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PRACTICE

UNCERTAINTIES

Is tonsillectomy recommended in adults with recurrent tonsillitis?

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In many, tonsillitis is self-limiting and of relatively short duration. A subset of patients suffers from recurrent debilitating episodes, with impaired daily functioning and absence from work.[1] Adult tonsillitis places a substantial burden on healthcare resources. Costs include primary care consultations, medical treatment, hospital admissions, and treatment of potentially life threatening complications.[1-3] There are three approaches to the management of tonsillitis: conservative (wait and watch), antibiotics, or tonsillectomy. Tonsillectomy provides definitive treatment for recurrent tonsillitis and was performed on more than 17 000 adult patients in England in 2014-2015.[4] Currently there is uncertainty around the severity of disease at which it is cost effective to perform tonsillectomy on adults with recurrent tonsillitis, as compared with conservative management.

What is the evidence of uncertainty?

Search strategy and study selection

We searched Medline, Embase, and the Cochrane Library using the terms "tonsillitis" or "tonsillectomy" or "pharyngitis." We included studies that involved adults and were published in English between 1996 and February 2017 (table 1⇓). We found Cochrane reviews comparing antibiotics with placebo, and comparing tonsillectomy with watchful waiting. We also found a review of qualitative outcomes in tonsillectomy, two retrospective studies investigating complications of tonsillectomy, a cross-sectional study of the complications of tonsillitis and tonsillectomy rates, and a small cohort study observing economic outcomes pre and post tonsillectomy.

In the UK, Clinical Commissioning Groups have labelled tonsillectomy as a "relatively ineffective intervention."[2] Since the CCG reports were published, a subsequent change in attitudes towards surgery has led to a steep decline in the rates of tonsillectomies in recent years.[2 10] This reduction in the number of operations has, however, been paralleled by a substantial rise in admissions for tonsillitis and its complications.[2] In this article, we present evidence on the effectiveness of antibiotics and of tonsillectomy, and also the associated costs and complications.

Antibiotics

Antibiotics are frequently prescribed for tonsillitis in primary care.[1] A recent Cochrane systematic review of 27 trials (12 835 cases of sore throat) showed that, at day three of the illness, antibiotics reduced symptoms of sore throat, (risk ratio 0.68; 95% confidence interval 0.59 to 0.79). The incidence of peritonsillar abscess was reduced in comparison with the placebo group (risk ratio 0.15, 95% confidence interval 0.05 to 0.47).[5] The ability to draw on these findings is limited by the lack of subgroup analysis of tonsillitis in the sore throat cases. Further, these modest benefits have to be balanced against side effects, the emergence of antibacterial resistance, and costs.

Tonsillectomy

Benefits

A Cochrane review[6] published in 2014 identified two randomised controlled trials from Finland comparing tonsillectomy and watchful waiting in adults. The studies did not report on antibiotic use. There were 3.6 fewer (95% confidence interval 7.9 to 0.70 more) episodes of sore throat within six months of surgery, equating to 10.6 fewer sore throat days (95% confidence interval 5.8 to 15.8). Absenteeism in the surgery arm was not substantially reduced (3.3 days, 95% confidence interval −7.7 to 1.1). Limitations included the short duration of follow-up, statistical heterogeneity, and omission of most postoperative complications from the analysis.

A systematic review concerning the impact of adult tonsillectomy on quality of life outcomes identified eight

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What you need to know

- Increasing rates of adult tonsillitis affect quality of life for patients and put pressure on health services through repeated primary care consultations and hospital admissions with complications
- Tonsillectomy is safe and effective to prevent recurrent tonsillitis; however, there is uncertainty over the stage of disease at which the operation is cost effective
- Discuss the options of watchful waiting, antibiotics, and tonsillectomy with patients experiencing recurrent tonsillitis, and explain the risks, benefits, and costs of each

retrospective cohort studies (708 pooled participants). Several studies reported low response rates (<50%). Outcome measures included generic (short form survey) and specific postsurgical quality of life measures (Glasgow Benefit Inventory). Tonsillectomy was considered likely to improve overall quality of life, particularly patients' physical and general health.[7]

Costs

The direct healthcare costs of an adult tonsillectomy are reflected in the procedure tariff: £1079 in the UK, $3832 in the United States.[8] Tonsillectomy is a painful procedure that requires an average of 14 days off work,[11] with associated costs of lost productivity. Only one small US study (83 adults) assessed the overall economic impact of adult tonsillectomy; it showed a breakeven point of 2.3 years after the procedure through reduced costs, both medical and work related, of tonsillitis.[3]

Additionally, patients can suffer complications following tonsillectomy. The commonest adverse event is postoperative haemorrhage, which can require re-operation. A review of complications of adult tonsillectomy from the two largest and most recent North American cohort studies (collectively 42 000 operations) showed a postoperative haemorrhage rate of 6.37% (2308/36 210),[8] re-operation rates for haemorrhage of 1.54% (558/36 210)[8] and 3.2% (189/5968),[9] and a mortality rate of 0.03% (2/5968).[9] The total healthcare costs escalated to an added 60% in the case of re-operation.[8]

Healthcare providers should also consider the costs of recurrent tonsillitis and complications if a conservative approach is adopted. A study extracted English Hospital Episode statistics all age data and showed that the overall tonsillectomy rate fell from 159 per 100 000 in 1991 to 89 per 100 000 in 2011 (44% reduction), while the contemporaneous admissions for tonsillitis, peritonsillar abscess, and retro or parapharyngeal abscess rose by 310% (94 per 100 000), 31% (3 per 100 000), and 39% (2 per 100 000), respectively. The use of bed day occupancy as a surrogate for cost implied that the rising rates for sore throat related admissions negated the savings from the decline in tonsillectomy over the decade.[2]

Is ongoing research likely to provide relevant evidence?

We searched the Current Controlled Trials Register, the *meta*Register of Controlled Trials, and the US Government Clinical Trials Register on 7 February 2017 using the search terms "tonsillitis" or "pharyngitis" or "tonsillectomy." We found one multicentre randomised controlled trial that is currently recruiting patients and is expected to complete in 2019. The National Trial of Tonsillectomy In Adults in the UK (UKCRN ID 17530, www.NATTINA.com)[12] aims to assess the clinical and cost effectiveness of tonsillectomy compared with conservative management (deferred surgery) in 510 adult participants with recurrent tonsillitis. The primary outcome measure is the number of sore throat days over a 24 month period.

What should we do in light of the uncertainty?

The label of a "relatively ineffective intervention" has undoubtedly affected referrals for tonsillectomy. Recent qualitative work demonstrates that general practitioners feel pressured to reduce tonsillectomy referral rates and that many patients perceive a barrier to the treatment they desire.[10]

New UK guidelines from the Royal College of Surgeons of England for adult tonsillectomy were published in 2016[13] but are essentially unchanged since the 2010 Scottish Intercollegiate Guidelines Network guidelines, as no further evidence is available (box 1). The referral guideline for surgery on the basis of the frequency and duration of recurrent sore throats only extrapolates from childhood evidence, and evidence is needed on clinical and cost effectiveness in adults.[14]

Assess patients for the frequency of episodes and severity of symptoms and their impact on quality of life. Discuss potential risks and likely benefits of either approach to enable making a shared decision (table 2⇓).

We have read and understood the BMJ policy on declaration of interests and declare the following interests: JP: none, JAW is chief investigator, SC is principal investigator and JOH is co-grant holder on The National Trial of Tonsillectomy In Adults.

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All authors were responsible for the conception and content of the article. JP and JOH conducted the database searches. All authors contributed to the drafting of the manuscript, and all the authors approved the final manuscript. JP is guarantor.

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Box 1: Recommended indications for consideration of tonsillectomy for recurrent acute sore throat in adults, based on Scottish Intercollegiate Guidelines Network (SIGN) guidelines

Sore throats are due to acute tonsillitis

The episodes of sore throat are disabling and prevent normal functioning

Seven or more well documented, clinically significant, adequately treated sore throats in the preceding year, or five or more such episodes in each of the preceding two years, or

three or more such episodes in each of the preceding three years.

Recommendations for future research

Study design: Randomised controlled trial

Population: Adults with recurrent tonsillitis

Intervention: Tonsillectomy

Comparison: Deferred surgery (watchful waiting), with consideration of antibiotics in acute episodes only

Outcome:

1) Full clinical evaluation, including complications, patient reported outcome measures of sore throat and quality of life

2) Cost based economic evaluation, including lost productivity and healthcare associated costs

What patients need to know

- If you have repeated episodes of sore throat or tonsillitis, share with your doctor about the severity of symptoms and how they affect your work and life.
- For most people tonsillitis will resolve with no need for medications or surgery. Your doctor might advise waiting for a period of time as symptoms improve spontaneously, or they might recommend antibiotics if your symptoms are severe.
- Tonsillectomy might be considered if you have several episodes of tonsillitis in a year and they affect your daily functioning.
- Tonsillectomy is effective in reducing episodes of sore throat. However the surgery is associated with complications and costs. Discuss these with your doctor to decide your preferred approach.

Education into practice

- Do you routinely ask your patient about the effect of symptoms of tonsillitis on their life and work?
- Have your compared your own tonsillectomy referral practice with other practitioners?

How patients were involved in the creation of this article

We discussed an early draft of this paper with three patients with tonsillitis. They stressed the importance of considering the severity of tonsillitis episodes and their impact on their life and work**.** With their comments we highlighted the impact of tonsillitis on quality of life.

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Tables

Table 1| Summary of evidence for the treatment of recurrent adult tonsillitis

Study design	Participants	Intervention	Comparator	Results	Summary statement on quality of evidence
Antibiotics					
Systematic review and meta-analysis (27 randomised controlled trials)[5]	12 835 cases of sore throat in children and adults	Antibiotics	Placebo	Symptoms of sore throat at day 3 of illness reduced with antibiotics, risk ratio 0.68 (95% confidence interval 0.59 to 0.79) Incidence of peritonsillar abscess reduced, risk ratio 0.15 (95% confidence interval 0.05 to 0.47)	High quality evidence
Tonsillectomy					
Systematic review and meta-analysis (2 randomised controlled trials)[6]	156 adults	Tonsillectomy	Watchful waiting	3.6 fewer (95% confidence interval 7.9-0.70 more) episodes of sore throat within six months of surgery	Low quality evidence
Systematic review (8 cohort studies)[7]	708 adults	Tonsillectomy	Pre to postoperative	Improvement in quality of life questionnaire scores postoperatively	Low quality evidence
Cross-sectional study [2]	Adults and children in England	None	None	Reduction in tonsillectomy rates and a contemporaneous increase in admission for the complications of tonsillitis	Low quality evidence
Cohort study[3]	83 adults	Tonsillectomy	Pre to postoperative	Breakeven point of surgical costs 2.3 years after the procedure through reduced medical and work related costs of tonsillitis	Low quality evidence
Retrospective study[8]	36 210 adults	Tonsillectomy	None	6.37% postoperative haemorrhage rate 1.54% re-operation rates for haemorrhage	High quality evidence
Retrospective study[9]	5968 adults	Tonsillectomy	None	3.2% re-operation rates for haemorrhage 0.03% mortality rate	High quality evidence

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Table 2| **What to do in light of the uncertainty**

Clinical group	Recommendation
Adults meeting SIGN criteria for the number of episodes of tonsillitis (see box 1)	Evidence supports the benefit of tonsillectomy over watchful waiting
Adults not meeting SIGN criteria, but who have a high symptom burden	Explain the lack of certainty about benefit of tonsillectomy over watchful waiting, guiding the patient in making a decision
Adults not meeting SIGN criteria with minimal symptom burden	Watchful waiting with consideration of antibiotics in acute episodes

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