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Subspecialty Day
Mar 14, 2024

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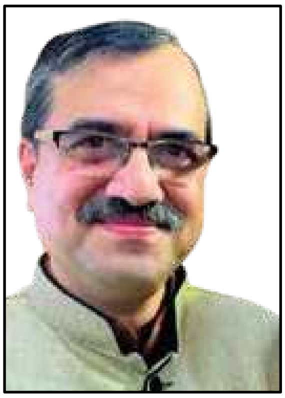

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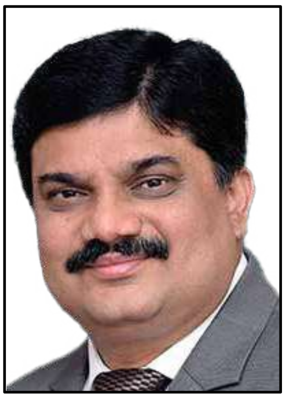

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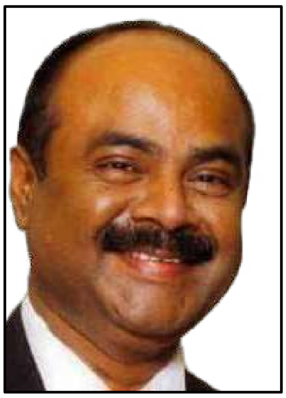

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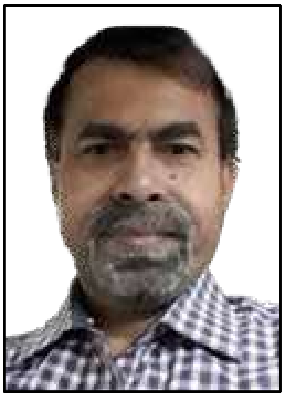

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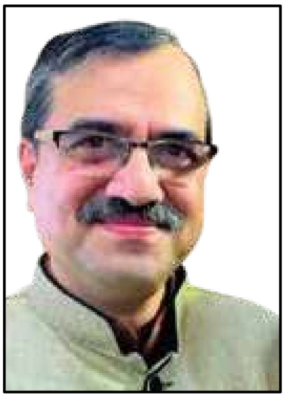

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Complications of Blepharoplasty

Dr Adit Gupta
Mumbai; draditgupta@yahoo.in

This talk will briefly outline the various complications encountered after a cosmetic eyelid procedure and the mechanism involved with possible solutions.

Introduction:

Eyelid cosmetic surgery is more frequently performed in India now than ever before to rejuvenate the upper or lower eyelids. Most complications of blepharoplasty are transient however some complications like malposition of the eyelids, deformation of the canthi, lagophthalmos, asymmetric folds can be permanent and cause great discomfort to an otherwise normal patient. With changing times and trends, the demand for aesthetic procedures is on the rise. Traditionally, most of the cosmetic procedures around the eyes were commonly performed by general plastic surgeons. Recent awareness and sensitisation of cosmetic procedures around the eye via various scientific articles, training programmes and conferences has brought oculoplastic surgery as a speciality in the limelight. Complications are now on the rise due to a steady increase in the number of periocular aesthetic surgeries. The aim of this talk is to bring forth the presentation characteristics and management of patients with more permanent complications after a blepharoplasty surgery.

Key Take Home:

1) Revision surgery should be performed after a wait period of 3 months
2) Preoperative counselling and postoperative hand holding is the key to managing difficult patients
3) Use of scar modulating agents helps in the immediate postoperative period.

References

1. Oestreicher J, Mehta S. Complications of blepharoplasty: prevention and management. Plast Surg Int. 2012;2012:252368.
2. Pacella SJ, Codner MA. Minor complications after blepharoplasty: dry eyes, chemosis, granulomas, ptosis, and scleral show. Plastic and Reconstructive Surgery. 2010;125(2):709–718.
3. Steinsapir KD, Steinsapir S. The Treatment of Post-blepharoplasty Lower Eyelid Retraction. Facial Plast Surg Clin North Am. 2021;29(2):291-300.
4. Pak J, Putterman AM. Revisional eyelid surgery: treatment of severe postblepharoplasty lower eyelid retraction. Facial Plast Surg Clin North Am. 2005;13(4):561-9, vi-vii..-C.; Kuo, C.-F.; Hsiao, C.-H. Using Slit-Lamp Images for Deep Learning–Based Identification of Bacterial and Fungal Keratitis. Diagnostics 2021, 11, 1246.

Globe Intussusception following orbital fracture

Dr Akruti Desai MD, Dr Milind Naik, MD, Dr Gautam Dendukuri, MDS

No Financial Disclosure

To report 'Globe Intussusception' as an extreme form of globe dislocation outside the orbital pyramid. A 17-year-old lady presented with a one-day history of sudden onset painful loss of vision in the left eye following a bull-horn injury. Computed tomography imaging of the orbit and brain revealed orbital fracture, and globe prolapse into the maxillary sinus with or without involvement of ethmoid sinus. This was associated with complete intussusception of the globe through the conjunctiva, giving an 'empty socket' appearance. Fracture repair along with retrieval of the eyeball from the sinus was carried out surgically. Reduction of the intussusception, and bringing the eyeball out of the conjunctival pouch was a special additional challenge in these cases. Conclusion: Retrieval of the intussuscepted eyeball via a 360° peritomy and suture tagging of extraocular muscles ensure safe repositioning of globe with intact extraocular muscles is crucial to save any potentially salvageable vision and achieve a good cosmetic appearance.

References

1. Haggerty CJ, Roman P. Repositioning of a traumatically displaced globe with maxillary antrostomy: review of the literature and treatment recommendations. J Oral Maxillofac Surg. 2013 Nov;71:1915-22.
2. Lawrence GH, Ulfelder H. Intussusception; a review of experience at the Massachusetts General Hospital, 1937-1951. N Engl J Med. 1952 Oct 2;247(14):499-502.
3. Kim S, Baek S: Traumatic dislocation of the globe into the maxillary sinus associated with extraocular muscle injury. Graefes Arch Clin Exp Ophthalmol.2005;243:1280-3.
4. Heilbig H, Iseli HP. Traumatic rupture of the globe cause by cow horns. Eur J Ophthalmol. 2002; 12:304-8.
5. Singh RI, Thomas R, Alexander TA. An Unusual case of bull gore injury. Aust N Z J Ophthalmol.1986;14:377-9.

Lower Lid Rejuvenation: One Goal, Many Solutions

Dr Akshay G Nair

Brief:
This talk covers and Introduction to lower lid rejuvenation's significance in facial aesthetics and its diverse treatment options.

The subtopics covered include:

1. Indications of Lower Lid Blepharoplasty:
Discussing indications including fat prolapse, tear trough hollows, and skin laxity. Covering fat excision, fat transposition, and dermal fillers.

2. Techniques of Lower Lid Rejuvenation:
Detailing surgical techniques like incision placement, fat excision, and transposition. Exploring dermal fillers for tear trough hollows and periocular Botox for dynamic wrinkles.

3. Complications and Tips for Improved Outcomes:
Addressing complications such as under/overcorrection and asymmetry. Providing tips for risk mitigation, patient selection, and post-operative care.

All procedures will be shown through high quality surgical videos. In the end, we will summarise the importance of tailored treatment plans and a multidisciplinary approach.

Orbital Infections and Infestations

Dr Anirban Bhaduri

Dr Anita Sethi

Dr Anna Kurian

Orbital Wall Defects- Patient Specific Implants

Dr Ashok Grover

Dr Chandana Chakraborty

Managing complications of orbital blowout fracture repair surgery

Dr Chittam Senthil Nathan

This talk will deal with the various intraoperative and postoperative complications that can arise during orbital fracture repair surgery and the various tips and tricks to avoid them. The various complications like iatrogenic injury to the adjoining structures like the cornea, lid, EOM, and NLD and implant related problems like dislocation, infection, exposure etc will be dealt with in detail with the help of high definition videos.

This talk will help the attendees to gain valuable take home points on how to avoid complications and perform safe orbital fracture repair surgery.

Baby Botox Techniques

Dr Essam El Toukhy

Eyelid Tumors and Management Protocols

Dr Fairooz PM

Eyelid tumors can be broadly classified as benign and malignant tumors. Benign tumors may not require aggressive treatment unless they are symptomatic or causing cosmetic blemish. However, it is important to differentiate it from malignant tumors that will require protocol-based management. Malignant tumors can simulate benign and inflammatory lesions. Management of malignant eyelid tumors has evolved in the recent past with advances in diagnostics and treatment strategies.

Management strategies

- Surgical excision: Most common primary management of eyelid tumors is complete surgical excision with wide margins under frozen section or Mohs micrographic surgery. Reconstruction of the eyelid is aimed at restoring the eyelid function and achieving satisfactory cosmesis.
- Chemotherapy: As a neoadjuvant for chemoreduction of advanced tumors to attain margin clearance for secondary surgical excision and preservation of the function of the eye.
- Radiation: Performed in non resectable tumors and as adjuvant post-surgical excision
- Targeted molecular therapy: Check point inhibitors for advanced tumors to preserve the eye and globe.
- It is important to identify these cases and seek specialist care in ocular oncology for appropriate and timely management for better outcome in terms of recurrence and reducing mortality.

Management of Canalicular Obstructions

Francesco Quaranta Leoni
Rome, Italy

Proximal lacrimal obstructions are a significant cause of epiphora, and not infrequently misdiagnosed. Depending on the rate of tear clearance, symptoms include awareness of wet or moist eyelids, impaired vision due to a raised tear meniscus, a "wicking" of the tear meniscus onto the skin at the lateral canthus, 'fogging' of the back of glasses, and frank epiphora, which, with repeated wiping, can be associated with a secondary eczema of the eyelids.

The relative contribution of the upper and lower canaliculi to tear drainage varies between individuals; a single canaliculus is usually adequate for basal tear drainage, but insufficient to accommodate reflex lacrimation, with epiphora commonly occuring after obstruction of the inferior canaliculus.

Treatment of proximal lacrimal obstructions depends on an accurate identification of the site of obstruction, the extent of the obstruction, and the history. So-called 'mini-invasive techniques' should be avoided in patients who would benefit from standard surgical treatment.

Punctal stenosis may equally benefit from simple punctum dilatation and positioning of a monocanalicular or bicanalicular stent, or punctoplasty.

Canalicular inflammation may be epithelial - due to primary herpes simplex infection or systemic chemotherapeutic agents - or subepithelial - due to lichen planus - with severe and extensive fibrosis and poor prognosis.

In **proximal canalicular obstructions** DCR with retrocanaliculostomy (R-DCR) is indicated, provided that the retrograde false passage from the nose does not involve the inferior canaliculus.

In **mid-canalicular obstructions R-DCR** may be considered, but failure rate appears to be higher than in case of proximal obstructions.

In **distal canalicular obstructions** by-pass surgery should be advised, as a high proportion of these patients will not benefit from canaliculodacryocystorhinostomy (CDCR).

In **proximal common canalicular obstructions** CDCR can be considered, but R-DCR may be preferable. In **distal common canalicular obstructions** DCR with membranectomy and intubation is effective.

In case of **no patency** at all, the procedure of choice is by-pass surgery (DCR) with LJT tube as a primary or secondary measure, but careful patient advice is mandatory, as functional success may be matched by poor patient satisfaction.

References

1. Liarakos VS, Boboridis KG, Mavrikakis E & Mavrikakis I (2009): Management of canalicular obstructions. Curr Opin Ophthalmol 20 (5): 395-400.
2. Quaranta-Leoni FM, Fiorino MG, Serricchio F, Quaranta-Leoni F. Management of proximal lacrimal obstructions: a rationale. Acta Ophthalmol. 2021 Jun;99(4):569-575
3. Fiorino MG, Quaranta-Leoni C, Quaranta-Leoni FM. Proximal lacrimal obstructions: a review. Acta Ophthalmol. 2021 Nov;99(7):701-711.
4. Bohman E, Kugelberg M, Dafgård Kopp E. Long-term outcome of lacrimal stent intubation for complete acquired lacrimal drainage obstructions. Acta Ophthalmol. 2020 Jun;98(4):396-399.

Combined Decompression, Strabismus Surgery and Eyelid Surgery in Thyroid Associated Orbitopathy

Francesco Quaranta Leoni
Rome, Italy

The most effective management for patients affected by moderate to severe thyroid associated orbitopathy (TAO) presenting with exophthalmos, strabismus and eyelid retraction is a multi-sequenced approach, performed during the inactive stage of the disease as each surgery can affect subsequent stages. However, a multi-staged approach requires as a longtime commitment, whereas addressing simultaneously the various aspects of the disease in one step may have benefits when access to surgical services is limited, or cost may be a concern.

Simultaneous orbital decompression, correction of eyelid retraction and strabismus surgery has been described in a limited number of patients with inactive TAO with a favourable outcome. A retrospective study compared the outcome of simultaneous orbital decompression and vertical strabismus surgery with the outcome of staged decompression and vertical strabismus surgery in 2 different groups of patients with moderate to severe disease. In cases submitted to one-stage surgery, an endoscopic medial wall decompression was performed, followed by inferior rectus muscle recession, the extent of the recession being determined by marking the place of the released tendon, and the conjunctiva recessed following assessment of relieved restriction with a forced duction testing. The same approach was used in case of superior rectus recession. The lateral wall was decompressed through a lateral canthal incision in the same surgical session, if necessary. There were no reports of diplopia in both primary and reading position, and the reduction in postoperative exophthalmos was not significantly different between the two groups.

The opportunity for combined surgery was influenced by a transition towards an endoscopic surgical approach, and standardisation of restrictive strabismus surgery. Endoscopic decompression preserves the anterior inferomedial boney 'strut' between the maxillary antrum and the ethmoid air cell, and allows to preserve a thin sling of the periorbita of the medial orbital wall. At the same time, it may cause less tissue manipulation than traditional approaches and therefore vertical muscle surgery can be performed during the same surgical session. The management of vertical strabismus aims to prioritise ocular alignment in downgaze and to avoid the risk of progressive overcorrection, and that this may be achieved with single-stage surgery.
A one-step approach is indicated in certain patients where there is both significant exophthalmos, and major eyelid retraction. Upper eyelid retraction correction (either Müllerectomy or graded blepharotomy) performed at the same time of the orbital decompression has been proposed by several authors, and the outcome appears unrelated to the amount of proptosis reduction.

Careful preoperative evaluation usually allows reasonable results, and possible over or under corrections may be addressed at a second stage, performed under local anaesthesia, with the advantage of optimising eyelid contour.

References

1. Ben Simon GJ, Mansury AM, Schwarcz RM, Lee S, McCann JD, Goldberg RA. Simultaneous orbital decompression and correction of upper eyelid retraction versus staged procedures in thyroid-related orbitopathy. Ophthalmology. 2005;112:923–932.
2. Bernardini FP, Skippen B, Zambelli A, Riesco B, Devoto MH. Simultaneous aesthetic eyelid surgery andorbital decompression for rehabilitation of thyroid eye disease: the one-stage approach. Aesthet Surg J. 2018 ;38:1052–1061.
3. Quaranta-Leoni FM, Di Marino M, Leonardi A, Verrilli S, Romeo R. Single-stage Orbital Decompression, Strabismus and Eyelid Surgery in Moderate to Severe Thyroid Associated Orbitopathy. Orbit. 2021; 3:1-9.
4. Rootman DB, Golan S, Pavlovich P, Rootman J. Postoperative changes in strabismus, ductions, exophthalmometry, and eyelid retraction after orbital decompression for thyroid orbitopathy. Ophthal Plast Reconstr Surg. 2017;33:289–293.

Controversies in Congenital Ptosis

Francesco Quaranta Leoni
Rome, Italy

Congenital ptosis, either as an isolated condition or associated with other ocular and systemic abnormalities, can cause functional and social impairment if not corrected.
Discussion remains as to whether congenital ptosis should be classified as a dysgenesis or a dystrophy. Some studies demonstrated that congenital ptosis has a myogenic basis[1] and thus congenital ptosis, although non-progressive, should be classified as muscular dystrophy. Others report that the myofibres analysed in biopsy specimens of levator muscle showed characteristics of a progressive degenerative process. However, other authors findings do not support the classification of congenital ptosis as a dystrophy.

Amblyopia is more likely to occur in cases with greater relative eyelid asymmetry and tends not to develop in children with symmetric ptosis; however, it is possible that anisometropia, regional myopia and amblyopia progressively evolve and this may also occur in children with mild congenital ptosis. Although anisometropia has been frequently cited as an indication for early intervention, some data failed to demonstrate a movement toward normalisation of refractive error after ptosis correction, showing instead a statistically significant worsening of astigmatism following surgery.

The correct choice of procedure is related to patient-specific factors, such as degree of ptosis, the age of patient and degree of LF, as well as surgeon preference and availability of resources. Severe unilateral ptosis with poor levator function can be treated with frontalis suspension, frontalis flap, or maximal levator resection. If Whitnall's superior suspensory ligament is sutured to the tarsus as an internal sling, ptosis will not recur, but the lid will be static with great asymmetry in downgaze. More than one operation may be required to correct congenital ptosis, and despite the many options available, repair can be challenging even for experienced surgeons.

Frontalis flap is a technique which can be used in all patients with poor LF, including blepharophimosis syndrome (BPES), III nerve palsy[4] and for unilateral or bilateral surgery in patients with Marcus Gunn jaw winking ptosis. Advantages of this procedure include avoiding the need for a temporary brow suspension procedure and the absence of forehead scars. The procedure can be reversed or revised and, as the sling is fashioned from muscle, it is less rigid than other forms of brow suspension. Disadvantages include a longer learning curve than with other surgical techniques, and experience is required to achieve optimal results.

Patients with Marcus Gunn jaw winking have variable degree of ptosis, usually unilateral, and treatment varies accordingly: the choice of the better surgical procedure varies, as it is still questioned whether unilateral or bilateral surgery should be performed.

References

1. SooHoo JR, Davies BW, Allard FD, Durairaj VD. Congenital ptosis. Surv Ophthalmol. 2014 Sep-Oct;59(5):483-92.
2. Quaranta-Leoni FM, Sposato S, Leonardi A, Iacoviello L, Costanzo S. Timing of surgical correction for the treatment of unilateral congenital ptosis: Effects on cosmetic and functional results. Orbit. 2017 Dec;36(6):382-387.
3. Quaranta-Leoni FM, Secondi R, Quaranta-Leoni F, Nardoni S. Histological findings of levator muscle in unilateral congenital ptosis in different age groups. Acta Ophthalmol. 2020 May; 98(3): 363-367.
4. Medel R, Vasquez L, Wolley Dod C. Early frontalis flap surgery as first option to correct congenital ptosis with poor levator function. Orbit. 2014 Jun;33(3):164-8
5. Quaranta-Leoni FM, Quaranta-Leoni C, Di Marino M. Marcus-Gunn jaw winking syndrome: case series study and management algorithm. Orbit. 2023 Mar 1:1-8.

Orbital Trauma: Orbital and Orbitofacial Fractures

Dr. Kavya Sundar, Dr. Gangadhara Sundar***

**Faculty of Dentistry, National University Centre for Oral Health, National University of Singapore, Singapore*

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Abstract

Imaging of the orbitofacial skeleton and soft tissues – including the globe, the face, and intracranial structures, is an essential component in the diagnosis, counseling, prognostication, management, and follow-up of patients afflicted by trauma to the craniofacial region, which has both medical and medicolegal consequences.We herewith provide an overview of the various imaging modalities (ultrasound, CT scan, Magnetic resonance imaging, angiography), and common radiologic features. A thorough knowledge is thus paramount to the practicing ophthalmologist managing these complex conditions.

In general, Computed Tomography (CT scan) is the imaging modality of choice for orbital trauma and foreign bodies. However, Magnetic Resonance Imaging (MRI) may be considered in special circumstances as it may be more sensitive in the detection and assessment of nonmetallic/organic intra-orbital foreign bodies. Black bone MRI is increasingly being used nowadays or orbital imaging, especially in children, who need repeated imaging of the soft tissues and the bone.

Keywords

Orbital trauma · Orbital fractures · Blow-out fracture s· Trapdoor fractures · Blow-in fractures · Orbital compartment syndrome · Open globe injuries · Closed globe injuries · Zygomatico-maxillary complex fractures · Naso-orbito-ethmoidal fractures · Cranio-orbital fractures · Orbitofacial fractures · Panfacial fractures · Orbital foreign bodies · Cone beam CT (CBCT)

1 Introduction

Orbital injuries are common and may be classified into orbital contusions, orbital and orbitofacial fractures, and penetrating injuries with or without orbital foreign bodies. In this section we shall focus on orbital and orbitofacial fractures. However, A variable amount of soft tissue injuries, e.g., to the globe, extraocular muscles, and the optic nerve [1] is often present in patients with fractures and should be addressed simultaneously. Imaging of the globe, the adnexa, and periorbital structures is thus essential for both a complete diagnosis of orbital and orbitofacial fractures and guide management.

2 Signs and Symptoms

Common symptoms of orbital fractures include periorbital discomfort or pain, often with swelling, blurring or loss of vision, double vision, numbness of the cheek or upper gums, bleeding from the nose, etc.

Early signs often include periorbital ecchymosis, associated periorbital or facial lacerations, variable degrees of proptosis from orbital hemorrhage, crepitus from emphysema, tenderness with or without step-off at the orbital rims, infraorbital and/or supraorbital paresthesia with orbital floor/roof involvement, respectively, reduced visual acuity, diplopia in primary or other gazes with limitation of ocular motility.

Late signs include variable degrees of visual loss, ocular motility limitation dependent on the degree and location of entrapment of extraocular muscles/intermuscular septum (EOM/IMS) complex, abnormal globe position in any of the three axes-horizontal, vertical, and anteroposterior, canthal and other midfacial deformities.

3 Differential Diagnosis

With a history of significant trauma and the above signs, the diagnosis of fractures may usually be straightforward especially with significant deformity. Visual loss may result from either closed globe injuries, open globe injuries, or traumatic optic neuropathy. Monocular diplopia may result from dislocated intraocular lens. Binocular diplopia may result from contusion and limited cooperation of the patient, entrapment of the EOM/IMS complex, or cranial neuropathies from fractures of the superior orbital fissure. Moderate to severe proptosis with visual loss with or without RAPD may represent an Orbital Compartment Syndrome (OCS) and should be managed as an emergency. Rarely acute severe orbital fractures may present with enophthalmos or even globe prolapse – externally or within the adjacent paranasal sinuses.

4 Treatment

Most orbital fractures may require just symptomatic management after ruling out vision threatening globe or orbital injuries, significant entrapment and large fractures. Significantly displaced orbital or orbitofacial fractures, especially those with entrapment of the extraocular muscle – intermuscular septum complex (EOM/IMS complex) or large soft tissue herniation often require surgical management. An open reduction with internal fixation (ORIF) either by the orbital surgeon alone or along with a cranio-maxillofacial (CMF) surgeon is often indicated in such cases.

5 Diagnosis

Orbital and orbitofacial imaging may be performed with x-ray, CT scan, occasionally MRI, and even, less frequently, specialized imaging (MR Angiography (MRA), CT Angiography (CTA), etc.). CT angiography is nowadays considered in patients presenting with acute craniofacial trauma to rule out intracranial vascular and soft tissue abnormalities concomitantly. Non-contrast fine cut CT scans is the imaging modality of choice in orbitofacial trauma for both bony and soft tissue injuries [2]. Ultrasound is only minimally useful for orbital injuries, but very useful in the assessment and follow-up of closed globe injuries with limited intraocular visualization and is beyond the scope of this entry.

It should be remembered that orbital imaging is not only essential for diagnosis but also the imaging data is useful for preoperative treatment planning, intraoperative and postoperative imaging as well, some of which are highlighted below.

In this entry, we shall present the bony changes from orbital and orbitofacial trauma. Soft tissue signs and orbital foreign bodies shall be discussed elsewhere.

6 Figures with Captions

6.1 X-rays

These are only used as a screening tool to detect gross disruptions of the orbitofacial skeleton and to rule out radiopaque (metallic) foreign bodies prior to MR Imaging. Advantages include relatively easy access in the emergency department setting, ease and brevity of image acquisition with least radiation exposure. Limitations include false negative and thus missed orbital fractures and poor details of orbital bone and soft tissue structures. As a screening tool it may demonstrate a "tear drop sign" in orbital floor blow-out fractures (Fig. 1).

Fig.1 Plain x-ray Water's view (occipitomental, angled PA skull radiograph): Tear drop sign from a left orbital floor blow-out fracture (orbital soft tissue expansion into the maxillary sinus)

6.2 CT Scans

This is the imaging modality of choice, usually performed without contrast, for suspected orbital and orbitofacial fractures, suspect and occult globe disruptions, orbital and ocular foreign bodies, traumatic optic neuropathy, and to rule out intracranial injuries [3]. It is often viewed in both a bone window (to visualize orbital bones and fractures, intraocular and orbital foreign bodies) and soft tissue windows (to visualize globe and other soft tissue structures) in the axial, coronal, and sagittal sections. Foreign bodies are often analyzed in both windows, with attention to their Hounsfield Units (HU). Conventional CT scans offer high resolution images with sub-mm cuts and the DICOM data is utilized not just for preoperative treatment planning but also for custom implant designing and intraoperative navigation. Cone beam CT scans (CBCTs) are often used for postoperative analysis of orbital implants and volumes with significantly reduced radiation exposure, acquisition time, and cost [4]. An intraoperative O-arm may also be used for intraoperative confirmation of adequate reconstruction in some centers globally.

An overview of the Practical Classification of Orbital and Orbitofacial fractures [5], their approximate incidence and radiologic features are shown below (Table 1).

Table 1 Practical Classification of Orbit and **Orbitofacial** fractures and their frequency

"Simple"/Pure orbital fracture	"Complex" orbitofacial fracture
1. Linear fractures 2. Blow-out fractures (a) 1 Wall fractures (21%) (i) Floor blow-out fractures (ii) Medial wall blow-out fractures (iii) Roof blow-out fractures (iv) Trapdoor fracture (b) 2 Wall fractures (10%) (i) Floor and medial wall blow-out fractures 3. Blow-in fractures.	1. Zygomatico-maxillary complex fractures (ZMC) Type I-III (18%) 2. **Naso-orbito-ethmoidal** fractures (NOE) Type I-III (3%) 3. Cranio-orbital fractures (10%) 4. Orbitofacial fractures Le Fort II fracture (5%) Le Fort III fracture (14%) 5. Cranio-orbitofacial fracture (14%) 6. Panfacial fracture (5%)

I. Simple Orbital Fractures: These are isolated orbital wall fractures without orbital rim or other craniofacial bone involvement or displacement.

A. Linear Orbital Fracture: These are crack or minimally displaced fractures, usually of one wall without significant orbital content prolapse or entrapment (Fig. 2) and thus managed conservatively.

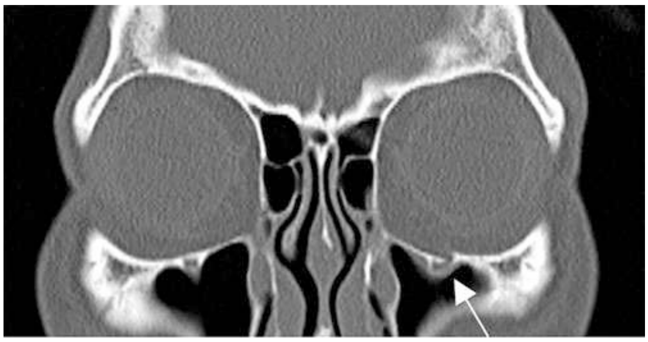


Fig. 2 Coronal bone window: Left orbital floor linear fracture along **infraorbital** groove from sports injury

B. Blow Out Fractures: These are fractures of either one wall or more than one wall of the orbit without orbital rim involvement. They may involve the floor (Fig. 3), medial wall (Fig. 4). or roof (Fig. 5) or may present as.

These trapdoor fractures are a form of blow-out fractures typically seen in children and young adults. Following blunt trauma, a momentary prolapse of orbital contents into the adjacent paranasal sinuses with the displaced bone springing back results in entrapment, often with severe consequences

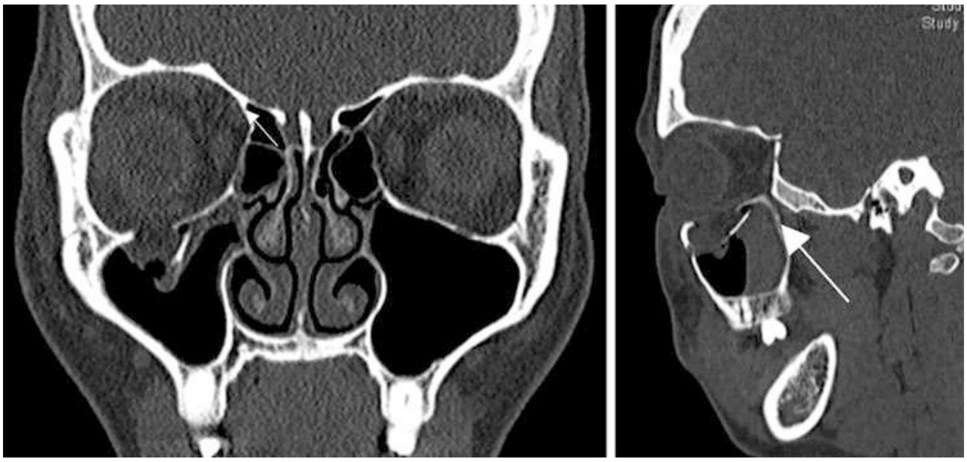


Fig. 3CT scan, coronal and sagittal bone windows: Right orbital floor blow-out fracture, the posterior ledge (arrow), with orbital soft tissue herniation and blood in the maxillary sinus

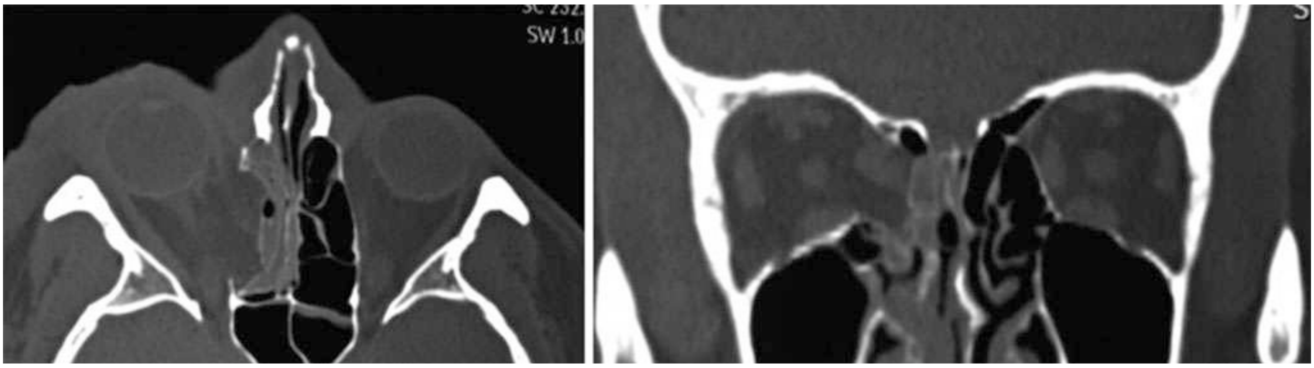


Fig. 4**CT scan, axial and coronal bone windows: Large right medial wall blow-out fracture with orbital fat and medial rectus prolapse and opacification of the ethmoid sinus**

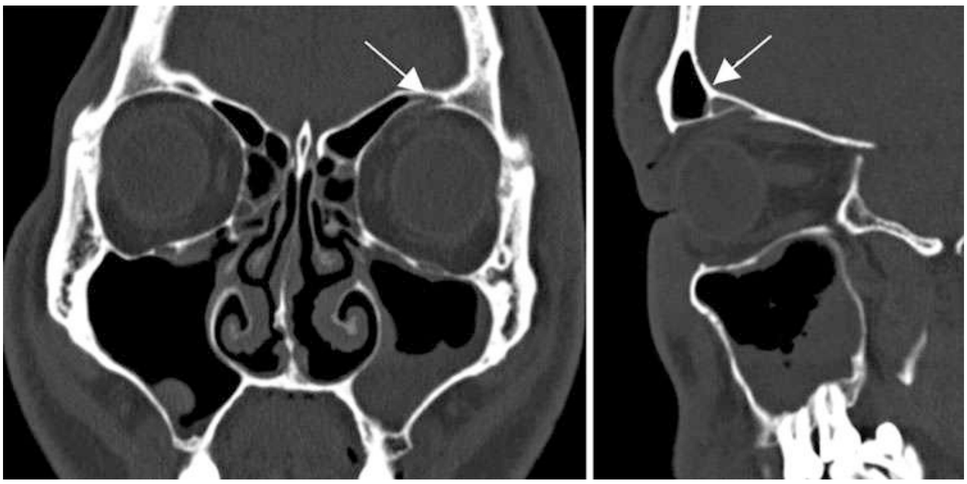


Fig. 5 CT scan coronal and **sagittal** bone windows: Left orbital roof blow-out fracture with minimal prolapse into the frontal sinus

C. Blow-in Fractures: These are orbital wall fractures sparing the orbital rim, with bony fragment displacement toward

C. Blow-in Fractures: These are orbital wall fractures sparing the orbital rim, with bony fragment **displacem**ent toward

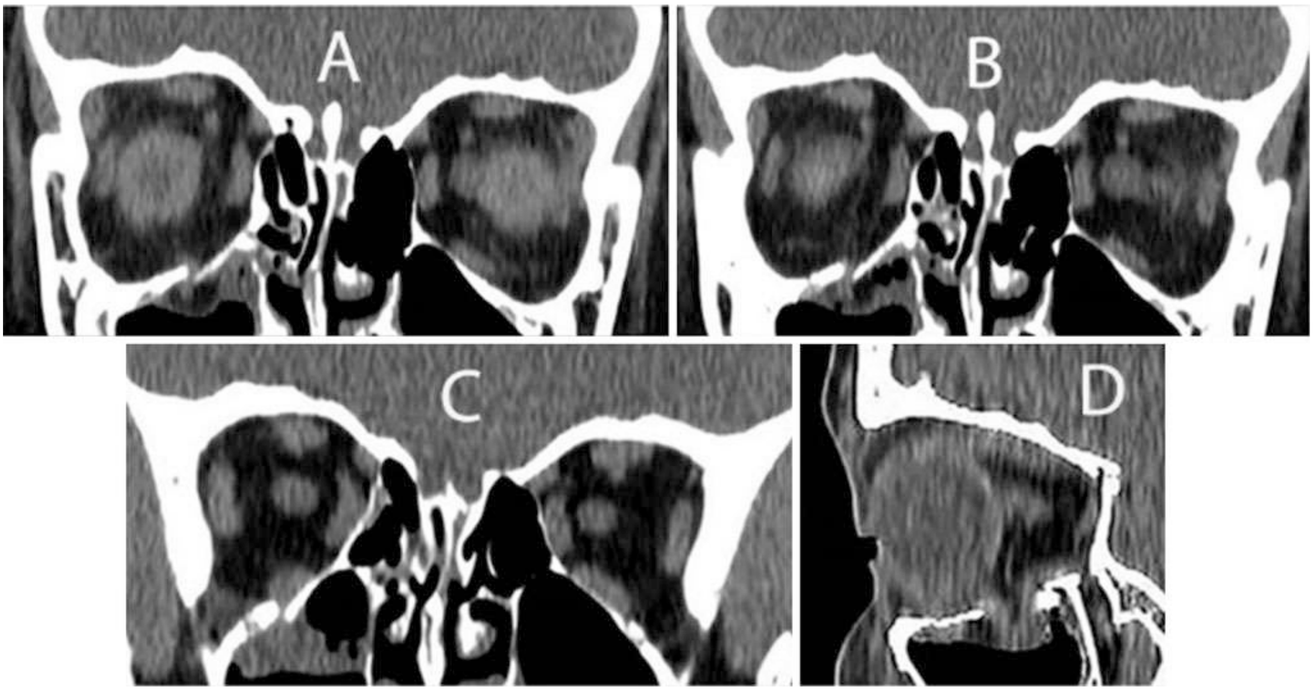


Fig. 6 CT soft tissue window: Trapdoor fracture of the right orbital floor with inferior rectus herniation and entrapment. Serial anterior to posterior coronal sections (a–c): Note the IR is not visible **intraorbitally** in figures A and B, but visible posteriorly (c, d). (Courtesy: Dr Guy Ben Simon)

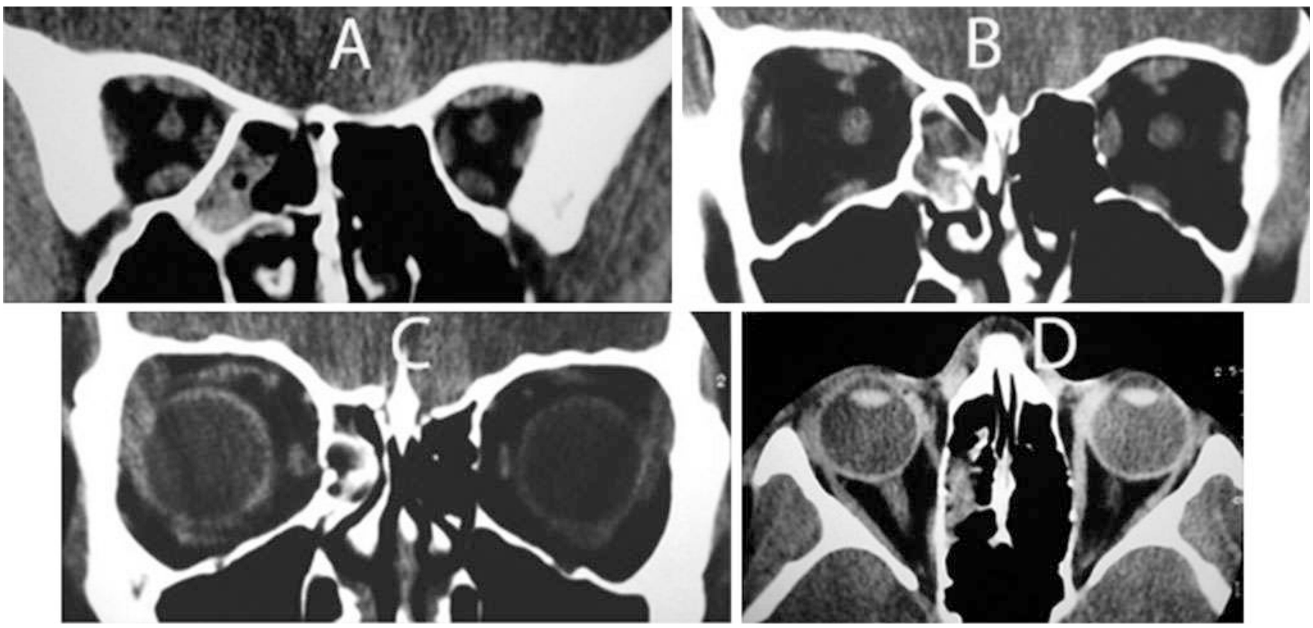
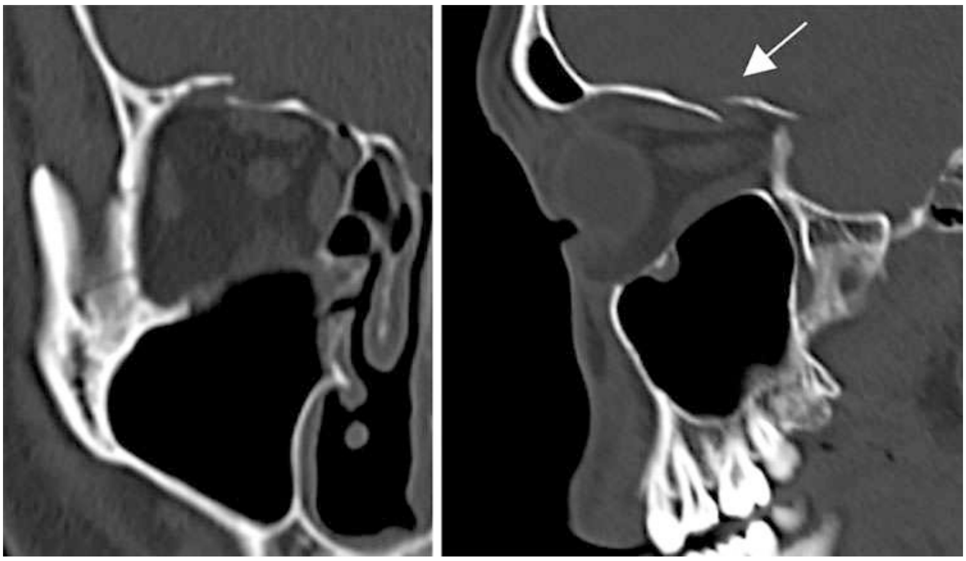


Fig. 7 CT scan soft tissue window: Right medial wall fracture with medial rectus entrapment. Medial rectus present in the anterior section that disappears in the mid-posterior sections but visualized in the ethmoidal sinus (a, b, d)

Fig. 8 **C**Tscan coronal bone (right) and soft tissue (left) windows: Combined right orbital floor and medial wall fracture with disruption of the inferomedial orbital strut, the Angle of Inferomedial Orbital Strut (AIOS) and soft tissue prolapse with hematoma of the ethmoid and maxillary sinus

Fig. 9 Coronal and sagittal bone windows: Right orbital roof blow-in fracture with impingement against the Levator palpebrae **superioris/Superior** rectus (LPS-SR complex)



the orbital soft tissue structures which may affect the roof (Fig. 9) medial wall (Fig. 10).

II. Complex Orbitofacial Fractures: These are orbital fractures, usually from high impact injuries, involving the orbit walls, its rims, and variable components of the facial skeleton – the upper face (fronto-temporal injuries), the midface (the maxilla, zygoma, pterygoids), and the lower face (mandible). They often require multidisciplinary intervention [7].

A. Zygomatico-maxillary complex fracture: The second most common type of facial fracture, these are fractures of the zygoma, involving the lateral wall of the orbit and

Fig. 10 CT scan axial bone window: Right medial wall blow-in fracture with **impingement** against medial rectus and orbital structures

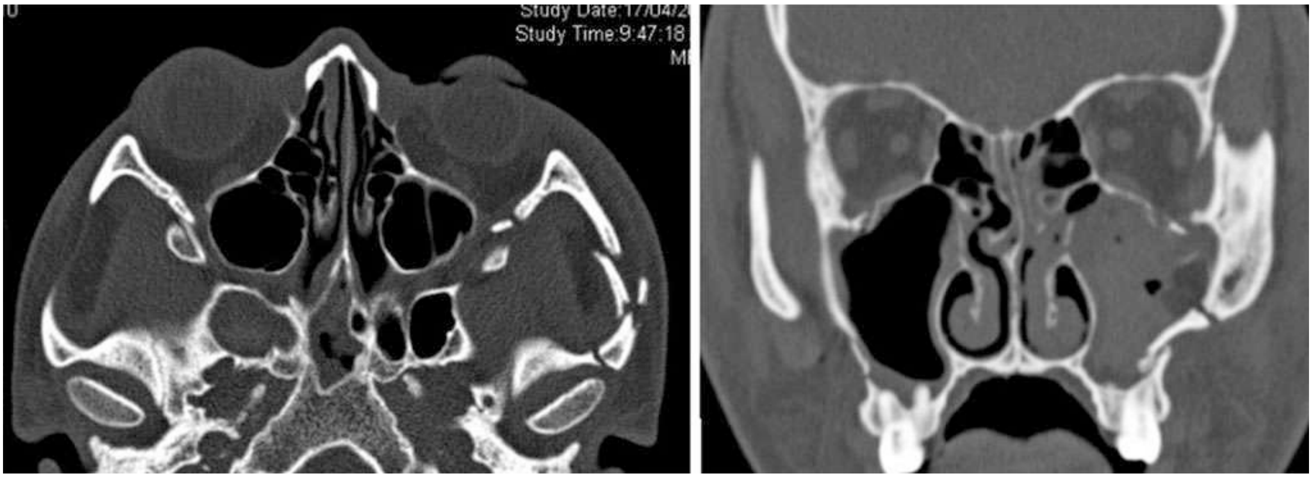


Fig. 11 CTscan axial and coronal bone windows: Minimally displaced comminuted left ZMC fracture with involvement of the lateral orbital wall, floor, and the zygomatic arch variable component of the orbital floor. The three types include Types I (Simple tripod fractures), Type II (Complex tetrapod fractures) (Fig. 11), and Type III (Comminuted severely displaced fractures) (Fig. 12).

B. Naso-orbito-ethmoidal (NOE) Fracture: Very uncommon in isolation, these are fractures of the central midface often involving the nasal bones, the medial walls of the orbit and variable damage to the medical canthal tendon and its attachments caused by high velocity high impact injuries. They may be unilateral or bilateral. Markowitz-

Fig. 12 3D CT **reconstruction:** Comminuted displaced right ZMC fracture from blast injury

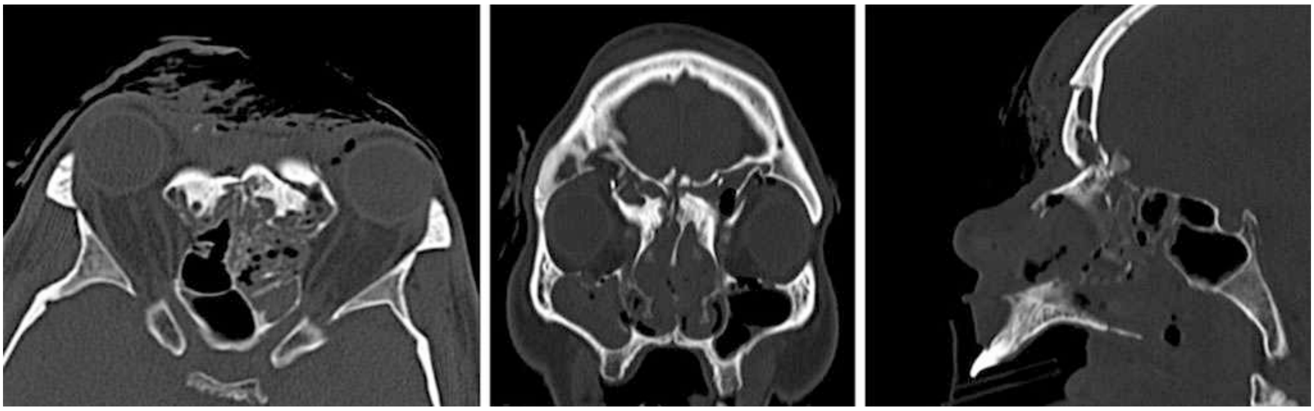


Fig. 13 CTscan axial, coronal and sagittal bone windows: Bilateral severe Type III NOE fractures with telescoping and comminution of the nasoorbito-ethmoidal complex and medial walls of the orbit

Manson classification include Type I (single central fragment with attached MCT), Type II (comminuted central fragment), and Type III (comminuted often disorganized central fragment without significant MCT attachment,Fig. 13).

C. Craniorbital fracture: These are fractures of the orbital roof involving the anterior cranial fossa (Fig. 14) and often require comanagement with the neurosurgeons.

D. Orbitofacial fractures: These are fractures of the orbit involving other bones of the midface (lower maxilla with or without zygoma) (Fig. 15a). Le Fort Type I fractures do not involve the orbit. Le Fort II fractures

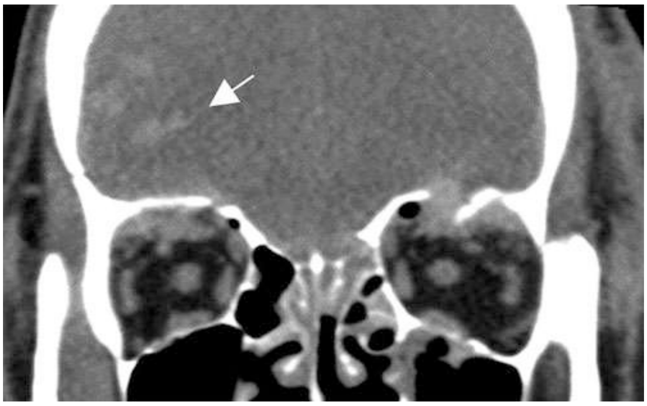


Fig. 14 CT scan coronal soft tissue windows: Bilateral orbital rooff ractures, more on the left, with anterior cranial fossa **involvement** and frontal lobe hemorrhage (arrow)

Fig. 15 (A) Le Fort II (Pyramidal) fracture and Le Fort III (Craniofacial dysjunction) fractures. (B) Coronal bone window: Left-sided Le Fort II fracture with involvement of the orbital floor and medial wall along with lateral maxillary wall fracture. (C) Coronal bone window: Right-sided Le Fort III fracture with involvement of the superomedial wall of the orbit including the skull base and the lateral wall craniofacial dysjunction

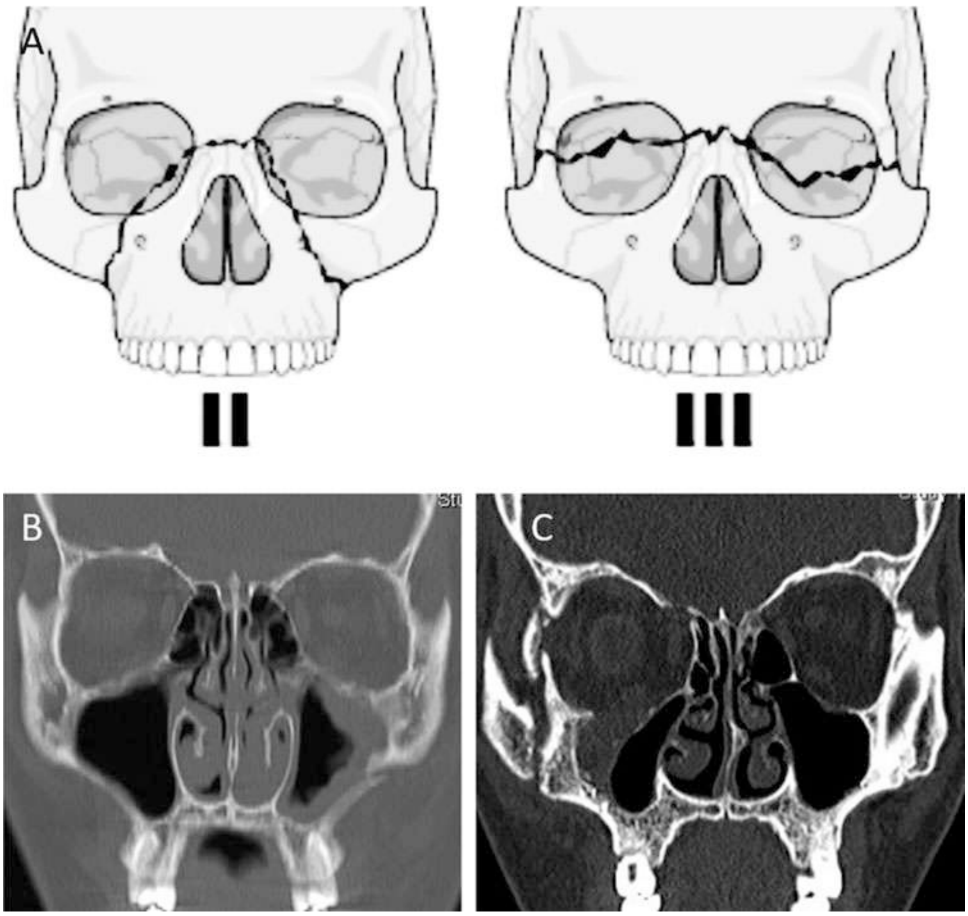


Fig. 16 CTCT scan coronal soft tissue window: Left cranio-orbitofacial fracture from high impact construction site injury with displaced fractures of the left orbital roof/anterior cranial fossa, floor of the orbit, and the maxilla with globe dystopia

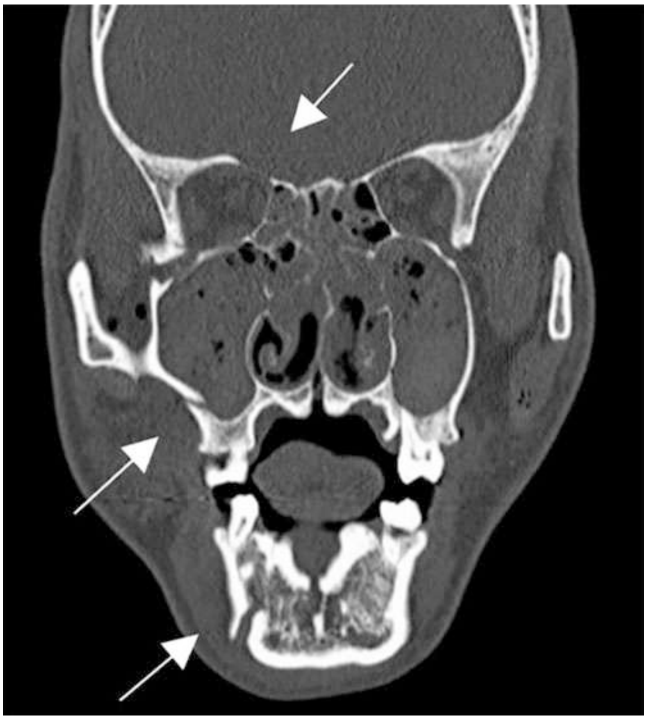


Fig. 17 CT scan coronal bone window: Right panfacial fracture with fractures of the upper face (Frontal bone/orbital roof), **midface(maxilla),** and lower face (mandible)

are midfacial fractures involving the medial wall and floor of orbit (Fig. 15a, b). Le Fort III fractures are midfacial fractures with medial wall and lateral walls of the orbit (craniofacial dysjunction)) (Fig. 15a, c). E. Cranio-orbitofacial fracture: These are fractures involving the skull base, orbits and the midface (Fig. 16).

F. Panfacial fracture: These are fractures involving the upper facial skeleton (skull base and orbital roof), midface (orbit, zygoma, and maxilla), and the lower face (mandible) (Fig. 17). These fractures often require a multidisciplinary approach, more meticulous treatment planning, and occasionally staged reconstruction.

Fig. 18 CT scan coronal bone windows image of orbital apex: Displaced fracture ofl eft posterior greater wing of sphenoid near the superior orbital fissure, which may present as ophthalmoplegia or ptosis

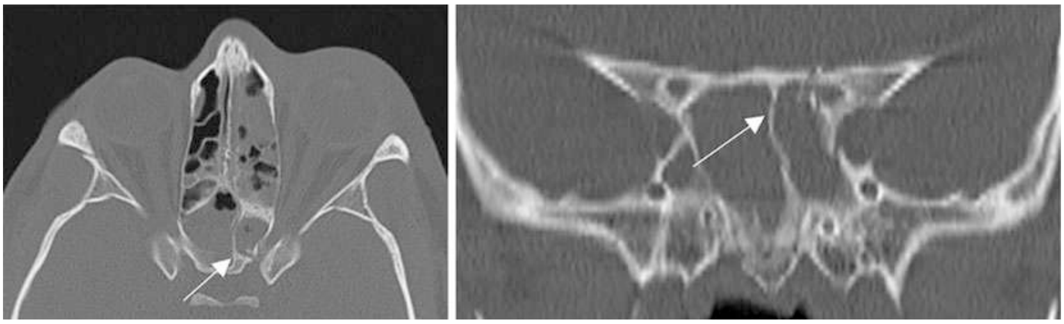


Fig. 19 CT scan axial and coronal bone windows: Left optic canal fracture **presenting** as traumatic optic neuropathy

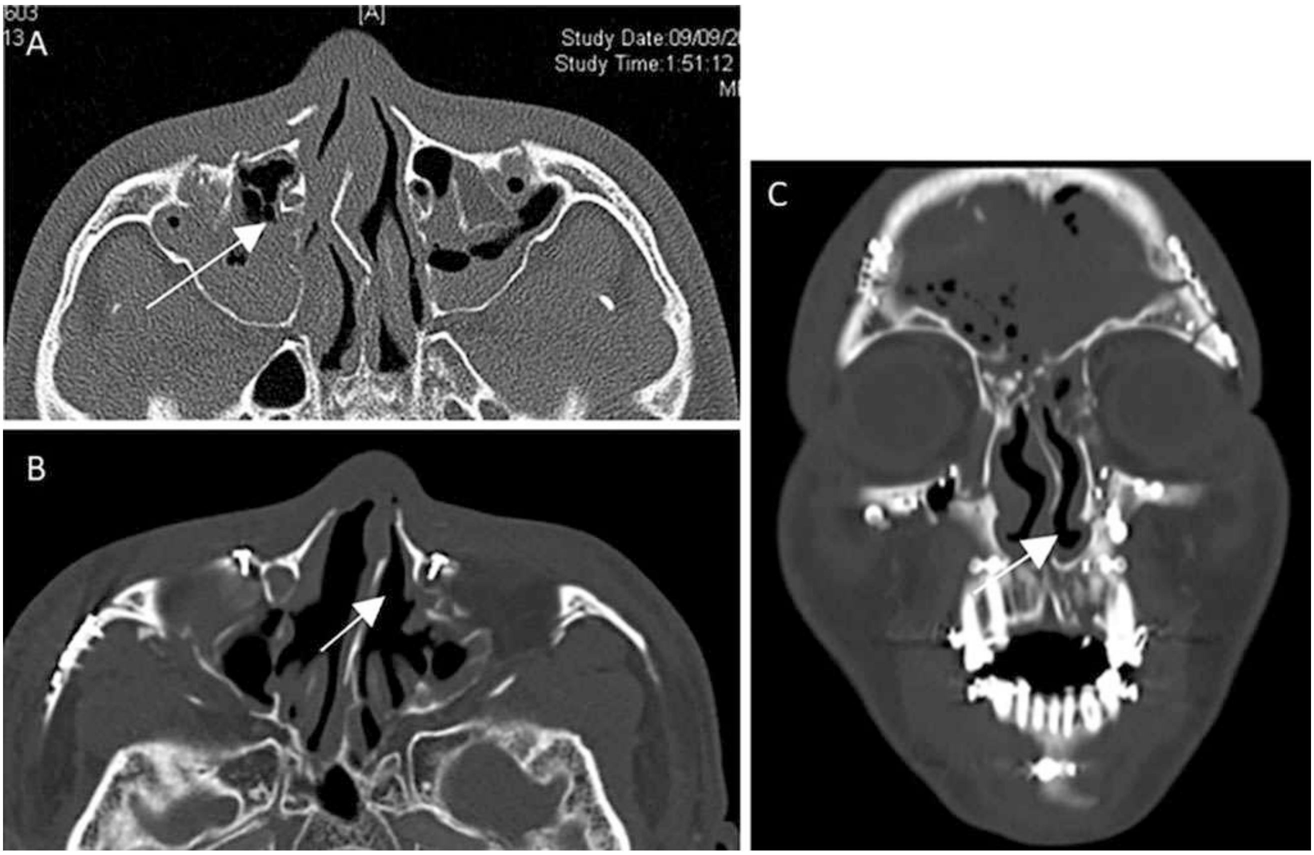


Fig. 20 (a) Axial bone window: Fracture of the right bony nasolacrimal duct in midfacial trauma. (b, c) Axial and coronal bone windows in a postoperative scan: Accidental placement of fixation screw through left nasolacrimal duct

6.3 Other Orbital Fracture Considerations

A. Apical Orbital Fractures: These are fractures of either the superior orbital fissure (Fig. 18), Optic canal fractures (Fig. 18), or both. They are important anatomical bony landmarks with vital structures coursing through them.

Fracture of superior orbital fissure may present with a complete ptosis with poor or absent levator function, globe elevation with supraorbital paresthesia. Fractures of the optic canal may present with visual loss and gross relative afferent pupillary defect.

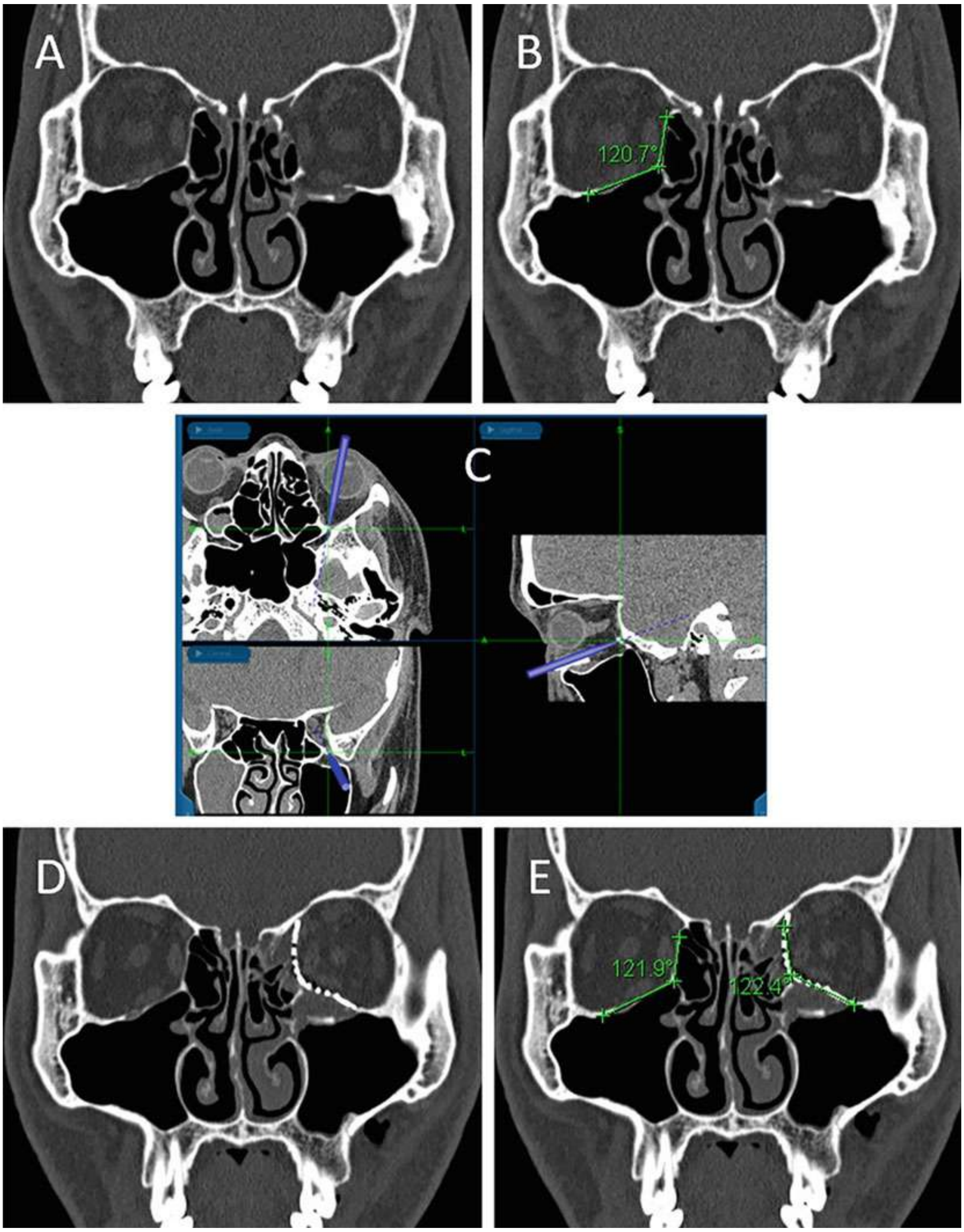


Fig. 21 (a) Preoperative imaging of unilateral left combined orbital floor – medial wall fracture with disruption of the inferomedial orbital strut. (b) Preoperative treatment planning with measurement of contralateral Angle of the Inferomedial Orbital Strut (AIOS). (c) Intraoperative navigation of posterior ledge for placement of implant. (d) Reconstruction of the left orbit with a prebent (AIOS) prefabricated anatomical titanium plate. (e) Postoperative verification of reconstructed orbit including AIOS

B. Lacrimal Drainage System Fractures: These are commonly seen (around 15%) in fractures of the midface (Le Fort II, Le Fort III, and NOE fractures) (Fig. 20a). Occasionally surgeries of the midface may also result in damage and disruption of lacrimal drainage apparatus primarily or iatrogenically (Fig. 20b, c).

C. DICOM Data in Orbital Fractures
Apart from diagnostic imaging, the DICOM data from sub-mm imaging of orbital fractures may also be utilized for preoperative treatment planning (segmentation with mirroring), intraoperative navigation, postoperative verification, and quality control with image fusion [8] (Fig. 21a–e). DICOM data from conventional or cone beam CT scans [9] can also be used for volumetric analysis both preoperatively and in patients with posttraumatic enophthalmos for treatment planning and implant fabrication.

D. Postoperative Imaging of Orbital Implants: Image Characteristics and Implant Positioning.

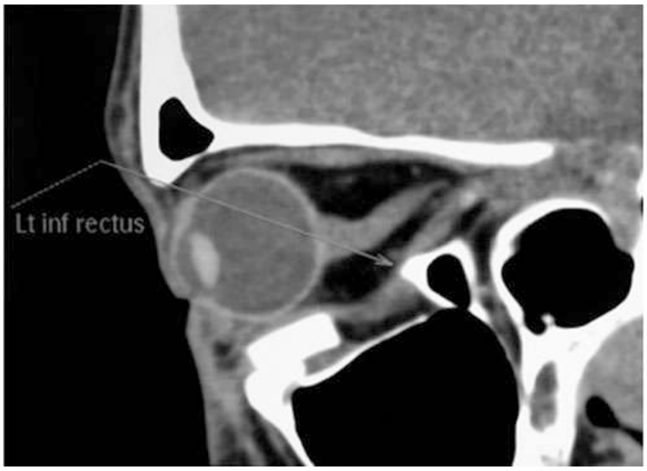


Fig. 22 Sagittal soft tissue window: Silicone block placed in the anterior orbit with incomplete reconstruction of orbital floor and residual prolapse of inferior rectus

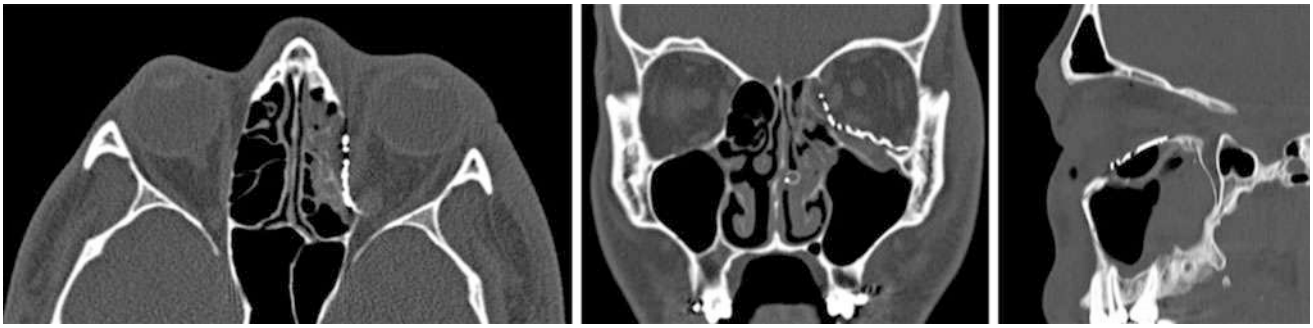


Fig. 23 Axial, coronal and sagittal bone window postoperative CT Scan: Ideally placed prebent (AIOS) prefabricated anatomic titanium plate for combined left orbital floor-medial wall fracture. Note reconstruction of the inferomedial orbital strut, with posterior convexity with implant resting against the posterior ledge restoring symmetry with the contralateral orbit

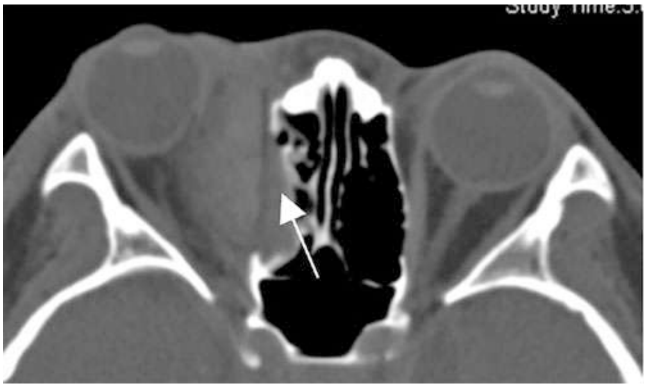


Fig. 24 Axial CT scan soft tissue window: Porous polyethylene (Medpor®) implant visualized as a linear radiolucency (arrow) along the right medial orbit with secondary hematoma causing globe displacement

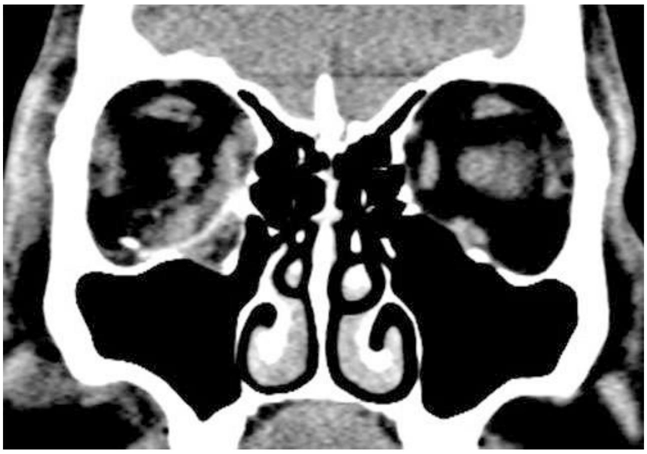


Fig. 25 Early postoperative CT scan coronal soft tissue window showing bioresorbable (Rapidsorb®) along right floor of orbit

Fig. 26 Early postoperative CT scan, coronal and sagittal views: Radiolucent polycaprolactone (Osteomesh®) implant along left orbital floor (arrows)

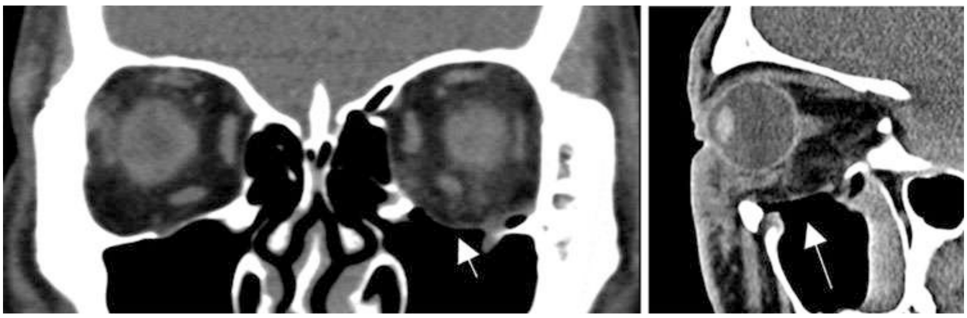


Fig. 27 ***Upper row***, postoperative A coronal and sagittal bone window CT scans: Superiorly mispositioned radio-opaque Titanium prefabricated implant along left orbital floor impinging upon inferior rectus muscle.
Lower row, postoperative coronal and sagittal scans: Inferiorly positioned Titanium implant below the posterior ledge (arrow) of the left orbit into the maxillary sinus with incomplete reduction of orbital contents

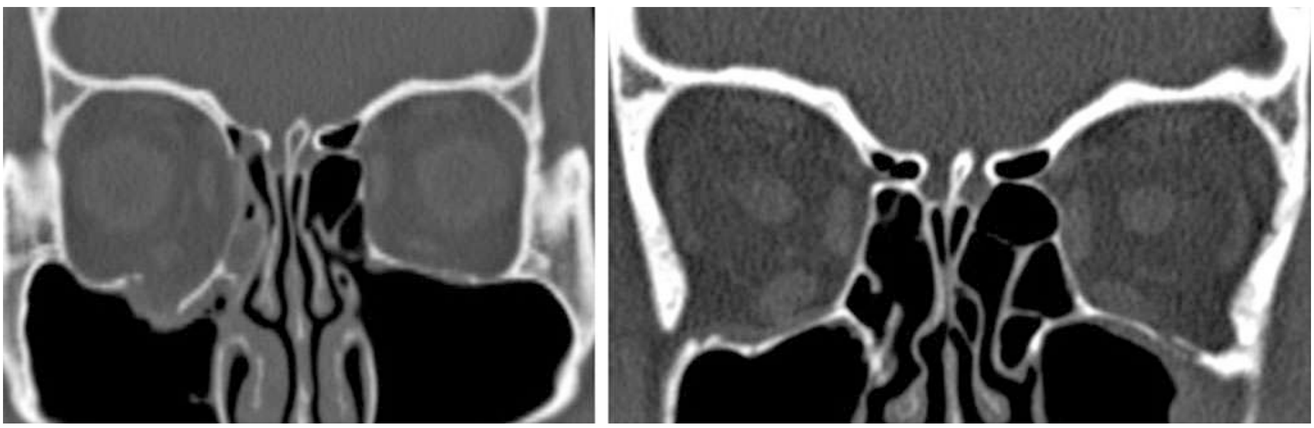


Fig. 28 Late postoperative CT scan coronal and sagittal bone windows: Completely healed left orbital floor fracture with implant resorption

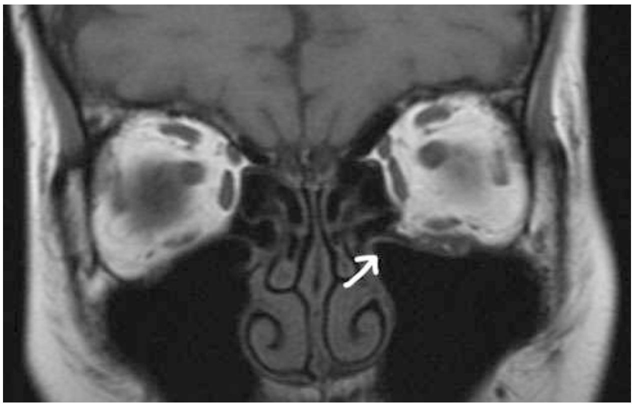


Fig.29 Coronal MRI demonstrating inferior displacement of the inferior rectus in an orbital floor fracture

Every implant biomaterial has different imaging characteristics. These include clarity of visibility in soft tissue and bone windows. Silicone and titanium implants are readily visible on both bone and soft tissue windows (Figs. 22 and 23). Polyethylene (Medpor®) implants are radiolucent on CT scans (Fig. 24). Bioresorbable implants are ideally visualized on soft tissue window (e.g., polylactides (Fig. 25), polycaprolactones (Fig. 26)). The surgeon should be familiar with these, especially when patients have postoperative complications and when operative notes are unavailable.

We herewith demonstrate some imaging characteristics of commonly used implants and their complications. Early postoperative imaging may confirm adequate reduction of orbital contents and either proper (Fig. 23) or improper implant placement (Fig. 27). In patients with bioresorbable implant placement, late postoperative imaging, typically performed 18 months postop, may help confirm complete resorption of implant with bone healing (Fig. 28).

6.4 MRI in Orbital Fractures

Traditionally, MRI has been contraindicated in acute head and neck injuries and has been considered a poor imaging modality for structural defects of the bony skeleton. However, since the description of "black bone MRI" by Eley et al. in 2012 [10], it is now being considered for various conditions including pediatric head injuries. Novel sequences with short echo time (TE of 4.2 ms) and repetition time (TR of 8.6 ms) along with low flip angle of 5 enables a high resolution depiction of bone with excellent contrast between bone, soft tissue, and air. While this may still not aid diagnosis of fracture of the bone next to paranasal sinuses (orbital floor, medial wall), it may be useful for the orbital roof and lateral wall, in addition to identifying soft tissue changes such as orbital fat, extraocular muscle and intermuscular septal prolapse, and/or incarceration [11] (Fig. 29).

7 Summary

In summary, a thorough understanding of the indications for imaging in globe and ocular adnexal trauma, the various modalities, and accurate interpretation goes a long way in making a proper diagnosis and treatment planning. Occasionally, postoperative imaging may also be indicated, which helps the surgeon confirm optimal surgical management.

References

1. Almousa R, Amrith S, Mani AH, Liang S, Sundar G. Radiologic signs of periorbital trauma – the Singapore experience. Orbit. 2010;29(6):307–12.
2. https://eyewiki.org/Imaging_in_Ocular_and_Ocular_adnexal_trauma
3. Ting E. Imaging in orbital & orbitofacial fractures. In Orbital fractures – principles, concepts & techniques. Imaging Science Today LLC. ISBN-13:978-0997781922.
4. Shintaku W, Venturin J, Azevedo B, Noujeim M. Applications of cone-beam computed tomography in fractures of the maxillofacial complex. Dental Traumatol. 2009;25:358–66.
5. Practical classification of Orbital & Orbitofacial Fractures. In: Sundar G, editor. Orbital fractures – principles, concepts & management. Imaging Science Today LLC. ISBN-13: 978-0997781922.
6. Kakizaki H, Zako M, Katori N, Iwaki M. Adult medial orbital wall trapdoor fracture with missing medial rectus muscle. Orbit. 2006;25(1):61–3.
7. Attoya KA, Mirvis SE. Radiological evaluation of the craniofacial skeleton. In: Dorafshar AH, Rodriguez ED, Manson PN, editors. Facial trauma surgery – from primary repair to reconstruction. Elsevier; 2020. ISBN: 978-0-323-49755-8.
8. Udhay P, Bhattacharjee K, Ananthanarayanan P, Sundar G. Computer-assisted navigation in orbitofacial surgery. Indian J Ophthalmol. 2019;67:995–1003.
9. Friedrich RE, Bruhn M, Lohse C. Cone-beam computed tomography of the orbit and optic canal volumes. J Craniomaxillofac Surg. 2016;44(9):1342–9.
10. Eley KA, McIntyre AG, Watt-Smith SR, Golding SJ. "Black bone" MRI: a partial flip angle technique for radiation reduction in craniofacial imaging. Br J Radiol. 2012;85(1011):272–8.
11. Freund M, Hähnel S, Sartor K. The value of magnetic resonance imaging in the diagnosis of orbital floor fractures. Eur Radiol. 2002;12:1127–33.

Dr. Jayanta Kumar Das

Eyelid Reconstruction - VAST

Dr. Joyeeta Das, MBBS, DNB

Eyelid defects from tumor, trauma, or congenital anomalies are difficult to reconstruct surgically due to their highly specialized function of globe protection, tear film maintenance, tear drainage dynamics, and facial cosmesis. An understanding of eyelid anatomy and principles of reconstruction unique to the periocular adnexa is key to achieving optimal functional and aesthetic results

The normal eye is elliptical, with the lateral canthus about 2 mm higher than the medial canthus. Aperture between upper and lower eyelids is known as the palpebral fissure. The palpebral fissure is 28-30 mm horizontally and 8-12 mm vertically.

For the purposes of reconstruction, the eyelid is divided into two distinct anatomical lamellae. The anterior lamella contains skin and the orbicularis oculi, while the posterior lamella is comprised of the tarsal plate and the conjunctiva. A gray line along both eyelid margins, marks the junction of the two lamellae. For different tissues components ,the surgeon should consider reconstruction of the bilamellar eyelid structure.

The indications of eyelid reconstruction are

- Congenital
  - Isolated colobomas or associated with Goldenhar syndrome, Treacher Collins syndrome, Fraser syndrome
- Acquired
  - Post-surgical (e.g. resection of tumor, floppy eyelid repair)
  - Trauma
  - Burns
  - Irradiation
  - Following previous complicated surgery

Evaluation of lid defect is very important before planning of reconstruction. The following points to evaluated

- If the defect is full-thickness with eyelid margin involving or just an anterior lamellar defect
- Size of defect
- Location – medial, lateral or central
- Canthus involvement
- Lacrimal drainage system involvement
- Age of the patient - laxity of lids

General consideration for lid reconstruction Several factors determine the choice of reconstruction, including the nature of the defect, the availability of surrounding tissues. Following general guidelines are important to remember when attempting eyelid reconstruction:

a. Reconstructing both anterior and posterior lamellae requires a well-vascularized flap. Graft-on-graft repair frequently fails due to lack of vascular supply .
b. For corneal protection and lubrication, posterior lamella must be lined by nonkeratinizing mucosal epithelium
c. For optimal eyelid function, keep proper horizontal and vertical dimensions to avoid vertical tension on the lower eyelid.
d. Flaps and grafts require tissue match.

The primary objective is to restore eyelid function so they can protect the eye, secondary goal is to restore eyelid aesthetics.

Treatment algorithms are as follows

If only **anterior lamella** defects are presents this may be reconstructed by

1. Primary closure with or without undermining tissue
2. Laissez faire – healing by secondary intention
3. Local skin flaps - V-Y flaps, Rhomboid flaps, bilobed or trilobed flap, Unipedicle and bipedicle rectangular advancement flap
4. Skin grafts – full thickness grafts are preferred over partial thickness graft in periocular area for better cosmesis and functional correction

If **full-thickness lid defects involving margin** are present reconstruction options depends upon length of defects

1) Small defect (up to 25% to 50% of lid length)- direct closure by vertical mattress suture
2) Medium defect [50% to 75% of lid length - Tenzel semi-circular advancement flap , McGregor flaps
3) Large defects [>75% lid lenghth] -

A. For **upper lid reconstruction** the options are
   a. Cutler-Beard lid sharing from lower lid
   b. Mustarde lid switch flap
   c. Glabellar flap
B. **For lower lid** the options are
   a. Hughes tarsoconjunctival flap
   b. Mustarde cheek rotation flap
C. Specialized flaps useful **in both the lids** are
   a. Fricke flap
   b. Paramedian forehead flap
   c. Tripier flap

Conclusion : The dynamic complexity of eyelid reconstruction makes it a challenging area of the face to reconstruct. Understanding anatomy helps surgeons choose the optimal reconstructive option to maintain eyelid functionality and aesthetics.

References

1. Tyers AG, Collin JRO. Colour Atlas of Ophthalmic Plastic Surgery. 4th ed. Elsevier Health Sciences,2018.Chapter 17: Eyelid reconstruction – anterior and posterior lamella combined; p.449-50
2. Subramanian N. Reconstruction of eyelids. Indian J Plast Surg. 2011 Jan-Apr; 44(1): 5–13
3. Nerad JA. Techniques in Ophthalmic Plastic Surgery.1st ed. Elsevier Health Sciences,2010. Chapter 12: Lid Reconstruction;p.33
4. Madge SN, Malhotra R, Thaller VT et al. A systematic approach to the oculoplastic reconstruction of the eyelid medial canthal region after cancer excision. Int Ophthalmol Clin 2009;49(04): 173–194

Application of Biofillers and Threads in Oculofacial Aesthetics

Dr. Kasturi Bhattacharjee MS, DNB, FRCSEd, FRCS(Glasg)

While the Fountain of Beauty and Elixir of life tantalize us with promises of eternal youth and beauty, Oculofacial aesthetics strives to actualize an enduring youthful appearance through minimally invasive techniques. The objective is to achieve a seamlessly natural and harmonious facial rejuvenation, addressing the challenges of aging as effectively and safely as possible. The aging process, marked by a decrease in collagen fiber elasticity and hyaluronic acid production, manifests as a lack of skin elasticity, fragility in collagen bundles, and fragmentation.

Globally, various exogenous fillers are employed for facial rejuvenation despite their notable drawbacks, including edema, erythema, encapsulation, granuloma formation, and the potential for chronic or delayed infection. In this context, it becomes paramount to introduce a more autologous alternative filler with minimal disadvantages. The Platelet-Rich Fibrin Matrix (PRFM), is a novel Biofiller, distinguished by its autologous nature and higher concentration of growth factors. This characteristic equips it with a markedly superior ability to stimulate angiogenesis, facilitate tissue regeneration, and enhance wound healing. Furthermore, PRFM prompts the migration of mesenchymal stem cells (MSCs) to the injection site, contributing to regenerative processes.

Adding to the arsenal are Polycaprolactone threads, the latest bio-absorbable, monofilament suspension threads of synthetic origin (caprolactone). These threads are engineered to promote collagen regeneration over an extended period compared to Polydioxanone (PDO) and Polylactic Acid (PLA) threads. Through the creation of a collagen framework, they deliver exceptional skin support, tightening, and prevention of sagging. Their fibrotic reaction ensures a lasting lifting and stretching effect, persisting even after absorption. Moreover, as the threads break down, they release molecules that stimulate the skin to produce increased collagen and hyaluronic acid. The result is revitalized, well-hydrated, and firm skin, showcasing enduring results.

In this presentation, we unveil the diverse applications and transformative potential of biofillers and facial threads in countering the effects of aging.

References

1. Karimi K, Rockwell H. The Benefits of Platelet-Rich Fibrin. Facial plastic surgery clinics of North America. 2019 Aug;27(3):331–340. doi: 10.1016/j.fsc.2019.03.005.
2. Evans M, Lewis ED, Zakaria N, Pelipyagina T, Guthrie N. A randomized, triple-blind, placebo-controlled, parallel study to evaluate the efficacy of a freshwater marine collagen on skin wrinkles and elasticity. Journal of cosmetic dermatology. 2021 Mar;20(3):825–834. doi: 10.1111/jocd.13676.
3. Wong V, Rafiq N, Kalyan R, et al. Hanging by a thread: choosing the right thread for the right patient. J Dermat Cosmetol. 2017;1(4):86-88. DOI: 10.15406/jdc.2017.01.00021.

Failed DCR- What do you do?

Dr. Marian Pauly

Periocular Soft Tissue Trauma: Highlights

Dr. Maya Hada

Financial disclosures - None

Outline

Injuries to periocular structures constitutes a major component of ocular trauma. The periocular soft tissue trauma could vary from simple to complicated injuries and include eyelid lacerations, canalicular lacerations, medial canthal injuries, intraorbital foreign bodies, orbital and subperiosteal hematoma, orbital compartment syndrome and traumatic globe luxations. Most of these injuries are vision threatening and require prompt management.

The stepwise repair of eyelid margin lacerations and canalicular lacerations with self-retaining silicone stents will be demonstrated[1]. Retained intraorbital foreign bodies (RIOrFB) poses a diagnostic and therapeutic challenge many a times. Varied presentations and case-based management of RIOrFBs will be discussed[2]. Emergency treatment in cases of sight-threatening orbital hematomas will be discussed. Traumatic luxation of the eyeball is an ophthalmic and medical emergency. Early recognition and prompt management by repositioning the globe is discussed[3].

Comprehensive understanding of structural details of periorbital region, establishing an early clinico-radiological diagnosis followed by prompt and individualized surgical managemnt can help in maximizing the outcomes in such cases. This talk will improve the understanding of general ophthalmologists regarding the management of various periocular soft tissue injuries.

References

1. Murthy R, Adulkar N, Bhat S, Jayadev C, Krishnakumar S. Management of canalicular lacerations:A review. Indian J Ophthalmol. 2017;65:591–8
2. S. Khanam, A. Agarwal, R. Goel, et al. Clinical presentation and management strategies in intraorbital foreign bodies. Case Rep. Ophthalmol. Med. (2021), p. 2021
3. Osman EA, Al-Akeely A. Luxation of eyeball following trauma: novel simple treatment. Indian J Ophthalmol. 2014 Jul;62(7):812-3.

Dr. Mrittika Sen

Enucleation is the removal of eyeball while preserving the rest of orbital tissues and extraocular muscles. Evisceration is the removal of intraocular tissue but leaving the sclera and conjunctiva intact. When done by a proper technique, these surgeries are rarely disfiguring. Indications for enucleation are malignant intraocular tumours, post-traumatic blind eyes with ciliary staphyloma and ciliary tenderness, phthisis bulbi. Evisceration is also done in cases of panophthalmitis. Evisceration is contraindicated for intraocular tumours. The surgical techniques for enucleation and evisceration will be discussed with emphasis on safety, motility and cosmesis.

Posterior Lamellar Approach in Ptosis surgery

Dr. Mukesh Sharma

Eyelid Malpositions and their Management

Dr Neha Ghose

Nil financial disclosures

Outline

There are various conditions which can cause malpositions of eyelids. This talk will address common conditions such as ptosis, entropion and ectropion and also complex entities such as eyelid retraction in thyroid eye disease as well as malpositions due to eyelid tumors, trauma and anophthalmic sockets.

Trauma can lead to multiple types of eyelid malpositions such as traumatic ptosis, cicatricial ectropion, lower eyelid retraction and lagophthalmos. More extensive injuries can lead to secondary eyelid changes following globe rupture, phthisis bulbi or orbital fractures. It is imperative to understand the correct time for surgical intervention, the chronology for addressing the different pathologies and which intervention works best in each scenario.

Eyelid retraction due to thyroid eye disease is multifactorial: it may occur due to sympathetic overactivity, due to fibrosis of the retractors, overactivity of the LPS muscle due to restriction of the inferior rectus, weakening of orbicularis tone or a combination of any of these. Eyelid retraction may be made more prominent by the presence of exophthalmos. Appropriate clinical examination and planning is necessary to address this condition accurately. Medical and surgical management options are discussed.

Key take home messages:

Cicatricial entropion is a relatively more difficult condition to treat compared to other eyelid malpositions due to a high rate of recurrence. Appropriate use of mucous membrane grafts can provide a more favourable outcome.

Treatment of traumatic eyelid malpositions need a tailor-made approach for each individual patient.

It is important to understand the mechanism behind eyelid retraction in thyroid eye disease in order to effectively address it.

References

1. Guthrie AJ, Kadakia P, Rosenberg J. Eyelid Malposition Repair: A Review of the Literature and Current Techniques. Semin Plast Surg. 2019 May;33(2):92-102. doi: 10.1055/s-0039-1685473.
2. Oestreicher JH, Pang NK, Liao W. Treatment of lower eyelid retraction by retractor release and posterior lamellar grafting: an analysis of 659 eyelids in 400 patients. Ophthalmic Plast Reconstr Surg. 2008 May-Jun;24(3):207-12.
3. Osaki TH, Monteiro LG, Osaki MH. Management of eyelid retraction related to thyroid eye disease. Taiwan J Ophthalmol. 2022 Feb 14;12(1):12-21.

Dr. Nidhi Pandey

Ten Commandments in Managing Orbito-Facial Trauma

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No Financial Disclosures

Outline

Introduction and Background

Orbital fractures, often occurring in conjunction with facial trauma, pose significant challenges to trauma surgeons due to their complex nature and potential for severe functional and aesthetic consequences. Effective management of these fractures requires a multifaceted, sometimes multi-disciplinary approach encompassing accurate assessment, timely intervention, background knowledge, surgical expertise, and comprehensive follow-up care.

It is imperative also for trainees and new sub-specialists to remain abreast of advancements in orbito-facial fracture repair techniques and technologies, while advocating for prevention and awareness in the public sphere. This is important for a well-rounded management of orbito-facial trauma.

To navigate the intricacies of orbito-facial fracture repair, oculoplastic surgeons should adhere to a set of guiding principles for facial fracture repair. This presentation will help in giving insights, tips, tricks and pitfalls in the management of orbital fractures.

This presentation shall cover the various principles of orbito-facial fracture management under the following heads in the form of "10 Commandments". This presentation will delve into each commandment, elucidating its significance and practical implications.

Ten Commandments

1. Thou shall know your **Anatomy!**
2. Shall learn **Orbital Radiology!**
3. Thou shall always choose the right **Implant!**
4. Thou shall not be fooled by a **White Eye!**
5. Thou shall always mind the **Posterior Ledge!**
6. Thou shall always look for an **Orbital Fracture** in any **Facial Fracture!**
7. Thou shall ignore **Soft Tissue Injuries** at your own peril!
8. Thou shall love **thy Neighbour!**
9. Thou shall not **STEAL** nor commit **MURDER!**
10. Thou shall always order a **post-operative CT scan!**

Conclusion:

Adherence to the above "commandments" (which is certainly not exhaustive) ensures a comprehensive and patient-centred approach, leading to improved outcomes and enhanced quality of life for patients. There is of course no substitute for actual experience in treating orbito-facial fractures to augment the knowledge gained by courses or workshops.

References

1. Lock JZ, Hegde R, Young S, Lim TC, Amrith S, Sundar G. A study of sports-related orbital fractures in Singapore. Orbit. 2017 Oct;36(5):301-306. doi: 10.1080/01676830.2017.1337167. Epub 2017 Jul 18. PMID: 28718704.
2. Valencia MR, Miyazaki H, Ito M, Nishimura K, Kakizaki H, Takahashi Y. Radiological findings of orbital blowout fractures: a review. Orbit. 2021 Apr;40(2):98-109. doi: 10.1080/01676830.2020.1744670. Epub 2020 Mar 26. PMID: 32212885.
3. Ng JY, Gangadhara S, Wanling W, Amrith S. Pediatric Orbital Blow-Out Fractures: Surgical Outcomes. Asia Pac J Ophthalmol (Phila). 2012 Sep-Oct;1(5):265-9. doi: 10.1097/APO.0b013e31825f8976. PMID: 26107596.
4. Wong YC, Goh DSL, Yoong CSY, Ho C, Cai EZ, Hing A, Lee H, Nallathamby V, Yap YL, Lim J, Gangadhara S, Lim TC. Mapping the Posterior Ledge and Optic Foramen in Orbital Floor Blowout Fractures. Arch Plast Surg. 2023 Aug 2;50(4):370-376. doi: 10.1055/a-2074-2092. PMID: 37564709; PMCID: PMC10411167.
5. Kunz C, Audigé L, Cornelius CP, Buitrago-Téllez CH, Rudderman R, Prein J. The Comprehensive AOCMF Classification System: Orbital Fractures - Level 3 Tutorial. Craniomaxillofac Trauma Reconstr. 2014 Dec;7(Suppl 1):S092-102. doi: 10.1055/s-0034-1389562. PMID: 25489393; PMCID: PMC4251722.

Dr. Rajesh Majumdar Chowdhury

Endoscopic Dacryocystorhinostomy-VAST

Dr Richa Dharap

Implant Exposure- Prevention to Cure

Dr Rwituja

Ocular Prosthesis- Finishing touch

Dr. Sachin Gupta
Ocularist

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Custom artificial eyes, also known as ocular prostheses, represent a remarkable intersection of medical science and artistry, offering not just cosmetic rehabilitation but also the dignity and confidence to those who have lost an eye due to injury, disease, or congenital conditions. These prosthetic eyes are individually crafted to match the appearance and size of the natural eye, seamlessly blending with the patient's facial features.

One of the key aspects of a custom artificial eye is its personalized design. Skilled ocularists meticulously handcraft each prosthesis to replicate the color, size, shape, and even the intricate details of the iris, ensuring a natural and lifelike appearance. The process involves a series of precise measurements and detailed impressions of the eye socket to create a prosthesis that fits comfortably and securely.

Beyond aesthetics, custom artificial eyes are engineered to mimic the movement of a real eye, enhancing facial expressions and providing a sense of normalcy to the wearer. Advanced materials, manufacturing and surgical techniques allow for greater mobility and alignment with the existing eye, resulting in improved comfort and functionality.

Moreover, these prosthetic eyes play a significant role in the psychological well-being of individuals who have experienced eye loss. By restoring symmetry to the face and minimizing the physical impact of their condition, custom artificial eyes help patients regain their self-esteem and social confidence, empowering them to lead fulfilling lives without the burden of self-consciousness or stigma.

In conclusion, custom artificial eyes represent a remarkable fusion of medical innovation and artistic craftsmanship, offering not just visual restoration but also emotional and psychological healing for individuals facing the challenge of eye loss. Through personalized design and advanced technology, these prosthetic devices contribute to the holistic well-being and quality of life for their wearers.

References

1. K.R. Pine, B.H. Sloan, R.J. Jacobs, Clinical Ocular Prosthetics, Springer, 2015
2. Alexander C. Rokohl, Marc Trester, Parsa Naderi, Niklas Loreck, Sarah Zwingelberg, Franziska Bucher, Keith R. Pine, Ludwig M. Heindl. Dry anophthalmic socket syndrome – morphological alterations in meibomian glands. Eye (Lond). 2021 Dec; 35(12): 3358–3366.
3. A.C. Rokohl, et al. Dry anophthalmic socket syndrome – Standardized clinical evaluation of symptoms and signs. The Ocular Surface 18 (2020) 453–459.
4. Pine KR, Sloan B, Stewart J, Jacobs RJ. The response of the anophthalmic socket to prosthetic eye wear. Clin Exp Optom 2013;96:388–93.
5. Keith R. Pine, De Silva K, Zhang F, Yeoman J, Jacobs RJ. Towards improving the biocompatibility of prosthetic eyes. Heliyon 2021 Feb 18;7(2):e06234.
6. Allen L, Kolder HE, Bulgarelli EM, Bulgarelli DM. Artificial eyes and tear measurements. Ophthalmology 1980;87(2):155-157.

Dr. Salil Mondal

Orbital Tumors- Current Management Protocols

Dr. Santosh Honavar

Medial Canthal Swelling- Can be more!

Dr. Shahid Alam

Abnormalities of the lacrimal drainage system like acute dacryocystitis, lacrimal sac abscess, lacrimal sac mucocoele and tumors involving the lacrimal sac are the common causes of medial canthal swelling. Other causes can be from the adjacent paranasal sinuses and nasal cavity such as ethmoidal mucocoele in children, who generally present with a painless medial canthal mass. Varieties of benign and malignant neoplasms from the paranasal sinuses and nasal cavity like inverted papilloma and squamous cell carcinomas which present with signs and symptoms of a nasal polyp can also present as a medial canthal mass. Other localized causes of medial canthal swelling are encephalocoele, hemangioma, lymphangioma and neurofibromas.

They can also be a manifestation of systemic diseases like non-hodgkin lymphomas, of the sino -nasal region which may spread by bony permeation. Sarcoidosis involving the lacrimal sac can also present with a medial canthal mass. Lesions of the medial canthus can be difficult to diagnose and a careful clinical examination is of utmost importance in formulating a differential diagnosis. It should always be kept in mind that a swelling in the medial canthal area is not always from a primary nasolacrimal duct obstruction and both clinical examination and imaging help in arriving at a correct diagnosis.

The pithos of Pandora- Plan, be prepared and let hope prevail

Dr. Shaifali Chahar, Dr. Santosh G Honavar, Dr. Kaustubh Mulay

Presenting author: Shaifali Chahar

No financial interests or disclosures

Outline:

Background: Orbit is rightly called the Pandora's box because it can harbor unexpected mysteries. It is prudent to keep an open mind and diverse list of differential diagnosis to catch such mysteries in time for initiation of treatment and timely management for providing best care and hope to the patients.

Case summary: We present one such case in a 46-year-old man who presented with proptosis of 1 month duration. Except for irregular bowel movements, systemic history was unremarkable. BCVA in the affected eye was 6/24 with evidence of RAPD. A proptosis of 9mm was present with restricted ocular movements in all gazes. Other significant examination findings included severe chemosis with dilated blood vessels, optic disc edema with choroidal folds. Rest of the ocular examination was non-contributory. Imaging showed a heterogenous, well-defined, intraconal mass displacing the horizontal recti and the optic nerve. Possibility of a nerve sheath tumor with degenerative changes was considered. Our management plan included treating the ongoing inflammation secondary to tumor necrosis, re-assess for possible debulking/incisional biopsy/excision, confirm the diagnosis histopathologically and provide external beam radiation as appropriate. The patient was administered oral steroids with unsatisfactory response. Cyst aspiration and suture tarsorrhaphy was subsequently performed. The aspirate showed features of an undifferentiated malignancy. Further systemic evaluation revealed an unexpected and extremely rare diagnosis managed by a multi-disciplinary team.

Take home message: Orbital tumors can often present a challenge to the treating surgeon. Meticulous planning for the case right from history taking and keeping in mind diverse differentials can help in timely management of such cases. As Oculoplasty surgeons we must keep systemic evaluation of the case in mind and work with a multi-disciplinary team for the best care of our patients.

References

1. Rose AM, Cowen S, Jayasena CN, Verity DH, Rose GE. Presentation, Treatment, and Prognosis of Secondary Melanoma within the Orbit. Front Oncol. 2017 Jun 23;7:125.
2. Shields JA, Shields CL, Brotman HK, Carvalho C, Perez N, Eagle RC Jr. Cancer metastatic to the orbit: the 2000 Robert M. Curts Lecture. Ophthalmic Plast Reconstr Surg. 2001 Sep;17(5):346-54.
3. Narayanan N, Padwal U, Gopinathan I, Pathak RS, Nair AG. Malignant melanoma of the rectum presenting as orbital metastasis. Indian J Ophthalmol. 2020 Nov;68(11):2620-2622.

Diverse Applications of Botox and Fillers

Dr. Shilpa Taneja

Orbital Inflammation- Specific and Non Specific

Dr. Sima Das

Contracted Socket: Challenges and Strategies

Dr. Sonal P Yadav MS FACS

No financial disclosures

Summary

Contracted socket is a complication of anophthalmic socket with shortening of fornices and inability to retain prosthesis. It tends to cause a cosmetic blemish and can lead to physical and psychological disability. Uncorrected congenital anophthalmos or microphthalmos, ocular trauma and tissue loss, radiotherapy, infections, multiple prior surgeries, ocular surface disorders, cicatrizing diseases are some of the risk factors for development of contracted socket. Cases with contracted socket pose real challenges for even experienced ophthalmic surgeons. Management of contracted socket can be an uphill task and may require muti-staged surgical procedures.

The major goals in managing a contracted socket include optimization of motility and attainment of adequate orbital volume and eyelid symmetry. A meticulous approach while performing enucleation/evisceration plays a key role in achieving optimal functional and cosmetic outcomes. Careful consideration should be given to preserving conjunctiva and tenon's capsule while dissecting, insertion of an appropriate-sized orbital implant, and performing a layered closure over the implant.

The contracted socket management mainly depends on the severity of the contraction and residual orbital volume as well as availability of ocular surface. The management strategies include one or more of following techniques: prosthesis modification, fornix formation sutures, socket expansion with secondary implant, amniotic membrane or mucous membrane graft for surface augmentation, dermis fat graft and placement of facial prosthesis.

This talk will discuss the etiology, classification, and evaluation of a case of contracted socket followed by management options for various grades of contraction.

Key Take home points-

- A contracted socket is a functional as well as a cosmetically disabling entity and prevention is always better than cure.
- Scrupulous tissue handling during the primary procedure e.g. enucleation/evisceration, placement of an adequately sized implant, layered closure over the implant, use of customized prosthesis post-operatively, and regular follow-ups may help prevent this debilitating condition
- A combination of available management options used strategically can help in achieving optimum functional and cosmetic outcomes in such cases.

References

1. Krishna G. Contracted sockets (aetiology and types). Indian J Ophthalmol 1980; 28:117–120.
2. Tawfik HA, Raslan AO, Talib N. Surgical management of acquired socket contracture. Curr Opin Ophthalmol. 2009 Sep;20(5):406-11
3. Bajaj MS, Pushker N, Singh KK, Chandra M, Ghose S. Evaluation of amniotic membrane grafting in the reconstruction of contracted socket. Ophthalmic Plast Reconstr Surg. 2006 Mar-Apr;22(2):116-20.
4. Bhattacharjee K, Bhattacharjee H, Kuri G, Das JK, Dey D. Comparative analysis of use of porous orbital implant with mucus membrane graft and dermis fat graft as a primary procedure in reconstruction of severely contracted socket. Indian J Ophthalmol. 2014 Feb;62(2):145-53.

Dr. Sonali Gaikwad

Grafts in Contracted Socket

Dr. Sonam Nisar

Gopal Krishnan classification
Grade 0-5 .

Contracted socket has 2 components: Bony and soft tissue contracture.
Both need to be addressed in order to achieve a desirable outcome.

When we look at soft tissue contracture, we need to address the socket volume as well as surface. End point is ability retain an ocular prosthesis.

Choice of graft vs flap is based on the etiology.

Grafts for volume augmentation :
1. Dermis Fat Graft
2. Autologous free fat graft

Grafts for surface enhancement :
1. Mucous Membrane graft
2. Allogenic Sclera
3. Composite grafts

Grafts for socket lining in malignant / grossly contracted socket :

1. Split skin graft

Newer modalities to enhance healing: platelet rich plasma drops
PRP enriched autologous free fat.

Take home message:
1. Important to understand the etiology of contracted socket.
2. Choose your graft wisely.
3. Realistic picture must be explained to the patient

Congenital Naso Lacrimal duct obstruction (CNLDO)

Dr. Soumya Narayanan

Nil financial interest

Congenital Nasolacrimal Duct Obstruction (CNLDO) is a condition that occurs in newborns and is characterized by symptoms such as epiphora, discharge, and matting of lashes. It affects around 6-20% of newborns and is typically caused by incomplete canalization which results in an imperforate membrane at the Valve of Hasner. The typical signs include increased tear film height, positive fluorescein dye disappearance test and regurgitation on pressure over lacrimal sac. There is a high rate of spontaneous resolution of CNLDO with approximately 90% of affected children being symptom free by their first year of life. So till 9months- 1year, conservative treatments such as observation and massage of the lacrimal sac, and the application of topical antibiotics when a bacterial superinfection occurs. In Crigler's sac massage a downward rotation of the thumb over the sac is done to break the membranous obstruction by increasing the hydrostatic pressure. If conservative measures fail, lacrimal probing is the most commonly performed surgical procedure, followed by balloon dacryoplasty and lacrimal intubation. In lacrimal probing, a probe is passing down to the distal portion of the nasolacrimal system in order to break the obstruction usually under general anesthesia with or without endoscopic guidance. If the first probing fails, we should rule out complicated obstructions like buried probe, bony obstruction and anatomical variations and do repeat probing with or without lacrimal intubation. The success of the probing decreases with age of the patient. But a trial of probing is advisable before dacryocystorhinostomy(DCR) even if the kids present late. DCR is only recommended for persistent CNLDO which is usually done at the age of 4-5years once the facial bones are fully formed.

Another rare presentation of CNLDO is dacryocystocele which is a cystic bluish swelling that can develop in the medial canthal area of the newborn. It is due to accumulation of fluid trapped within the lacrimal sac, which is blocked distally at the nasolacrimal duct and proximally at the common canalicular duct. It is usually managed with sac massage and antibiotics in case of dacryocystitis. Ruling out the presence of intranasal cysts are important as newborns are nasal breathers and marsupialization of the cyst may be necessary if conservative measures fail.

References

1. Vagge A, Ferro Desideri L, Nucci P, Serafino M, Giannaccare G, Lembo A, Traverso CE. Congenital Nasolacrimal Duct Obstruction (CNLDO): A Review. Diseases. 2018 Oct 22;6(4):96.
2. Bansal O, Bothra N, Sharma A, Ali MJ. Congenital nasolacrimal duct obstruction update study (CUP study): Paper II - Profile and outcomes of complex CNLDO and masquerades. Int J Pediatr Otorhinolaryngol. 2020 Dec;139:110407. doi: 10.1016/j.ijporl.2020.110407. Epub 2020 Sep 28. PMID: 33068946.
3. Ali MJ, Psaltis AJ, Brunworth J, Naik MN, Wormald PJ. Congenital dacryocele with large intranasal cyst: efficacy of cruciate marsupialization, adjunctive procedures, and outcomes. Ophthalmic Plast Reconstr Surg. 2014 Jul-Aug;30(4):346-51.

Dr. Sumeet Lahane

What is new in Thyroid Eye Disease

Dr. Suryasnata Rath

Optic Nerve Fenestration- Technique and Outcome

Dr. Usha Kim