Nasal fractures

Trauma to nose

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Nasal trauma

- Aetiology

  - commonly
    - assault
    - motor vehicle accidents
    - sports injuries

Nasal trauma

- Apart from actual fracture of nasal bones, injuries include:
  - soft tissue
  - septal cartilage fracture / dislocation
  - septal bone fracture / dislocation
  - septal haematoma
  - csf leak - cribriform plate or skull base
  - facial bone fracture

Nasal trauma

- Injury results from various forces:
  - frontal
  - lateral → commonest
  - combined

Nasal fractures - classification

- Class 1 - frontal or frontolateral trauma
  - vertical septal fracture
  - depressed or displaced distal part of nasal bones
- Class 2 - lateral trauma
  - horizontal or C-shaped septal fracture
  - bony or cartilaginous septum fracture
  - frontal process of maxilla fracture

Nasal fractures - classification

- Class 3 - high velocity trauma
  - fracture extends to ethmoid labyrinth
  - bony septum rotates posteriorly
  - bridge collapse
  - upturned tip, revealing nostrils
  - depressed nasal bones pushed up under frontal bones
  - apparent inter-ocular space widening

Nasal trauma

- May be part of more extensive injury to face, skull, skull-base, neck, chest …….

REMEMBER TO CONSIDER THE **AIRWAY**

AND EXCLUDE

CERVICAL SPINE INJURIES

Clinical features

- Epistaxis
- Deformity
- Nasal airway obstruction
- Diplopia
- Epiphora

} Naso-fronto-ethmoid fractures

Clinical features

- There is often periorbital swelling and there may be periorbital and subconjunctival ecchymoses
- Septal haematoma may occur

Clinical features

- Assessment may be difficult if not seen immediately
- Thus entirely appropriate in the absence of other injury to reassess 5-7 days later

(except in cases of purely lateral trauma where lateral displacements should be reduced / corrected immediately)

N.B.

- Assess nasal airway patency
- Test ocular movement and function as well as Vth nerve sensation (infra-orbital branch)
- Check dental occlusion

N.B.

- Document all injuries, symptoms and signs
- Supplement notes with drawings, diagrams and photographs

These injuries often require reports for legal purposes and good, clear documentation is vital

People tend to see their faces at least once a day (and often many times) and are thus preoccupied with real and imagined changes / deformities.

Investigations

- Most uncomplicated fractures require none
- In more serious injuries, radiography is important:
  - skull
  - face
  - nasal bones
- CT scan will help to show fracture(s) if there is uncertainty and sufficient reason to exclude the possibility

Management - soft tissue

- Clean wounds and remove foreign material
- Anti-tetanus and antibiotic cover if appropriate
- Abrasions cleaned and left open
- *Steristrips* to small lacerations
- Fine monofilament sutures to large lacerations

Management - fracture

- Nothing if no deformity. Reassure and review

- Class 1 - reduce if early
  - disimpact and realign
  - if swollen, manipulate and reduce at 5-7 days

Management - fracture

Class 2 - septal fracture is often overlapping so fractures redisplace

- manipulation of the nasal bones should follow excision of overlapping edges

Manipulation should not be delayed more than 10 to 14 days as fracture(s) become “sticky” and fixed, making reduction difficult or impossible.

It is also inappropriate to try to reduce an old deformity as the attempt will rarely succeed.

Management - fracture

- Class 3 - requires open reduction
  - depressed nasal bones need elevation and support
  - septum is approached intranasally and reduced antero-inferiorly
  - malunion will require formal septorhinoplasty at 4-6 months if requested

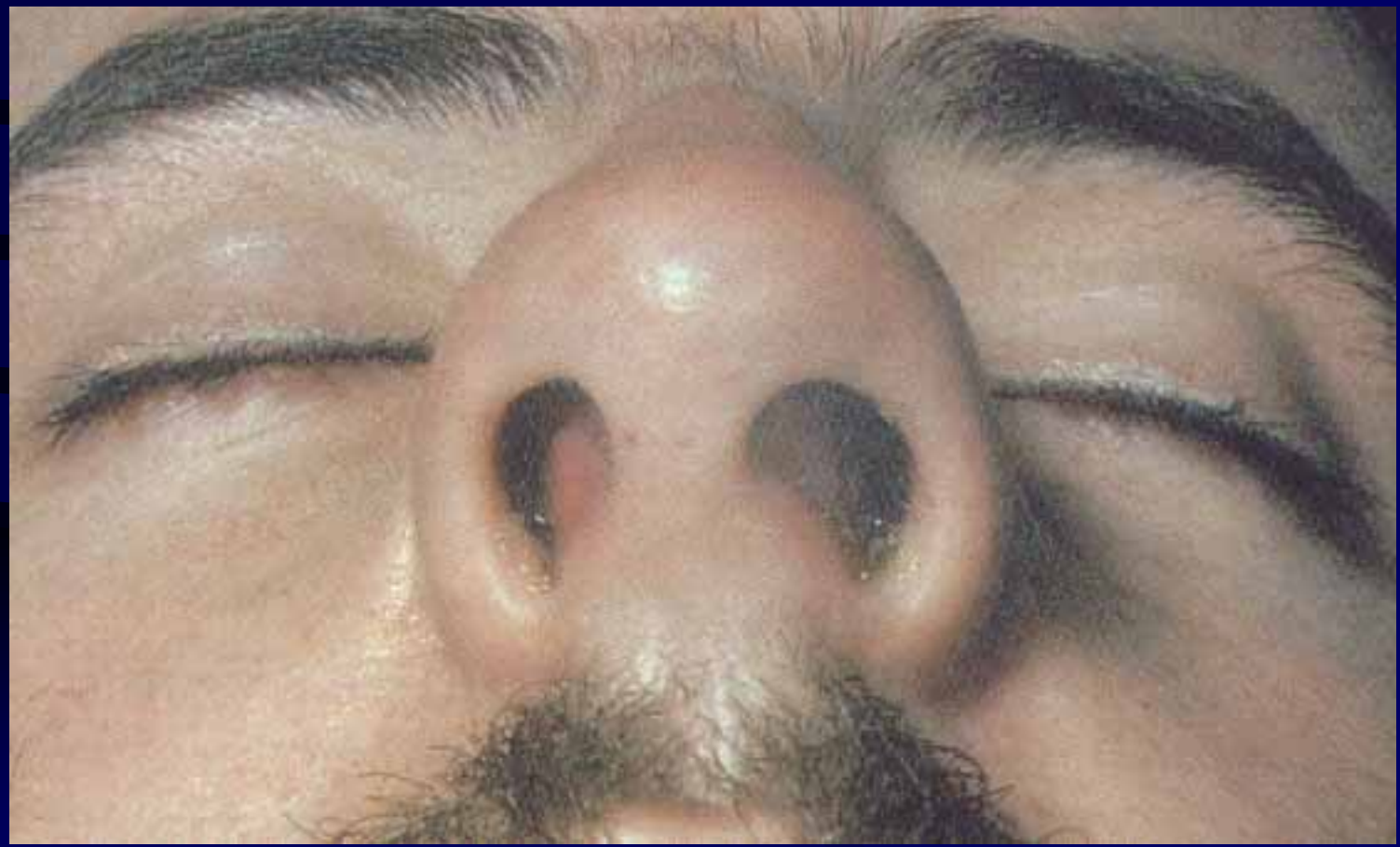
Management - soft tissue

- Septal haematoma

  (collection of blood beneath mucoperichondrium causing bilateral complete obstruction)

  - aspirate if small
  - usually incise and drain with a “quilt” suture to prevent re-collection
  - appropriate antibiotic cover

Septal haematoma



Management - soft tissue

- If septal haematoma is missed or not treated adequately, septal abscess may follow and result in cartilage necrosis and “saddle” deformity

Saddle deformity

Management - csf leak

- Clear rhinorrhoea at any stage after trauma should raise suspicion of cribriform plate injury

- confirm suspicion - glucose in fluid
  - ß transferrin assay
  - fluorescein via LP
  - high-res CT
- antibiotic cover - until leak ceases there is risk of *pneumococcal* meningitis

Management - csf leak

- Most leaks close spontaneously but some require surgical repair:
  - temporalis fascia
  - fascia lata
  - mucosal flap from septum

Remember that low velocity trauma usually results in isolated nasal injury, while high-velocity trauma often has accompanying facial fractures and cervical spine injury must be considered

Other complications

- Respiratory obstruction
  - blood clots
  - dentures / teeth
  - swelling / oedema
  - tongue
  - laryngotracheal injury

Manage

- remove obstruction
- position
- intubate/tracheostomy

Other complications

- Haemorrhage - usually settles spontaneously
  - or easily controlled by pressure
  - torrential bleed from large vessel injury can be treated with direct pressure (if possible), nasal packing or exploration and ligation

Other complications

- Inhalational injuries MAY BE FATAL
  - denture / tooth fragments
  - foreign material
  - blood and gastric contents

Prevent

Secure airway (tracheostomy / intubation)

Other complications

- Sensory loss - anaesthesia over maxillae and upper lip as result of infraorbital nerve damage

  - anosmia, especially if the cribriform plate is damaged

Septal deviations

- The nasal septum comprises cartilage and bone and supports the nasal tip.

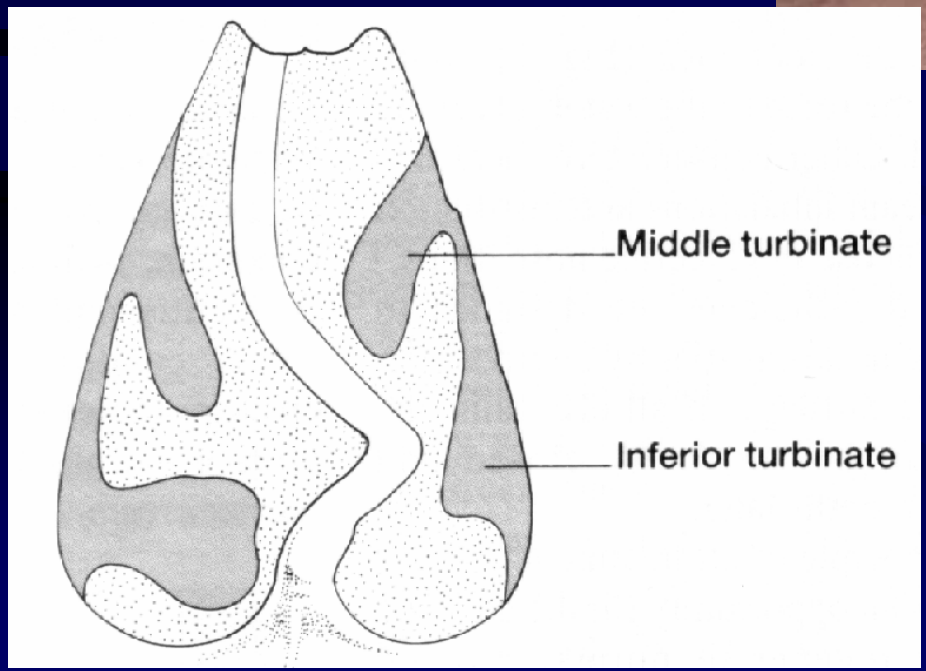
  It is inserted into the columella and the maxillary crest inferiorly and is covered by mucoperichondrium and mucoperiosteum.

Septal deviations

- A truly straight septum is rare - deviations, deflections and spurs occur and, if severe, can cause obstruction.

- Perceptions of “abnormality” are subjective as some patients with minimal loss of airflow complain bitterly while complete obstruction is often an incidental finding in others.

Septal deviation



Causes

- Developmental
- Traumatic

The convexity of the septum is usually to the obstructed side while the concave side often has enlarged (compensatory) inferior and middle turbinates.

Symptoms

- Usually unilateral

- Obstruction - convex side - septum itself
  - concave side - turbinate

- Facial pain / sinusitis - enlarged turbinate

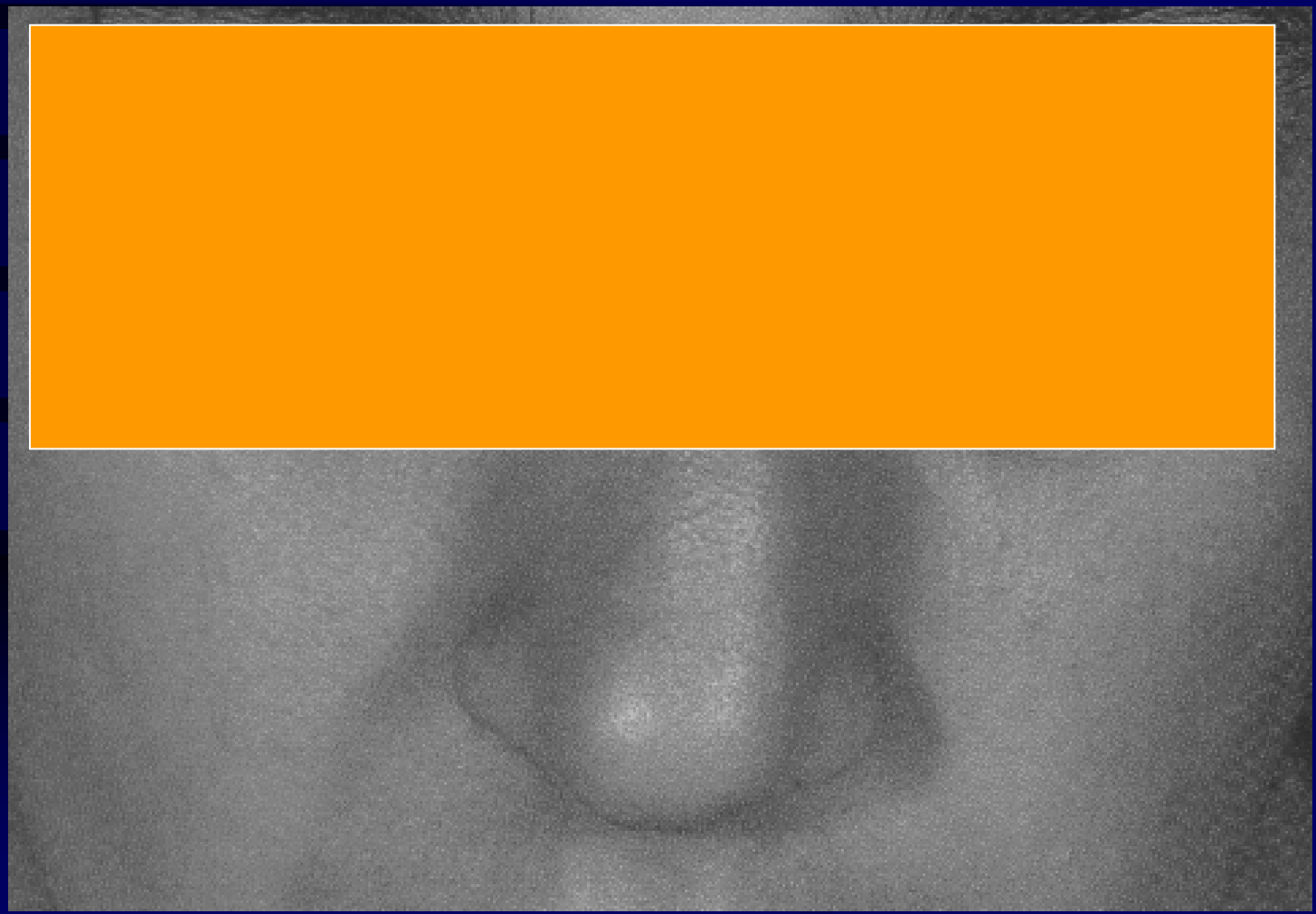
- Chronic otitis media - E.Tube dysfunction

Clinical appearance

- External appearance of the nose gives idea of symmetry.

- Inspection (anterior & posterior rhinoscopy)
  - deflection(s)
  - caudal dislocation
  - spur(s)
  - compensatory turbinate enlargement

External deformity



Treatment

- Depends on degree of symptoms / discomfort
- Is surgery is indicated, choice is between septoplasty and submucosal resection
- Aim is to straighten or remove the deviated section and reposition it in the midline, while retaining adequate support of the nasal dorsum
- Turbinates may be trimmed or realigned