summary

No research evidence to support the prophylactic removal of pathology-free impacted third molars

Song F, O'Meara S, Wilson P, Kleijnen J, Golder S. *The effectiveness and cost-effectiveness of the prophylactic removal of wisdom teeth. NHS Centre for Reviews and Dissemination, University of York, November 1999, Report commissioned by the NHS HTA Programme on behalf of the National Institute for Clinical Excellence*

Objective To summarise existing evidence on prophylactic removal of impacted wisdom teeth, in terms of the incidence of surgical complications associated with prophylactic removal and the morbidity associated with retention.

Data sources Update of a previous review with additional searches of MEDLINE (1984–1999), EMBASE (1984–1999), Science Citation Index, Cochrane Controlled Trials Register, The National Research Register, The Database of Abstracts of Reviews of Effectiveness, and the NHS Economic Evaluation Database plus additional paper and web-based sources.

Study selection Reviews or RCTs that considered surgical removal of unerupted or impacted third molars, either as prophylaxis or because of pathology reporting outcomes including pathology and/or symptoms associated with unerupted or impacted third molars or surgical outcomes were eligible for inclusion.

Results We identified 4682 references, of which 28 met the inclusion criteria. Two RCTs, 22 literature reviews and four decision analyses. Results from both RCTs suggested that prophylactic removal of third

molars is unjustified (one trial provides preliminary data only). Methodological quality of the reviews was generally poor. Five reviews suggested only a weak association between retention of third molars and anterior crowding. Five reviews concluded that the prophylactic removal of third molars was unjustified. Nine reviews had no clear conclusion. One review (of poorer methodological quality) suggested that prophylactic removal of third molars is appropriate. The decision analyses indicated that retention of third molars was cost saving and more cost-effective compared with prophylactic removal of all impacted third molars. There are currently two ongoing RCTs, one in Denmark the other in the USA

Conclusion There is no reliable research evidence to support the prophylactic removal of pathology-free impacted third molars. Well-designed RCTs with long-term follow-up are required in order to confirm this.

Address for reprints: The review is available on the web at: <http://server1.nice.org.uk/nice-web/Cat.asp?c=509>

Commentary

The literature concerning the removal of impacted third molars is extensive, including documentation of morbidity associated with third molar surgery^{1–4}, the pathology associated with retaining such teeth^{5–8}, and support for the theory that impacted teeth should be removed prophylactically at an early age^{9–13}. The indications for removal of impacted teeth when associated with pathology have been clearly established, universally endorsed and based on objective criteria¹⁴. The rationale for 'prophylactic odontectomy' is grounded in the theories of preventive and interceptive medicine.

To date, no long-term prospective studies have been performed that validate the benefit to the patient of

retaining impacted teeth. When decision analysis methods have been used to attempt to determine either cost-benefit or risk-benefit ratios related to extraction or non-extraction of asymptomatic unerupted third molars, the data which give rise to assumptions and probabilities upon which these analyses are based, are of necessity derived from specific and limited populations and, as a result, can never be sufficiently complete to cope with all the variations needed to treat all individuals. Even if the data were available, one result could not be satisfactorily compared with another purely in terms of probability because of the familiar problem of trying to relate statistical significance to clinical relevance. Indeed, the serious flaw in many articles such as that by

Stephens *et al*¹⁵ results from basing conclusions solely on radiographic examination of a complex clinical event. Neither clinicians nor epidemiologists can make a diagnosis of acute pericoronitis solely from a radiograph.

No prospective, long-term study exists which definitely answers the question whether to extract or to deliberately retain asymptomatic third molar teeth. Such a study dealing with wisdom teeth, or for that matter any other surgical clinical problem, is highly unlikely to be successfully carried out in the foreseeable future. We must therefore rely on traditional medical methods of studying indications and contra-indications in developing a diagnosis and treatment plan for each individual patient.

A strong indication for removal of the impacted third molar should be complimented with a strong contra-indication to its retention. The inverse of this statement is also germane to the topic but little attention, to date, has been paid to it in the literature. It appears that as yet, for many patients, evidence to permit development of absolute indications and contra-indications for either deliberate retention or surgical removal of the asymptomatic impacted third molar is insufficient.

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