

Orbital decompression surgery



**Mr David H Verity, MD MA FRCOphth
Consultant Ophthalmic Surgeon**

See also information leaflets on:
~ *Thyroid Eye Disease* ~ *Upper lid lowering* ~ *Proptosis*

Qu: What is the ‘orbit’?

The eye, its surrounding muscles, nerves and fatty tissue lie within the bony orbit of the skull. Above are the frontal sinuses and brain, and below the maxillary sinuses. In the midline, lying between the two orbits, are the ethmoid sinuses and nasal space. The temporalis muscle, which closes the jaw, passes under the outer bony arch of the upper cheek (the zygoma) and lies against the bony wall of the outer aspect of the orbit. The structures which enter the orbit from the brain do so via various apertures in the bones behind the eye. Thus, the soft tissues of the orbit lie within a protected, but relatively confined, space, and expansion of these tissues (for example muscle enlargement in thyroid eye disease) can lead to ‘bulging’ of the eyes (proptosis) and rarely visual loss due to raised orbital pressure.

Qu: What is the purpose of orbital decompression surgery?

Orbital decompression, typically performed for patients with proptosis in thyroid eye disease (TED), increases the available space for the orbital contents, thereby reducing the degree of proptosis and the risk of visual loss. The operation is achieved either by removing part of the wall(s) of the orbit, and, in some units, by excision of some of the orbital fatty tissue. Depending on the degree of proptosis and visual loss, surgery may involve removing part of one, two or three orbital walls.

Thus, the main reasons for orbital decompression are (i) to reduce proptosis (by up to 10mm depending on the number of walls decompressed, and (ii) to treat visual loss due to raised intraorbital pressure.

In the surgical rehabilitation of patients with long-standing TED, decompression is performed to reduce proptosis. This frequently corrects the down-ward displacement of the lower lid and some of the bulging of the upper eyelid, although upper lid retraction may even increase and requires subsequent lid lowering.

Qu: What are the risks of orbital decompression surgery?

Orbital decompression is major surgery, and should only be considered after careful discussion with your ophthalmologist and with an understanding of all the associated risks, which are outlined below.

(i) **Single** (lateral) wall decompression:

- A fine linear scar hidden within the ‘laughter lines’ of the outer corner of the eyelids.
- Swelling of the upper and lower eyelids, this settling over 2 - 4 weeks.
- A ‘wobble’ of the vision on eating (‘masticatory oscillopsia’) – this occurring in about 40% of patients, but rapidly settling in nearly all.
- New onset double vision is unusual with lateral wall decompression.

(ii) Balanced **two wall** decompression (lateral and medial walls):

In addition to the above, medial wall decompression carries the following specific risks:

- Epistaxis (nose bleed)
- Numbness over the side of the nose.
- New onset double vision, which can sometimes require squint surgery after the postoperative phase.

(iii) Full **three wall** decompression (lateral and medial walls, and orbital floor, *usually reserved for severe degrees of proptosis*) – Additional risks to (i) and (ii) above:

- Numbness of the upper cheek, and upper teeth – this occurs to a degree in most patients, and resolves in virtually all patients over time.
- Lower lid swelling – improving over 1 – 2 weeks.

(iv) The following risks are present – to different degrees – with **all** forms of decompression:

- Bruising and haemorrhage – this risk is reduced by stopping ALL blood thinning agents 3 weeks prior to surgery (see advice leaflet). The dose of Warfarin – if taken – should also be adjusted such that the INR level is below 1.5, and this must be arranged with your GP’s and / or Cardiologist’s express permission (the same is true for any tablets used to keep the blood thin after cardiac ‘stenting’).
- New / increased double vision – this is unlikely with lateral wall decompression.
- Risk to sight - very rare (less than 1 in 1000), and not encountered by this author. Nevertheless, with simultaneous right and left surgery, there is a minute chance of irreversible sight loss in each eye (in the order of 1 in a million), and if a patient is not prepared to take this risk, sequential surgery can be arranged.
- Risk to life - as with any major operation, but again not encountered by this author.

Qu: How is orbital decompression surgery performed?

After assessment on the ward by an anaesthetist, surgery is performed under a general anaesthetic with a one night stay in hospital. Depending on the number of walls and whether one or both orbits require decompression, the operation may take up to 3 ½ hours. Both eyes are padded after surgery, and these are removed on the ward the following morning. Oral antibiotics, a reducing course of oral steroid tablets and eye drops are prescribed and a follow up appointment arranged for 2 weeks later.

- Lateral wall decompression: A 10 – 15 mm long incision is made in the ‘laughter line’ of the outer eyelids, and a section of bone behind the orbital rim (the outer wall of the orbit) is removed. The skin is closed with a few sutures which are removed after two weeks.
- Medial (inner) wall decompression: A fine incision is made behind the inner corner of the eyelids to allow the inner wall of the orbit and the adjacent ethmoid air cells (sinuses) to be removed. One or two fine absorbable stitches are used to close the conjunctiva – with no visible external scar.
- Orbital floor: A similar approach to lateral wall decompression is used, and part of the floor of the orbit underneath the eyeball is removed. The nerve to the cheek runs through the bone of the floor, accounting for the numbness which often follows, but which typically improves.

Qu: What pre-operative precautions are required?

No aspirin or aspirin-type medications (see advice leaflet) should be taken for 3 weeks before surgery. For patients on warfarin, this should be stopped for 3 – 4 days prior to surgery with agreement of the General Practitioner and / or Cardiologist, such that the INR is, or is very close to, 1.0.

Qu: What is the post-operative treatment, and what precautions should be taken?

Pads are placed over the operated eye(s) after surgery, and these, and the very fine drains, are gently removed the following day before discharge from hospital. Postoperative medications, which include a short course of steroid tablets, oral antibiotics, and antibiotic eye drops, are supplied. Sleeping on an extra pillow at night helps to reduce any postoperative swelling and bruising, and this should settle within a few weeks of surgery. With 2- and 3-wall decompressions, drainage of the air sinuses around the eye may be temporarily affected; nose blowing, flying and scuba-diving must therefore be avoided for at least 3 weeks. Rarely, however, sinus symptoms can persist after surgery, and this may require medical or surgical treatment in its own right. Driving should be avoided if new or worsening double vision is experienced. This is uncommon with lateral wall decompression and more frequent with 2 and 3-wall decompression.

Postoperative appointments are scheduled for 2 weeks after surgery, when the sutures are removed, and again 6 weeks later.