

## The orbit

The orbit is a cone-shaped vault (Figs 152 and 153). At its apex are three orifices through which pass the nerves, arteries, and veins supplying the eye.

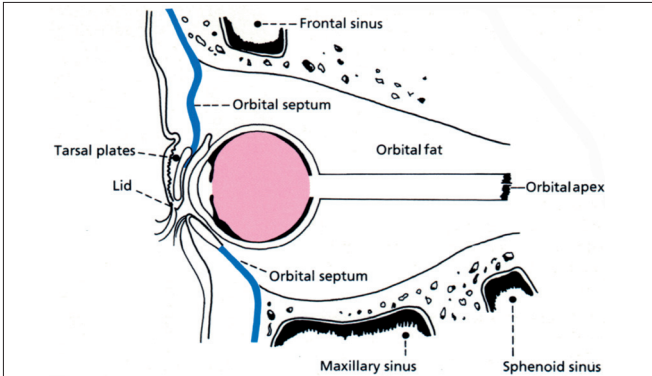


Fig. 152 Side view of orbit.

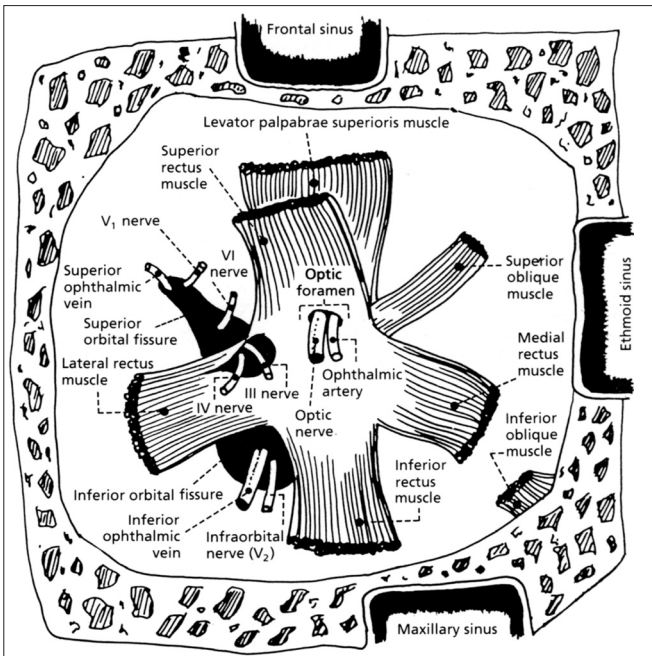


Fig. 153 Front view shows the apex of the orbit.

## Clues that may indicate disease of the orbit

- A. Proptosis (exophthalmos)—forward bulging of the eye.
- B. Enophthalmos—sunken eye.
- C. Swollen lids (sometimes totally shut); redness and engorgement of conjunctival vessels; clear fluid under conjunctiva (chemosis).
- D. Loss of eye movement (ophthalmoplegia) due to involvement of cranial nerves III, IV, and VI or local damage to extraocular muscles.

Orbital cellulitis causes the lids to be swollen shut (Fig. 154). The globe may not move (ophthalmoplegia) and there is chemosis, fever, adenopathy, and exophthalmos. It is most often due to sinusitis, but also occurs with tooth, facial or lid infections.

An orbital septum connecting the lid tarsal plates to the orbital rim (see Fig. 152) acts as a barrier protecting the orbit from lid infections. Beware of the rare breakthrough. Orbital cellulitis can spread to the cavernous sinus through the superior and inferior orbital veins that drain the orbit and part of the face. This could cause thrombosis and death. Rx: hospitalize the patient and treat with systemic antibiotics.

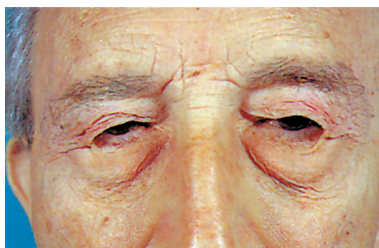
Orbital fat may migrate under the conjunctiva (Fig. 155) or herniate through the septum under the skin (Fig. 156). This is only a cosmetic problem.



**Fig. 154** Orbital cellulitis with chemosis and ophthalmoplegia, causing inability to look up.



**Fig. 155** Orbital fat under conjunctiva.



**Fig. 156** Prolapsed fat through septum is palpable under skin.

## Exophthalmos

Exophthalmos (proptosis) is a protrusion of the eyeball caused by an increase in orbital contents. It is measured with an exophthalmometer (Fig. 157). In adults, unilateral and bilateral cases are most often due to thyroid disease. In children, unilateral cases are most often due to orbital cellulitis. Other causes are metastatic tumors, orbital hemorrhage, cavernous sinus thrombosis or fistulas, sinus mucoceles, or the following primary orbital tumors:

- 1 hemangioma;
- 2 rhabdomyosarcoma;
- 3 pseudotumor;
- 4 lipoma;
- 5 dermoid;
- 6 lacrimal gland tumor;
- 7 glioma of the optic nerve;
- 8 lymphoma (Fig. 158);
- 9 meningioma.

Computed tomography (CT) scans are usually the radiologic technique of choice to evaluate orbital diseases such as fractures (Fig. 159), foreign bodies, thyroid disease (see Fig. 2), optic canal changes, and sinusitis.



Fig. 157 Exophthalmometer.

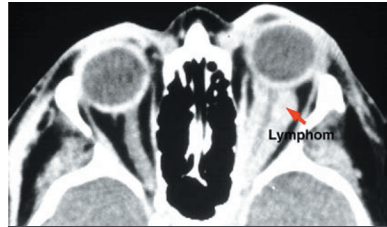
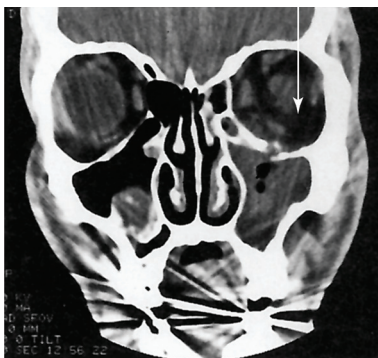


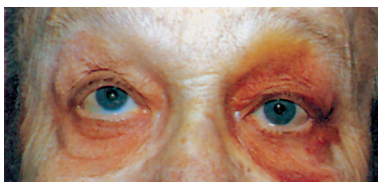
Fig. 158 Axial computed tomography (CT) of orbital lymphoma.

## Enophthalmos

Enophthalmos is a retracted globe. The most common cause is a blow to the orbit that raises intraorbital pressure, causing the thin roof of the maxillary sinus to fracture (Fig. 159). This is called a “blow-out” fracture. Associated signs may include subconjunctival hemorrhage, entrapment of the inferior rectus muscle in the fracture causing restriction of upward gaze, and vertical diplopia (Fig. 160). Hypesthesia of the cheek is due to infraorbital nerve damage. Rx: surgical insertion of silicone implant in the floor of the orbit if diplopia or enophthalmos persists.



**Fig. 159** Computed tomography (CT) scan of orbital blow-out fracture (arrow).



**Fig. 160** Restriction of upward gaze due to blow-out fracture.