Traumatic Superior Orbital Fissure Syndrome – A Case Study

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Abstract

Superior orbital fissure syndrome is characterised by ophthalmoplegia, ptosis and proptosis of the eye, pupil dilation and anaesthesia of the upper eyelid and forehead. This syndrome may be the result of neoplasms of the retrobulbar space, hemotoma and infection of the cavernous sinus, craniofacial fractures and other anomalies in the region of the superior orbital fissure. A fifty nine year old woman presented to the Royal Victorian Eye and Ear Hospital with a complete right ptosis and ophthalmoplegia following blunt trauma. The clinical presentation of traumatic superior orbital fissure syndrome is described.

Key words:
Superior orbital fissure, ophthalmoplegia.

Case Study

A 59 year old woman, Mrs JA was happily gardening at her home one Sunday afternoon in preparation for her 60th birthday party which was to be celebrated the following week. Whilst gardening she turned around and while doing so, leaned over and struck her right eye on the end of a steel rod which was being used as a garden stake. She heard a crack, her eye became quite painful and suddenly closed. Mrs JA felt that obviously something quite serious has just occurred so along with her husband attended the Royal Victorian Eye and Ear Hospital Accident and Emergency Department.

On arrival and initial presentation, Mrs JA complained of a right sided frontal headache with numbness on her forehead and around the right eye. Other initial findings revealed the following:

- complete right ptosis, seen in Figure 1
- complete right ophthalmoplegia, seen in Figure 2
- a mid-dilated pupil, but no afferent pupil defect (APD)
- decreased corneal sensation
- no hyphaema
- densely numb in the region of V1
- a contaminated conjunctival laceration with a posterior track visible in Tenon's plane

Mrs JA's visual acuity was recorded to be Right 6/36, Left 6/6 with normal colour vision on Ishihara testing. Automated visual fields were within normal limits. Fundi were also investigated and showed no abnormalities.

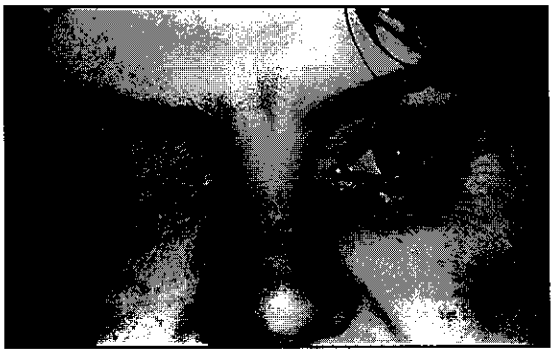

Figure 1.
Initial presentation of Mrs JA with complete right ptosis and mild periorbital bruising and swelling.

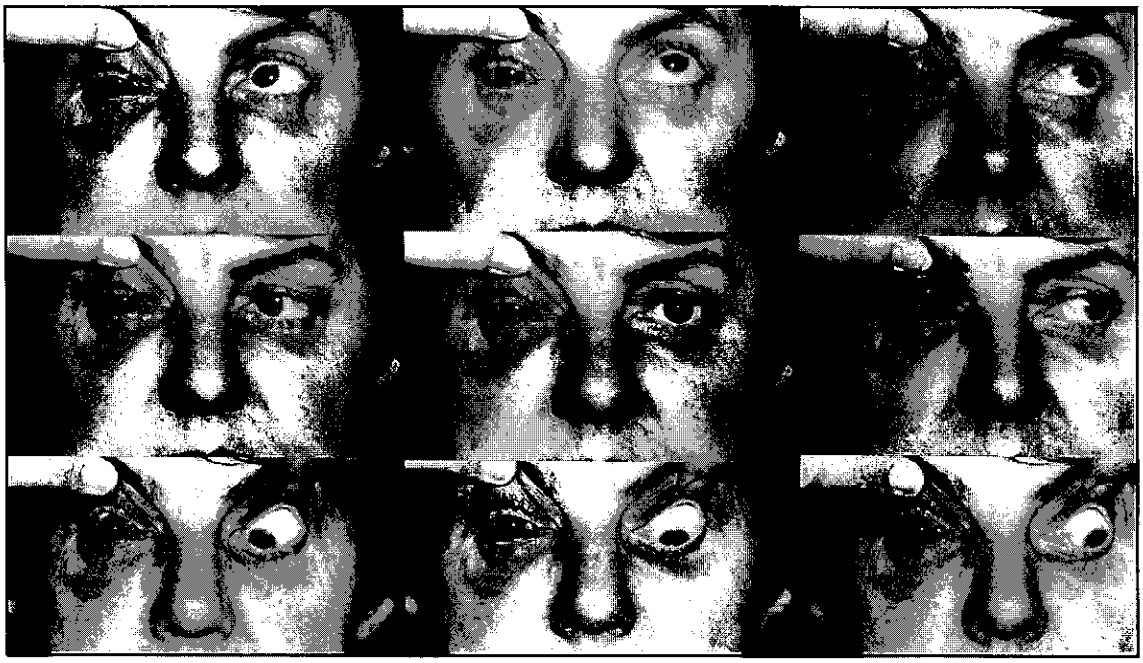

Figure 2.
Complete ophthalmoplegia on initial presentation – has the appearance of a frozen eye.

CT imaging was immediately ordered on this day of presentation. The findings strongly suggested some air within the right cavernous sinus with appearances most probably reflecting perforation through the superior orbital fissure on the right side. A prominent amount of oedema was seen within the right orbit, particularly at the orbital apex. No definite bone fracture was identified.

Air within the cavernous sinus presented a risk of cavernous sinus thrombosis. Mrs JA was immediately admitted to the Neurosurgical Ward at St. Vincents Hospital for observation. Notes suggested that thrombosis was unlikely but nonetheless she was kept for observation for 24 hours and placed on prophylactic IV antibiotics. During this time, MR imaging was ordered. Imaging showed no further pathology other than that demonstrated on CT imaging. It did however confirm marked oedematous change throughout the right orbit with a degree of proptosis. The globe and optic nerve appeared intact. Further CT imaging three days later showed the previously noted air in the cavernous sinus to be resorbed with exclusion of any significant cavernous sinus thrombosis. The oedema in the

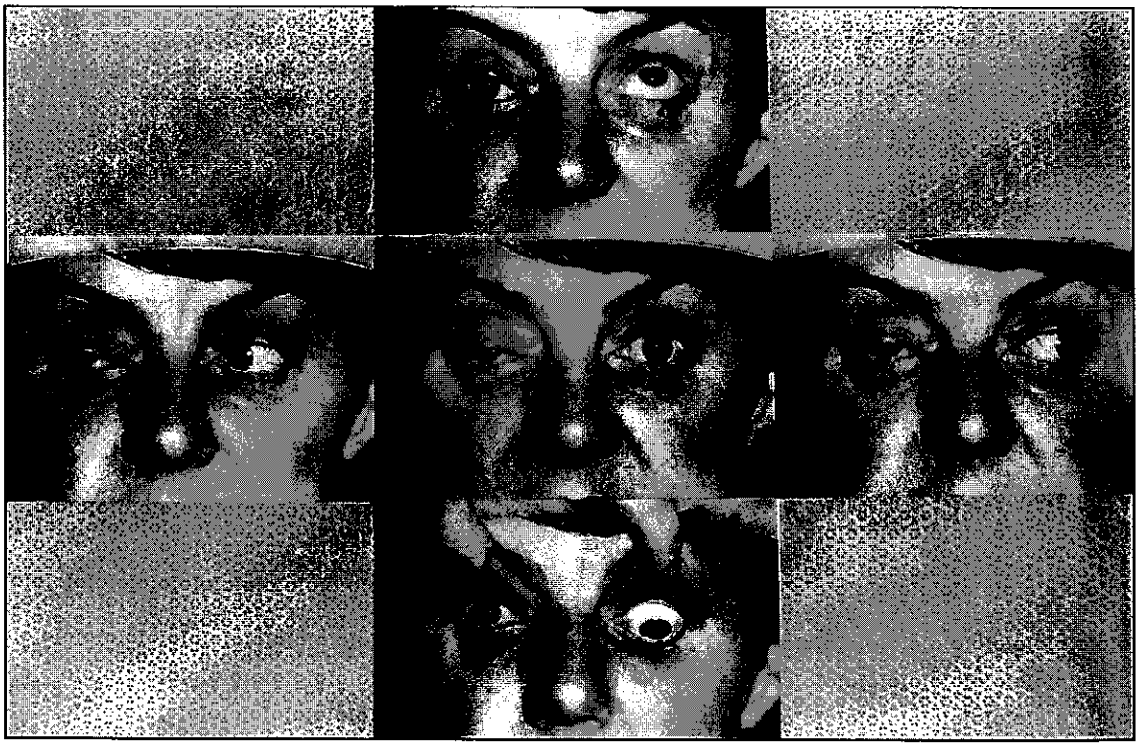

Figure 3.
Range of extraocular movement at one month post trauma.

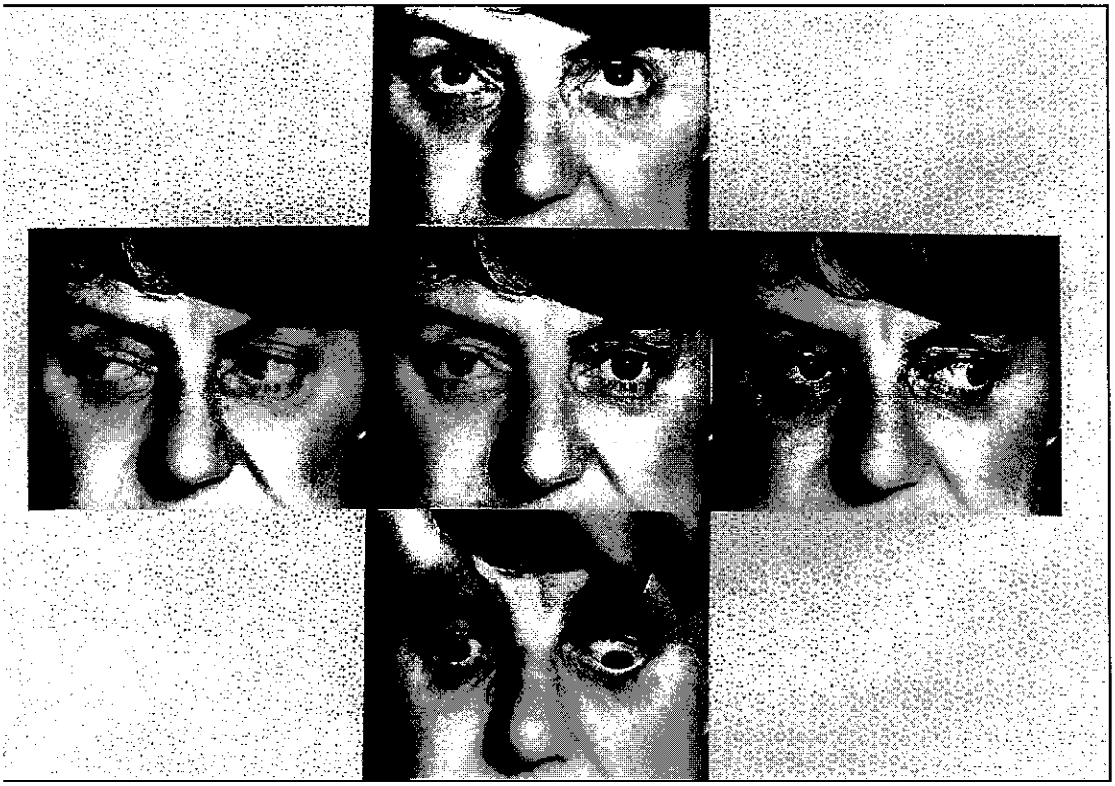

Figure 4.
Range of extraocular movement at two months post trauma. Note the significant improvement over the previous month.

ght orbit had also improved considerably.

Mrs JA presented to clinic one month post auma. She felt that her condition had slowly ıproved. The ptosis was no longer complete, owever quite marked. Extraocular movements were ossly limited, however a complete phthalmoplegia was no longer noted. There was no ovement of the right eye in up or down gaze and ry little movement in right adduction. The eatest movement seen was on right abduction, beit slight. This is shown in Figure 3.

Mrs JA's presentation at two months (see Figure) post trauma was more encouraging. Her eye mained comfortable and white. The right ptosis owed great improvement, so too the range of eye ovement. The greatest limitation remained in owngaze as well as continued marked limitation on gaze. Right abduction and adduction had greatly ıproved over the previous month, with only ıargınal limitation in right abduction seen.

Over the past 10 months, Mrs JA's ocular ondition had greatly improved. On last report, a ight limitation in downgaze was noted as well as a ild ptosis. V1(1)CN involvement persisted and she on medication for this. Unfortunately, Mrs JA mplains of excyclotorsion on downgaze. It was ecided by her private ophthalmologist to take a onservative approach, examining her periodically. the symptom of torsion persisted, the phthalmologist was planning surgery.

Discussion

The clinical manifestations of the superior orbital fissure syndrome (SOFS) are a result of injury to the structures that cross it.[1] Findings include persistent periorbital oedema, proptosis, subconjunctival haemorrhages, ptosis and ophthalmoplegia, dilation of the pupil, loss of corneal reflex and cutaneous anaesthesia of the forehead region.[2,3] Incomplete forms of this syndrome or associations with other clinical findings can be found. Kjoer,[4] in 1945, coined the term orbital apex syndrome to describe the clinical features, which include the SOFS and involvement of the optic nerve. A second entity that may have clinical manifestations similar to SOFS is the development of a carotid-cavernous fistula (CCSF). Craniofacial trauma is responsible for this condition in 75% of cases.[5] The cardinal symptoms in CCSF are pulsatile exophalmos, chemosis, a bruit, ptosis, ophthalmoplegia, diplopia and headache. The definitive diagnosis of this entity is determined by an arteriogram of the internal carotid artery.[5] Lastly, the Tolosa-Hunt syndrome also has clinical manifestations similar to the SOFS. Subjects present with severe ocular pain with ophthalmoplegia, it however does respond dramatically to large doses of corticosteroids. Spontaneous remissions may occur with complete or partial regression of deficits. Episodes may occur at intervals of months or years. Unfortunately, lesions responsible for this condition have been confirmed in very few instances.[2,6]

Conclusion

Traumatic superior orbital fissure syndrome is rarely seen. This case continues to amaze those of us who examined and treated Mrs JA particularly as the metal rod lacerated her conjunctiva, travelled beneath her globe not severing any major arteries, veins or ocular muscles in the process, but more importantly not severing her optic nerve which would have resulted in blindness. It is cases like this that will keep me even further away from the garden, especially garden stakes.

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