Bull Gore Injury

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Introduction
Ocular trauma is a common ophthalmic emergency. The Birmingham Eye Trauma, Terminology System (BETTS) classifies mechanical eye injuries broadly into open and closed globe injuries because these have different pathophysiological and therapeutic ramifications. It is important for the ophthalmologist to differentiate closed globe from open globe injuries as latter may leave the eye with an open wound which can lead rapidly to sight-threatening complications. Therefore prompt recognition of open globe injuries are essential because they need immediate surgical repair to maintain the integrity of the globe and to maximize visual restoration. In the case reported here the history and the initial clinical picture misled us before we clinched the diagnosis!

Case Report
A 74 year old male after having been gored by his bull the day before was brought to casualty with complaints of loss of vision, redness and pain in his right eye. He had a visual acuity of Perception of Light (PL) with accurate projection in the right eye and 6/60 N24 NIG in the fellow eye which was due to immature senile cortical cataract. Slit Lamp examination of the affected eye showed a patch of dense subconjunctival haemorrhage in the temporal quadrant. Cornea appeared little hazy, and details of iris or the pupil could not be made out due to near total hyphaema. Obviously there was no view of the fundus in this eye. Intra ocular tension digitally appeared normal and when recorded was 14 mm Hg in both the eyes.

A provisional diagnosis of closed globe injury was made and patient was subjected to Ultra Sound B Scan to assess the posterior segment as there was no ophthimoscopic view of the fundus due to hyphaema. B Scan showed normal globe integrity with dense vitreous haemorrhage. However the shadow of the lens was missing. This prompted us to get back to the patient to know if the patient had undergone cataract surgery. The patient gave history of having undergone cataract surgery 2 years back. He was not sure if a lens was implanted in his eye. When asked he also said that he had no useful vision in that eye after cataract surgery. CT orbit showed absence of lens and there was no evidence of globe rupture. (fig 1)

The picture now seemed like a closed globe injury in an aphakic eye.

When the patient was examined next day in slit lamp, to our surprise an Intra Ocular Lens (IOL) was well visible in the temporal quadrant over the area where a subconjunctival haemorrhage was seen the previous day (fig 2). The blood on the surface of the IOL had moved to the margins of the optic making it visible. So it was now clear that we were dealing with a Pseudophakic eye with the IOL extruded subconjonctivally. After a careful examination no suspicious area of scleral rupture was noted even after paying special attention to the areas that are likely to give way like superior limbus (cataract surgery incision) and insertion of recti muscles. So we decided to explore. On the previous day all odds were against it being an Open Globe injury because the conjunctiva, cornea and sclera appeared intact, IOL was not seen and the IOP was also normal.

Patient was subjected to exploration and explantation of the dislocated IOL. Through a conjunctival incision adjoining where the optic of IOL was visible the IOL was pulled out (fig 3 a & b). Surprisingly one of the haptics of the IOL was missing and there was no evidence of sclera having

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The blunt trauma had caused the cataract wound to give way resulting in expelling the broken IOL in parts to a subconjunctival location. The globe integrity was restored by securing the gaped wound and reforming the Anterior Chamber (AC). What looked like a closed globe injury (Type A Grade D Pupil A Zone III) finally turned out to be an open globe injury (Type A Grade D Pupil A Zone II) based on BETTS Classification.

This is to highlight that Open globe injury can mimic as Closed globe injury and arriving at the right diagnosis and delivering timely but the right intervention is needed to save the eye.

Now the patient is under follow up. We are planning to implant a secondary IOL if feasible at a later date under guarded visual prognosis after evaluating the posterior segment.

**Discussion:**

Biedner et al first reported a case of subconjunctival dislocation of an IOL implant and termed it pseudophacocele. The implant was a Binkhorst iris clip lens fixed after uncomplicated intracapsular cataract surgery. Subsequently, Bene and Kranias and Sandramouli et al reported dislocation of PC IOL into the subconjunctival space following blunt trauma.

Pseudophacocele is diagnosed when an IOL is seen in a subconjunctival location after a pseudophakic eye has sustained a blunt trauma of significant magnitude for the sclera to rupture and extrude the lens. The most common site of rupture in an eye without a history of previous intraocular surgery is under the rectus muscles where the eyeball is the thinnest. The diagnosis of a ruptured globe can be difficult with the periocular and ocular swelling, and since the rupture usually occurs under the rectus muscles, the wound may be occult. In eyes with a previous surgical incision, the rupture usually occurs at the previous incision, even many years later as in this case. Modern well-constructed, small, self-sealing cataract incisions may, however, have little tendency to rupture even following severe blunt injury compared to their conventional counterparts.

In this case reported here, at the time of presentation neither was the subconjunctivally dislocated IOL visible nor was there any signs of sclera having given away like a rupture and related hypotony. Moreover, B scan and CT scan showed normal globe integrity. So high index of clinical suspicion is required to diagnose open globe injury in misleading situations like these. Therefore patients with a history of significant ocular and periocular blunt trauma should be considered open globe until proven otherwise. Prompt recognition and ophthalmologic intervention are
essential to maximizing functional outcome.

References


Fig 4: rupture site identified as the previous cataract incision site.
Paediatric Fungal Endophthalmitis

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Introduction
Infectious endophthalmitis is a rare but devastating condition resulting from exogenous or endogenous spread of pathogens into the eye. Reports of paediatric endophthalmitis are rare in the literature. A diagnosis of endophthalmitis is not often suspected in otherwise healthy paediatric patients with no prior eye surgery or trauma. Poor communication in paediatric patients and denial of trauma for fear may lead to delay in diagnosis. We report a case of a fourteen year old healthy boy who presented to us with severe fibrinous iridocyclitis in the Right Eye (RE) following viral keratoconjunctivitis, without any history of trauma or systemic disease and finally turned out to be fungal endophthalmitis.

Case Report
A fourteen year old healthy boy presented to us with pain, redness and foreign body sensation in the RE of 3 weeks duration and loss of vision in the RE since last 4-5 days. His complaints had started as redness and foreign body sensation with discharge in Both Eyes 3 weeks back and was diagnosed locally to be viral keratoconjunctivitis. He was started on topical antibiotic – steroid combination and lubricant eye drops. At around the same time his parents also developed viral conjunctivitis which subsided with treatment in around ten days time. His left eye became symptom free in around 2 weeks time but pain and redness increased in his RE. He also developed loss of vision in the RE since last 4-5 days when they panicked and he was referred. The boy denied any history of trauma even on repeated probing. There was no history suggestive of any previous iridocyclitis, viral keratitis or previous ocular surgeries. There was no history of any systemic illness and he was immunized till date.

General and systemic examinations were normal. Visual acuity in his RE was perception of light with accurate projection and visual acuity in his Left Eye (LE) was 6/6. Anterior segment examination of the RE showed conjunctival and circumcorneal congestion, minimal corneal stromal edema and grade 2 anterior chamber cells. An exudative membrane adherent to iris and obscuring the pupillary area and most of the iris could be seen. There was no view of the lens or the posterior segment. Examination of the left eye was normal. Intraocular pressures in the RE and LE were 20 and 14mm of Hg respectively. Posterior segment of the RE was evaluated using Bscan ultrasonography which turned out to be normal.

He was admitted with a provisional diagnosis of RE fibrinous iridocyclitis with suspected infective / inflammatory etiology and started on systemic moxifloxacin, systemic betamethasone and fortified cefazolin, vigamox and 1% atropine eye drops. Blood routine showed leucocytosis (total count 14,600). Differential count Polymorphs-67%, Leucocytes-25%, Eosinophils-1%, Monocytes-7%. ESR 55mm/1st hour. Retroviral antibody tested negative. Blood culture was also negative.

On the following day as the condition was more or less the same he was taken up for an aqueous tap and anterior chamber wash with vigamox and voriconazole. The membrane was found to be tough and leathery and adherent to the iris and lens. Viscodissection was done and the membrane peeled off. Underlying lens was found to be cataractous and exudates were pouring out from the undersurface of the iris. The exudates and membrane were plated on chocolate agar.

On the following day, there were fresh exudates in the pupillary area and in the anterior chamber with total cataract. [fig 1] Considering infective etiology systemic steroid was stopped. A repeat B scan was taken the next day which showed doubtful vitreous echoes in high gain (100db). Meanwhile, the culture report of the Anterior Chamber (AC) exudate turned out to be negative and the clinical condition seemed to be worsening with no definite etiologic diagnosis. Hence the child was again taken up for an aqueous tap for Polymerase Chain Reactor (PCR). Vitreous aspiration was also done in the same sitting along with intravitreal injections
of vancomycin, ceftazidime and voriconazole. The vitreous sample was sent for gram stain, KOH wet mount, AFB stain and for culture.

The reports were available the following day and KOH wet mount was positive for fungal filaments. Systemic ketoconazole and topical natamycin and voriconazole drops were added to the treatment regime. B scan repeated on the following day showed an increase in the vitreous echoes. Vitreous aspirate culture turned out to be negative, but the PCR report was positive for panfungal genome. In view of the increasing vitreous echoes and the positive PCR report the child was immediately taken up for pars-plana lensectomy, vitrectomy, endolaser, silicone oil injection along with intravitreal injection of voriconazole. Endoexudates adherent to the pars plana and vitreous exudates were cleared as far as possible. [fig 2] View of the posterior segment improved considerably by the second postop day. Some mobile residual exudates started retracting well. A repeat intravitreal injection of voriconazole was given on the fourth postoperative day. Following this he slowly improved considerably, the exudates in the pupillary area retracted well, the residual posterior segment exudates also cleared and he was discharged on the tenth postoperative day on systemic and topical antifungals.

Systemic ketoconazole was continued until day 15 and topical antifungals were continued for 6 weeks along with topical nepafenac eye drop. The ocular condition progressively improved, the exudates retracted fully. Topical steroid 0.1% flurometholone eye drop was added after 6 weeks. He is currently on follow up with us. Cornea developed band shaped keratopathy [fig 3] by 2 months for which EDTA chelation was attempted with partial clearing. At the end of 3 months, his Best Corrected Visual Acuity (BCVA) in the RE with +7.0DS/ +2.0 DC at 180deg is 6/24.Posterior segment examination is normal, but the IOP recorded is persistently low. Hence oil removal is being debated.

Discussion
Endophthalmitis is a form of panuveitis which presents with reduced vision, progressive vitritis and hypopyon, as well as red eye, pain and lid swelling. Exogenous endophthalmitis is more commonly encountered and can occur following surgery, trauma, corneal ulcer or periocular infection that invades an adjacent ocular wall. Endogenous endophthalmitis occurs through hematogenous spread of micro-organisms that cross the blood-retinal barrier. Risk factors for endogenous endophthalmitis include the presence of systemic or local infections, relative states of immunosuppression or procedures that increase the risk of blood-borne infections.

Children account for only 0.1 percent of all cases of endogenous endophthalmitis. Post-traumatic endophthalmitis in children is rare; in reviewing one large series of patients, only 2-8% of post-traumatic endophthalmitis occurred in children of 18 years or younger.

In both adult and pediatric series of posttraumatic endophthalmitis from around the world, Staphylococcus and Streptococcus species (sp.) are the most frequent
Pseudomonas aeruginosa and Bacillus cereus also are frequently identified but their prevalence varies with geographic location. In two recent studies from Saudi Arabia and India, fungi made up 3.8% and 7.3% of post-traumatic endophthalmitis respectively. Gupta et al noted filamentous fungi especially Aspergillus sp. and Fusarium sp. were usually isolated.

In our patient, initial suspicion for infectious endophthalmitis was low, given the lack of history of trauma, hypopyon, lid swelling or significant ocular pain. The patient was otherwise healthy with no other risk factors for endophthalmitis. The boy denied any history of trauma and there was no wound of entry visible. Additionally, our patient’s history of viral keratoconjunctivitis and the initial normal B scan along with initial negative microbiology contributed to our thought process that he had a noninfectious, inflammatory condition. We still lack a clear source for his infection but suspect an episode of some unnoticed trivial eye trauma which must have led to some small self sealed wound. In a study by Vasumathy et al on post traumatic endophthalmitis, wound of entry was visible in 83.5% eyes, 74.1% of which were self-sealed wounds.

Infectious endophthalmitis should be considered in the differential diagnosis of paediatric patients presenting with panuveitis, even in the absence of reported trauma or other risk factors. This may be particularly important when evaluation has not otherwise determined the etiology of the uveitis. Early diagnostic vitrectomy should be considered.

PCR is a highly sensitive and specific test that allows rapid and accurate diagnosis of paediatric fungal endophthalmitis. PCR gives a much more sensitive and more rapid result than Gram stain and culture technique with comparable high specificity. Thus, we recommend the use of conventional methods as culture and stained smears as they are useful if positive, inexpensive, and available in all laboratories along with PCR assay, which must be added to the protocol of management in difficult cases of paediatric endophthalmitis.

References
Frontal Mucocele Presenting as a Giant Forehead Mass

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Abstract

Frontal mucoceles present first to ophthalmologists as the symptomatology includes visual complaints like diplopia, diminution of vision, visual field defect, ptosis, orbital swelling, retro-orbital pain, displacement of eye-globe and proptosis. Our extensive multimedia search revealed only three such cases of frontal mucocele presenting with a forehead mass in the literature.

This article presents an unusual case of frontal mucocele in a 60-year-old female who presented with painless slowly progressive subcutaneous swelling over the forehead of 3-year duration. The discussion of the case and the related literature is reviewed.

Key Words
Frontal Mucocele, orbital extension, eccentric proptosis, bony erosion of sinus wall, subcutaneous mass.

Introduction

Mucoceles are benign cystic lesions and expand slowly. It occurs when a sinus ostium or a compartment of a septated sinus undergoes chronic or intermittent obstruction, causing the sinus cavity to become filled with mucus and to become airless. The etiology includes congenital anomalies, allergy, infection, inflammatory, trauma, polyp, surgical intervention in the nose and neoplasm1. Sinuses frequently affected are frontal, maxillary, anterior ethmoidal and rarely the posterior ethmoidal and sphenoidal2, 3, 4, 5.

Frontal sinus mucoceles alone account for about 65% of the mucoceles6, Frontal mucoceles could be either exclusively frontal or fronto-ethmoidal7,8. Mucoceles are usually observed in the fourth to sixth decade of life. No gender preference has been observed9. Only two cases of giant frontal mucoceles have been reported in the western literature so far10,11,12.

Case Report
A 65 year old female patient presented to our department with the complaints of facial pain right sided for last 1month, diminution of vision Right Eye (RE) for last 2 years and large mass over same eye for last 3 years. The pain had been confined to right half of the face close to RE, dull aching in nature, persistent throughout the day, with occasional tingling sensation which relieved temporarily with oral analgesics. The diminution of vision was gradual and progressive for last 2 years. No other ocular symptoms could be associated. She was neither a diabetic nor hypertensive.

Mass over the RE over last 3 years had been slow in onset and gradually progressive to the present size. The mass had been painless throughout except for generalized facial pain for the last one month, probably due to the size effect. A year after the onset of the mass, the vision had been gradually deteriorating. There was no variation in the size of the mass on exertion or any aggravating or relieving factors.

On Inspection: A mass roughly measuring 8x7x6cms arising from the right fore-head, adjoining superior orbital margins and extending forwards and downwards. The forward protrusion was by about 6cms. The eye-ball is eccentric in its position and buried under the mass to be almost un-noticed. The skin over the swelling is glossy with a pigmented patch of 2mm and a visible vein. There was no visible pulsation over the swelling or variation in size with posture/valsalva manocure. The lids displaced from their normal position with pseudo-ptosis. The anterior segment structures were barely visible.

On Palpation: The surface of the mass was uniformly smooth, firm in consistency, immobile, non-tender, non-fluctuant, transluscent, non-trans-illuminant, non-reducible, non-compressible, non-retropulsive and did not yield to finger insinuation all around. However, there was a prominent dilated vein, a solitary pigmented patch over the skin of the swelling and loss of eye-brows over lateral half. A serrated bony defect was palpable along the superior orbital margins.

Ocular examination (RE) revealed the following: On primary gaze, the position of the eye had been eccentric
and looked almost buried under the mass. Marked pseudoptosis due to the size-effect was seen. The vertical inter-palpebral aperture was markedly reduced. It was possible for the anterior segment to be examined only after voluntarily elevating the upper-lid. The eye ball was directed downwards and infero-nasally. The upper & lower fornices were obliterated. The conjunctiva showed mild hyperemia with no visible chemosis, tortuous veins or Anteno-Venous (AV) fistulas. The cornea was hazy with prominent arcus senilis. Corneal sensations were intact. Fluorescien staining was negative. Anterior chamber was optically clear with normal depth. Iris color and pattern was normal. Pupils were very sluggish with no RAPD. Lens showed immature cataract (NS-III). Fundus examination did not yield due to the lens changes and inadequate pupillary dilatation. Visual acuity fell to perception of light with inadequate projection of light.

Ocular examination of Left Eye (LE) revealed only immature cataract (NS-II), with a visual acuity of 4/60 with pin-hole improvement to 6/24 and a normal fundus. The anatomy of the LE orbit was normal on examination.

**Investigations**

X-ray (plain), AP view revealed a soft tissue density shadow in the region of the right frontal sinus and overlying right orbit. Lateral view- revealed thinning and elevation of the anterior wall of the right frontal sinus with absence of its lower portion. The nasal septum had been midline. Opacifacation of the left frontal sinus also noted.

CT –plain axial and coronal views revealed, a soft tissue density mass of size 8-7-6cms size extending inferiorly causing impression over the globe with considerable proptosis. There was expansion of the right frontal sinus with partial destruction and thinning of the inferior and lateral wall of the sinus. Anterior wall of the sinus showed remodeling / scalloping of the bone with no evidence destruction of the bone or extension into brain parenchyma. No discontinuity of the ethamoidal margin noted. Nasal septum appeared midline with both turbinates normal. A diagnosis of a large expansile right frontal sinus soft tissue density mass suggestive of a frontal mucocele was made.

High resolution sonogram of orbit and mass revealed, a large complex cystic mass of size 72-50mm in the right orbital region. Mass appeared to push the right orbit downwards. Mass showed fine internal echoes. Lens showed opacities. Posterior chamber and vitreous appeared normal. Left orbit appears normal. A diagnosis of a large cystic mass right frontal region pushing the right orbit downwards most probably a frontal mucocele (CT-correlated) was made.

**Discussion**

The differential diagnoses for unilateral proptosis include dysthyroid eye disease, retrobulbar orbital tumour, inflammatory pseudo tumour, sinus tumour, metastatic lesion and mucoceles of the paranasal sinuses. As to mucoceles, frontal mucoceles are a common cause of long standing unilateral proptosis.

Although mucoceles occur secondary to varied causes, in our case the exact cause could not be identified even after detailed history and ENT examination. The possible pathogeneses could be continuous or intermittent obstruction of the sinus ostium followed by gradual distension, thinning and erosion of the bony wall of the sinus due to progressive accumulation of mucoid material.

The proximity to orbit and the least resistance offered by virtue of its thinness in superior aspect causes the frontal mucocele to encroach the orbit commonly as compared to intracranial extension. Thus rarely these lesions could present as a forehead swelling. Our extensive multimedia article search through internet revealed only three cases of frontal mucocele presenting as forehead swelling so far. Of all the above published articles, ours is probably the ever documented largest frontal mucocele presenting as a forehead swelling.

The symptomatology in mucoceles may be attributed to pressure against the globe and mechanical interference with its motility. The proptosis due to frontal mucoceles is usually eccentric (non-axial), with the globe being displaced away from the site of the mucocele. The visual acuity may be affected by direct compression of the optic nerve in the orbit, a vascular or inflammatory process involving the optic nerve, refractive errors induced by the indentation on the globe, exposure keratopathy or secondary glaucoma.

In our patient the fall in visual acuity to PL may be attributed to compressive effect on the optic nerve as suggested clinically by poor pupillary response.

CT is the most preferred mode of imaging for paranasal sinus pathology as it delineates the extent of the lesion and its relations to other surrounding structures, extent of bone destruction and differentiates the high attenuated regions of mucus from the low attenuated regions of surrounding mucosa. MRI is useful in complicated cases like infection and intracranial extension.

Orbital ultrasonography is another useful imaging tool as
it helps to determine whether the lesion is a cystic or a solid mass\textsuperscript{16}. In our case HRSG was done as the posterior segment could not be examined clinically and its role was only complimentary.

The definitive treatment of mucoceles is primarily surgical. The aim of surgical management is to re-establish adequate drainage of the sinus without producing cosmetic or functional deformity. Surgical treatment could be accomplished with a craniotomy with craniofacial surgery or a minimally invasive endoscopic procedure. Endoscopic surgery has increased the safety and efficacy of intranasal marsupialization for the treatment of mucoceles in all paranasal sinuses\textsuperscript{15}. Endoscopic sinus surgery combined with transcranial surgery is advisable in cases of giant frontal mucocele\textsuperscript{9}. The cyst lining may be removed and the sinus obliterated with soft tissue like abdominal fat\textsuperscript{24-25}. The bony defect during surgery may be reconstructed with the help of autologous cranial bone graft, Methyl-methacrylate and porous polyethylene.

**Conclusion**

Frontal mucoceles may present with varied ophthalmic features. However being benign, curable and with low recurrence rates overall prognosis is good. An early surgical intervention has a favourable outcome on vision. Appropriate clinical and radiological evaluation is necessary to diagnose frontal mucoceles. As the prognosis for visual function depends on the duration, it is important that clinicians consider mucoceles as an easily remediable cause of visual loss.

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