

Paediatric Rhinosinusitis Handout

Combined Scotland Paediatric Study Day · Perth · 28 October 2026

Mr John Curran, Consultant Rhinologist and Facial Plastic Surgeon, Queen Elizabeth University Hospital, Glasgow

Teaching points

- **Development:** ethmoid and maxillary sinuses at birth, sphenoid at about 9 months, frontal after 5 on MRI ([Adibelli 2011](#)) slide 3
- **History and examination:** ask the child and the carer; lift the tip or use an otoscope; nasendoscopy in clinic from about 3 slide 6
- **Chronic rhinosinusitis, rhinitis and polyps:** chronic rhinosinusitis is treated with saline and an intranasal steroid, then adenoidectomy, then FESS; allergic rhinitis in steps from saline to an intranasal steroid; bilateral polyps, a sweat test ([Brietzke 2008](#)) slides 9 to 16
- **Acute rhinosinusitis:** acute bacterial rhinosinusitis is diagnosed on three presentations without imaging ([Wald 2013](#)) slides 17 and 18
- **Complications:** contrast CT or MRI for a suspected orbital or intracranial complication; concurrent ENT and neurosurgical intervention was associated with less recurrence and revision neurosurgery in one cohort; no difference in other series ([Sexton 2022](#); [Milinis 2023](#); [Zhou 2026](#)) slides 19 to 33
- **Nasal trauma and the septum:** examine for a septal haematoma at every contact and drain it; cartilage sparing septoplasty; septorhinoplasty at nasal maturity; under 16 the attending doctor judges the child's capacity to consent ([van der Heijden 2008](#); [1991 Act, s2\(4\)](#)) slides 34 to 49
- **The cleft nose:** rhinoplasty and septoplasty at lip repair were not found to restrict growth, and definitive septorhinoplasty follows correction of the skeletal base ([Zelko 2023](#); [Bins 2024](#); [Pawar 2014](#)) slides 50 to 54

By age

Under 2	• Maxillary and ethmoid sinuses at birth, the sphenoid at 9 months, on MRI (Adibelli 2011) • Children under about 2 years cannot produce antibody to bacterial capsular polysaccharides (Rijkers 1998) • Septal cartilage adult sized in area by about 2 (van Loosen 1996) • A septal haematoma or abscess before walking age should prompt suspicion of non accidental injury (Ghadersohi 2020) • In the UK the lip is repaired at a median of 4.3 months (Fell 2023)
2 to 5	• Young children have about 6 to 8 colds a year (Heikkinen 2003) • Flexible nasendoscopy was completed without restraint in 86 per cent of 110 children aged 3 to 10 in one NHS clinic (Narang 2022) • Adenoidectomy is an effective first line surgical procedure for children up to 6 years (strong consensus) (Brietzke 2014) • On CT volumetry frontal air first appeared in one boy aged 2 to 3 and in over half the children after 4 (Ayaz 2026)
6 to 11	• On CT a frontal sinus was present at 6 years in 23 per cent of boys and 33 per cent of girls (Spaeth 1997) • The adenoid peaks at about 6 to 8 years (Perry 2022; Yoon 2026) • Adenoidectomy is first line surgery to age 12; FESS follows if medicines or adenoidectomy fail (Brietzke 2014) • Children with orbital complications were younger than those with intracranial complications, at 8.6 against 12.4 years (Levy 2020) • In children under 9 with none of nine criteria, 27 of 29 (93.1 per cent) subperiosteal abscesses cleared on intravenous antibiotics (Garcia 2000) • MRI in addition in children over 7 years with a risk factor for intracranial disease (Herrmann and Forsen 2004) • Peak nasal inspiratory flow from about 6, read against paediatric values (van Spronsen 2012) • The alveolar bone graft is done at 8 to 10 years (Scott-Brown)
12 to 16	• On CT a frontal sinus was present at 12 in 86 per cent (Spaeth 1997) • The nasal growth spurt ends at 13.1 years in girls and 14.7 in boys, and 98 per cent are nasally mature at 15.8 and 16.9 (van der Heijden 2008) • Girls: at least a year past menarche with stable growth (Chauhan 2010) • My practice for cosmetic surgery is 16 in girls and 18 in boys; for functional surgery I operate earlier when the obstruction is severe, on a case by case basis • Definitive cleft septorhinoplasty follows correction of the skeletal base, usually at 14 to 16 years in girls and 16 to 18 in boys (Pawar 2014) • Under 16 the attending doctor judges capacity; a parent cannot override a competent child; at 16 an adult (1991 Act, s2(4); GMC 0 to 18, paragraph 31)

Children and adults

	Children	Adults	Source
Chronic rhinosinusitis, definition	cough	reduction or loss of smell	EPOS 2020
Chronic rhinosinusitis, how common	a diagnosis rate of up to 4 per cent	10.9 per cent by symptoms	EPOS 2020 ; Hastan 2011
Colds a year	about 6 to 8 (young children)	2 to 4	Heikkinen 2003
Eosinophil aggregates at FESS	4.0 per cent of 50 children	22.8 per cent of 378 adults	Brown 2023
Severe complication of acute rhinosinusitis (Netherlands)	about 1 in 12,000 episodes	1 in 32,000 episodes	Hansen 2012
Orbital cellulitis in Scotland, a year	1.6 per 100,000	0.1 per 100,000	Murphy 2014
Revision after septoplasty (US claims)	2.9 per cent of 24,322 (mean age 15.7)	1.1 per cent	Shah 2022
Revision operation a rhinoplasty	9.4 per cent of revised children	5.3 per cent of revised adults	Shah 2022
Consent	under 16, the attending doctor judges capacity	at 16, consents as an adult	1991 Act, s2(4)

Teaching points are the hour's summary slide. Every figure is from the slides and speaker notes; the reference pack lists each source in the order taught.

Reference pack, the twelve SBAs with answers, and this handout: jcitalia4.github.io/paeds-rhino

Paediatric Rhinosinusitis Twelve SBAs

Combined Scotland Paediatric Study Day · Perth · 28 October 2026

Mr John Curran, Consultant Rhinologist and Facial Plastic Surgeon, Queen Elizabeth University Hospital, Glasgow

Single best answer questions in the FRCS (ORL-HNS) Section 1 style, three or four for each section of the hour. Four were asked in the hour, and their slide is given. The answers follow the questions, each with its reasons and sources. The numbers in the stems are constructed for the questions.

Rhinosinusitis

1. A 4 year old boy is admitted with right periorbital cellulitis after a week of coryza. Contrast enhanced CT of the orbits, paranasal sinuses and brain is requested. Which paranasal sinus is least likely to be pneumatized on his scan?
 - A Anterior ethmoid
 - B Posterior ethmoid
 - C Maxillary
 - D Sphenoid
 - E Frontal
2. A 5 year old girl has had nasal discharge and a daytime cough for 12 days without improvement. She is afebrile and well, and her mother asks whether an antibiotic will help. Which feature at presentation best identifies a child who is likely to benefit from amoxicillin with clavulanate?
 - A Green rather than clear nasal discharge
 - B A bacterial pathogen on nasopharyngeal culture
 - C Opacification of the maxillary sinus on CT
 - D A raised C reactive protein
 - E Age under 6 years
3. A 6 year old boy has had purulent rhinorrhoea, nasal obstruction and a wet daytime cough for 5 months despite 3 months of daily saline irrigation and once daily intranasal mometasone. He has no asthma and his sweat test is normal. Flexible nasendoscopy in clinic shows an adenoid pad with mucopus; CT gives a Lund Mackay score of 9. What is the most appropriate first operation? *Asked in the hour, slide 11.*
 - A Functional endoscopic sinus surgery with uncinctomy and anterior ethmoidectomy
 - B Balloon dilation of both maxillary ostia
 - C Adenoidectomy
 - D Bilateral inferior turbinate reduction
 - E Bilateral antral puncture and lavage alone

Complications

4. A 7 year old girl presents with 2 days of right upper and lower eyelid swelling after a week of coryza. Temperature 38.4 °C. The lids are so swollen that the eye cannot be opened, so visual acuity, pupils and eye movements cannot be assessed. Intravenous antibiotics are started. What is the most appropriate next step?
 - A Reassess the eye after 24 hours of intravenous antibiotics
 - B Ultrasound of the orbit
 - C Contrast enhanced CT of the orbits, paranasal sinuses and brain with coronal reformats
 - D MRI of the orbits and brain under general anaesthetic before any further treatment
 - E Non contrast CT of the orbits

5. A 5 year old boy with left ethmoiditis has a medial subperiosteal abscess on contrast CT, 3 mm wide, with an estimated volume of 0.4 mL. After 36 hours of intravenous co-amoxiclav he is afebrile and the lid swelling is less; there is no proptosis, eye movements are full and painless, acuity and colour vision are normal and intraocular pressure is 14 mmHg. What is the most appropriate management? *Asked in the hour, slide 22.*
 - A Endoscopic drainage through the bulla ethmoidalis and lamina papyracea
 - B External drainage through a Lynch Howarth incision
 - C Continue intravenous antibiotics with six hourly checks of vision and pupils
 - D Add intravenous dexamethasone
 - E Switch to oral antibiotics and discharge
6. A 14 year old boy has had 2 weeks of coryza and 3 days of worsening frontal headache, vomiting and fever. GCS 14. Contrast CT shows opacified frontal and ethmoid sinuses and a 1 cm extradural collection over the right frontal lobe without midline shift; MRI with gadolinium shows no subdural component. Intravenous ceftriaxone and metronidazole have been started and the neurosurgeons have reviewed him. What is the most appropriate surgical plan?
 - A Neurosurgical evacuation of the collection first, with sinus surgery deferred until he has recovered
 - B Drainage of the frontal sinus now, endoscopically or by trephine, with any neurosurgical drainage at the same anaesthetic
 - C Six weeks of intravenous antibiotics with repeat MRI at 2 weeks and no operation
 - D Lumbar puncture to guide antibiotic choice before any operation
 - E Bilateral antral washout alone
7. A 13 year old boy undergoes burr hole drainage of a subdural empyema complicating frontal sinusitis, with endoscopic frontal sinus drainage at the same sitting. Which organism is most likely to be isolated from the pus?
 - A Staphylococcus aureus
 - B Streptococcus pneumoniae
 - C Haemophilus influenzae type b
 - D Streptococcus anginosus group
 - E Pseudomonas aeruginosa

Nasal trauma and the septum

8. An 8 year old girl, an obligate mouth breather, has failed 3 months of saline and intranasal steroid. She has a severe anterior cartilaginous deviation with a basal spur and a NOSE score of 70. She is listed for an endonasal septoplasty. Which manoeuvre carries the greatest risk to growth of the dorsum? *Asked in the hour, slide 45.*
 - A Bilateral elevation of the mucoperichondrium
 - B Resection of a vomerine spur (spina vomeri)
 - C Posterior chondrotomy separating the cartilage from the perpendicular plate dorsally
 - D Repositioning the caudal septum onto the anterior nasal spine with the septospinal ligament intact
 - E Resection of a deviated basal rim of the cartilaginous septum, leaving its most anterior part
9. A 15 year old boy fractured his nose playing rugby 2 years ago. He has a C shaped deviation of the bony and cartilaginous pyramid and a NOSE score of 65, and wants the nose straightened; he is still growing in height. At what age are 98 per cent of boys nasally mature?
 - A 14 years
 - B 15 years
 - C 16 years
 - D 17 years
 - E 18 years

10. You are taking consent from an 11 year old boy and his parents for an endonasal septoplasty for nasal obstruction. His father asks how likely a second operation is compared with an adult. Which statement is correct?
- A Children and adults are revised at the same rate, about 1 per cent
 - B Children are revised two to three times as often as adults, and 9 to 13 year olds most of all
 - C Children are revised less often than adults because their cartilage is more pliable
 - D Revision in children is driven by measurable arrest of nasal growth
 - E Revision after paediatric septoplasty is almost always a repeat septoplasty

The cleft nose

11. A 4 month old boy with a complete left unilateral cleft lip and palate is listed for primary lip repair. His parents have read that touching the nose in infancy will stunt its growth and ask whether the surgeon should leave the nasal cartilages alone. Which statement is most accurate?
- A Primary rhinoplasty should be avoided because longitudinal studies show restricted nasal growth
 - B Most studies that followed nasal growth found no restriction after primary rhinoplasty at lip repair
 - C The nose should be corrected first, at 6 weeks, and the lip repaired later
 - D Nasal correction should wait until alveolar bone grafting at 8 to 10
 - E Primary rhinoplasty is contraindicated unless nasoalveolar moulding has been used
12. A 15 year old girl with a repaired right unilateral cleft lip and palate asks for a rhinoplasty before her school leavers' dance. She has a class III malocclusion with maxillary retrusion, a Le Fort I advancement is planned at 17 to 18, and her alveolar bone graft at 9 was successful. When should she have her definitive septorhinoplasty? *Asked in the hour, slide 53.*
- A Proceed now; at 15 a girl is nasally mature
 - B Proceed now but confine the operation to the tip
 - C Defer definitive septorhinoplasty until after the Le Fort I advancement
 - D Defer until 21 when all facial growth has stopped
 - E Perform the septorhinoplasty at the same sitting as the Le Fort I

Answers

1. E Frontal

On MRI, pneumatisation first appears at birth in the maxillary and ethmoid sinuses, at 9 months in the sphenoid and after 5 years in the frontal sinus ([Adibelli 2011](#)). On CT a frontal sinus was present at 6 years in 23 per cent of boys and 33 per cent of girls ([Spaeth 1997](#)). On CT volumetry, frontal air first appeared in one boy aged 2 to 3 and in over half the children after 4 ([Ayaz 2026](#)), so give the method with the age. The orbit is reached most often from the ethmoid (Scott-Brown).

2. B A bacterial pathogen on nasopharyngeal culture

In a trial of amoxicillin with clavulanate against placebo in 510 children aged 2 to 11, antibiotic treatment had minimal benefit for those without nasopharyngeal bacterial pathogens on presentation, and its effects did not depend on the colour of nasal discharge ([Shaikh 2023](#)). Time to symptom resolution was 7 days with amoxicillin and clavulanate and 9 with placebo ([Shaikh 2023](#)). Clinicians should not obtain imaging studies of any kind to distinguish acute bacterial sinusitis from viral URI, because they do not contribute to the diagnosis ([Wald 2013](#)).

3. C Adenoidectomy

Adenoidectomy is an effective first line surgical procedure for children up to 6 years (strong consensus) and aged 6 to 12 years (consensus) ([Brietze 2014, statements 18 and 19](#)), and this boy has an adenoid pad with mucopus. Endoscopic sinus surgery is best performed after medical therapy, adenoidectomy or both have failed (statement 23). The panel reached no consensus that antral irrigation, balloon sinuplasty or inferior turbinate reduction has an evidence supported role (statements 17, 30 and 31 to 33). In medically refractory chronic rhinosinusitis 69.3 per cent of children improved after adenoidectomy ([Brietze 2008](#)).

4. C Contrast enhanced CT of the orbits, paranasal sinuses and brain with coronal reformats

Half the children with an abscess had no proptosis, pain on eye movement or ophthalmoplegia ([Rudloe 2010](#)). An eye that cannot be examined needs imaging ([ENT UK](#)). The first scan is contrast CT of the orbits, sinuses and brain ([ENT UK](#)) with coronal reformats ([Mathew 2014](#)); MRI is added over 7 years with an intracranial risk factor ([Herrmann and Forsen 2004](#)).

5. C Continue intravenous antibiotics with six hourly checks of vision and pupils

The boy is under 9, the abscess is medial and small, and he is improving at 36 hours, so he stays on intravenous antibiotics. In Garcia and Harris's series of children under 9, vision and pupils were checked at least every 6 hours for the first 48 hours, and 27 of 29 (93.1 per cent) cleared on intravenous antibiotics ([Garcia 2000](#)). For medical management of a medial abscess he meets the Oxford and McClay criteria that the stem names, and 0.4 mL is below McKerlie's cut point of 1.18 mL ([Oxford and McClay 2006](#); [McKerlie 2023](#)). Steroids: one small trial of 21 participants, children and adults together, and insufficient evidence ([Kornelsen 2021, Cochrane review](#)); use discouraged outside trials in children ([Gill 2022, observational](#)).

6. B Drainage of the frontal sinus now, endoscopically or by trephine, with any neurosurgical drainage at the same anaesthetic

In 65 children with intracranial complications of sinusitis or otitis media, concurrent otolaryngological and neurosurgical intervention was associated with less residual collection ($p = 0.018$) and less revision neurosurgery ($p = 0.039$) in the sinogenic group ([Sexton 2022](#)); other series found no difference ([Milinis 2023](#); [Zhou 2026](#)). The frontal sinus is cleared by trephine or endoscopically, by age and surgeon ([van der Poel 2025](#)). Heran managed four children with an extradural abscess without an intracranial procedure, given adequate sinus drainage, antibiotics and minimal mass effect ([Heran 2003](#)).

7. D Streptococcus anginosus group

In 104 children with intracranial complications of sinusitis over 20 years in Toronto, the predominant pathogen isolated from sterile site specimens was *Streptococcus anginosus* (40, 63 per cent), but polymicrobial growth was common (24, 38 per cent) ([Smiljkovic 2024](#)). In 27 UK children, *Streptococcus milleri* (the anginosus group) was isolated in 18 (67 per cent) ([Patel 2015](#)). Infection caused by the S anginosus group resulted in more severe intracranial complications, and these patients were more likely to require neurosurgical intervention ([Deutschmann 2013](#)).

8. C Posterior chondrotomy separating the cartilage from the perpendicular plate dorsally

Posterior chondrotomy or separation from the perpendicular plate, in particular dorsally, should be avoided, because that area supports the dorsum and its growth in length and height ([Verwoerd 2010](#)). In young rabbits, larger resections shortened and lowered the adult nose, and a partial resection of the basal rim did not affect dorsal growth ([Meeuwis 1993](#)). The other options are acceptable: Verwoerd allows mucoperichondrial elevation, resection of a vomerine spur and a basal rim resection that leaves the anterior part, and Scott-Brown allows conservative relocation of the septum on the spine.

9. D 17 years

The nasal growth spurt ends at 13.1 years in girls and 14.7 in boys, and 98 per cent are nasally mature at 15.8 and 16.9 ([van der Heijden 2008](#)). The review concludes that rhinoseptoplasty can safely be performed after the age of 16 years in girls and 17 years in boys ([van der Heijden 2008](#)). My practice for cosmetic surgery is 16 in girls and 18 in boys; for functional surgery I operate earlier when the obstruction is severe, on a case by case basis.

10. B Children are revised two to three times as often as adults, and 9 to 13 year olds most of all

Revision after septoplasty was 2.9 per cent in 24,322 children against 1.1 per cent in adults, highest at 9 to 13 years, 4.3 per cent ([Shah 2022](#)). The revision operation was a rhinoplasty in 9.4 per cent of revised children against 5.3 per cent of revised adults ([Shah 2022](#)). The cohort was aged 18 or under with a mean age of 15.7, so it describes mostly adolescents. Pooled across 18 studies of septal surgery and septorhinoplasty in 1,080 children, 5.6 per cent were revised ([Howard 2024](#)).

11. B Most studies that followed nasal growth found no restriction after primary rhinoplasty at lip repair

A systematic review of 25 studies of primary rhinoplasty at unilateral cleft lip repair found no restriction of nasal development in eight of nine growth studies, with significant bias risks in most ([Zelko 2023](#)). Primary rhinoplasty and septoplasty at lip repair were not found to restrict growth ([Zelko 2023](#); [Bins 2024](#)). In the UK the lip is repaired at a median of 4.3 months ([Fell 2023](#)), and nasoalveolar moulding is not routine UK practice (Scott-Brown).

12. C Defer definitive septorhinoplasty until after the Le Fort I advancement

Definitive septorhinoplasty follows correction of the skeletal base, usually at 14 to 16 years in girls and 16 to 18 in boys ([Pawar 2014](#)). In eight observational studies of patients older than 16, five at high risk of bias, Le Fort I osteotomy was associated with better alar symmetry and a larger nasolabial angle, but also alar widening up to 3.0 mm and tip projection changing in either direction ([Carvalho 2026, online ahead of print](#)), so I plan the septorhinoplasty after the jaw surgery.

Reference pack

Paediatric Rhinosinusitis · Combined Scotland Paediatric Study Day · Perth · 28 October 2026

Mr John Curran, Consultant Rhinologist and Facial Plastic Surgeon, Queen Elizabeth University Hospital, Glasgow

The papers, guidelines, textbook chapters and judgments behind the slides and speaker notes, in the order they are taught. Slide numbers are those shown on screen. Each PubMed number and DOI is copied from the PubMed record of the paper, checked on 27 October 2026; where PubMed Central holds a free full text, that is linked too.

Rhinosinusitis slides 1 to 18

1. **ISCP 2021** slides 1, 2, 40, 50
Intercollegiate Surgical Curriculum Programme (ISCP). Otolaryngology Curriculum, 4 August 2021 (version 2, July 2023). Appendix 2, Otolaryngology Syllabus; Appendix 3, Critical conditions.
[ISCP curriculum \(PDF\)](#)
2. **Ayaz 2026** slide 3
Ayaz E, Kavukoglu I, Akyel NG. Assessment of Paranasal Sinus Growth with 3D Volumetric Measurements and the Effect of Anatomic Variations on Sinus Volume in a Pediatric Population. *Tomography* 2026;12(2).
[PubMed 41745692](#) · [doi 10.3390/tomography12020015](#) · [full text PMC12944150](#)
3. **Adibelli 2011** slides 3, 55
Adibelli ZH, Songu M, Adibelli H. Paranasal sinus development in children: A magnetic resonance imaging analysis. *Am J Rhinol Allergy* 2011;25(1):30 to 35.
[PubMed 21711972](#) · [doi 10.2500/ajra.2011.25.3552](#)
4. **Spaeth 1997** slide 3
Spaeth J, Krügelstein U, Schlöndorff G. The paranasal sinuses in CT-imaging: development from birth to age 25. *Int J Pediatr Otorhinolaryngol* 1997;39(1):25 to 40.
[PubMed 9051437](#) · [doi 10.1016/S0165-5876\(96\)01458-9](#)
5. **Levy 2020** slides 3, 19, 20
Levy DA, Pecha PP, Nguyen SA, et al. Trends in complications of pediatric rhinosinusitis in the United States from 2006 to 2016. *Int J Pediatr Otorhinolaryngol* 2020;128:109695.
[PubMed 31568952](#) · [doi 10.1016/j.ijporl.2019.109695](#)
6. **Scott-Brown, volume 2, chapter 24** slides 3, 8, 19, 28
Tweedie D. Paediatric rhinosinusitis and its complications. In: *Scott-Brown's Otorhinolaryngology, Head and Neck Surgery*, 8th edition, volume 2, chapter 24, pages 267 to 270 cited.
Textbook teaching.
7. **Rijkers 1998** slide 4
Rijkers GT, Sanders EA, Breukels MA, et al. Infant B cell responses to polysaccharide determinants. *Vaccine* 1998;16(14-15):1396 to 1400.
[PubMed 9711778](#) · [doi 10.1016/S0264-410X\(98\)00098-X](#)
8. **Heikkinen 2003** slide 4
Heikkinen T, Järvinen A. The common cold. *Lancet* 2003;361(9351):51 to 59.
[PubMed 12517470](#) · [doi 10.1016/S0140-6736\(03\)12162-9](#) · [full text PMC7112468](#)
9. **Chonmaitree 2008** slide 4
Chonmaitree T, Revai K, Grady JJ, et al. Viral upper respiratory tract infection and otitis media complication in young children. *Clin Infect Dis* 2008;46(6):815 to 823.
[PubMed 18279042](#) · [doi 10.1086/528685](#) · [full text PMC2744371](#)
10. **Perry 2022** slide 4
Perry JL, Haenssler AE, Kotlarek KJ, et al. A Midsagittal-View Magnetic Resonance Imaging Study of the Growth and Involution of the Adenoid Mass and Related Changes in Selected Velopharyngeal Structures. *J Speech Lang Hear Res* 2022;65(4):1282 to 1293.
[PubMed 35239427](#) · [doi 10.1044/2021_JSLHR-21-00514](#) · [full text PMC9499359](#)
11. **Yoon 2026** slide 4
Yoon AJ, Hor JKL, Kim KA. Conceptual growth curves of oropharyngeal soft tissues and craniofacial skeletal structures: clinical implications for pediatric airway management. *Sleep Breath* 2026;30(5).
[PubMed 42762282](#) · [doi 10.1007/s11325-026-03809-6](#) · [full text PMC13589707](#)

12. **EPOS 2020** slides 4, 5, 6, 8, 9, 10, 13, 14, 15
Fokkens WJ, Lund VJ, Hopkins C, et al. European Position Paper on Rhinosinusitis and Nasal Polyps 2020. *Rhinology* 2020;58(Suppl S29):1 to 464.
[PubMed 32077450](#) · [doi 10.4193/Rhin20.600](#)
Fokkens WJ, Lund VJ, Hopkins C, et al. Executive summary of EPOS 2020 including integrated care pathways. *Rhinology* 2020;58(2):82 to 111.
[PubMed 32226949](#) · [doi 10.4193/Rhin20.601](#)
13. **Calvo-Henríquez 2026** slide 4
Calvo-Henriquez C, Solano Marmolejo M, Saura Vilela I, et al. Assessing the role of adenoid biofilm on children in different ENT diseases. A state-of-the-art systematic review. *Acta Otorrinolaringol Esp (Engl Ed)* 2026;77(2):512306.
[PubMed 41344444](#) · [doi 10.1016/j.otoeng.2025.512306](#)
14. **Pratomo 2026** slide 4
Pratomo GRA, Trihandoko F. Mechanistic Insights into the Role of Adenoid Hypertrophy and Chronic Adenoiditis in the Pathogenesis of Pediatric Chronic Rhinosinusitis: A Systematic Review. *Iran J Otorhinolaryngol* 2026;38(5):289 to 300.
[PubMed 42764928](#) · [doi 10.22038/ijorl.2026.97252.4200](#) (not yet active at doi.org) · [full text PMC13589882](#)
15. **Zuliani 2006** slide 4
Zuliani G, Carron M, Gurrola J, et al. Identification of adenoid biofilms in chronic rhinosinusitis. *Int J Pediatr Otorhinolaryngol* 2006;70(9):1613 to 1617.
[PubMed 16781783](#) · [doi 10.1016/j.ijporl.2006.05.002](#)
A notice of duplicate publication links this paper with Coticchia 2007 (PubMed 17709631).
16. **Coticchia 2007** slide 4
Coticchia J, Zuliani G, Coleman C, et al. Biofilm surface area in the pediatric nasopharynx: Chronic rhinosinusitis vs obstructive sleep apnea. *Arch Otolaryngol Head Neck Surg* 2007;133(2):110 to 114.
[PubMed 17309976](#) · [doi 10.1001/archotol.133.2.110](#)
A notice of duplicate publication links this paper with Zuliani 2006 (PubMed 17709631).
17. **DeMuri 2016** slide 5
DeMuri GP, Gern JE, Moyer SC, et al. Clinical Features, Virus Identification, and Sinusitis as a Complication of Upper Respiratory Tract Illness in Children Ages 4-7 Years. *J Pediatr* 2016;171:133-9.e1.
[PubMed 26787374](#) · [doi 10.1016/j.jpeds.2015.12.034](#) · [full text PMC4808614](#)
18. **Hastan 2011** slide 5
Hastan D, Fokkens WJ, Bachert C, et al. Chronic rhinosinusitis in Europe--an underestimated disease. A GA²LEN study. *Allergy* 2011;66(9):1216 to 1223.
[PubMed 21605125](#) · [doi 10.1111/j.1398-9995.2011.02646.x](#)
19. **Otten 1992** slide 5
Otten FW, Van Aarem A, Grote JJ. Long-term follow-up of chronic therapy resistant purulent rhinitis in children. *Clin Otolaryngol Allied Sci* 1992;17(1):32 to 33.
[PubMed 1555315](#) · [doi 10.1111/j.1365-2273.1992.tb00984.x](#)
20. **Calvo-Henríquez 2022** slides 6, 40
Calvo-Henriquez C, Martínez-Seijas P, Boronat-Catalá B, et al. Assessing the ability of children and parents to rate their nasal patency. A cross sectional study. *Int J Pediatr Otorhinolaryngol* 2022;156:111094.
[PubMed 35290944](#) · [doi 10.1016/j.ijporl.2022.111094](#)
21. **Narang 2022** slide 6
Narang VP, Loroach A, Sambiagio G. Versatility and Benefits of 4.0mm Flexible Nasal Endoscopy in 118 Children up to 10 Years of Age. *Cureus* 2022;14(2):e22656.
[PubMed 35371672](#) · [doi 10.7759/cureus.22656](#) · [full text PMC8963822](#)
22. **Chadha 2013** slide 6
Chadha NK, Lam GO, Ludemann JP, et al. Intranasal topical local anesthetic and decongestant for flexible nasendoscopy in children: a randomized, double-blind, placebo-controlled trial. *JAMA Otolaryngol Head Neck Surg* 2013;139(12):1301 to 1305.
[PubMed 24158493](#) · [doi 10.1001/jamaoto.2013.5297](#)
23. **Jonas 2007** slide 6
Jonas NE, Visser MF, Oomen A, et al. Is topical local anaesthesia necessary when performing paediatric flexible nasendoscopy? A double-blind randomized controlled trial. *Int J Pediatr Otorhinolaryngol* 2007;71(11):1687 to 1692.
[PubMed 17720256](#) · [doi 10.1016/j.ijporl.2007.07.001](#)

24. **Graham, Scadding and Bull 2007, chapter 35** slide 6
Clement PAR. Rhinosinusitis in children. In: Graham JM, Scadding GK, Bull PD (eds). Pediatric ENT. Berlin: Springer; 2007. Chapter 35, p 312, Clinical Examination.
Textbook teaching.
25. **Hill 2004** slide 8
Hill M, Bhattacharyya N, Hall TR, et al. Incidental paranasal sinus imaging abnormalities and the normal Lund score in children. *Otolaryngol Head Neck Surg* 2004;130(2):171 to 175.
[PubMed 14990912](#) · [doi 10.1016/j.otohns.2003.11.006](#)
26. **Chan 2004** slide 8
Chan KH, Abzug MJ, Coffinet L, et al. Chronic rhinosinusitis in young children differs from adults: a histopathology study. *J Pediatr* 2004;144(2):206 to 212.
[PubMed 14760263](#) · [doi 10.1016/j.jpeds.2003.11.009](#)
27. **Brown 2023** slide 8
Brown HJ, Khalife S, Ganesan V, et al. Histopathologic differences between adult and pediatric patients with chronic rhinosinusitis. *Int Forum Allergy Rhinol* 2023;13(1):25 to 30.
[PubMed 35708908](#) · [doi 10.1002/alr.23037](#)
28. **Bhattacharyya 2004** slide 8
Bhattacharyya N, Jones DT, Hill M, et al. The diagnostic accuracy of computed tomography in pediatric chronic rhinosinusitis. *Arch Otolaryngol Head Neck Surg* 2004;130(9):1029 to 1032.
[PubMed 15381587](#) · [doi 10.1001/archotol.130.9.1029](#)
29. **Cunha 2022** slides 9, 15
Cunha B, Kuroedov D, Conceição C. Imaging of pediatric nasal masses: A review. *J Neuroimaging* 2022;32(2):230 to 244.
[PubMed 34705308](#) · [doi 10.1111/jon.12942](#)
30. **Bosch de Basea 2023** slide 9
Bosch de Basea M, Thierry-Chef I, Harbron R, et al. Risk of hematological malignancies from CT radiation exposure in children, adolescents and young adults. *Nat Med* 2023;29(12):3111 to 3119.
[PubMed 37946058](#) · [doi 10.1038/s41591-023-02620-0](#) · [full text PMC10719096](#)
An author correction was published (PubMed 40217080).
31. **Kong 2019** slide 9
Kong Q, Lu F, Gao Y, et al. Wide-detector CT combined iterative reconstruction in pediatric low-dose scan of the paranasal sinus. *J Xray Sci Technol* 2019;27(4):731 to 738.
[PubMed 31227681](#) · [doi 10.3233/XST-180487](#)
32. **BSACI 2017** slides 9, 10
Scadding GK, Kariyawasam HH, Scadding G, et al. BSACI guideline for the diagnosis and management of allergic and non-allergic rhinitis (Revised Edition 2017; First edition 2007). *Clin Exp Allergy* 2017;47(7):856 to 889.
[PubMed 30239057](#) · [doi 10.1111/cea.12953](#)
33. **Makary 2021** slide 9
Makary CA, Purnell PR, O'Brien D, et al. Antibody deficiencies are more common in adult versus pediatric recurrent acute rhinosinusitis. *Am J Otolaryngol* 2021;42(5):103004.
[PubMed 33812207](#) · [doi 10.1016/j.amjoto.2021.103004](#)
34. **Summaries of Product Characteristics: nasal sprays** slides 10, 11
Electronic Medicines Compendium (emc), Summaries of Product Characteristics: Nasonex (mometasone furoate), emc 1663, last updated 02 Jan 2025; Flixonase Aqueous (fluticasone propionate), emc 845, last updated 01 Sep 2023; Avamys (fluticasone furoate), emc 6439, last updated 28 Jan 2026; Dymista (azelastine and fluticasone), emc 9450, last updated 01 Oct 2025, section 4.2.
[Nasonex](#) · [Flixonase](#) · [Avamys](#) · [Dymista](#)
35. **MHRA 2024** slide 10
MHRA. Montelukast: reminder of the risk of neuropsychiatric reactions. Drug Safety Update, volume 17, issue 9, 29 April 2024.
[GOV.UK](#)
36. **CKS 2024** slide 10
NICE Clinical Knowledge Summaries. Allergic rhinitis: Management, Scenario: Management; and Prescribing information, Intranasal corticosteroids (last revised January 2024).
[CKS, management](#) · [CKS, intranasal corticosteroids](#)

37. **Summaries of Product Characteristics: sublingual immunotherapy** slide 10
Electronic Medicines Compendium (emc), Summaries of Product Characteristics, section 4.1: Grazax 75,000 SQ-T, emc 315, last updated 03 Jun 2026; Acarizax 12 SQ-HDM, emc 12905, last updated 03 Feb 2026; Itulazax 12 SQ-Bet, emc 12906, last updated 20 Jan 2026.
[Grazax](#) · [Acarizax](#) · [Itulazax](#)
38. **Halken 2017** slide 10
Halken S, Larenas-Linnemann D, Roberts G, et al. EAAI guidelines on allergen immunotherapy: Prevention of allergy. *Pediatr Allergy Immunol* 2017;28(8):728 to 745.
[PubMed 28902467](#) · [doi 10.1111/pai.12807](#)
39. **Valovirta 2018** slide 10
Valovirta E, Petersen TH, Piotrowska T, et al. Results from the 5-year SQ grass sublingual immunotherapy tablet asthma prevention (GAP) trial in children with grass pollen allergy. *J Allergy Clin Immunol* 2018;141(2):529-538.e13.
[PubMed 28689794](#) · [doi 10.1016/j.jaci.2017.06.014](#)
40. **Sedaghat 2014** slide 10
Sedaghat AR, Phipatanakul W, Cunningham MJ. Prevalence of and associations with allergic rhinitis in children with chronic rhinosinusitis. *Int J Pediatr Otorhinolaryngol* 2014;78(2):343 to 347.
[PubMed 24388318](#) · [doi 10.1016/j.ijporl.2013.12.006](#) · [full text PMC3966022](#)
41. **Donaldson 2020** slide 10
Donaldson AM, Choby G, Kim DH, et al. Intranasal Corticosteroid Therapy: Systematic Review and Meta-analysis of Reported Safety and Adverse Effects in Children. *Otolaryngol Head Neck Surg* 2020;163(6):1087 to 1096.
[PubMed 32660332](#) · [doi 10.1177/0194599820931454](#)
42. **Brietzke 2014** slides 12, 13, 14
Brietzke SE, Shin JJ, Choi S, et al. Clinical consensus statement: pediatric chronic rhinosinusitis. *Otolaryngol Head Neck Surg* 2014;151(4):542 to 553.
[PubMed 25274375](#) · [doi 10.1177/0194599814549302](#)
43. **Jeffe 2012** slide 13
Jeffe JS, Bhushan B, Schroeder JW. Nasal saline irrigation in children: a study of compliance and tolerance. *Int J Pediatr Otorhinolaryngol* 2012;76(3):409 to 413.
[PubMed 22266167](#) · [doi 10.1016/j.ijporl.2011.12.022](#)
44. **Latek 2023** slide 13
Latek M, Lacwik P, Molinska K, et al. Effect of an Intranasal Corticosteroid on Quality of Life and Local Microbiome in Young Children With Chronic Rhinosinusitis: A Randomized Clinical Trial. *JAMA Pediatr* 2023;177(4):345 to 352.
[PubMed 36848113](#) · [doi 10.1001/jamapediatrics.2022.6172](#) · [full text PMC9972242](#)
45. **CKS 2025** slide 13
NICE Clinical Knowledge Summaries. Sinusitis: Management, Scenario: Chronic sinusitis (last revised October 2025).
[CKS, chronic sinusitis](#)
46. **Otten 1994** slide 13
Otten HW, Antvelink JB, Ruyter de Wildt H, et al. Is antibiotic treatment of chronic sinusitis effective in children?. *Clin Otolaryngol Allied Sci* 1994;19(3):215 to 217.
[PubMed 7923842](#) · [doi 10.1111/j.1365-2273.1994.tb01217.x](#)
47. **Ramadan 2008** slide 14
Ramadan HH, Cost JL. Outcome of adenoidectomy versus adenoidectomy with maxillary sinus wash for chronic rhinosinusitis in children. *Laryngoscope* 2008;118(5):871 to 873.
[PubMed 18520186](#) · [doi 10.1097/MLG.0b013e3181653422](#)
48. **Gerber 2018** slide 14
Gerber ME, Kennedy AA. Adenoidectomy With Balloon Catheter Sinuplasty: A Randomized Trial for Pediatric Rhinosinusitis. *Laryngoscope* 2018;128(12):2893 to 2897.
[PubMed 30195275](#) · [doi 10.1002/lary.27270](#)
49. **Brietzke 2008** slides 14, 55
Brietzke SE, Brigger MT. Adenoidectomy outcomes in pediatric rhinosinusitis: a meta-analysis. *Int J Pediatr Otorhinolaryngol* 2008;72(10):1541 to 1545.
[PubMed 18723228](#) · [doi 10.1016/j.ijporl.2008.07.008](#)

50. **Hebert 1998** slide 14
Hebert RL, Bent JP. Meta-analysis of outcomes of pediatric functional endoscopic sinus surgery. Laryngoscope 1998;108(6):796 to 799.
[PubMed 9628491](#) · [doi 10.1097/00005537-199806000-00004](#)
Not named on the slide; the source of one of its figures.
51. **ACB 2014** slide 15
Association for Clinical Biochemistry and Laboratory Medicine with the Cystic Fibrosis Trust. Guidelines for the Performance of the Sweat Test for the Investigation of Cystic Fibrosis in the UK, 2nd version, March 2014, section 6.1.
[Guideline \(PDF\)](#)
52. **Schlüter 2020** slide 15
Schlüter DK, Southern KW, Dryden C, et al. Impact of newborn screening on outcomes and social inequalities in cystic fibrosis: a UK CF registry-based study. Thorax 2020;75(2):123 to 131.
[PubMed 31771956](#) · [doi 10.1136/thoraxinl-2019-213179](#) · [full text PMC7029232](#)
53. **CF Trust 2024** slide 15
Cystic Fibrosis Trust. Standards for the clinical care of children and adults with cystic fibrosis in the UK, third edition, August 2024, p 30, section 5.1.2, Diagnosis through clinical features.
[Standards \(PDF\)](#)
54. **Leigh 2013** slide 15
Leigh MW, Hazucha MJ, Chawla KK, et al. Standardizing nasal nitric oxide measurement as a test for primary ciliary dyskinesia. Ann Am Thorac Soc 2013;10(6):574 to 581.
[PubMed 24024753](#) · [doi 10.1513/AnnalsATS.201305-110OC](#) · [full text PMC3960971](#)
55. **Shoemark 2025** slide 15
Shoemark A, Goutaki M, Kinghorn B, et al. European Respiratory Society and American Thoracic Society guidelines for the diagnosis of primary ciliary dyskinesia. Eur Respir J 2025;66(6).
[PubMed 41005984](#) · [doi 10.1183/13993003.00745-2025](#) · [full text PMC13101888](#)
56. **Kekeç 2026** slide 15
Kekeç H, Şişmanlar Eyüboğlu T, Çetinkaya AB, et al. Nasal polyps in childhood: insights from a pediatric pulmonology cohort. Turk J Pediatr 2026;68(2):277 to 287.
[PubMed 42172462](#) · [doi 10.24953/turkijpediatr.2026.7007](#)
57. **NICE NG78** slide 15
NICE. Cystic fibrosis: diagnosis and management. NICE guideline NG78, published 25 October 2017, recommendation 1.1.2.
[NICE NG78](#)
58. **Summaries of Product Characteristics: biologics** slide 16
Electronic Medicines Compendium (emc), Summaries of Product Characteristics: Dupixent (dupilumab), emc 8553, last updated 26 Nov 2025; Xolair (omalizumab), emc 4725, last updated 13 Mar 2024; Nucala (mepolizumab), emc 10563, last updated 12 Jan 2026; Tezspire (tezepelumab), emc 14064, last updated 15 Dec 2025; Exdensur (depemokimab), emc 101774, last updated 14 Sep 2026.
[Dupixent](#) · [Xolair](#) · [Nucala](#) · [Tezspire](#) · [Exdensur](#)
59. **Kimple 2022** slide 16
Kimple AJ, Senior BA, Naureckas ET, et al. Cystic Fibrosis Foundation otolaryngology care multidisciplinary consensus recommendations. Int Forum Allergy Rhinol 2022;12(9):1089 to 1103.
[PubMed 35089650](#) · [doi 10.1002/alr.22974](#) · [full text PMC9545592](#)
60. **Lee 2016** slide 16
Lee DH, Yoon TM, Lee JK, et al. Difference of antrochoanal polyp between children and adults. Int J Pediatr Otorhinolaryngol 2016;84:143 to 146.
[PubMed 27063770](#) · [doi 10.1016/j.ijporl.2016.03.004](#)
61. **Frosini 2009** slide 16
Frosini P, Picarella G, De Campora E. Antrochoanal polyp: analysis of 200 cases. Acta Otorhinolaryngol Ital 2009;29(1):21 to 26.
[PubMed 19609378](#) · [full text PMC2689564](#)
Not read: cited through Lee 2016.
62. **Galluzzi 2018** slide 16
Galluzzi F, Pignataro L, Maddalone M, et al. Recurrences of surgery for antrochoanal polyps in children: A systematic review. Int J Pediatr Otorhinolaryngol 2018;106:26 to 30.
[PubMed 29447886](#) · [doi 10.1016/j.ijporl.2017.12.035](#)

63. **Petitjean 2025** slide 16
Petitjean M, Letierce A, Bonnel AS, et al. Beyond the Lung. Impact of Elexacaftor/Tezacaftor/Ivacaftor on Sinonasal Disease in Children With Cystic Fibrosis. *Int Forum Allergy Rhinol* 2025;15(7):715 to 723.
[PubMed 40047648](#) · [doi 10.1002/alr.23557](#) · [full text PMC12227108](#)
64. **SMC 2024** slide 16
Scottish Medicines Consortium. Ivacaftor, tezacaftor and elexacaftor (Kaftrio), SMC2713, advice published 24 July 2024.
[SMC advice](#)
65. **Wald 2013** slides 17, 55
Wald ER, Applegate KE, Bordley C, et al. Clinical practice guideline for the diagnosis and management of acute bacterial sinusitis in children aged 1 to 18 years. *Pediatrics* 2013;132(1):e262 to e280.
[PubMed 23796742](#) · [doi 10.1542/peds.2013-1071](#)
66. **NICE NG79** slide 18
NICE. Sinusitis (acute): antimicrobial prescribing. NICE guideline NG79, published 27 October 2017, recommendations 1.1 to 1.3.
[NICE NG79](#)
67. **MHRA 2026** slide 18
MHRA. Nasal decongestant sprays and drops containing xylometazoline hydrochloride or oxymetazoline hydrochloride: increased risk of rebound congestion, rhinitis medicamentosa, and tachyphylaxis with overuse. Drug Safety Update, 30 April 2026.
[GOV.UK](#)
68. **Shaikh 2023** slide 18
Shaikh N, Hoberman A, Shope TR, et al. Identifying Children Likely to Benefit From Antibiotics for Acute Sinusitis: A Randomized Clinical Trial. *JAMA* 2023;330(4):349 to 358.
[PubMed 37490085](#) · [doi 10.1001/jama.2023.10854](#) · [full text PMC10370259](#)
A correction was published (PubMed 38864163).
69. **Shaikh 2014** slide 18
Shaikh N, Wald ER. Decongestants, antihistamines and nasal irrigation for acute sinusitis in children. *Cochrane Database Syst Rev* 2014;2014(10):CD007909.
[PubMed 25347280](#) · [doi 10.1002/14651858.CD007909.pub4](#) · [full text PMC7182143](#)

Complications slides 19 to 33

70. **Hansen 2012** slide 19
Hansen FS, Hoffmans R, Georgalas C, et al. Complications of acute rhinosinusitis in The Netherlands. *Fam Pract* 2012;29(2):147 to 153.
[PubMed 21896505](#) · [doi 10.1093/fampra/cmr062](#)
71. **Murphy 2014** slide 19
Murphy C, Livingstone I, Foot B, et al. Orbital cellulitis in Scotland: current incidence, aetiology, management and outcomes. *Br J Ophthalmol* 2014;98(11):1575 to 1578.
[PubMed 24939424](#) · [doi 10.1136/bjophthalmol-2014-305222](#)
72. **Chandler 1970** slide 19
Chandler JR, Langenbrunner DJ, Stevens ER. The pathogenesis of orbital complications in acute sinusitis. *Laryngoscope* 1970;80(9):1414 to 1428.
[PubMed 5470225](#) · [doi 10.1288/00005537-197009000-00007](#)
Not read: the five stages are taken from Scott-Brown, volume 2, chapter 24, p 267.
73. **Mortimore 1997** slide 19
Mortimore S, Wormald PJ. The Groote Schuur hospital classification of the orbital complications of sinusitis. *J Laryngol Otol* 1997;111(8):719 to 723.
[PubMed 9327008](#) · [doi 10.1017/s0022215100138459](#)
74. **Anselmo-Lima 2023** slide 20
Anselmo-Lima WT, Soares MR, Fonseca JP, et al. Revisiting the orbital complications of acute rhinosinusitis. *Braz J Otorhinolaryngol* 2023;89(5):101316.
[PubMed 37678009](#) · [doi 10.1016/j.bjorl.2023.101316](#) · [full text PMC10495636](#)
75. **ENT UK 2017** slides 21, 23
ENT UK. Orbital cellulitis management guideline, for adults and paed (revised flow chart, 2017; Ball S, Okonkwo A, Powell S, Carrie S).
[Flow chart \(PDF\)](#)

76. **Mathew 2014** slide 21
Mathew AV, Craig E, Al-Mahmoud R, et al. Paediatric post-septal and pre-septal cellulitis: 10 years' experience at a tertiary-level children's hospital. Br J Radiol 2014;87(1033):20130503.
[PubMed 24288398](#) · [doi 10.1259/bjr.20130503](#) · [full text PMC3898973](#)
77. **Herrmann 2004** slide 21
Herrmann BW, Forsen JW. Simultaneous intracranial and orbital complications of acute rhinosinusitis in children. Int J Pediatr Otorhinolaryngol 2004;68(5):619 to 625.
[PubMed 15081240](#) · [doi 10.1016/j.ijporl.2003.12.010](#)
78. **Crosbie 2016** slide 21
Crosbie RA, Nairn J, Kubba H. Management of paediatric periorbital cellulitis: Our experience of 243 children managed according to a standardised protocol 2012-2015. Int J Pediatr Otorhinolaryngol 2016;87:134 to 138.
[PubMed 27368460](#) · [doi 10.1016/j.ijporl.2016.06.025](#)
79. **Garcia 2000** slides 21, 23, 24, 26, 27
Garcia GH, Harris GJ. Criteria for nonsurgical management of subperiosteal abscess of the orbit: analysis of outcomes 1988-1998. Ophthalmology 2000;107(8):1454-6; discussion 1457-8.
[PubMed 10919887](#) · [doi 10.1016/s0161-6420\(00\)00242-6](#)
80. **Rudloe 2010** slide 21
Rudloe TF, Harper MB, Prabhu SP, et al. Acute periorbital infections: who needs emergent imaging?. Pediatrics 2010;125(4):e719 to e726.
[PubMed 20194288](#) · [doi 10.1542/peds.2009-1709](#)
81. **Pushker 2013** slide 22
Pushker N, Tejwani LK, Bajaj MS, et al. Role of oral corticosteroids in orbital cellulitis. Am J Ophthalmol 2013;156(1):178-183.e1.
[PubMed 23622565](#) · [doi 10.1016/j.ajo.2013.01.031](#)
Not named on the slide; the source of one of its figures.
82. **Oxford 2006** slide 23
Oxford LE, McClay J. Medical and surgical management of subperiosteal orbital abscess secondary to acute sinusitis in children. Int J Pediatr Otorhinolaryngol 2006;70(11):1853 to 1861.
[PubMed 16905200](#) · [doi 10.1016/j.ijporl.2006.05.012](#)
83. **McKerlie 2023** slides 23, 24
McKerlie MF, Wolter NE, Mahant S, et al. Abscess volume as a predictor of surgical intervention in children hospitalized with orbital cellulitis: A multicentre cohort study. Int J Pediatr Otorhinolaryngol 2023;171:111629.
[PubMed 37437497](#) · [doi 10.1016/j.ijporl.2023.111629](#)
84. **Okonkwo 2018** slide 24
Okonkwo ACO, Powell S, Carrie S, et al. A review of periorbital cellulitis guidelines in Fifty-One Acute Admitting Units in the United Kingdom. Clin Otolaryngol 2018;43(2):718 to 721.
[PubMed 29054126](#) · [doi 10.1111/coa.13020](#)
85. **Kornelsen 2021** slide 24
Kornelsen E, Mahant S, Parkin P, et al. Corticosteroids for periorbital and orbital cellulitis. Cochrane Database Syst Rev 2021;4(4):CD013535.
[PubMed 33908631](#) · [doi 10.1002/14651858.CD013535.pub2](#) · [full text PMC8092453](#)
86. **Gill 2022** slide 24
Gill PJ, Mahant S, Hall M, et al. Association Between Corticosteroids and Outcomes in Children Hospitalized With Orbital Cellulitis. Hosp Pediatr 2022;12(1):70 to 89.
[PubMed 34877598](#) · [doi 10.1542/hpeds.2021-005910](#)
87. **Schwartz 2023** slide 24
Schwartz TR, Adams MD, Wertz A. Systemic corticosteroids for orbital complications of pediatric rhinosinusitis: A systematic review. Int J Pediatr Otorhinolaryngol 2023;167:111336.
[PubMed 36868145](#) · [doi 10.1016/j.ijporl.2022.111336](#)
88. **Taubenslag 2016** slides 26, 28
Taubenslag KJ, Chelnis JG, Mawn LA. Management of frontal sinusitis-associated subperiosteal abscess in children less than 9 years of age. J AAPOS 2016;20(6):527-531.e1.
[PubMed 27810421](#) · [doi 10.1016/j.jaapos.2016.08.007](#)

89. **Harris 1994** slides 26, 27
Harris GJ. Subperiosteal abscess of the orbit. Age as a factor in the bacteriology and response to treatment. *Ophthalmology* 1994;101(3):585 to 595.
[PubMed 8127580](#) · [doi 10.1016/s0161-6420\(94\)31297-8](#)
90. **Nghiem 2024** slide 28
Nghiem AZ, Sanz-Magallon Duque de Estrada B, Farwana R, et al. Pediatric preseptal and orbital cellulitis - a 6 year experience from a London tertiary centre. *Orbit* 2024;43(3):301 to 306.
[PubMed 38165256](#) · [doi 10.1080/01676830.2023.2296563](#)
91. **Milinis 2022** slides 30, 31
Milinis K, Thompson N, Atsmoni SC, et al. Sinogenic Intracranial Suppuration in Children: Systematic Review and Meta-analysis. *Otolaryngol Head Neck Surg* 2022;167(2):215 to 223.
[PubMed 34491863](#) · [doi 10.1177/01945998211043847](#)
92. **Hakim 2006** slide 30
Hakim HE, Malik AC, Aronyk K, et al. The prevalence of intracranial complications in pediatric frontal sinusitis. *Int J Pediatr Otorhinolaryngol* 2006;70(8):1383 to 1387.
[PubMed 16530852](#) · [doi 10.1016/j.ijporl.2006.02.003](#)
93. **Edwards-Bailey 2025** slides 30, 32
Edwards-Bailey A, Rybka N, Hollingworth MA, et al. Community-acquired cerebral abscess and intracranial empyemas in children: a prospective cohort study. *J Neurosurg Pediatr* 2025;36(3):286 to 295.
[PubMed 40479826](#) · [doi 10.3171/2025.2.PEDS24227](#)
94. **Felsenstein 2013** slide 30
Felsenstein S, Williams B, Shingadia D, et al. Clinical and microbiologic features guiding treatment recommendations for brain abscesses in children. *Pediatr Infect Dis J* 2013;32(2):129 to 135.
[PubMed 23001027](#) · [doi 10.1097/INF.0b013e3182748d6e](#)
95. **Sexton 2022** slides 31, 55
Sexton GP, Nae A, Cleere EF, et al. Concurrent management of suppurative intracranial complications of sinusitis and acute otitis media in children. *Int J Pediatr Otorhinolaryngol* 2022;156:111093.
[PubMed 35272257](#) · [doi 10.1016/j.ijporl.2022.111093](#)
96. **van der Poel 2025** slide 31
van der Poel N, Shah G, Wolter N, et al. Management of pott's puffy tumor: a Delphi-method international clinical consensus statement. *Eur Arch Otorhinolaryngol* 2025;282(9):4669 to 4680.
[PubMed 40782155](#) · [doi 10.1007/s00405-025-09589-1](#) · [full text PMC12423165](#)
97. **Milinis 2023** slides 32, 55
Milinis K, Thiagarajan J, Leong S, et al. Review of management practices of sinogenic intracranial abscesses in children. *J Laryngol Otol* 2023;137(10):1135 to 1140.
[PubMed 36751894](#) · [doi 10.1017/S0022215123000166](#)
98. **Zhou 2026** slides 32, 33, 55
Zhou Y, Karsonovich T, Adebayo B, et al. Neurosurgical intervention and outcomes in pediatric sinogenic intracranial infection. *J Neurosurg Pediatr* 2026. Published online 28 August 2026, ahead of print.
[PubMed 42664514](#) · [doi 10.3171/2026.3.PEDS2614](#)
99. **Children (Scotland) Act 1995** slides 32, 49
Children (Scotland) Act 1995 (c. 36), sections 1(1)(d) and 15(5).
[Section 1](#) · [Section 15](#)
100. **Age of Legal Capacity (Scotland) Act 1991** slides 32, 49, 55
Age of Legal Capacity (Scotland) Act 1991 (c. 50), sections 1(1) and 2(4).
[Section 1](#) · [Section 2](#)
101. **Heran 2003** slide 33
Heran NS, Steinbok P, Cochrane DD. Conservative neurosurgical management of intracranial epidural abscesses in children. *Neurosurgery* 2003;53(4):893-7; discussion 897-8.
[PubMed 14519222](#) · [doi 10.1227/01.neu.0000084163.51521.58](#)
102. **Patel 2015** slide 33
Patel AP, Masterson L, Deutsch CJ, et al. Management and outcomes in children with sinogenic intracranial abscesses. *Int J Pediatr Otorhinolaryngol* 2015;79(6):868 to 873.
[PubMed 25887135](#) · [doi 10.1016/j.ijporl.2015.03.020](#)

Nasal trauma and the septum slides 34 to 49

103. Verwoerd 2010 slides 34, 35, 43, 45

Verwoerd CD, Verwoerd-Verhoef HL. Rhinosurgery in children: developmental and surgical aspects of the growing nose. *GMS Curr Top Otorhinolaryngol Head Neck Surg* 2010;9:Doc05.

[PubMed 22073109](#) · [doi 10.3205/cto000069](#) · [full text PMC3199823](#)

104. van Loosen 1996 slide 34

Van Loosen J, Van Zanten GA, Howard CV, et al. Growth characteristics of the human nasal septum. *Rhinology* 1996;34(2):78 to 82.

[PubMed 8876067](#)

105. van der Heijden 2008 slides 34, 47, 48, 55

van der Heijden P, Korsten-Meijer AG, van der Laan BF, et al. Nasal growth and maturation age in adolescents: a systematic review. *Arch Otolaryngol Head Neck Surg* 2008;134(12):1288 to 1293.

[PubMed 19075124](#) · [doi 10.1001/archoto.2008.501](#)

106. Farkas 1992 slide 34

Farkas LG, Posnick JC, Hreczko TM, et al. Growth patterns of the nasolabial region: a morphometric study. *Cleft Palate Craniofac J* 1992;29(4):318 to 324.

[PubMed 1643060](#) · [doi 10.1597/1545-1569 1992 029 0318 gpotnr 2.3.co 2](#)

107. Graham, Scadding and Bull 2007, chapter 32 slide 36

Carrie S. Nasal foreign bodies, epistaxis and nasal trauma. In: Graham JM, Scadding GK, Bull PD (eds). *Pediatric ENT*. Berlin: Springer; 2007. Chapter 32, p 288, Nasal Trauma.

Textbook teaching.

108. Sayin 2021 slides 37, 38

Sayin I, Yazici ZM, Abakay MA, et al. Nasal Septal Hematoma and Abscess in Children: An Uncommon Otorhinolaryngology Emergency Revisited. *J Craniofac Surg* 2021;32(2):e125 to e128.

[PubMed 33705048](#) · [doi 10.1097/SCS.00000000000006854](#)

109. Ali 2021 slide 37

Ali HM, Zavala H, Chinnadurai S, et al. Nasal septal hematoma in children: Time to diagnosis and resulting complications. *Int J Pediatr Otorhinolaryngol* 2021;145:110734.

[PubMed 33930759](#) · [doi 10.1016/j.ijporl.2021.110734](#)

110. NHS GGC slides 37, 39

NHS Greater Glasgow and Clyde, Right Decisions. Nasal injuries in children, emergency department, Paediatrics (197), version 5, last reviewed 20 May 2026.

[Right Decisions](#)

111. Ghadersohi 2020 slide 37

Ghadersohi S, Francom CR, Prager JD. Non-accidental trauma presenting with nasal septal hematoma or abscess. *Int J Pediatr Otorhinolaryngol* 2020;139:110460.

[PubMed 33091809](#) · [doi 10.1016/j.ijporl.2020.110460](#)

112. Shefer 2024 slide 38

Shefer O, Le J, Daas E, et al. Atraumatic Infected Septal Hematoma in a Pediatric Patient. *Clin Pract Cases Emerg Med* 2024;8(3):311 to 313.

[PubMed 39158259](#) · [doi 10.5811/cpcem.19476](#) · [full text PMC11326054](#)

113. Grymer 1985 slide 39

Grymer LF, Gutierrez C, Stoksted P. Nasal fractures in children: influence on the development of the nose. *J Laryngol Otol* 1985;99(8):735 to 739.

[PubMed 4020268](#) · [doi 10.1017/s0022215100097589](#)

114. GIRFT 2025 slide 39

Getting It Right First Time (GIRFT). Ear, Nose and Throat: referral guidelines (children), 2025, Epistaxis, Indications for referral, p 23.

[Referral guidelines \(PDF\)](#)

115. ENT UK nasal trauma guideline slide 39

ENT UK, Global ENT Guidelines. Nasal trauma/fracture (PDF, created 21 March 2023), Level 3, Timing of reduction and Investigations.

[Guideline \(PDF\)](#)

- 116. ENT UK patient information** slide 39
ENT UK, patient information. Nasal injuries (published 5 November 2021; the page is headed under review).
[ENT UK](#)
- 117. RCEM Learning** slide 39
RCEM Learning. Zygomatic Complex and Nasal Injury, Management, Nasal Fracture (e-learning page, no author or date shown).
[RCEM Learning](#)
- 118. NHS Lothian RefHelp** slide 39
NHS Lothian RefHelp. Paediatric ENT, Nose and Sinus Paediatric: Nasal Fracture Paeds (page signed 24 April 2023).
[RefHelp](#)
- 119. Kang 2021** slide 39
Kang WK, Han DG, Kim SE, et al. Comparison of postoperative outcomes between early and delayed surgery for pediatric nasal fractures. Arch Craniofac Surg 2021;22(2):93 to 98.
[PubMed 33957734](#) · [doi 10.7181/acfs.2021.00122](#) · [full text PMC8107460](#)
- 120. Chapman 2009** slide 39
Chapman VM, Fenton LZ, Gao D, et al. Facial fractures in children: unique patterns of injury observed by computed tomography. J Comput Assist Tomogr 2009;33(1):70 to 72.
[PubMed 19188788](#) · [doi 10.1097/RCT.0b013e318169bfdc](#)
Not named on the slide; the source of one of its figures.
- 121. Din 2020** slides 40, 44
Din H, Bundogji N, Leuin SC. Psychometric Evaluation of the Nasal Obstruction Symptom Evaluation Scale for Pediatric Patients. Otolaryngol Head Neck Surg 2020;162(2):248 to 254.
[PubMed 31818184](#) · [doi 10.1177/0194599819890835](#)
- 122. Howard 2024** slides 40, 46
Howard T, Williams I, Navaratnam A, et al. "Should Pediatric Septal Surgery and Septorhinoplasty Be Performed for Nasal Obstruction?"-A Systematic Review of the Literature. Facial Plast Surg 2024;40(3):378 to 393.
[PubMed 38035612](#) · [doi 10.1055/a-2219-9266](#)
- 123. GIRFT 2026** slide 40
Getting It Right First Time (GIRFT) with ENT UK, BRS, BSFPS and NHS England. Indications for nasal airway surgery, January 2026: page 1 flow chart and the PNIF footnote (Functional septorhinoplasty pathway, 16 plus).
[GIRFT \(PDF\)](#)
- 124. Valls-Mateus 2017** slide 40
Valls-Mateus M, Marino-Sanchez F, Ruiz-Echevarría K, et al. Nasal obstructive disorders impair health-related quality of life in adolescents with persistent allergic rhinitis: A real-life study. Pediatr Allergy Immunol 2017;28(5):438 to 445.
[PubMed 28423474](#) · [doi 10.1111/pai.12724](#)
- 125. Hosokawa 2026** slide 40
Hosokawa Y. Surgical considerations for pediatric nasal septal deviation: A review of current concepts and timing of intervention. Auris Nasus Larynx 2026;53(2):252 to 256.
[PubMed 41671645](#) · [doi 10.1016/j.anl.2026.01.010](#)
- 126. Facial Plastic and Reconstructive Surgery Study Guide, chapter 26** slide 40
Facial Plastic and Reconstructive Surgery Study Guide. Chapter 26, Rhinoplasty, Preoperative assessment, p 373.
Textbook teaching.
- 127. Scott-Brown, volume 3, chapter 81** slide 40
Pre-operative assessment for rhinoplasty. In: Scott-Brown's Otorhinolaryngology, Head and Neck Surgery, 8th edition, volume 3, chapter 81, Photograph review, p 1140.
Textbook teaching.
- 128. GMC, recordings of patients** slides 40, 49
General Medical Council. Making and using visual and audio recordings of patients (in effect 9 May 2011, updated 18 December 2024), Children or young people: making recordings as part of care, paragraph 21.
[GMC](#)
- 129. Carucci 2026** slide 40
Carucci L, Nocerino R, Cantone E, et al. Allergic rhinitis and nasal septum deviation in children: cause, consequence, or bidirectional relationship? Insights from the ARHINASD study. Front Med (Lausanne) 2026;13:1824028.
[PubMed 42328578](#) · [doi 10.3389/fmed.2026.1824028](#) · [full text PMC13277362](#)
A correction was published (PubMed 42328591).

- 130. Kay 2003** slide 40
 Kay DJ, Rosenfeld RM. Quality of life for children with persistent sinonasal symptoms. *Otolaryngol Head Neck Surg* 2003;128(1):17 to 26.
[PubMed 12574754](#) · [doi 10.1067/mhn.2003.41](#)
Not named on the slide; the source of one of its figures.
- 131. Makary 2023** slide 40
 Makary CA, Tumlin P, Asad F, et al. Quality of Life Measurement for Adolescent Patients with Sinonasal Symptoms. *Laryngoscope* 2023;133(5):1052 to 1058.
[PubMed 35638256](#) · [doi 10.1002/lary.30232](#)
Not named on the slide; the source of one of its figures.
- 132. Wartelle 2018** slide 40
 Wartelle S, Simon F, Louis B, et al. Endonasal measurements by acoustic rhinometry in children: A preliminary study. *Int J Pediatr Otorhinolaryngol* 2018;107:93 to 96.
[PubMed 29501319](#) · [doi 10.1016/j.ijporl.2018.01.038](#)
Not named on the slide; the source of one of its figures.
- 133. Welkoborsky 2022** slide 40
 Welkoborsky HJ, Rose-Diekmann C, Vor der Holte AP, et al. Clinical parameters influencing the results of anterior rhinomanometry in children. *Eur Arch Otorhinolaryngol* 2022;279(8):3963 to 3972.
[PubMed 35041066](#) · [doi 10.1007/s00405-021-07218-1](#)
Not named on the slide; the source of one of its figures.
- 134. van Spronsen 2012** slide 40
 van Spronsen E, Ebbens FA, Fokkens WJ. Normal peak nasal inspiratory flow rate values in healthy children aged 6 to 11 years in the Netherlands. *Rhinology* 2012;50(1):22 to 25.
[PubMed 22469601](#) · [doi 10.4193/Rhino.09.119](#)
Not named on the slide; the source of one of its figures.
- 135. Sarnat 2008** slide 41
 Sarnat BG. Some factors related to experimental snout growth. *J Craniofac Surg* 2008;19(5):1308 to 1314.
[PubMed 18812856](#) · [doi 10.1097/SCS.0b013e3181843532](#)
- 136. Freer 1902** slide 41
 Freer OT. The correction of deflections of the nasal septum with a minimum of traumatism. *JAMA* 1902;38(10):636 (pages 636 to 642 in the reference list of Zieliński 2025).
[doi 10.1001/jama.1902.62480100012002b](#)
Not on PubMed and not read: title and date from the Crossref record; credited with Killian for submucous resection by Zieliński 2025.
- 137. Killian 1904** slide 41
 Killian G. Die submuköse Fensterresektion der Nasenscheidewand. *Arch Laryngol* 1904;16:203.
Not on PubMed and not read: cited as reference 8 of Zieliński 2025.
- 138. Editorial 1908** slide 41
 Submucous resection of the nasal septum in children [editorial, no author shown]. *J Laryngol Rhinol Otol* 1908;23(5):234 to 237.
[doi 10.1017/S175514630018093X](#)
Not on PubMed.
- 139. Meeuwis 1993** slides 41, 43, 45
 Meeuwis J, Verwoerd-Verhoef HL, Verwoerd CD. Normal and abnormal nasal growth after partial submucous resection of the cartilaginous septum. *Acta Otolaryngol* 1993;113(3):379 to 382.
[PubMed 8517143](#) · [doi 10.3109/00016489309135829](#)
- 140. Grymer 1997** slide 41
 Grymer LF, Bosch C. The nasal septum and the development of the midface. A longitudinal study of a pair of monozygotic twins. *Rhinology* 1997;35(1):6 to 10.
[PubMed 9200255](#)
- 141. Moss 1968** slide 41
 Moss ML, Bromberg BE, Song IC, et al. The passive role of nasal septal cartilage in mid-facial growth. *Plast Reconstr Surg* 1968;41(6):536 to 542.
[PubMed 5654895](#) · [doi 10.1097/00006534-196806000-00004](#)

142. **Calvo-Henríquez 2020** slide 42
Calvo-Henríquez C, Neves JC, Arancibia-Tagle D, et al. Does pediatric septoplasty compromise midfacial growth? A systematic review. *Eur Arch Otorhinolaryngol* 2020;277(6):1565 to 1574.
[PubMed 32200434](#) · [doi 10.1007/s00405-020-05919-7](#)
143. **El-Hakim 2001** slide 42
El-Hakim H, Crysedale WS, Abdolmel M, et al. A study of anthropometric measures before and after external septoplasty in children: a preliminary study. *Arch Otolaryngol Head Neck Surg* 2001;127(11):1362 to 1366.
[PubMed 11701075](#) · [doi 10.1001/archotol.127.11.1362](#)
144. **D'Ascanio 2010** slides 42, 49
D'Ascanio L, Lancione C, Pompa G, et al. Craniofacial growth in children with nasal septum deviation: a cephalometric comparative study. *Int J Pediatr Otorhinolaryngol* 2010;74(10):1180 to 1183.
[PubMed 20696485](#) · [doi 10.1016/j.ijporl.2010.07.010](#)
145. **Zieliński 2025** slide 42
Zieliński J, Costa S, Cherkas M, et al. Pediatric Septoplasty: Benefits, Challenges, and Clinical Recommendations- Comprehensive Review of Young ESPO. *J Clin Med* 2025;14(15).
[PubMed 40807158](#) · [doi 10.3390/jcm14155537](#) · [full text PMC12347891](#)
146. **Kopacheva-Barsova 2016** slide 43
Kopacheva-Barsova G, Arsova S. The Impact of the Nasal Trauma in Childhood on the Development of the Nose in Future. *Open Access Maced J Med Sci* 2016;4(3):413 to 419.
[PubMed 27703565](#) · [doi 10.3889/oamjms.2016.081](#) · [full text PMC5042625](#)
147. **Dispenza 2009** slide 43
Dispenza F, Saraniti C, Sciandra D, et al. Management of naso-septal deformity in childhood: long-term results. *Auris Nasus Larynx* 2009;36(6):665 to 670.
[PubMed 19411151](#) · [doi 10.1016/j.anl.2009.02.005](#)
148. **Kawai 2021** slide 44
Kawai K, Dombrowski N, AuYeung T, et al. Validation of the Nasal Obstruction Symptom Evaluation Scale in Pediatric Patients. *Laryngoscope* 2021;131(9):E2594 to E2598.
[PubMed 33543767](#) · [doi 10.1002/lary.29420](#)
149. **Scott-Brown, volume 3, chapter 80** slide 45
East C. Rhinoplasty following nasal trauma. In: *Scott-Brown's Otorhinolaryngology, Head and Neck Surgery*, 8th edition, volume 3, chapter 80, Nasal trauma and children, p 1131.
Textbook teaching.
150. **Shah 2022** slide 46
Shah JP, Youn GM, Wei EX, et al. Septoplasty Revision Rates in Pediatric vs Adult Populations. *JAMA Otolaryngol Head Neck Surg* 2022;148(11):1044 to 1050.
[PubMed 36201221](#) · [doi 10.1001/jamaoto.2022.3041](#) · [full text PMC9539730](#)
151. **Tasca 2011** slide 46
Tasca I, Compadretti GC. Nasal growth after pediatric septoplasty at long-term follow-up. *Am J Rhinol Allergy* 2011;25(1):e7 to e12.
[PubMed 21711962](#) · [doi 10.2500/ajra.2011.25.3536](#)
152. **Béjar 1996** slide 46
Béjar I, Farkas LG, Messner AH, et al. Nasal growth after external septoplasty in children. *Arch Otolaryngol Head Neck Surg* 1996;122(8):816 to 821.
[PubMed 8703382](#) · [doi 10.1001/archotol.1996.01890200008002](#)
153. **Chauhan 2010** slide 47
Chauhan N, Warner J, Adamson PA. Adolescent rhinoplasty: challenges and psychosocial and clinical outcomes. *Aesthetic Plast Surg* 2010;34(4):510 to 516.
[PubMed 20333519](#) · [doi 10.1007/s00266-010-9489-7](#)
154. **Khetpal 2022** slide 47
Khetpal S, Dinis J, Peck C, et al. Utilizing Age of Menarche to Optimize Pediatric Rhinoplasty. *J Craniofac Surg* 2022;33(2):444 to 448.
[PubMed 34510067](#) · [doi 10.1097/SCS.00000000000008132](#)

155. Gupta 2017 slide 47

Gupta A, Svider PF, Rayess H, et al. Pediatric rhinoplasty: A discussion of perioperative considerations and systematic review. *Int J Pediatr Otorhinolaryngol* 2017;92:11 to 16.

[PubMed 28012510](#) · [doi 10.1016/j.ijporl.2016.10.027](#)

156. Silinevica 2026 slide 48

Silinevica S, Nassereldine A, Jakobsone G, et al. Vertical Growth of Facial Soft Tissues: A Longitudinal Three-Dimensional Facial Growth Study. *Orthod Craniofac Res* 2026;29(4):649 to 658.

[PubMed 41792884](#) · [doi 10.1111/ocr.70107](#) · [full text PMC13485161](#)

157. GMC 0 to 18, paragraph 31 slide 49

General Medical Council. 0 to 18 years: guidance for all doctors (2007). Making decisions: Assessing the capacity to consent, paragraph 25; If a young person refuses treatment, paragraph 31.

[GMC](#)

158. Montgomery 2015 slide 49

Montgomery v Lanarkshire Health Board [2015] UKSC 11, judgment of 11 March 2015, paragraph 87.

[Judgment](#)

159. RCS 2016 slide 49

Royal College of Surgeons of England. Professional Standards for Cosmetic Surgery, April 2016, p 11.

[RCS \(PDF\)](#)

160. NHS Scotland clinical photography procedures slide 49

NHSIS. Clinical (Patient) Photography and Video Procedures (the multi board procedure adopted by NHS GGC; PDF of 8 June 2023, review date June 2026), section 6.2, Consent for secondary use.

[Procedures \(PDF\)](#)

161. Ori 2021 slide 49

Ori M, Ricci G, Capalbo M, et al. Quick septoplasty in children: Long-term effects on nasal breathing and dentofacial morphology. A prospective cephalometric study. *Auris Nasus Larynx* 2021;48(5):914 to 921.

[PubMed 33685756](#) · [doi 10.1016/j.anl.2021.02.017](#)

162. McCulloch 2023 slide 49

McCulloch and others v Forth Valley Health Board [2023] UKSC 26, judgment of 12 July 2023, paragraph 57.

[Judgment](#)

The cleft nose slides 50 to 54

163. Rossell-Perry 2017 slide 50

Rossell-Perry P. Primary unilateral cleft lip nasal deformity repair using V-Y-Z plasty: An anthropometric study. *Indian J Plast Surg* 2017;50(2):180 to 186.

[PubMed 29343894](#) · [doi 10.4103/ijps.IJPS_215_16](#) · [full text PMC5770932](#)

164. Mulliken 2000 slide 50

Mulliken JB. Repair of bilateral complete cleft lip and nasal deformity--state of the art. *Cleft Palate Craniofac J* 2000;37(4):342 to 347.

[PubMed 10912711](#) · [doi 10.1597/1545-1569_2000_037_0342_robcccl_2.3.co_2](#)

165. Scott-Brown, volume 2, chapter 18 slides 50, 51, 53

Wynne DM, Ferguson L. Cleft lip and palate. In: Scott-Brown's Otorhinolaryngology and Head and Neck Surgery, 8th edition, volume 2, chapter 18. Boca Raton: CRC Press; 2018. Table 18.2, p 190 (alveolar bone graft at 8 to 10 years). *Textbook teaching*.

166. NICE NG233 slide 50

NICE. Otitis media with effusion in under 12s. NICE guideline NG233, published 30 August 2023.

[NICE NG233](#)

167. Pawar 2014 slides 50, 54, 55

Pawar SS, Wang TD. Secondary cleft rhinoplasty. *JAMA Facial Plast Surg* 2014;16(1):58 to 63.

[PubMed 24201895](#) · [doi 10.1001/jamafacial.2013.1562](#)

168. Wolfe 2016 slide 50

Wolfe SA, Nathan NR, MacArthur IR. The Cleft Lip Nose: Primary and Secondary Treatment. *Clin Plast Surg* 2016;43(1):213 to 221.

[PubMed 26616709](#) · [doi 10.1016/j.cps.2015.09.008](#)

169. **Seo 2020** slide 51
Seo HJ, Denadai R, Vamvanij N, et al. Primary Rhinoplasty Does Not Interfere with Nasal Growth: A Long-Term Three-Dimensional Morphometric Outcome Study in Patients with Unilateral Cleft. *Plast Reconstr Surg* 2020;145(5):1223 to 1236.
[PubMed 32332542](#) · [doi 10.1097/PRS.0000000000006744](#)
170. **Haddock 2012** slide 51
Haddock NT, McRae MH, Cutting CB. Long-term effect of primary cleft rhinoplasty on secondary cleft rhinoplasty in patients with unilateral cleft lip-cleft palate. *Plast Reconstr Surg* 2012;129(3):740 to 748.
[PubMed 22373979](#) · [doi 10.1097/PRS.0b013e3182402e8e](#)
171. **Ridgway 2011** slide 51
Ridgway EB, Andrews BT, Labrie RA, et al. Positioning the caudal septum during primary repair of unilateral cleft lip. *J Craniofac Surg* 2011;22(4):1219 to 1224.
[PubMed 21772212](#) · [doi 10.1097/SCS.0b013e31821c0ef1](#)
172. **National Services Scotland** slide 51
NHS National Services Scotland. Cleft Lip and Palate Surgical Service (page published 26 March 2026).
[NSS](#)
173. **Scottish Government 2016** slide 51
Scottish Government. Cleft surgery recommendation. News release, 20 December 2016.
[gov.scot](#)
174. **Zelko 2023** slides 51, 55
Zelko I, Zielinski E, Santiago CN, et al. Primary Cleft Rhinoplasty: A Systematic Review of Results, Growth Restriction, and Avoiding Secondary Rhinoplasty. *Plast Reconstr Surg* 2023;151(3):452e to 462e.
[PubMed 36409217](#) · [doi 10.1097/PRS.0000000000009924](#)
175. **Park 2023** slide 52
Park JJ, Rodriguez Colon R, Arias FD, et al. "Septoplasty" Performed at Primary Cleft Rhinoplasty: A Systematic Review of Techniques and Call for Accurate Terminology. *Cleft Palate Craniofac J* 2023;60(12):1645 to 1654.
[PubMed 35837698](#) · [doi 10.1177/10556656221113997](#)
176. **Ndrianarivony 2025** slide 52
Ndrianarivony SC, Maggiulli F, Herman F, et al. Primary Anterior Septoplasty in a Cleft Repair Improves Deviation of the Anterior Septum but Not That of the Posterior Bone Structure. *Plast Reconstr Surg* 2025;155(5):893e to 901e.
[PubMed 39212973](#) · [doi 10.1097/PRS.00000000000011704](#)
177. **Friel 2015** slide 52
Friel MT, Starbuck JM, Ghoneima AM, et al. Airway Obstruction and the Unilateral Cleft Lip and Palate Deformity: Contributions by the Bony Septum. *Ann Plast Surg* 2015;75(1):37 to 43.
[PubMed 24135640](#) · [doi 10.1097/SAP.0000000000000027](#)
178. **Bins 2024** slides 52, 55
Bins GP, Dourado J, Tang J, et al. "Primary Correction of the Cleft Nasal Septum: A Systematic Review". *Cleft Palate Craniofac J* 2024;61(3):373 to 382.
[PubMed 36120835](#) · [doi 10.1177/10556656221127539](#)
179. **Fell 2023** slide 53
Fell M, Davies A, Davies A, et al. Current Surgical Practice for Children Born with a Cleft lip and/or Palate in the United Kingdom. *Cleft Palate Craniofac J* 2023;60(6):679 to 688.
[PubMed 35199604](#) · [doi 10.1177/10556656221078151](#)
180. **Paterson 2016** slide 53
Paterson M, Rae J, Paterson P, et al. Secondary Alveolar Bone Grafting (CLEFTSiS) 2007-2010. *Cleft Palate Craniofac J* 2016;53(2):141 to 146.
[PubMed 26914161](#) · [doi 10.1597/14-093.1](#)
181. **Heliövaara 2021** slide 54
Heliövaara A, Leikola J. Prediction of orthognathic surgery need in children with unilateral cleft lip palate: Dental arch relationships and 5-year-olds' index. *Orthod Craniofac Res* 2021;24(4):528 to 535.
[PubMed 33440074](#) · [doi 10.1111/ocr.12467](#)
182. **Podleśny 2024** slide 54
Podleśny MH, Ylikontiola L, K Sándor G, et al. Need for orthognathic surgery in cleft patients from Northern Finland. *Acta Odontol Scand* 2024;83:140 to 143.
[PubMed 38605577](#) · [doi 10.2340/aos.v83.40338](#) · [full text PMC11302477](#)

183. Carvalho 2026 slide 54

Carvalho LRA, Gringo CPO, Da Silveira ITT, et al. Nasal Changes After Le Fort I Osteotomy in Individuals With Cleft Lip and Palate: A Systematic Review. *Cleft Palate Craniofac J* 2026. Published online 7 July 2026, ahead of print.

[PubMed 42412015](#) · [doi 10.1177/10556656261462303](#)