How many tonsillectomies are necessary?

An eleven year retrospective study of indications and eligibility for childhood tonsillectomy in UK

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Tonsillectomy

• First mentioned in Hindu medicine around 1,000 years B.C.
• One of the most common surgical procedures in children
  – UK 2015/16: 35,000 tonsillectomies
  – National Health Service cost: £39,000,000
• Large national and international variations in tonsillectomy rates
• Safety:
  – general anaesthesia
  – postoperative bleeding
Evidence based indications

• Sore throat (severely affected children)
  - **Modest reduction** in recurrent sore throats in children meeting **Paradise criteria** *(Cochrane Review 2014)*  
    Documented sore throats: \( \geq 7 \) in a year OR \( \geq 5 \) yearly in the last 2 years OR \( \geq 3 \) yearly in the last 3 years  
    At least 1 clinical feature per episode *(Temperature \( \geq 38.3^\circ C \) / Cervical adenopathy \( \geq 2 \) cm / Tonsillar exudate/ Culture positive for group A streptococcus)*

• Periodic fever, aphthous stomatitis, pharyngitis and cervical adenitis syndrome **PFAPA** *(Cochrane 2014)*  
  - positive effect on symptom resolution / decrease in episodes based on moderate quality RCTs

• **Tonsillar tumour** – very uncommon in children
Indications without convincing evidence

• **Sore throat (less severely affected children)**
  - No significant difference in number of sore throats (*Cochrane review 2014*)
  - No longer term benefits, no significant difference in quality of life (*AHRQ review 2017*)

• **Obstructive sleep apnoea (OSA)/ sleep-disordered breathing** (*Cochrane 2015, AHRQ 2017*)
  - QoL: short term improvements (in 5-9 year olds)
  - Attention and neurocognitive performance: no benefit
  - Resolves spontaneously in about half of children in <1 year
  - Unevaluated in younger children; inconclusive evidence in those with an unconfirmed diagnosis

• **Quinsy (peritonsillar abscess)**
  - Limited evidence, no controlled studies

• **Guttate and chronic plaque psoriasis**
  - Limited evidence, no trials in children

• **Glomerulonephritis**
  - Inconclusive evidence based on RCT (mainly adults) in Japan 2014
Aims

• Describe indications for tonsillectomies carried out in children in the UK
  - proportion of tonsillectomies that are evidence based

• Describe incidence of evidence based indications for tonsillectomy
  - potential need
Methods

• Retrospective open cohort study of children aged 0 - 15 years

• The Health Improvement Network (THIN) database of patient records from 500 UK general practices

• Contains information on diagnoses, symptoms, referrals to secondary care, tests and treatments

• Broadly representative of the UK population in terms of demographics and medical condition prevalence
Methods

• Exposure
  – Potential indications for tonsillectomy were identified
  – The strongest indication based on evidence, if several potential indications

• Broad definition of indications
  – e.g. for sore throats we used consultations for sore throats or any other upper respiratory tract infection
  – Sensitivity analysis broadening the definition further to include antibiotic prescribing relevant to sore throats (penicillin V, erythromycin and clarithromycin)
Cohort characteristics (2005-2015)

- 1,471,560 children aged 0 to 15
- 6,333,566 person years of follow-up
- 16,015 tonsillectomies

Annual tonsillectomy rate in children

No. of tonsillectomies per 1,000 person years

Year


0.0 0.5 1.0 1.5 2.0 2.5 3.0
Proportion of tonsillectomies due to different indications

- No indication identified
- Snoring
- 1 to 2 sore throats
- 3 to 4 sore throats
- Obstructive sleep apnoea
- 5 to 6 sore throats
- Peritonsillar abscess
- Evidence based criteria

% of all tonsillectomies

Year

Incidence of evidence based indications over time

98% severely affected by recurrent sore throats
(=met Paradise criteria)
Sore throat frequency and tonsillectomies

- 1 in 1 year: 0.5% undergo tonsillectomy
- 2 in 1 year: 1.2% undergo tonsillectomy
- 3-4 in 1 year: 3.5% undergo tonsillectomy
- 5-6 in 1 year: 9.5% undergo tonsillectomy
- Paradise criteria*: 13.5% undergo tonsillectomy

Numbers of children
Mismatch between need and tonsillectomies

Children with evidence based indications (N=14,528)
- 87% with an evidence based indication did not undergo tonsillectomy
- 12% evidence based

Tonsillectomies (N=16,015)
- 88% tonsillectomies not evidence based
Implications for practice and research

• Significant scope to improve tonsillectomy practice in the UK
  - 30,000 unnecessary childhood tonsillectomies in the UK annually
  - Tonsillectomy offers only modest benefits in severely affected children with documented sore throats
  - Parents should be informed that most children do not undergo tonsillectomy

• Need for RCTs on tonsillectomy for:
  - peritonsillar abscess
  - guttate and chronic plaque psoriasis
  - sleep disordered breathing