

Central Retinal Artery Occlusion and Ophthalmoplegia Following Spinal Surgery in the Prone Position

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SUMMARY

A 14 Year old boy underwent a 7 hour long spinal surgery for scoliosis in the prone position. In the immediate post-operative period, he developed right proptosis, periorbital swelling, chemosis and total ophthalmoplegia. The vision in his right eye was only counting fingers and the intraocular pressure was 68 mmHg. Fundus examination revealed occlusion of the right central retinal artery. A rare manifestation of both vein and artery occlusion was possible in this patient as a result of external ocular compression due to a prolonged period in the prone position. This report highlights the importance of being aware of the possible complications of external ocular compression in non-ocular surgery.

KEY WORDS:

Visual loss, Central retinal artery occlusion, Ophthalmoplegia, Spinal surgery, Prone position

INTRODUCTION

Postoperative visual loss after non-ocular surgery is a rare but devastating complication with an estimated incidence varying from 0.01 to 1% depending on the type of surgery^{1,2}. The three recognized causes of postoperative visual loss are ischaemic optic neuropathy, central retinal artery occlusion and cortical infarction. However, ischaemic optic neuropathy is the most frequently cited cause of postoperative visual loss following general anaesthesia¹. Several patient risk factors have been identified such as chronic hypertension, diabetes mellitus, smoking, vascular disease and other disorders that result in increased blood viscosity³. Visual loss with total ophthalmoplegia as a surgical complication is very uncommon and not many cases have been reported in the literature.

CASE REPORT

A 14 year old boy underwent spinal surgery for scoliosis under general anaesthesia. During this 7 hour procedure the patient was positioned on the operating table in a prone position with his face resting on a padded, gel filled horse-shoe headrest. Both eyes were taped shut and padded with gauze. Continuous intraoperative monitoring recorded a regular heart rate and stable blood pressure. The circulating blood volume was well maintained. Immediately after recovery from anaesthesia, the patient complained of right ocular pain and was unable to open his right eye. Ocular

examination of the right revealed marked periorbital swelling, proptosis, ptosis of the upper eyelid, chemosis, corneal edema, a relative afferent pupillary defect (RAPD) and total ophthalmoplegia. The vision in the right eye was reduced to counting fingers. The intraocular pressure was 68 mmHg (normal 15-21 mmHg). Fundus examination of the right eye revealed retinal edema, a central cherry-red spot at the macula and attenuated arteries, suggestive of central retinal artery occlusion (CRAO). The general neurological examination was normal. Anterior chamber paracentesis was done immediately and the patient was started on intravenous acetazolamide 500mg Stat followed by oral acetazolamide 250mg four times a day. The intraocular pressure came down subsequently and there was also reduction in the periorbital and eyelid swelling, however his visual acuity did not show improvement.

Swelling of the eyelids, chemosis and increase intraocular pressure suggest orbital and facial venous occlusion while the fixed dilated pupil, positive RAPD, CRAO and total ophthalmoplegia suggest retinal and orbital arterial occlusion, indicating the presence of co-existence of both arterial and venous occlusion in this patient most probably due to external compression during the surgical procedure. A shift in the head position during surgery might have trapped the patient's head within the headrest. This would have caused impingement of the right eye on the inner edge of the headrest, thereby causing compression of the globe.

Magnetic Resonance Imaging studies showed oedema of the extraocular muscles in the right orbit with sparing of their tendons (Figure 1) and right globe proptosis in the T2 weighted images (Figure 2). Examination of the patient two weeks later showed regression of the periorbital swelling and corneal edema; however his vision remained at counting fingers. Fundoscopic examination of the right eye showed a pale optic disc and attenuated arteries. There was no improvement in the extraocular movements.

DISCUSSION

Central retinal artery occlusion following surgery is very uncommon complication and not many cases have been reported in the literature. Central retinal artery occlusion is a disease entity that usually occurs after embolic phenomenon, thrombotic episodes or trauma both in children and adults⁴. CRAO as a result of external compression during surgical procedure has rarely been reported in the literature. In our

This article was accepted: 3 October 2009

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