

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) ([Brietzke 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 ([Brietzke 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.