TBH/ GSH
ENT Meeting

E F Post

13.06.2006

Case Summary

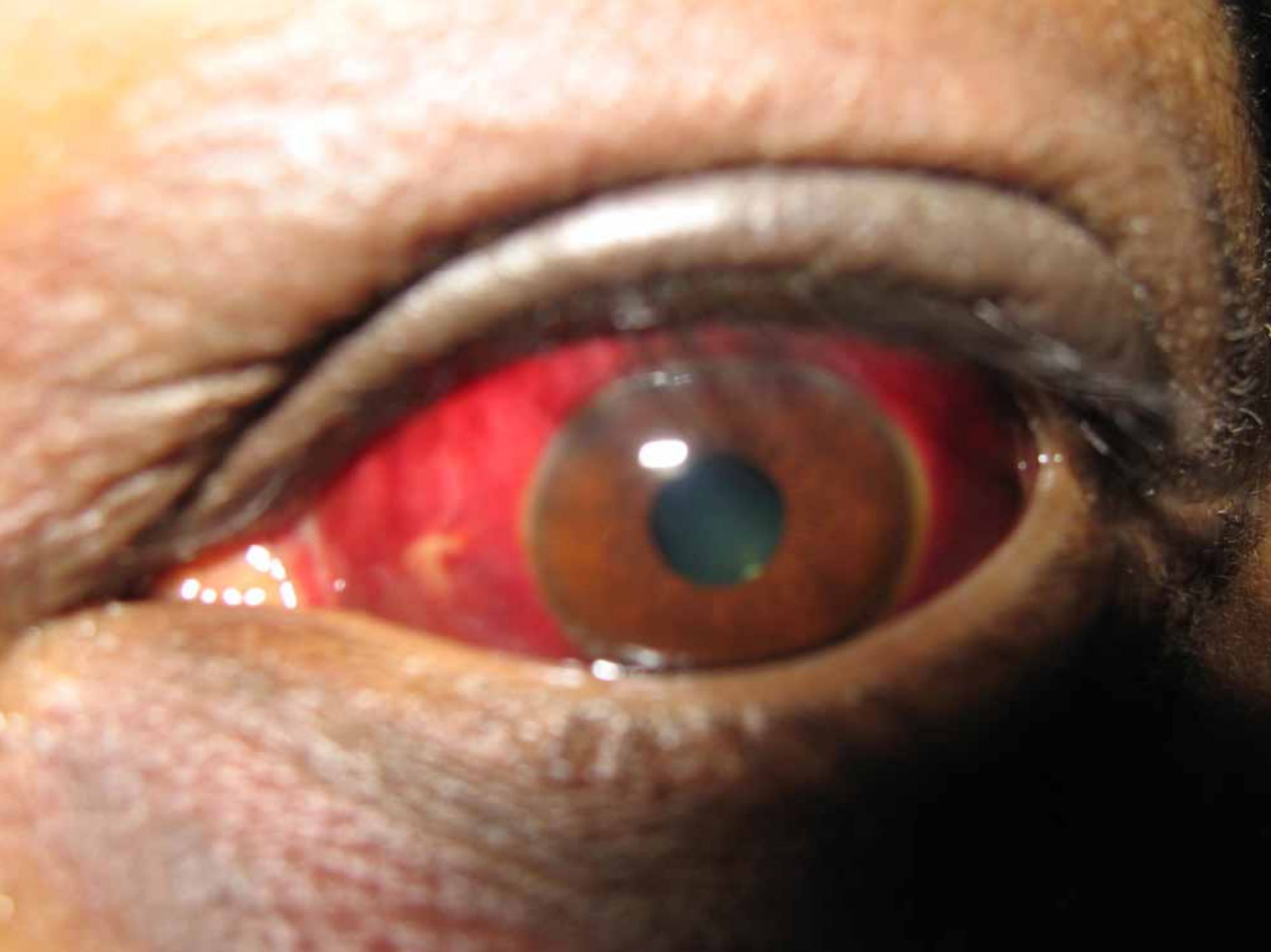
- 35 yo male
- PMHx / Medication: 0
- Symptoms:
  - Nasal obstruction
  - Frontal headaches
- Examination:
  - DNS (L) to back
  - Polyp (L) OMC

Case presentation

- CT:
  - Severe DNS (L)
  - Bilat concha bullosa
  - Bilat opacified anterior ethmoids
  - Bilat obstructed maxillary ostia
- ESS:
  - Septoplasty, Bilat: uncinectomies, antrostomies, open concha bullosa + Ant ethmoidectomies,

Intraoperative

- Straight forward, good field, uncomplicated
- At end unexpected: Staff noted
  - Proptosis
  - Ecchymosis
  - Very tense globe



Orbital Hematoma

Orbital complications of ESS

- Major
  - Vision
    - Blindness (direct II/ ischeamia)
    - Diplopia (medial rectus)
  - Orbital Hematoma
- Minor
  - Orbital subcutaneous emphysema
  - Epiphora

Incidence -major orbital complications

- Stankiewicz et al.
  - 3500 retrospective ethmoidectomies
    - 15 orbital hematoma - 1 temporary blindness
      - 1 total blindness
- Stammberger
  - 6000 ESS
    - 2 orbital hematoma

Origin of bleeding

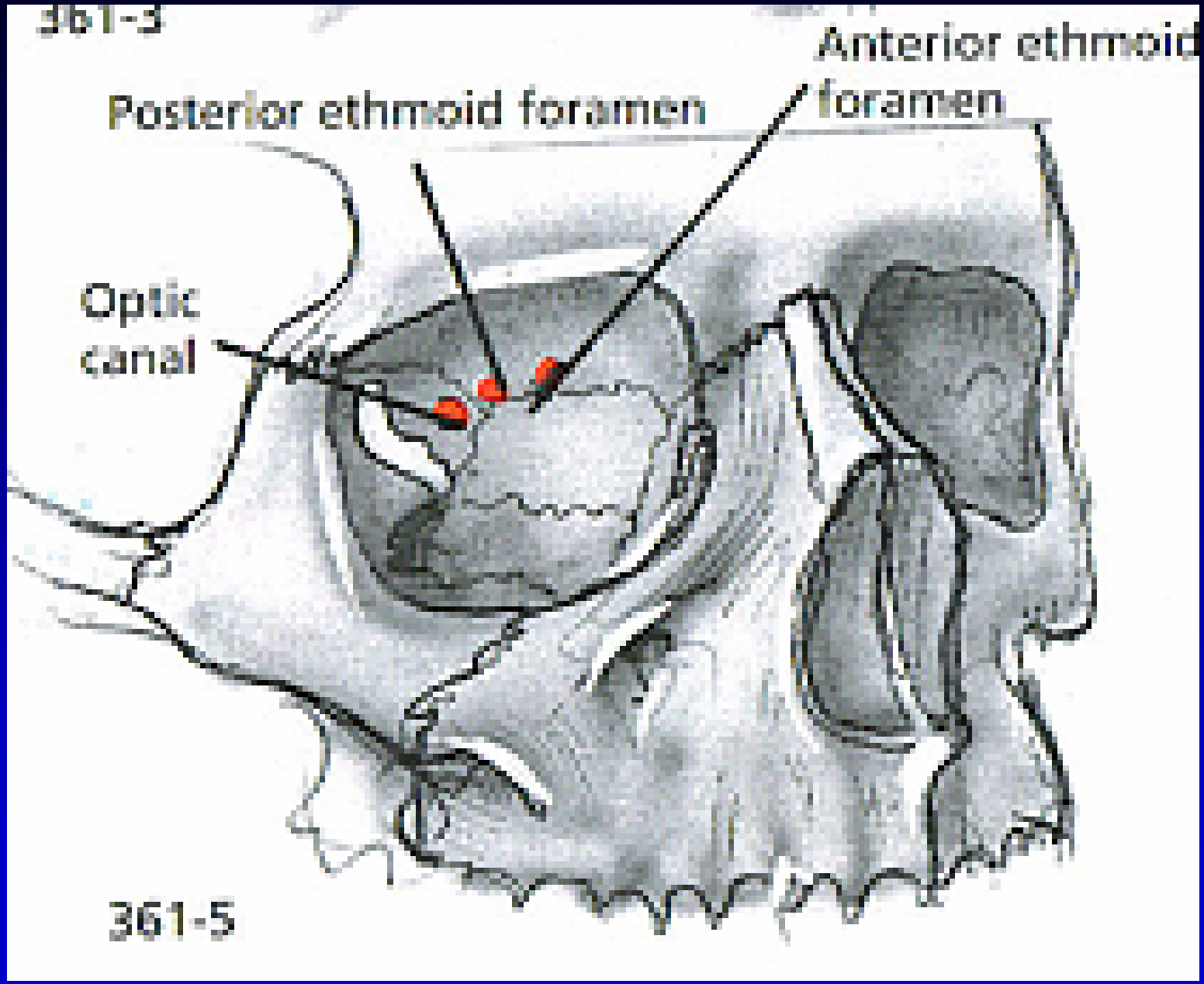
- Anterior ethmoid arteries
- Poster ethmoid arteries
- Orbital veins – LP breech

Increased incidence

- Previous surgery
- Nasal polyposis
- Long standing + extensive disease

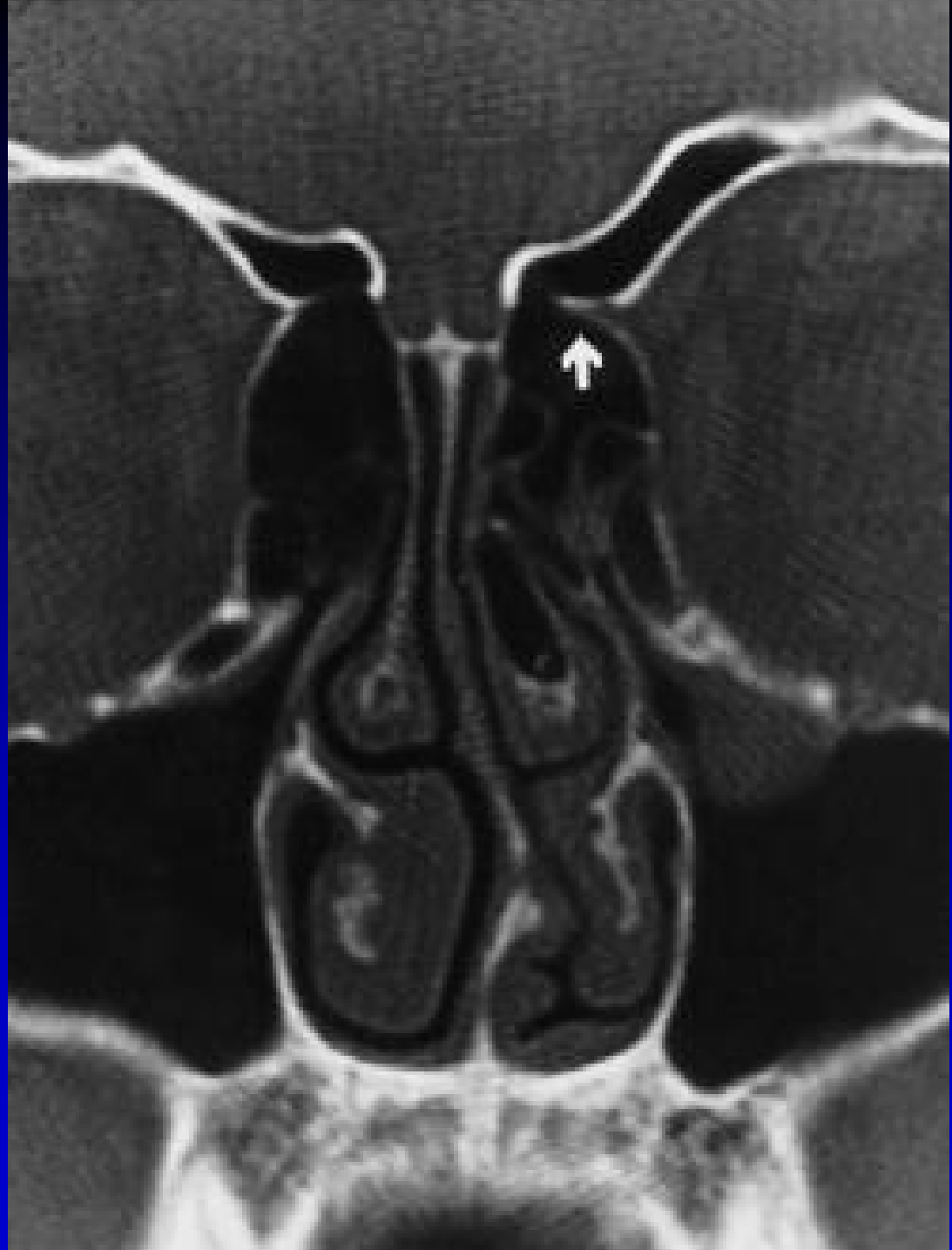
Anatomy

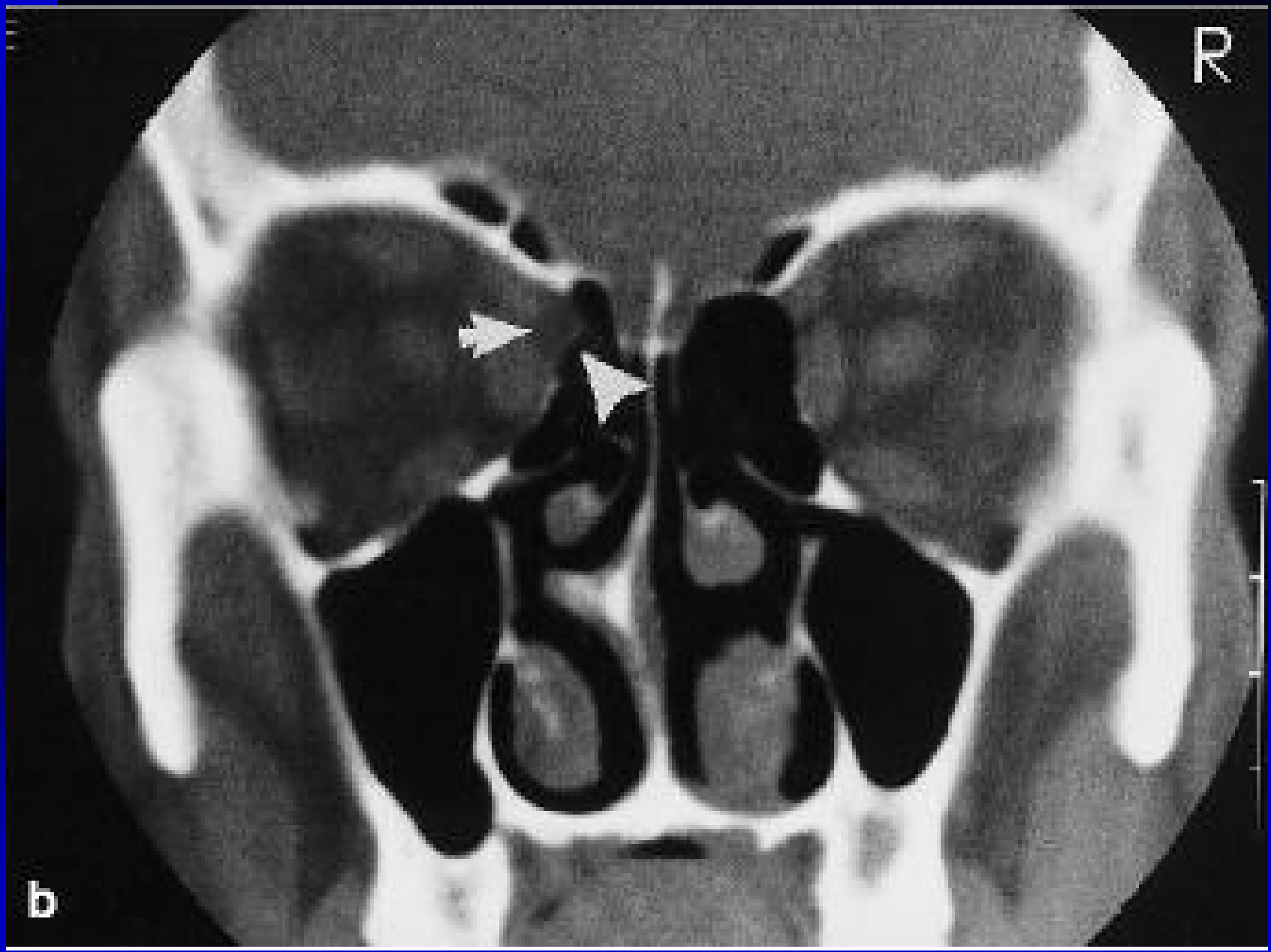
- Ethmoid arteries
  - ICA → ophthalmic art → ethmoid art
  - Lacrimal crest: 24: 12: ± 6 mm
  - Frontal/ ethmoidal suture
  - Anterior: cross ES just posterior to frontal recess through lateral lamella (very thin)
  - Posterior: cross BOS above superior lip of SS thick bone, seldom injured

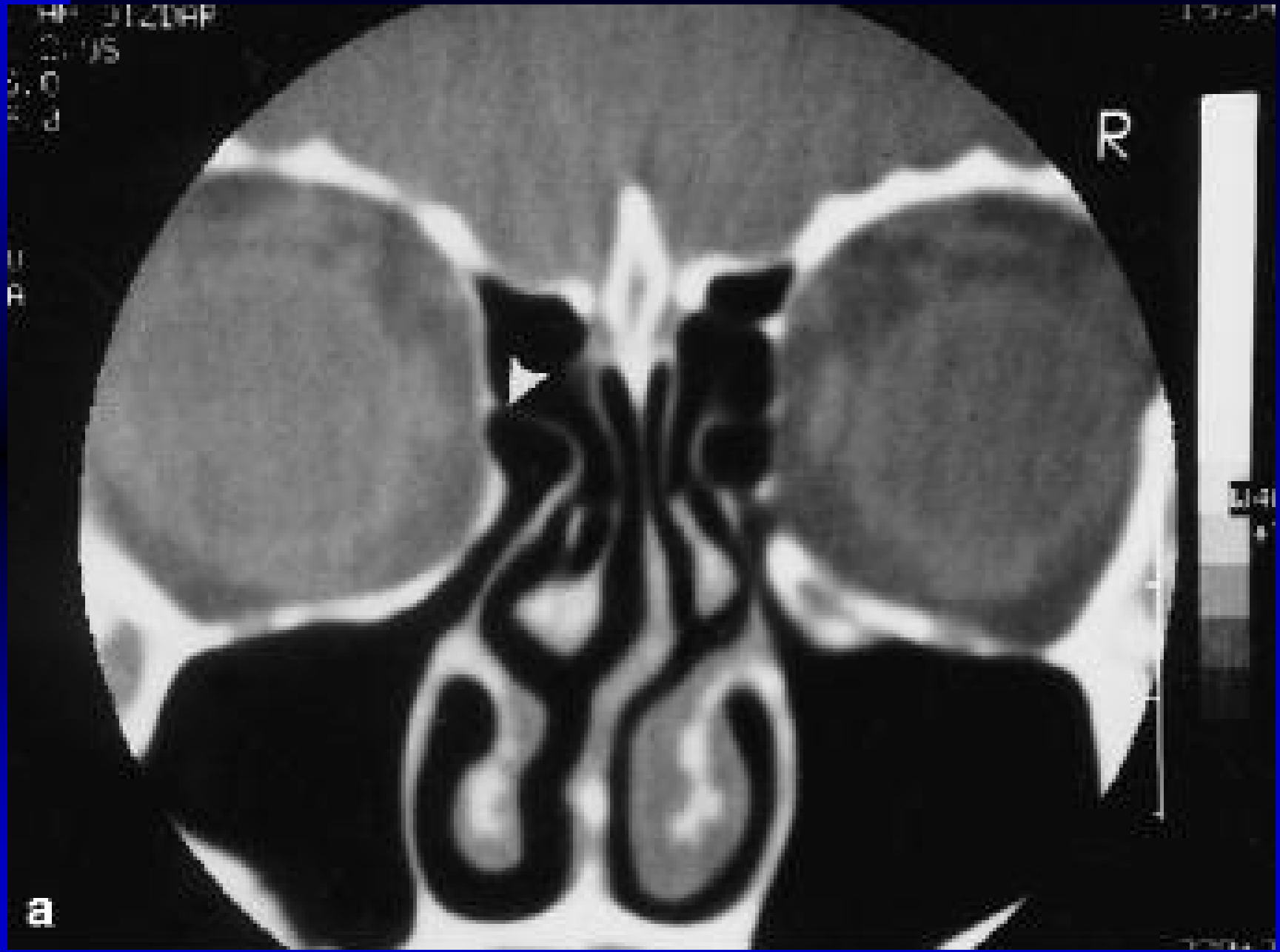

361-3
Anterior ethmoid
foramen
Posterior ethmoid foramen
Optic
canal
361-5

Anatomical variants

- Ethmoid artery
  - Anterior: “sling” / loose superiorly in sinus

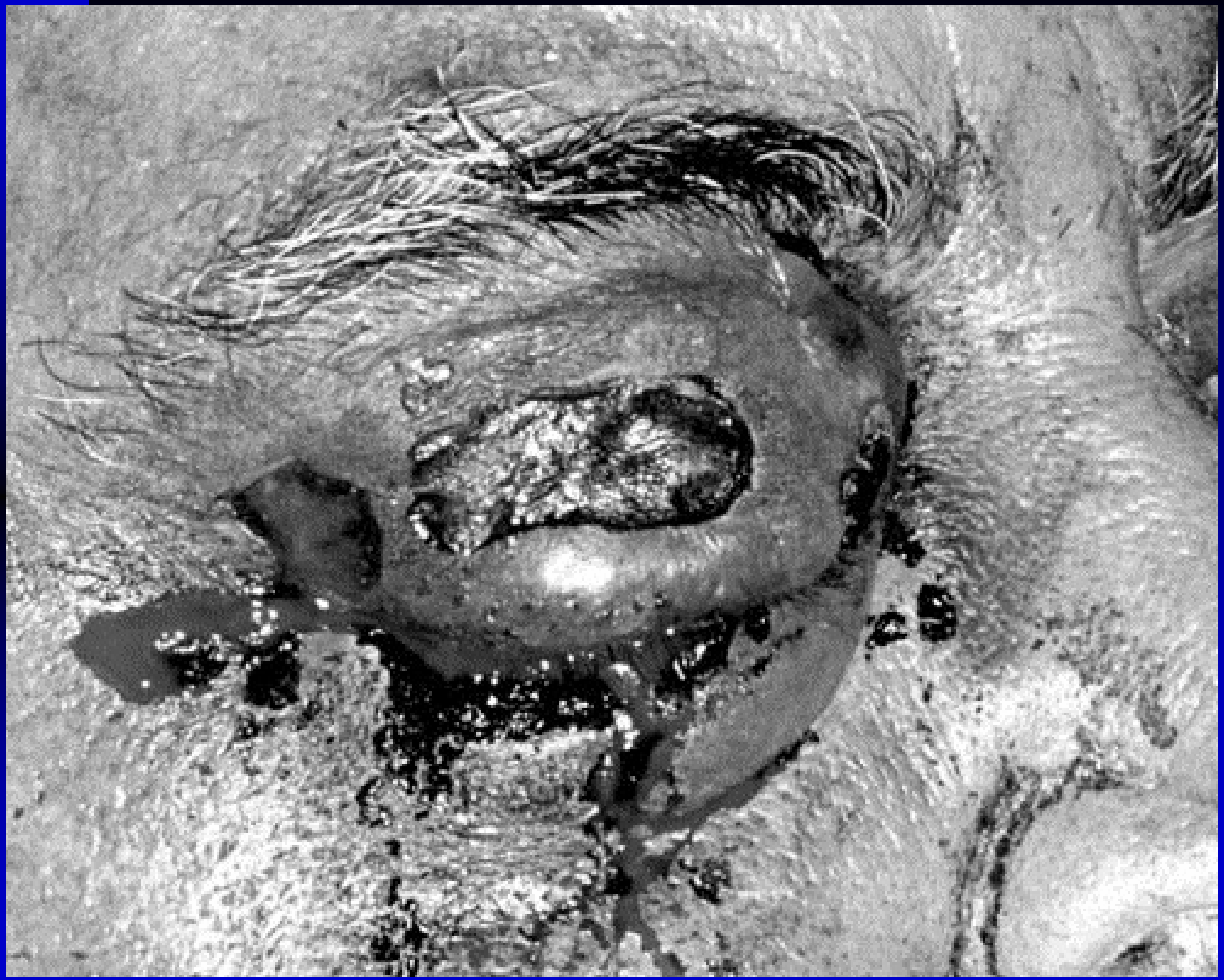



R
b


R
a

Orbital hematoma

- Signs
  - Lid edema } first stage, then progress
  - Ecchymosis }
  - Chemosis
  - Mydriasis
  - Proptosis
  - Loss VA / blindness
  - ESS surgeon tachycardia



Blindness

- Bleed→ ↑ IOP → vein compressed → ↓ venous drainage→↓ perfusion / ischemia
- Ophthalmic artery = resilient to pressure
- Management directed to ↓ IOP

Orbital hematoma

- 1. Arterial:
  - 4/ 15 (Stankiewicz)
  - ant (post) ethmoidal art
  - **Fast** immediate onset.
  - Require urgent intervention; usually surgical
  - Associated epistaxis
  - If cut close to LP: retracts into orbit

Orbital hematoma

- 2. Venous:
  - 11/ 15
  - LP damage with vein disruption
    - Risk if see orbital fat
  - Bleed subperiosteally / intraorbital
  - Slow: even days.
  - Usually medical Rx: 60 –90 min to reduce pressure

Reduce the risk

- **Preoperative:**
  - CT scan
  - Consent
    - <1%, but severe complication

Reduce the risk

- **Intraoperative:**
  - Watch eye
  - (L) side: LP appear > lateral
  - Globe press test (look at LP)

Reduce the risk

- **Postoperative**:
  - Watch for signs of orbital hematoma
    - Observation in ward
    - Instruction to patient: 48hr +

Orbital Hematoma medical MX

- Ophthalmologist
- Eye massage:
  - redistribute intra/ extraocular fluid.
  - CI: previous eye surgery

Medical Mx

- Medications: (venous):
  - Mannitol 1-2g/kg over 20min, fast
    - Osmotically drawing out orbital fluid
    - Not fast enough for arterial hematoma
  - Acetazolamide: 500mg IV
    - Reduce IOP: decr aqueous humor prod
  - Steroids: no clear evidence

Surgical Mx

Failed medical Rx / arterial hematoma

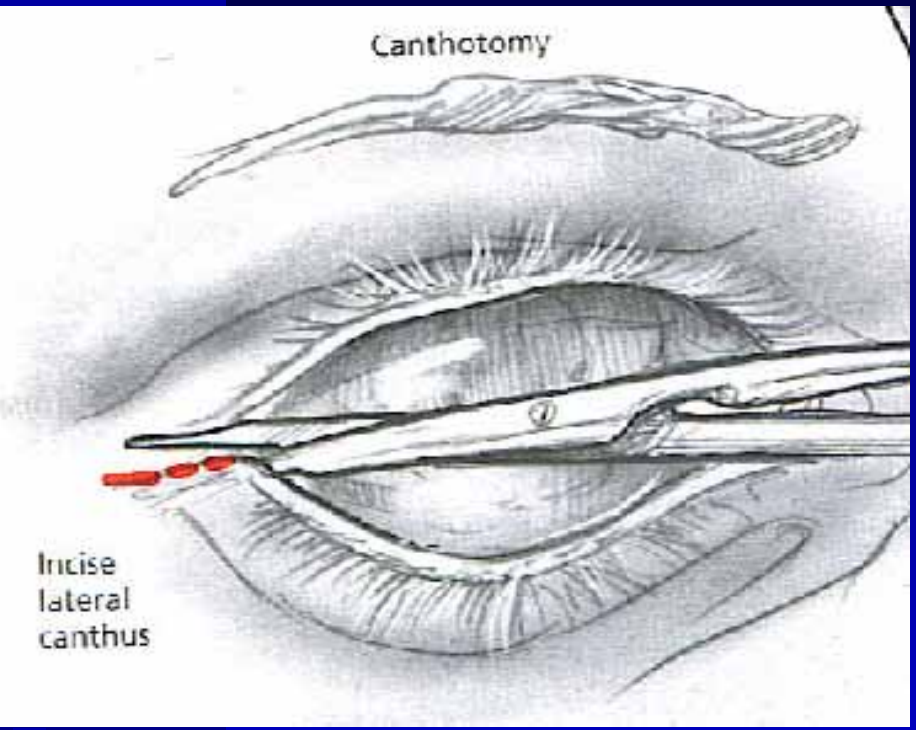
- 1.**Stop bleeding**
  - Endoscopic cautery
  - Lynch approach + clip arteries
- 2.**↓ Orbital pressure**
  - Step by step to reduce pressure to < 20mm Hg

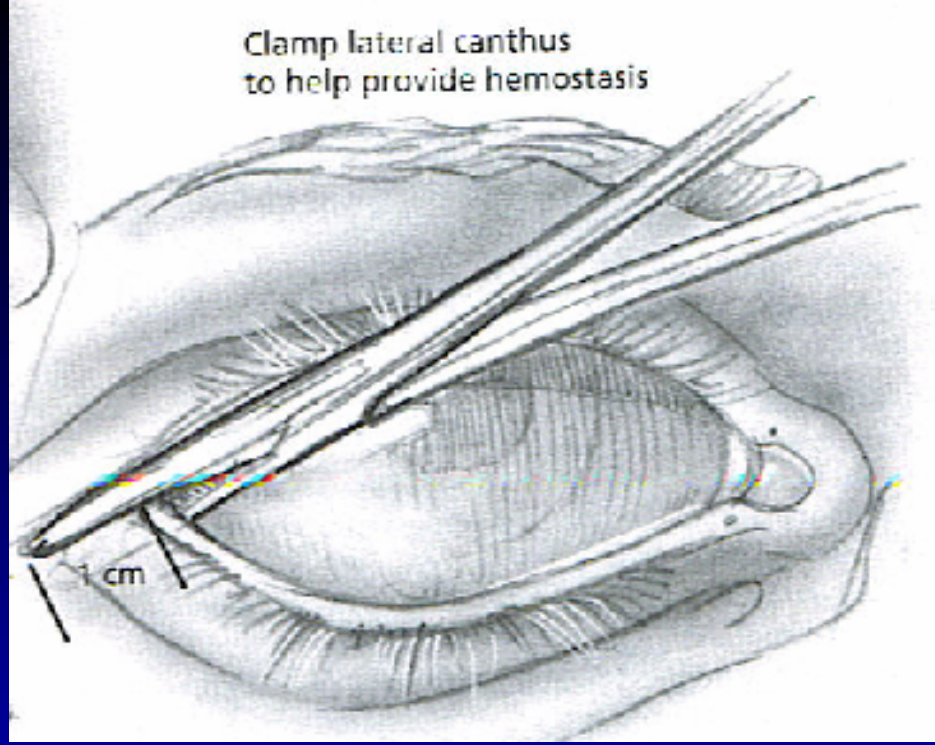
Surgical

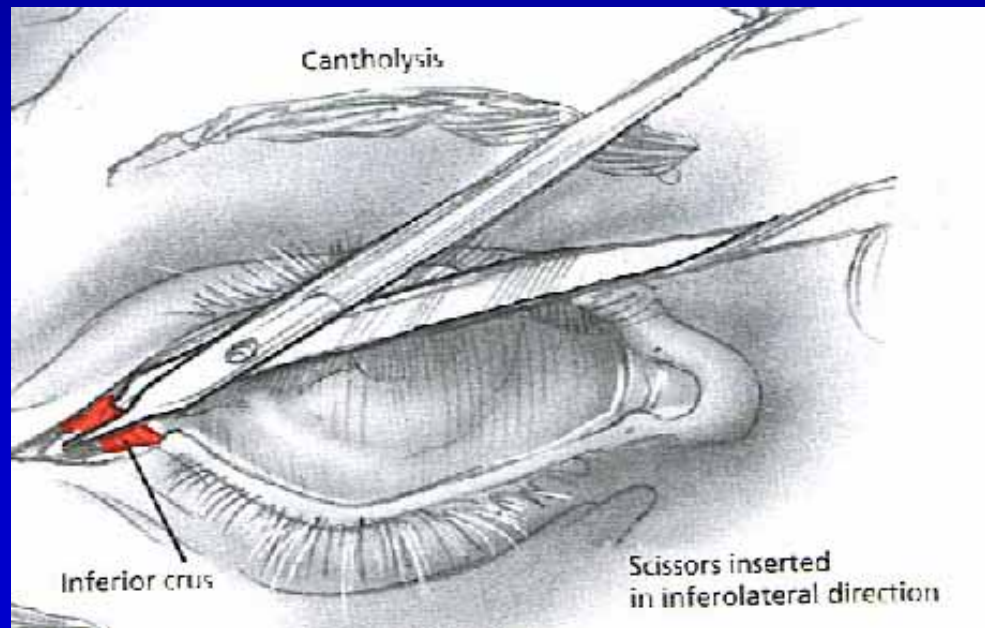
- **2. ↓ orbital pressure**

1. Lateral canthotomy / cantholysis
   ↓
2. Medial canthotomy
   ↓
3. Decompression (endo/ext; + orbitotomy)
   ↓
4. Incise periorbita

Canthotomy Cantholysis







Flow chart

- F:\Diagnose orbital hematoma.doc

Post operative

- Monitor
- Ophthalmology consultation
- Usually uneventful

Case presentation

- Management
  - Endoscopic decompression + cut periorbita
  - Postop:
    - Ophthalmologist
    - Diamox, Abx
    - HCU: ↓GCS-CT normal
  - DC next day

Postoperative

- No loss of visual acuity
- No limited ROM
- Subconjunctival hemorrhage settled 2 weeks

Bibliography

- Stankiewicz, Otolaryngology-HNS (99); 120, Nr 6
- A Fernandez, Complications of ESS
- Bailey, HNS-OL, 2001
- Lee et al, Eur Arch ORL (2003);260:429-431
- Baipan M. et al, Eur Radiol (2001)11;1991-1997

Surgical decompression

- Usually elective for Exophthalmos (with optic neuropathy / keratitis)
- Walsh-Ogura approach:
  - Uncinectomy, maxillary antrostomy - posteriorly, ethmosphenoidectomy, remove LP and floor of orbit medial to infraorbital canal, periorbital fascia incised.
  - Can proceed to lateral orbital decompression if needed