Cosmetic orbital surgery

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Abstract

Purpose Current indications for orbital surgery primarily aimed at improving cosmesis are considered in the context of subspecialist orbital practice by an ophthalmologist.

Scope Thyroid eye disease, orbital vascular anomalies, and dermolipomas are common orbital diseases in which the symptoms can be purely cosmetic. Accurate anatomical awareness, preoperative scanning, control of medical factors including smoking and thyroid status, and endoscopic techniques have all contributed to the aesthetic outcome of orbital surgery. The threshold for performing reconstructive orbital surgery has also been lowered by public demand.

Conclusions Orbital surgeons can therefore offer the familiar techniques, such as orbital decompression, for pure cosmesis. Sensitive history taking and awareness of the psychological element are of paramount importance for the orbital surgeon who develops a cosmetic practice.

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Introduction

The concept of cosmesis is intrinsic to all oculoplastic surgery. The word derives from the Greek 'kosmetikos', from kosmos, which means, 'order or adornment' and is defined in the Oxford English Dictionary¹ as an adjective, (i) 'relating to treatment intended to improve a person's appearance' or (ii) 'improving only the appearance of something'. It is the subtle difference between these two definitions that mirrors the terms, 'reconstructive surgery', which could be applied to the first definition, and 'cosmetic surgery', which applies to the second. There is a further word that introduces another element beyond restoration or improved appearance. 'Aesthetic', derived from

'aesthethai' (perceive) in Greek, may be defined as, 'concerned with beauty or the appreciation of beauty' or 'of pleasing appearance'.¹ In the field of orbital surgery, pure aesthetic practice, that is, surgery to create beauty, is not yet an issue!

In its broadest sense, cosmetic orbital surgery encompasses craniofacial reconstruction and eyelid and periocular procedures, but this article only addresses the operations that are specifically performed on the orbit in oculoplastic practice. Any oculoplastic surgery carries risks associated with anaesthesia, bleeding, and infection, but orbital surgery incurs additional sight or life-threatening risks compared with preseptal procedures:

1. Optic nerve damage with visual impairment.
2. Impaired ocular motility causing diplopia.
3. CSF leak, possibly leading to meningitis.

However, in skilled hands, the risk of optic nerve damage and CSF leak is very small.

Orbital surgery therefore demands a scientific approach: methodical justification for surgery, recognition, and stabilization of medical conditions such as thyroid dysfunction, hypotensive anaesthesia, precise anatomical dissection based on preoperative imaging of bone and soft tissue, and meticulous haemostasis. The surgeon's choice of approach and preoperative technique is governed by training, continuing education, and experience.

Reconstructive surgery is performed to correct congenital or acquired defects, which adversely affect ocular function and/or social interaction. Cosmetic surgery aims at improving a normal appearance. Although the orbital surgeon's work is predominantly reconstructive, the skills gained and used in reconstructive surgery are also preparation for cosmetic orbital surgery. The decision to offer the latter is based on the surgeon's confidence in his/her results and motivation to perform such surgery. The patient's psyche dominates his/her own motivation to have surgery and their response to surgical outcome.² The surgeon

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needs particular skill as a historian to ensure that the patient's story is elicited and documented accurately. Once a decision to offer surgery is made, the aims, limitations, and complications need to be clear and confirmed in writing.^{3,4}

Facial disfigurement caused by orbital surgery has become less evident over the last 20 years. Earlier recognition and treatment of orbital tumours and increased use of chemotherapy rather than radiotherapy for tumours such as retinoblastoma and lymphoma has reduced the incidence of widespread tissue loss and ischaemic sequelae.⁵ An inconspicuous extended upper lid skin crease incision has replaced the Stallard–Wright lateral orbitotomy incision,⁶ which was positioned along the lateral orbital rim and zygoma, and often remained visible for months postoperatively. In many cases, it has also replaced the coronal incision.⁷ Although this incision behind the hair line remains a useful approach for extended access to the orbital roof and lateral orbital wall, it can be associated with loss of hair⁸ and scalp hypoesthesia. Both of these approaches may be complicated by temporalis wasting.⁹ This can be minimised by avoiding damage to the superficial temporal artery, dissection in facial planes, and even repositioning of the muscle by fixation just inferior to the superotemporal ridge.¹⁰ The transconjunctival approach to floor fracture repair and orbital decompression has improved direct access to the orbital floor with reduced cutaneous scarring.¹¹

Tailored exenteration with lid-sparing surgery,¹² where possible, and the use of skin/muscle flaps,¹³ split skin grafts, and osseointegrated orbital implants¹⁴ have improved cosmetic outcomes, although most patients still prefer a patch!¹⁵

Thyroid eye disease involves an inflammatory response with deposition of GAG in the orbit causing orbital congestion and proptosis.¹⁶ The activity can be assessed using an activity score and MRI.¹⁷ Prevention of severe orbital involvement in thyroid eye disease by early disease recognition, achieving and maintaining euthyroid status,^{18,19} avoiding cigarette smoke, and immunosuppression,²⁰ when appropriate, is essential in preventing the need for surgery. There is no evidence that steroids reduce proptosis and it is possible that steroid-induced lipid deposition involves the orbit and may increase proptosis.²¹ Smoking adversely affects surgical outcomes as well as disease activity.²²

Orbital decompression is justifiable when sight is threatened, despite the risk of complications: diplopia, infraorbital anaesthesia, upper lid retraction, sinusitis, orbital cellulitis, visual loss, globe malposition, lateral canthal deformity, blood loss, CSF leak, and meningitis. It is advisable in active disease in which dysthyroid optic neuropathy is not resolved using medical treatment.²³

It is also an accepted management for inactive disease where proptosis is causing corneal exposure and photophobia owing to loss of brow shadow, chronic aching pain, or subluxation of the globe. Proptosis of more than 25 mm measured with the Hertel exophthalmometer almost invariably causes more than one of these symptoms. The position of the lower lid in relation to the inferior corneal limbus is a good guide to exposure caused by proptosis. If there is inferior scleral show, it is likely that orbital decompression will be required. Lower lid grafts only have limited success in addressing this type of exposure. Upper lid retraction is caused by proptosis, sympathetic stimulation, fibrosis of upper lid tissues, and inferior rectus fibrosis.²⁴ In the absence of inferior rectus fibrosis and inferior scleral show, it is reasonable to treat this with upper lid recession, provided that the patient is euthyroid.

In practice, few individuals with cosmetic affects of TED are devoid of ocular symptoms. Quality of life is adversely affected by thyroid eye disease. The GO-QOL assessment²⁵ includes eight questions referring to limitations of psychosocial function as a consequence of changed appearance. These include feeling socially isolated and experiencing adverse effects on self-confidence. Society can afford to value quality of life as well as working to lower morbidity and mortality. Cosmetic orbital surgery is justified for those who have comfortable protuberant eyes, which are sufficiently distressing to affect social interaction.²⁶

In decompression for thyroid eye disease, endo-nasal and transconjunctival approaches avoid cutaneous scars. In addition, the 'swinging eyelid' approach allows decompression of the lateral wall to be performed from the internal aspect, usually utilising a drill.¹¹ Removal of fibres of temporalis muscle is restricted to the area immediately over the osteotomy and wasting is not a problem (personal observation). Removal of the medial and lateral orbital walls and some orbital fat minimises the risk of diplopia.²⁷ However, this symptom is always a possible complication and needs to be carefully explained to any patient undergoing decompression surgery and is particularly important in a cosmetic procedure.

Orbital decompression *per se* will not address the thickening of tissues elsewhere on the face, including the glabellar region, and patients need to be aware of this.

Enophthalmos may present with cosmetic symptoms following trauma²⁸ or orbital decompression surgery.²⁹ The risk of visual loss and diplopia must be clearly explained. Some patients are sufficiently motivated by altered body image and are prepared to undertake surgery despite discouragement and an explanation of these complications. Transplantation of fat into the orbit is an alternative to reconstruction of the orbital walls.³⁰

Dermolipoma is a solid choristoma, which commonly presents as a lateral canthal mass,³¹ but can be irritable because of exposure or hairs on the surface. Once the nature of the lesion and the potential inflammatory complications of surgery are explained, most individuals will accept that intervention is unwise. If surgery is performed, one should remove the smallest amount that debulks the tumour.^{31,32}

Orbital vascular abnormalities may cause pain but frequently present with cosmetic symptoms.^{33,34} They are notoriously difficult to remove and are best operated on in specialist centres. Effective surgery depends on all the measures already discussed to make surgery more safe, and may be assisted by embolisation.³⁵ Neurofibromatosis type 1 (NF1) is an inherited systemic disease with eye involvement. Plexiform neurofibromas involving the orbit are not encapsulated and may be associated with facial homolateral hypertrophy.³⁶ Cosmetic improvement can be achieved,³⁷ although recurrence is extremely likely.

The concept of facial disfigurement in thyroid eye disease does not appear to be in the eye of the beholder.³⁸ The surgeon should therefore be able to judge whether the patient's request is genuine, taking psychosocial factors into account. Assessment of these factors can be formalised using scales such as the GO-QOL²⁵ and the Derriford Appearance Scale.³⁹ Three-dimensional imaging and analysis offers new potential for analysing change after surgery.⁴⁰ Orbital anomalies usually affect function as well as cosmesis and dysfunction is usually the prime indication for surgery. In a few cases where the appearance is the only issue, there is potential for the experienced orbital surgeon to apply his skills to cosmetic orbital surgery. In these cases, market forces will steer the future.⁴¹

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