 84 years, compared the effect of the absence (previous removal or agenesis) against the presence of asymptomatic disease-free impacted wisdom teeth on periodontitis and caries associated with the distal of the adjacent second molar during a follow-up period of three to over 25 years. Very low quality evidence suggests that the presence of asymptomatic disease-free impacted wisdom teeth may be associated with increased risk of periodontitis affecting the adjacent second molar in the long term. In the same study, which is at serious risk of bias, there is insufficient evidence to demonstrate a difference in caries risk associated with the presence or absence of impacted wisdom teeth.

One RCT with 164 randomised and 77 analysed adolescent participants compared the effect of extraction with retention of asymptomatic disease-free impacted wisdom teeth on dimensional changes in the dental arch after five years. Participants (55% female) had previously undergone orthodontic treatment and had 'crowded' wisdom teeth. No evidence from this study, which was at high risk of bias, was found to suggest that removal of asymptomatic disease-free impacted wisdom teeth has a clinically significant effect on dimensional changes in the dental arch.

The included studies did not measure our other secondary outcomes: costs, other adverse events associated with retention of asymptomatic disease-free impacted wisdom teeth (pericoronitis, root resorption, cyst formation, tumour formation, inflammation/infection) and adverse effects associated with their removal (alveolar osteitis/postoperative infection, nerve injury, damage to adjacent teeth during surgery, bleeding, osteonecrosis related to medication/radiotherapy, inflammation/infection).

Authors' conclusions

Insufficient evidence is available to determine whether or not asymptomatic disease-free impacted wisdom teeth should be removed. Although asymptomatic disease-free impacted wisdom teeth may be associated with increased risk of periodontitis affecting adjacent second molars in the long term, the evidence is of very low quality. Well-designed RCTs investigating long-term and rare effects of retention and removal of asymptomatic disease-free impacted wisdom teeth, in a representative group of individuals, are unlikely to be feasible. In their continuing absence, high quality, long-term prospective cohort studies may provide valuable evidence in the future. Given the lack of available evidence, patient values should be considered and clinical expertise used to guide shared decision making with patients who have asymptomatic disease-free impacted wisdom teeth. If the decision is made to retain asymptomatic disease-free impacted wisdom teeth, clinical assessment at regular intervals to prevent undesirable outcomes is advisable.

PLAIN LANGUAGE SUMMARY

Surgical removal versus retention for the management of asymptomatic disease-free impacted wisdom teeth

Review question

This review, produced through Cochrane Oral Health, seeks to assess the effects of removal compared with conservative management of impacted wisdom teeth, in the absence of symptoms and without evidence of local disease, in adolescents and adults. This is an update of an existing review published in 2012.

Background

Wisdom teeth, or third molars, generally erupt between the ages of 17 and 26 years. These are the last teeth to erupt, and they normally erupt into a position closely behind the last standing teeth (second molars). Space for these teeth to erupt can be limited. Wisdom teeth often fail to erupt or erupt only partially, which is often due to impaction of the wisdom teeth against the second molars (teeth directly in front of the wisdom teeth). In most cases, this occurs when second molars are blocking the path of eruption of third molar teeth and act as a physical barrier, preventing complete eruption. An impacted wisdom tooth is called asymptomatic and disease-free in the absence of signs and symptoms of disease affecting the wisdom tooth or nearby structures.

Impacted wisdom teeth can cause swelling and ulceration of the gums around the wisdom teeth, damage to the roots of second molars, decay in second molars, gum and bone disease around second molars and development of cysts or tumours. General agreement exists that removal of wisdom teeth is appropriate if signs or symptoms of disease related to the wisdom teeth are present. Less agreement exists about the appropriate management of asymptomatic disease-free impacted wisdom teeth.

Study characteristics

We searched the medical literature up to May 2016 and found one randomised controlled trial (RCT) and one prospective cohort study to include in this review. These studies involved 493 participants in total. The RCT conducted at a dental hospital in the UK included 77 adolescent male and female participants, and the cohort study conducted at a private dental clinic in the USA involved 416 men aged 24 to 84 years.

Key results

Available evidence is insufficient to show whether or not asymptomatic disease-free impacted wisdom teeth should be removed.

One study at serious risk of bias provided very low quality evidence suggesting that the presence of asymptomatic disease-free impacted wisdom teeth is associated with increased risk of periodontitis (infection of the gums) affecting the adjacent second molar (teeth directly in front of the wisdom teeth) in the long term. In the same study, no evidence was found to suggest that the presence of asymptomatic disease-free impacted wisdom teeth increases the risk of caries affecting the adjacent second molar.

Another study, also at high risk of bias, found no evidence to suggest that removal of asymptomatic disease-free impacted wisdom teeth has an effect on crowding in the dental arch.

The included studies did not measure our primary outcome - health-related quality of life. Nor did they measure our secondary outcomes - costs, other adverse events associated with retention of asymptomatic disease-free impacted wisdom teeth (pericoronitis, root resorption, cyst formation, tumour formation, inflammation/infection) and adverse effects associated with their removal (alveolar osteitis/postoperative infection, nerve injury, damage to adjacent teeth during surgery, bleeding, osteonecrosis related to medication/radiotherapy, inflammation/infection).

Quality of the evidence

Evidence provided by the two studies included in this review is of low to very low quality, so we cannot rely on these findings. High-quality research is urgently needed to support clinical practice in this area. In light of the lack of available evidence, patient values should be considered and clinical expertise used when treatment decisions are made with patients who have asymptomatic disease-free impacted wisdom teeth. If the decision is made to retain asymptomatic disease-free impacted wisdom teeth, clinical assessment at regular intervals is advisable to prevent undesirable outcomes.