Clinical Practice Guidelines: Tonsillectomy in Children

These Guidelines were adapted mainly from "Clinical Practice Guideline: Tonsillectomy in Children (Update)" developed by the American Academy of Otolaryngology-Head and Neck Surgery Foundation in 2019 with partial incorporation of insights gleaned from reputable sources to enhance its comprehensiveness and applicability[1-4]

Aknowledgement

We would like to aknowlege the Committee of National Egyptian Guidelines, Ministry of Health and ENT Scientific Committee for adapting this Guidelines.

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Abbreviations

ASOT, antistreptolysin O titer
OSA, Obstructive Sleep Apnea
oSDB, obstructive sleep-disordered breathing
PSG, polysomnography

Glossary

Tonsillectomy: It is defined as a surgical procedure performed with or without adenoidectomy that completely removes the tonsil, including its capsule, by dissecting the peritonsillar space between the tonsil capsule and the muscular wall.

Throat infection: is defined as a sore throat caused by viral or bacterial infection of the pharynx, palatine tonsils, or both, which may or may not be culture positive for group A streptococcus. This includes the term strep throat, acute tonsillitis, pharyngitis, adenotonsillitis, or tonsillopharyngitis.

Obstructive sleep-disordered breathing (oSDB): is aclinical diagnosis characterized by obstructive abnormalities of the respiratory pattern or the adequacy of oxygenation/ventilation during sleep, which include snoring, mouth breathing, and pauses in breathing. oSDB encompasses a spectrum of obstructive disorders that increases in severity from primary snoring to obstructive sleep apnea (OSA). Daytime symptoms associated with oSDB may include inattention, poor concentration, hyperactivity, or excessive sleepiness. The term oSDB is used to distinguish oSDB from SDB that includes central apnea and/or abnormalities of ventilation (eg, hypopnea-associated hypoventilation).

Obstructive sleep apnea (OSA:) is diagnosed when oSDB is accompanied by an abnormal polysomnography (PSG) with an obstructive apnea-hypopnea index (AHI) ≥ 1. It is a disorder of breathing during sleep characterized by prolonged partial upper airway obstruction and/or intermittent

complete obstruction (obstructive apnea) that disrupts normal ventilation during sleep and normal sleep patterns.

The term **caregiver** is used to refer to parents, guardians, or other adults providing care to children under consideration for or undergoing tonsillectomy.

Executive Summary

This guideline predominantly addresses indications for tonsillectomy in children based on obstructive and infectious causes. The evidence that supports tonsillectomy for orthodontic concerns, dysphagia, dysphonia, secondary enuresis, tonsilliths, halitosis, and chronic tonsillitis is limited and generally of lesser quality, and a role for shared decision making is present.

- Clinicians should recommend watchful waiting for recurrent throat infection if there have been<7 episodes in the past year, <5 episodes per year in the past 2 years, or <3 episodes per year in the past 3 years.
- Clinicians should administer a single intraoperative dose of intravenous dexamethasone to children undergoing tonsillectomy.
- Clinicians should recommend ibuprofen, acetaminophen, or both for pain control after tonsillectomy.
- Clinicians should assess the child with recurrent throat infection who does not meet criteria in KAS 2 for modifying factors that may nonetheless favor tonsillectomy, which may include but are not limited to multiple antibiotic allergies/intolerance, PFAPA (periodic fever, aphthous stomatitis, pharyngitis, and adenitis), or history of >1 peritonsillar abscess.
- Clinicians should not order ASOT. The determination of the antistreptolysin-O titer (ASOT) and other streptococcal antibody titers does not have any value in acute and recurrent tonsillitis / pharyngitis.
- Clinicians should ask caregivers of children with obstructive sleep-disordered breathing and tonsillar hypertrophy about comorbid conditions that may improve after tonsillectomy, including growth retardation, poor school performance, enuresis, asthma, and behavioral problems.
- Before performing tonsillectomy, the clinician should refer children with obstructive sleep-disordered breathing for polysomnography if they are <2 years of age or if they exhibit any of the following: obesity, Down syndrome, craniofacial abnormalities, neuromuscular disorders, sickle cell disease, or mucopolysaccharidoses.
- The clinician should advocate for polysomnography prior to tonsillectomy for obstructive sleep-disordered breathing in children without any of the comorbidities listed in KAS 5 for whom the need for tonsillectomy is uncertain or when there is discordance between the physical examination and the reported severity of oSDB.
- Clinicians should recommend tonsillectomy for children with obstructive sleep apnea documented by overnight polysomnography.
- Clinicians should counsel patients and caregivers and explain that obstructive sleep-disordered breathing may persist or recur after tonsillectomy and may require further management.
- The clinician should counsel patients and caregivers regarding the importance of managing posttonsillectomy pain as part of the perioperative education process and

should reinforce this counseling at the time of surgery with reminders about the need to anticipate, reassess, and adequately treat pain after surgery.

- Clinicians should arrange for overnight, inpatient monitoring of children after tonsillectomy if they are <3 years old or have severe obstructive sleep apnea (apnea-hypopnea index >10 obstructive events/hour, oxygen saturation nadir <80%, or both).
- Clinicians should follow up with patients and/or caregivers after tonsillectomy and document in the medical record the presence or absence of bleeding within 24 hours of surgery (primary bleeding) and bleeding occurring later than 24 hours after surgery (secondary bleeding).
- The guideline group made a strong recommendation against prescribjng perioperative antibiotics to children undergoing tonsillectomy.
- Clinicians may recommend tonsillectomy for recurrent throat infection with a frequency of at least 7 episodes in the past year, at least 5 episodes per year for 2 years, or at least 3 episodes per year for 3 years with documentation in the medical record for each episode of sore throat and 1 of the following: temperature >38.3 C, cervical adenopathy, tonsillar exudate, or positive test for group A betahemolytic streptococcus

Guideline Purpose

The purpose of this guideline is to identify quality improvement opportunities in managing children undergoing tonsillectomy and to create clear and actionable recommendations to implement these opportunities in clinical practice. The target patient population for the guideline is any child 1 to 18 years of age who may be a candidate for tonsillectomy. The guideline does not apply to populations of children excluded from most tonsillectomy research studies, including those with neuromuscular disease, diabetes mellitus, chronic cardiopulmonary disease, congenital anomalies of the head and neck region, coagulopathies, or immunodeficiency.

Target audience

The target audience or intended primary end-users of the guideline are those physicians dealing with patients recommended to have tonsillectomy like Otoaryngologists, pediatricians and family doctors.

Methods

A comprehensive search for guidelines was undertaken to identify the most relevant guidelines to consider for adaptation.

inclusion/exclusion criteria followed in the search and retrieval of guidelines to be adapted:

- *Selecting only evidence-based guidelines (guideline must include a report on systematic literature searches and explicit links between individual recommendations and their supporting evidence)*

- *Selecting only national and/or international guidelines*
- *Specific range of dates for publication (using Guidelines published or updated 2015 and later)*
- *Selecting peer reviewed publications only*
- *Selecting guidelines written in English language*
- *Excluding guidelines written by a single author not on behalf of an organization in order to be valid and comprehensive, a guideline ideally requires multidisciplinary input*
- *Excluding guidelines published without references as the panel needs to know whether a thorough literature review was conducted and whether current evidence was used in the preparation of the recommendations*

The following characteristics of the retrieved guidelines were summarized in a table:

- *Developing organisation/authors*
- *Date of publication, posting, and release*
- *Country/language of publication*
- *Date of posting and/or release*
- *Dates of the search used by the source guideline developers*

All retrieved Guidelines were screened and appraised using AGREE II instrument (www.agreetrust.org) by at least two members. the panel decided a cut-off point or rank the guidelines (any guideline scoring above 50% on the rigour dimension was retained)

Evidence assessment

According to WHO handbook for Guidelines we used the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) approach to assess the quality of a body of evidence, develop and report recommendations. GRADE methods are used by WHO because these represent internationally agreed standards for making transparent recommendations. Detailed information on GRADE is available on the following sites:

■ *GRADE working group: http://www.gradeworkingroup.org*
■ *GRADE online training modules: http://cebgrade.mcmaster.ca/*
■ *GRADE profile software: http://ims.cochrane.org/revman/gradepro*

Table 1 Quality of evidence in GRADE

Quality level	Definition
High	We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low	Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low	We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

GRADE: Grading of Recommendations Assessment, Development and Evaluation.

Table 2 Significance of the four levels of evidence

Quality	Definition	Implications
High	The guideline development group is very confident that the true effect lies close to that of the estimate of the effect	Further research is very unlikely to change confidence in the estimate of effect
Moderate	The guideline development group is moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate
Low	Confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the true effect	Further research is very likely to have an important impact on confidence in the estimate of effect and is unlikely to change the estimate
Very low	The group has very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect	Any estimate of effect is very uncertain

Table 3 Factors that determine How to upgrade or downgrade the quality of evidence

Downgrade in presence of	Upgrade in presence of
Study limitations -1 Serious limitations -2 Very serious limitations	Dose-response gradient +1 Evidence of a dose-response gradient
Consistency -1 Important inconsistency	Direction of plausible bias +1 All plausible confounders would have reduced the effect
Directness -1 Some uncertainty -2 Major uncertainty	Magnitude of the effect +1 Strong, no plausible confounders, consistent and direct evidence
Precision -1 Imprecise data	+2 Very strong, no major threats to validity and direct evidence
Reporting bias -1 High probability of reporting bias	

The strength of the recommendation

The strength of a recommendation communicates the importance of adherence to the recommendation.

Strong recommendations

With strong recommendations, the guideline communicates the message that the desirable effects of adherence to the recommendation outweigh the undesirable effects. This means that in most situations the recommendation can be adopted as policy.

Conditional recommendations

These are made when there is greater uncertainty about the four factors above or if local adaptation has to account for a greater variety in values and preferences, or when resource use makes the intervention suitable for some, but not for other locations. This means that there is a need for substantial debate and involvement of stakeholders before this recommendation can be adopted as policy.

When not to make recommendations

When there is lack of evidence on the effectiveness of an intervention, it may be appropriate not to make a recommendation.

Recommendations

1. Watchful waiting for recurrent throat infection
Clinicians should recommend watchful waiting for recurrent throat infection if there have been <7 episodes in the past year, <5 episodes per year in the past 2 years, or <3 episodes per year in the past 3 years.
Strong recommendation
High Quality Evidence *(systematic reviews of randomized controlled trials that fail to show clinically important advantages of surgery over observation alone (as stated in Statement 1)*[5]*;*
Grade C, observational studies showing improvement with watchful waiting)[6,7]

2. Recurrent throat infection with documentation
Clinicians may recommend tonsillectomy for recurrent throat infection with a frequency of at least 7 episodes in the past year, at least 5 episodes per year for 2 years, or at least 3 episodes per year for 3 years with documentation in the medical record for each episode of sore throat and ≥1 of the following: temperature >38.3 C , cervical adenopathy, tonsillar exudate, or positive test for group A beta-hemolytic streptococcus.
Conditional Recommendation
Moderate Quality Evidence *(systematic review of randomized controlled trials with limitations in the consistency with the randomization process regarding recruitment and follow-up; some observational studies)*[8,9]

3a. Tonsillectomy for recurrent infection with modifying factors
Clinicians should assess the child with recurrent throat infection who does not meet criteria in Key Action Statement 2 for modifying factors that may nonetheless favor tonsillectomy, which may include but are not limited to: multiple antibiotic allergies/intolerance,

PFAPA (periodic fever, aphthous stomatitis, pharyngitis, and adenitis), or history of >1 peritonsillar abscess.
Strong recommendation
High Quality Evidence *(systematic review of randomized controlled trials with limitations for PFAPA; observational studies for all other factors)*[10-16]

3b. Role of ASOT in decision making
Clinicians should not order ASOT. The determination of the antistreptolysin-O titer (ASOT) and other streptococcal antibody titers does not have any value in acute and recurrent tonsillitis / pharyngitis,
Strong recommendation (against)
High Quality Evidence *(randomized controlled trials)*[17]

4. Tonsillectomy for obstructive sleep-disordered breathing
Clinicians should ask caregivers of children with obstructive sleepdisordered breathing (oSDB) and tonsillar hypertrophy about comorbid conditions that may improve after tonsillectomy, including growth retardation, poor school performance, enuresis, asthma, and behavioral problems.
Strong recommendation
High Quality Evidence *(randomized controlled trials, systematic reviews, and before-and-after observational studies)*[18-21]

5. Indications for polysomnography
Before performing tonsillectomy, the clinician should refer children with obstructive sleep-disordered breathing (oSDB) for polysomnography (PSG) if they are <2 years of age or if they exhibit any of the following: obesity, Down syndrome, craniofacial abnormalities, neuromuscular disorders, sickle cell disease, or mucopolysaccharidoses.

Strong recommendation
High Quality Evidence *(observational studies with consistently applied reference standard; and one systematic review of observational studies on obesity)*[22-25]

6. Additional recommendations for polysomnography
The clinician should advocate for polysomnography (PSG) prior to tonsillectomy for obstructive sleep-disordered breathing (oSDB) in children without any of the comorbidities listed in Key Action Statement 5 for whom the need for tonsillectomy is uncertain or when there is discordance between the physical examination and the reported severity of oSDB.
Strong recommendation
High Quality Evidence *(a randomized controlled trial, observational and case-control studies)*[26,27]

7. Tonsillectomy for obstructive sleep apnea
Clinicians should recommend tonsillectomy for children with obstructive sleep apnea (OSA) documented by overnight polysomnography (PSG).
Strong recommendation
High Quality Evidence *(randomized controlled trial, observational before-and-after studies, and meta-analysis of observational studies showing substantial reduction in the prevalence of sleep-disordered breathing and abnormal PSG after tonsillectomy)*[28-29]

8. Education regarding persistent or recurrent obstructive sleep-disordered breathing
Clinicians should counsel patients and caregivers and explain that obstructive sleep-disordered breathing (oSDB) may persist or recur after tonsillectomy and may require further management.
Strong recommendation

High Quality Evidence *(randomized controlled trial, systematic reviews, and before-andafter observational studies)*[30]

9. Perioperative pain counseling
The clinician should counsel patients and caregivers regarding the importance of managing posttonsillectomy pain as part of the perioperative education process and should reinforce this counseling at the time of surgery with reminders about the need to anticipate, reassess, and adequately treat pain after surgery.
Strong recommendation
High Quality Evidence *(randomized controlled trials and observational studies)*[31-34]

10. Perioperative antibiotics
Clinicians should not administer or prescribe perioperative antibiotics to children undergoing tonsillectomy
Strong recommendation (against)
High Quality Evidence *(randomized controlled trials and systematic reviews, showing no benefit in using perioperative antibiotics to reduce posttonsillectomy morbidity)*[35-37]

11. Intraoperative steroids
Clinicians should administer a single intraoperative dose of intravenous dexamethasone to children undergoing tonsillectomy
Strong recommendation
High Quality Evidence *(randomized controlled trials and multiple systematic reviews, for preventing postoperative nausea and vomiting (PONV); randomized controlled trials and systematic review for decreased pain and shorter times to oral intake)*[38,39]

12. Inpatient monitoring for children after tonsillectomy
Clinicians should arrange for overnight, inpatient monitoring of children after tonsillectomy if they are < 3 years old or have severe obstructive sleep apnea (OSA; apnea-hypopnea index [AHI] ≥10 obstructive events/hour, oxygen saturation nadir <80%, or both).
Strong recommendation

High Quality Evidence *(observational studies on age, meta-analysis of observational studies regarding complications)*[40-42]

13. Postoperative ibuprofen and acetaminophen
Clinicians should recommend ibuprofen, acetaminophen, or both for pain control after tonsillectomy.
Strong recommendation
High Quality Evidence *(based on systematic review and randomized controlled trials)*[43,44]

14. Outcome assessment for bleeding
Clinicians should follow up with patients and/or caregivers after tonsillectomy and document in the medical record the presence or absence of bleeding within 24 hours of surgery (primary bleeding) and bleeding occurring later than 24 hours after surgery (secondary bleeding).
Strong recommendation
High Quality Evidence *(based on observational studies with a preponderance of benefit over harm.)*[45,46]

Clinical Indicators for Monitoring

1. Frequency-based Assessment:
   Ensure that clinicians recommend watchful waiting for recurrent throat infection based on the specified frequency criteria: <7 episodes in the past year, <5 episodes per year in the past 2 years, or <3 episodes per year in the past 3 years.
2. Intraoperative Dexamethasone Administration:
   Monitor if clinicians administer a single intraoperative dose of intravenous dexamethasone to children undergoing tonsillectomy.
3. Pain Control Recommendations:
   Verify that clinicians recommend ibuprofen, acetaminophen, or a combination of both for pain control after tonsillectomy.
4. Avoidance of ASOT Testing:
   Confirm that clinicians refrain from ordering the antistreptolysin-O titer (ASOT) for acute and recurrent tonsillitis/pharyngitis, as it is deemed not valuable.
5. Comorbidity Assessment for Sleep-disordered Breathing:

Ensure that clinicians inquire about comorbid conditions related to obstructive sleep-disordered breathing in children with tonsillar hypertrophy, including growth retardation, poor school performance, enuresis, asthma, and behavioral problems.

6. Polysomnography Referral and Advocacy:
   Monitor whether clinicians appropriately refer children for polysomnography before tonsillectomy based on age or the presence of specific comorbidities, and advocate for polysomnography when the need for tonsillectomy is uncertain or when there is discordance between examination and reported severity.

These indicators cover a range of key recommendations from the guidelines, ensuring proper adherence and patient care.

Updating the guideline

To keep these recommendations up to date and ensure its validity it will be periodically updated. This will be done whenever a strong new evidence is available and necessitates updation.

Research Needs

1. *Investigate the treatment of recurrent throat infections by tonsillectomy versus antibiotics/watchful waiting (<12 and >12 months) using a multicenter randomized controlled trial design.*
2. *Assess the immunologic role of the tonsils and, specifically, at what point the benefits of tonsillectomy exceed the harm, using a biomarker approach.*
3. *Determine the cost-effectiveness (direct and indirect) of different tonsillectomy techniques.*

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Annexes

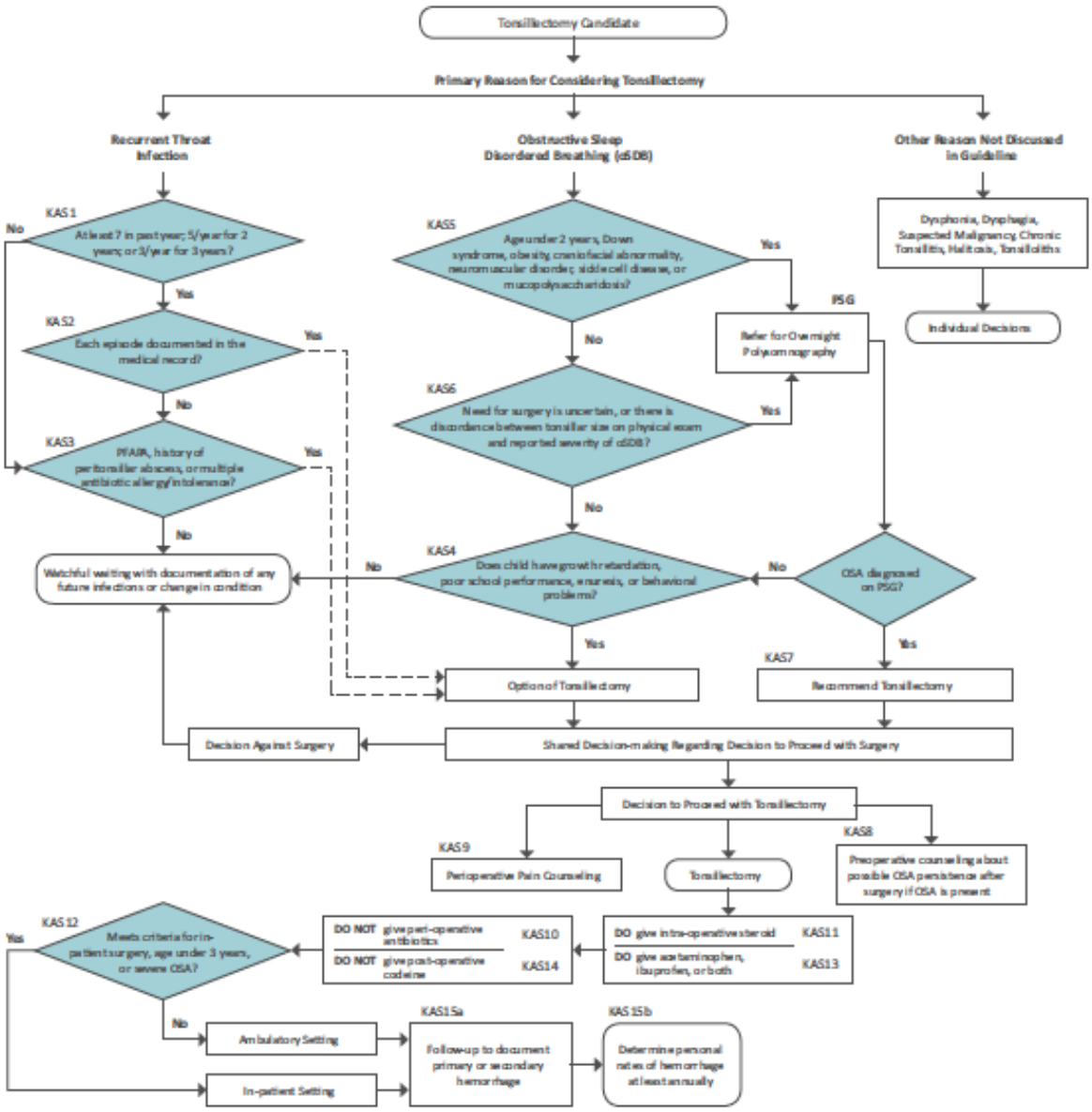

Figure 1. Tonsillectomy in children: clinical practice guideline algorithm. KAS, key action statement; OSA, obstructive sleep apnea; PFAPA, periodic fever, aphthous stomatitis, pharyngitis, and adenitis; PSG, polysomnography.