# ORBIT

# Anatomy

1 **The roof** consists of lesser wing of the sphenoid and the orbital plate of the frontal.

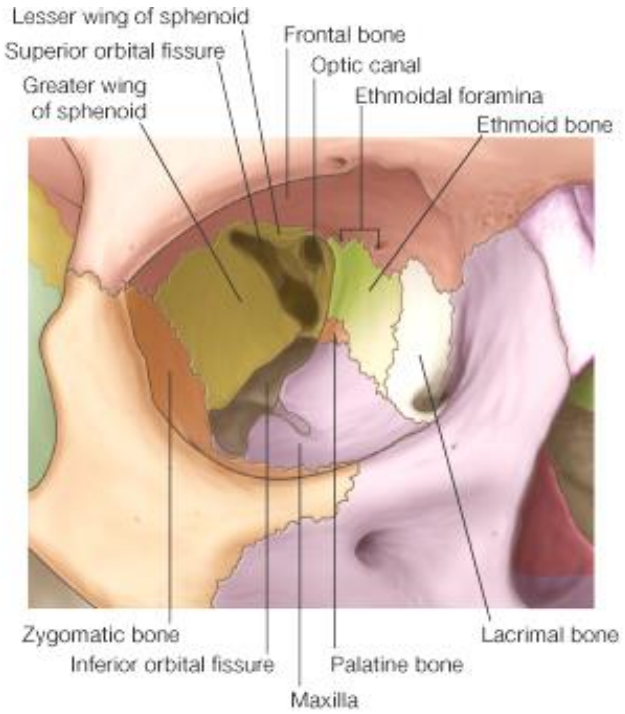
2 **The lateral wall** consists of the greater wing of the sphenoid and the zygomatic.

3 **The floor** consists of zygomatic, maxillary and palatine.

4 **The medial wall** consists of maxillary, lacrimal, ethmoid and sphenoid. The lamina papyracea, which forms part of the medial wall, is paper-thin . Orbital cellulitis is therefore frequently secondary to ethmoidal sinusitis.

5 **The superior orbital fissure** is a slit between the greater and lesser wings of the sphenoid bone, through which pass the following important structures.

- The superior portion contains the lacrimal, frontal and trochlear nerves, and the superior ophthalmic vein.
- The inferior portion contains the oculomotor nerve, the abducens and nasociliary nerves and sympathetic fibres from the cavernous plexus.



# Clinical signs

## Soft tissue involvement

**Signs** include lid and periorbital oedema, skin discoloration, ptosis, chemosis and epibulbar injection

## Proptosis

It describes an abnormal protrusion of the globe which may be caused by retrobulbar lesions or, less frequently, a shallow orbit. Asymmetrical proptosis is best detected by looking down at the patient from above and behind . *Exophthalmos specifically describes proptosis of the eye and is*

sometimes used to describe the bulging of the eye associated with Graves ophthalmopathy.

## Enophthalmos

It implies recession of the globe within the orbit

## Dystopia

It implies displacement of the globe in the coronal plane, usually due to an extraconal orbital mass such as a lacrimal gland tumour.

## Ophthalmoplegia

it is defective ocular motility .

## Dynamic properties

**1** **Increasing venous pressure** by dependent head position, Valsalva manoeuvre or jugular compression may induce or exacerbate proptosis in patients with orbital venous anomalies or infants with orbital capillary haemangiomas.

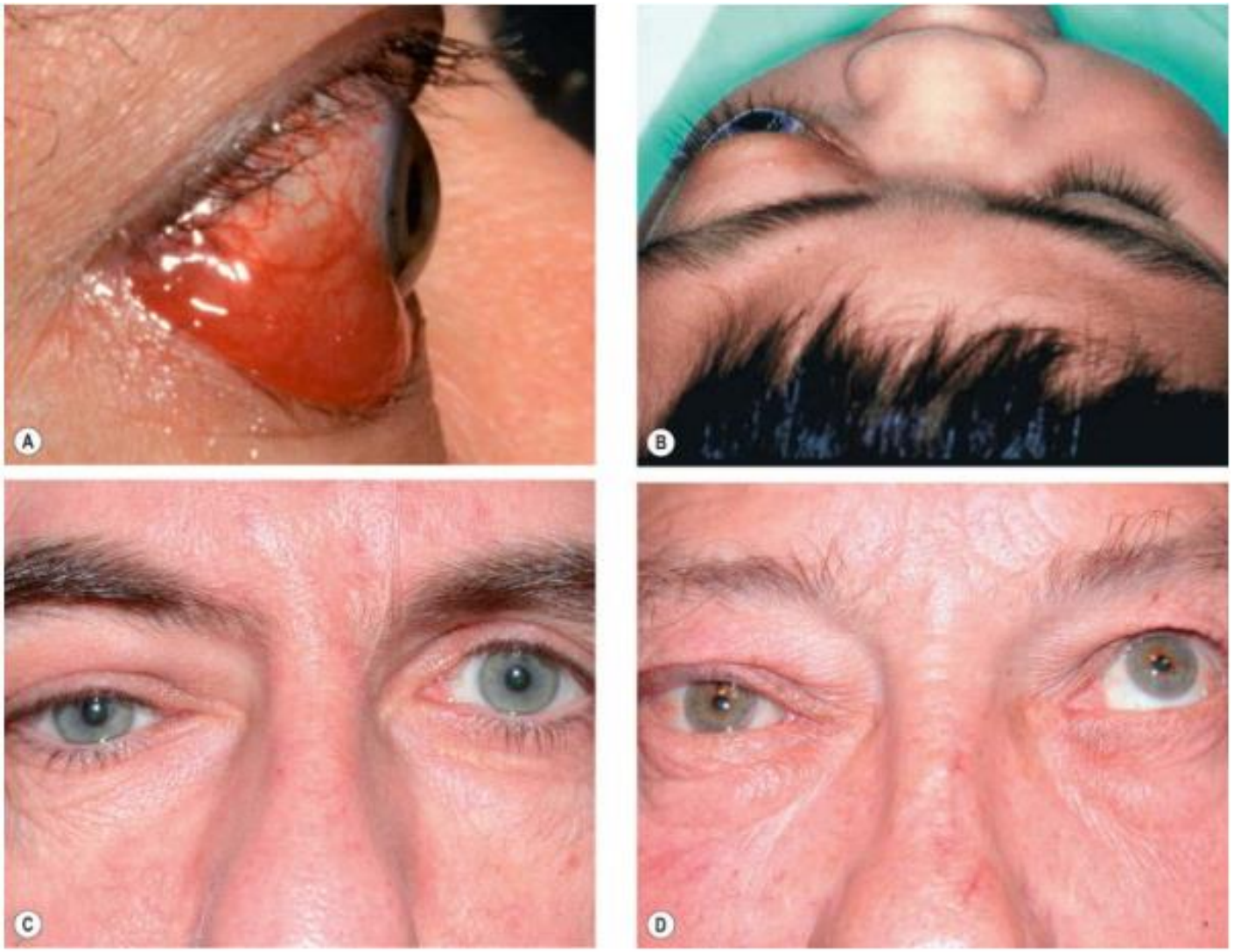
**2** **Pulsation** is caused either by an arteriovenous communication or a defect in the orbital roof.

3 **A bruit** is a sign of of carotid-cavernous fistula.

## Fundus changes

**1** **Optic disc swelling** may be the initial feature of compressive optic neuropathy

**2** **Optic atrophy**




General signs of orbital disease. **(A)** Soft tissue involvement; **(B)** left proptosis; **(C)** right inferior dystopia; **(D)** right ophthalmoplegia of elevation

# Thyroid eye disease (TED)

## Risk factors

- Smoking
- Women
- Radioactive iodine used to treat hyperthyroidism .

## Clinical manifestations

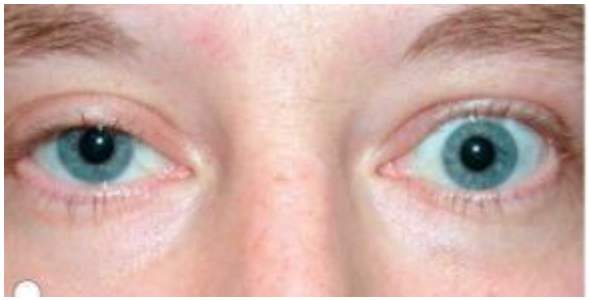
- *soft tissue involvement*,
- *lid retraction*,

  The upper lid margin normally rests 2 mm below the limbus . Lid retraction is suspected when the margin is either level with or above the superior limbus, allowing sclera to be visible ('scleral show'). Likewise, the lower eyelid normally rests at the inferior limbus; retraction is suspected when sclera shows below the limbus.

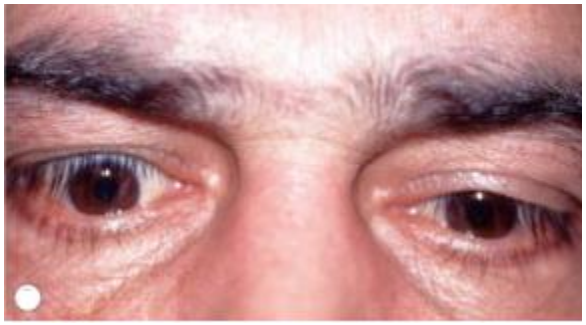
  **1** lid retraction in primary gaze .

  **2** a staring and frightened appearance of the eyes which is particularly marked on attentive fixation

  **3** retarded descent of the upper lid on downgaze
- *proptosis*,
- *optic neuropathy*
- *Restrictive myopathy*.



Mild left lid retraction;



right lid lag on downgaze

Treatment

Mild disease with soft tissue swelling can be treated by:

Topical lubricants.

topical NSAIDS.

Head elivation with three pillows during sleep to reduce periorbital oedema.

Eyelid taping during sleep may alleviate mild exposure keratopathy.

Moderate to sever disease treated by:

1.Oral prednisolone 60-80 mg per day.intravenous methylprednisolone is reserved for acute compressive optic neuropathy

2.Orbital steroid injection are used in selected cases to minimize the systemic side effect.

3. Low dose radiotherapy may be used in addition to steroids.

## Preseptal cellulitis

It is an infection of the subcutaneous tissues anterior to the orbital septum. In contrast to orbital cellulitis proptosis and chemosis are absent; visual acuity, pupillary reactions and ocular motility are unimpaired.

## Bacterial orbital cellulitis

Bacterial orbital cellulitis is a life-threatening infection of the soft tissues behind the orbital septum. It can occur at any age but is more common in children. The most common causative organisms are *S. pneumoniae*, *S. aureus, S. pyogenes* and *H. influenzae.*

## Pathogenesis

1 **Sinus-related**, most commonly ethmoidal, typically affects children and young adults.

2 **Extension of preseptal cellulitis** through the orbital septum.

3 **Local spread** from adjacent dacryocystitis, mid-facial or dental infection.

4 **Haematogenous spread.**

5 **Post-traumatic** develops within 72 hours of an injury that penetrates the orbital septum.

6 **Post-surgical** may complicate retinal, lacrimal or orbital surgery.

**Presentation** is with the rapid onset of severe malaise, fever, pain and visual impairment.

**Complications**

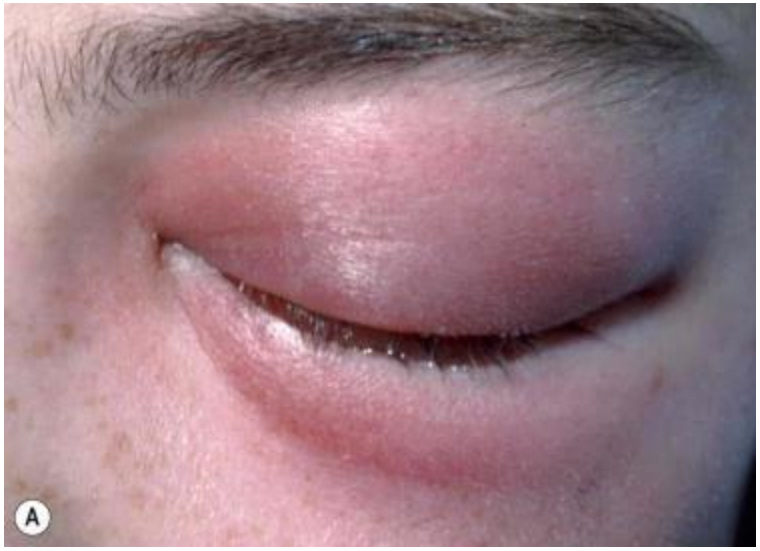
1 **Ocular** complications include exposure keratopathy, raised intraocular pressure, occlusion of the central retinal artery or vein, endophthalmitis and optic neuropathy.

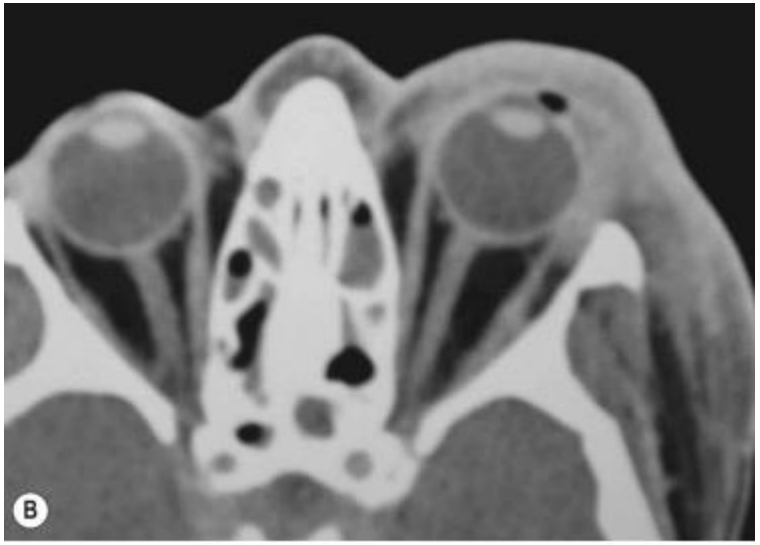
2 **Intracranial** complications include meningitis, brain abscess and cavernous sinus thrombosis

3 **Subperiosteal abscess**

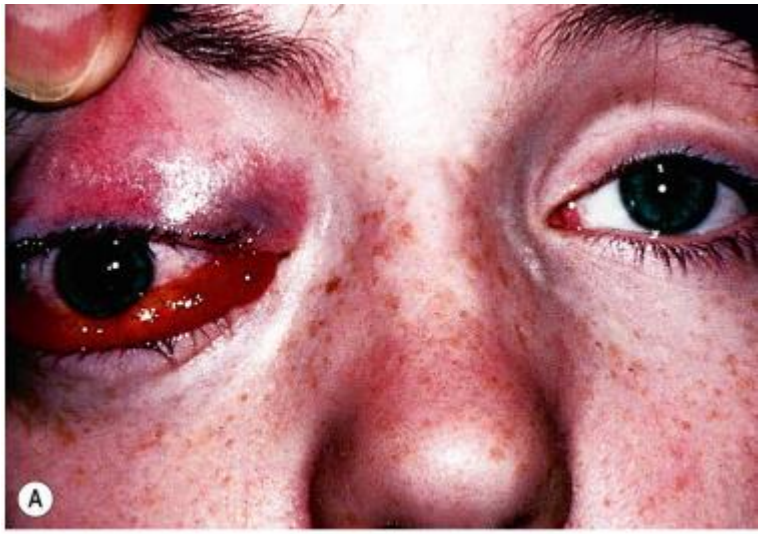
**Antibiotic therapy** involves intravenous ceftazidime, with oral metronidazole to cover anaerobes. Vancomycin is a useful alternative in the context of penicillin allergy.

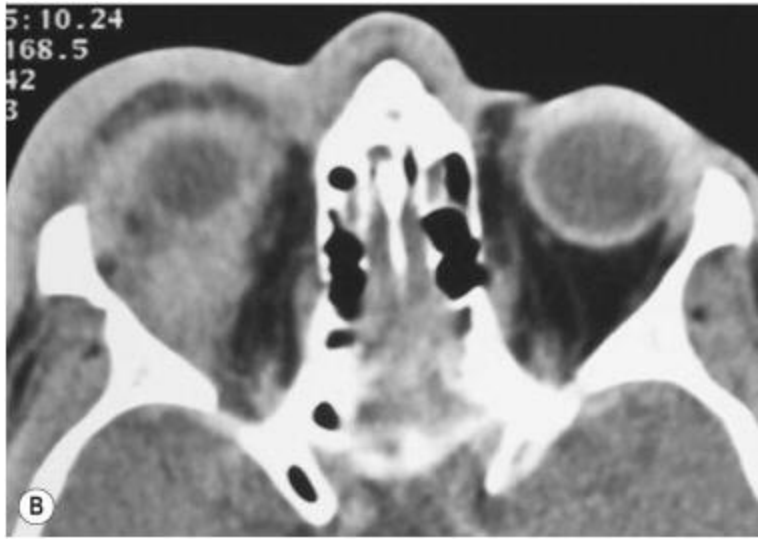
**Surgical intervention** in which the infected sinus, subperiosteal or intracranial abscess are drained .




**(A)** Left preseptal cellulitis; **(B)** axial CT shows opacification anterior to the orbital septum



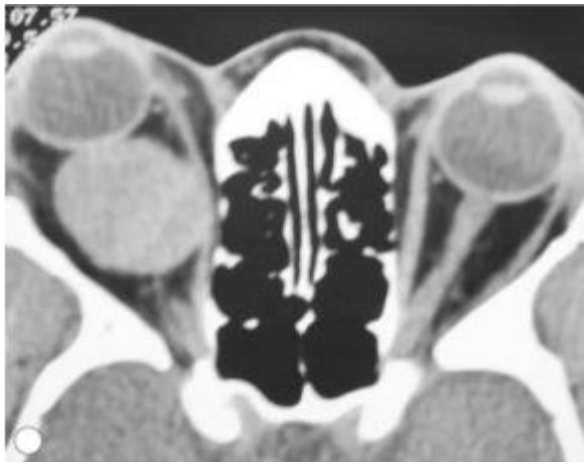

**(A)** Right orbital cellulitis with ophthalmoplegia; **(B)** axial CT shows preseptal and orbital opacification

## Dermoid cyst

An orbital dermoid cyst is a choristoma derived from displacement of ectoderm to a subcutaneous location along embryonic lines of closure. Dermoids are lined by keratinized stratified squamous epithelium (like skin), have a fibrous wall and contain dermal appendages such as sweat glands, sebaceous glands and hair follicles. Epidermoid cysts do not contain such adnexal structures. Dermoids may be (a) *superficial* or (b) *deep*, located anterior or posterior to the orbital septum respectively.

## Cavernous haemangioma

It is a vascular malformation that occurs in adults, with a female preponderance of 70%. Although it may develop anywhere in the orbit, it most frequently occurs within the muscle cone just behind the globe.



Cavernous haemangioma.

CT shows a well-circumscribed retrobulbar oval lesion and proptosis

Superficial dermoid cyst;

## Capillary haemangioma

Capillary haemangioma, a hamartoma, is the most common tumour of the orbit and periorbital areas in childhood.

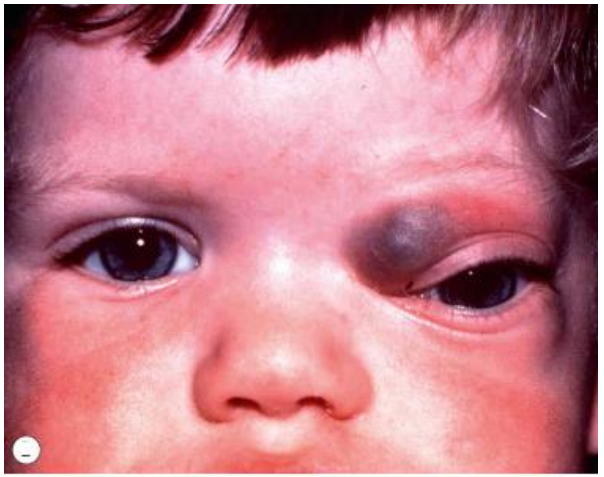
**Presentation** is usually in the first few weeks of life (approximately 30% are present at birth).

**The course** is characterized by rapid growth 3–6 months after diagnosis , followed by a slower phase of natural resolution in which 30% of lesions resolve by the age of 3 years and 70% by the age of 7 years.

**Indications** of **treatment:**

- Amblyopia secondary to induced astigmatism, anisometropia, and occlusion.
- Optic nerve compression.
- Exposure keratopathy.
- A severe cosmetic blemish, necrosis or infection.

1 **Laser**
2 **Steroid injection** into the lesion .
3 **Systemic steroids**
4 **Local resection** with cutting cautery
5. **systemic B- blocker** is helpful…. nowadays even topical b-blocker may used.



## Dacryops:

Is bilateral cyst of the lacimal glands that is thought to develop from dilated obstructed duct,it appear as a round cystic lesion protudes from in to the superior fornix from the palpebral lobe of the gland.

Treatment involve excision or marsupialization with histopathological analysis

# Pleomorphic lacrimal gland adenoma

Pleomorphic adenoma (benign mixed-cell tumour) is the most common epithelial tumour of the lacrimal gland and is derived from the ducts and secretory elements including myoepithelial cells.

**Presentation** is in the 2nd–5th decades with a painless, slowly progressive proptosis or swelling in the superolateral part of the orbit, usually of more than a year's duration.

**Treatment** involves surgical excision

**Prognosis** is excellent provided excision is complete and without disruption of the capsule.

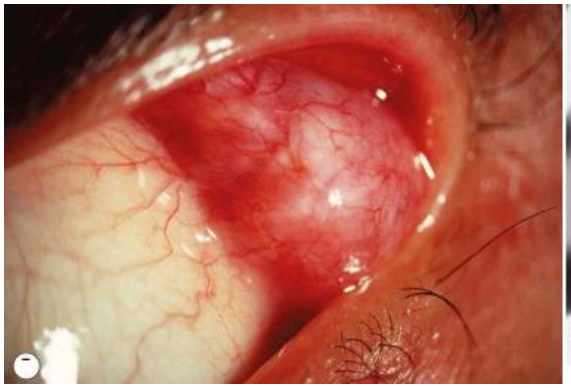
# Lacrimal gland carcinoma

Lacrimal gland carcinoma is a rare tumour which carries a high morbidity and mortality.

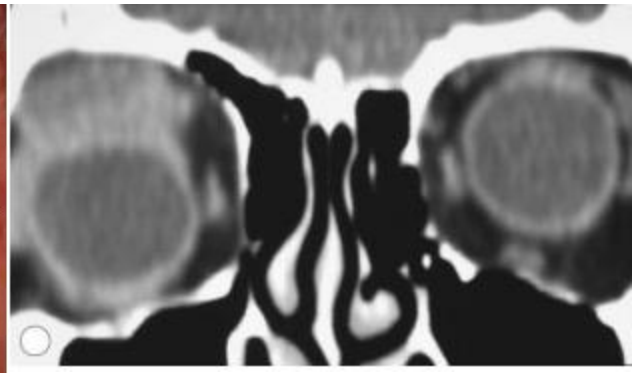
**Presentation** is in the 4th–5th decades with a history shorter than that of a benign tumour. Pain is a frequent feature of malignancy

**Treatment** involves excision of the tumour and adjacent tissues.

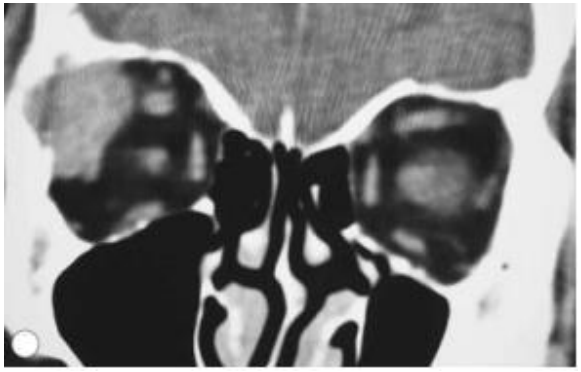
**Prognosis** for life is frequently poor



Pleomorphic lacrimal gland adenoma arising from the palpebral lobe.



coronal CT shows an oval mass



Lacrimal gland carcinoma.
coronal CT shows contiguous erosion of bone

## Embryonal sarcoma (Rhabdomyosarcoma)

It is the most common primary orbital malignancy of childhood. The tumour is derived from undifferentiated mesenchymal cell rests, which have the potential to differentiate into striated muscle. They do not arise from striated muscle, and the term rhabdomyosarcoma is appropriate only if there is evidence of differentiation into muscle.

**Presentation** is in the 1st decade (average 7 years) with rapidly progressive unilateral proptosis which may initially mimic an inflammatory process. Swelling and injection of overlying skin develop later but the skin is not warm

**Treatment** involves radiotherapy and chemotherapy

**Prognosis** depends on the stage and location of disease at the time of diagnosis. Patients with tumours localized to the orbit have a 95% cure rate.

## Adult metastatic tumours

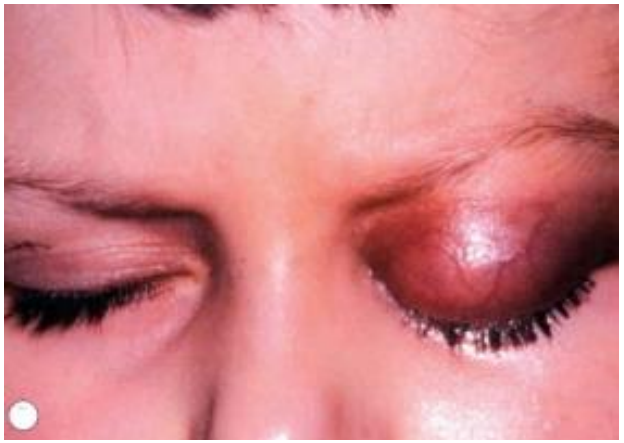
In order of frequency the most common primary sites are breast, bronchus, prostate, skin (melanoma), gastrointestinal tract and kidney.

## Childhood metastatic tumours

Neuroblastoma

Myeloid sarcoma

Neuroblastoma.



embryonal sarcoma.

## Blow out fracture

■ Floor

■ Trauma by an object whose size is larger than the diameter of the orbital inlet.

- → ↑ intraorbital pressure
- → transmitted force

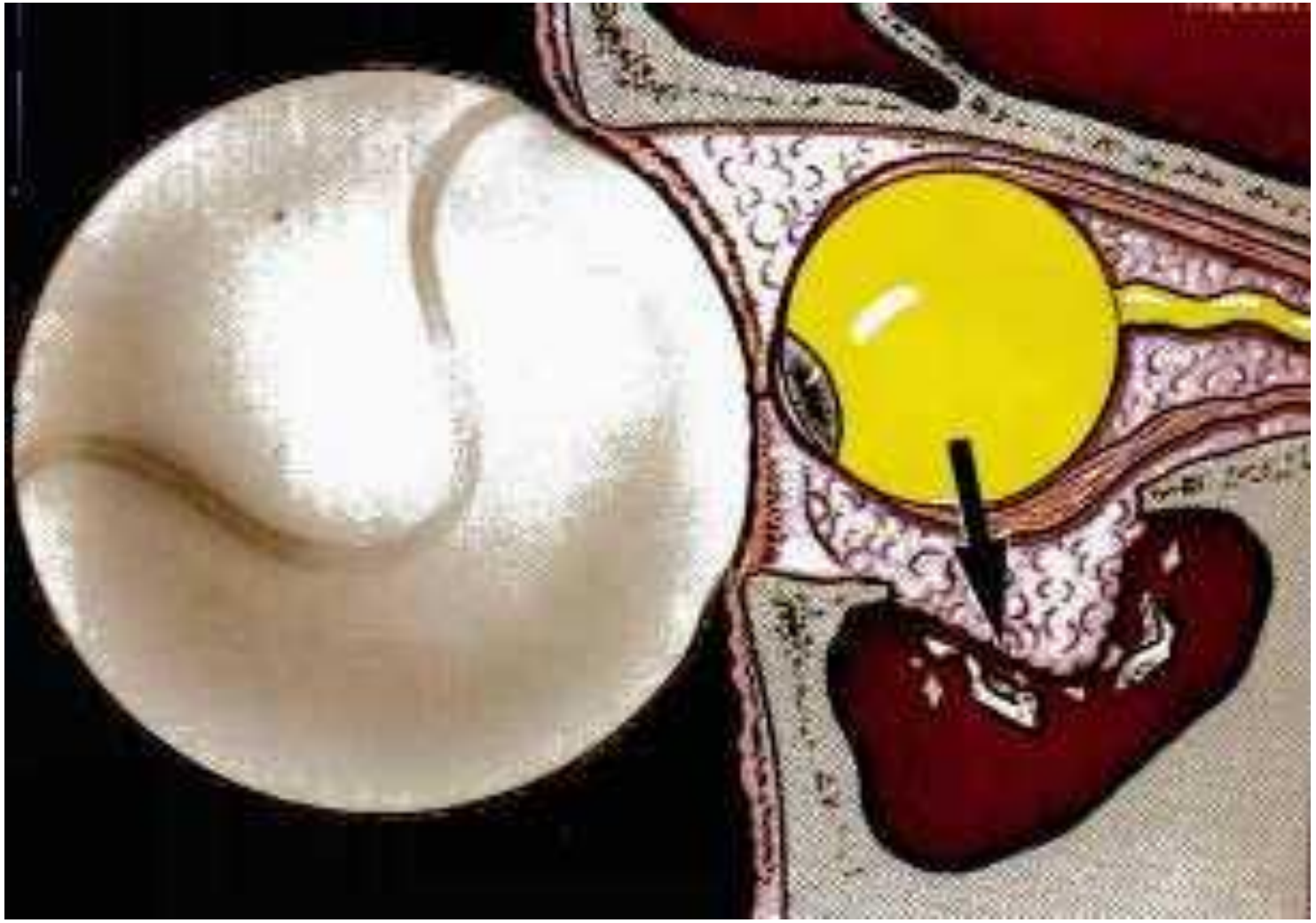
•These will affect weak areas..

- **Signs & Symptoms:**
- 1. Surgical emphysema, edema, echymosis
- 2. Diplopia (tethering of orbital contents, e.g.: inferior rectus) with restricted up movement.
- 3. enophthalmos, orbital fat necrosis
- 4. Anesthesia along the infra orbital n. distribution
- 5. Hypotropia
- 6. Intraocular damage (e.g.: hyphema)

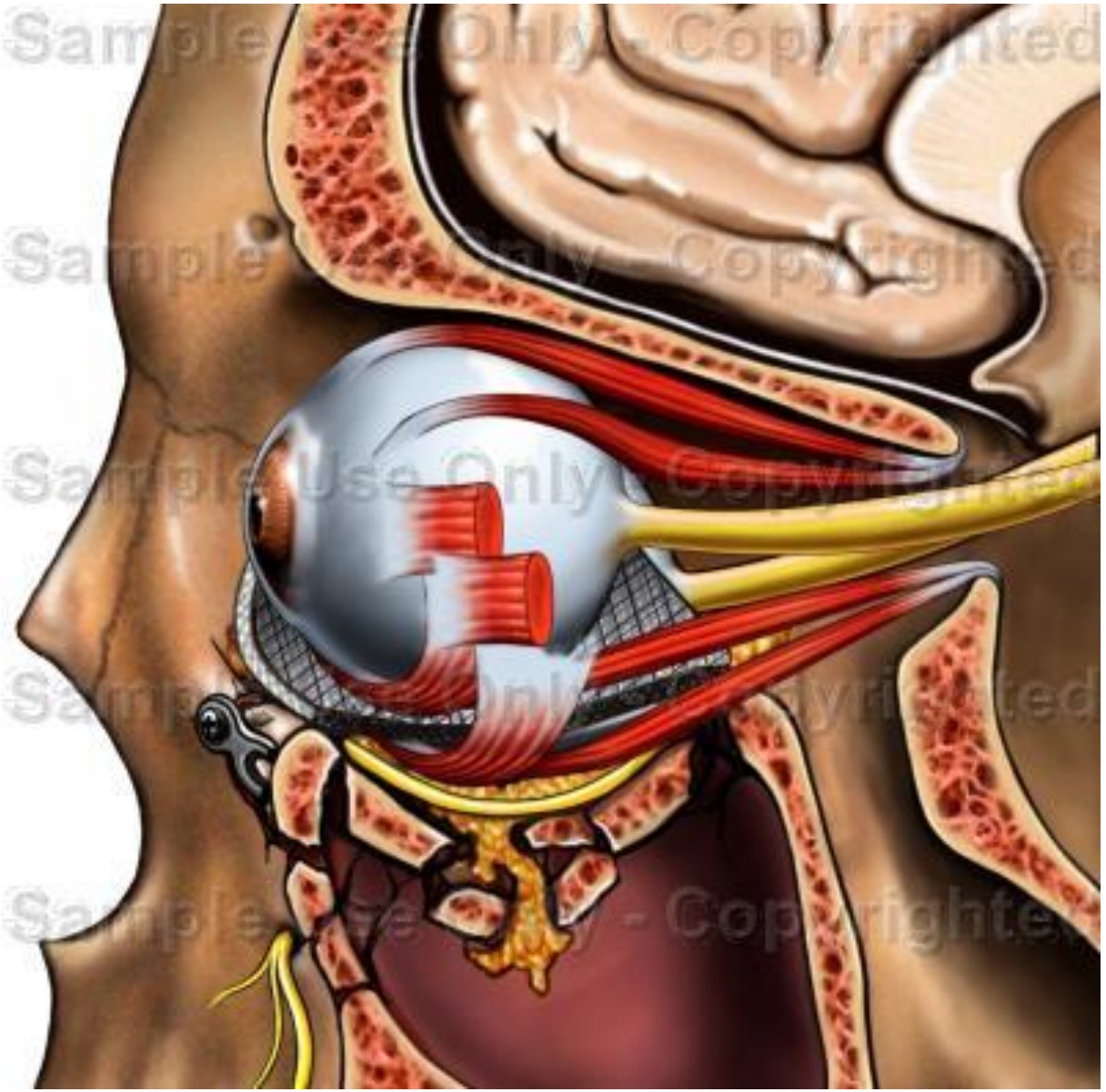
- **Investigations:**
- CT of the orbit & maxillary sinus

- **Treatment:**
- 1. Systemic antibiotics
- 2. Not blow the nose
- 3. Surgery → timing
  → indications

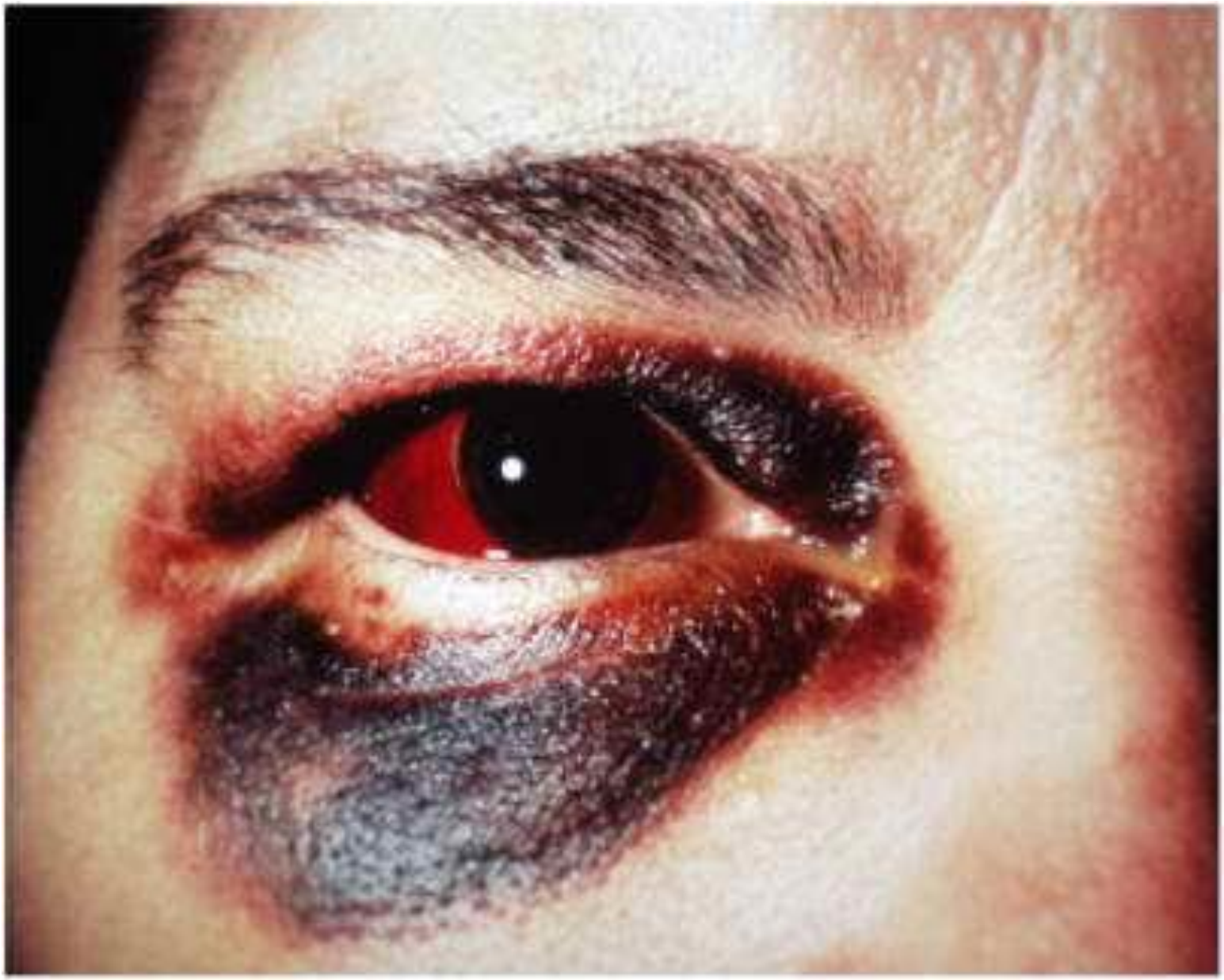
# Blow out Fracture



# Blow out Fracture



# Blow out Fracture



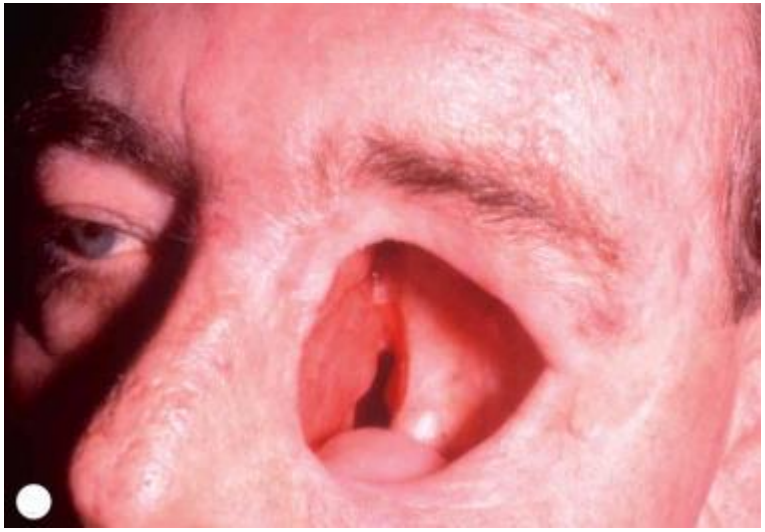
## Surgical procedures

**Enucleation** (removal of the globe) is indicated in the following circumstances:

1. **Primary intraocular malignancies** .
2. **After severe trauma** to avoid sympathetic ophthalmitis .
3. **Blind painful or unsightly eyes** .

**Evisceration** involves removal of the entire contents of the globe leaving the sclera and extraocular muscles intact.

**Exenteration** involves removal of the globe and the soft tissues of the orbit.



Exenteration.

# Thank You