

Case Report

Miraculous recovery of perioperative acute uniocular loss of vision following spine surgery in prone position

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ABSTRACT

An 18 years old female came to emergency with low back pain radiating to left lower limb for 8 months. The patient had no comorbidities as such and was hemodynamically stable with HR-72/min, BP-120/60 mmHg, Spo2-98% in room air, RBS-125 mg/dl. Patient was diagnosed with L5-S1 PIVD with Lumbar Canal Stenosis and was planned for L5-S1 instrumented spinal Stabilization with L5 laminectomy and discectomy under general anaesthesia. Preoperative status of the patient was stable. Perioperatively patient had uniocular left sided complete loss of vision for 3 days following which gradual improvement of vision to normal restoration of vision achieved after 4 months along with a diagnosis of left optic neuritis with severe retino-optic nerve pathway dysfunction.

Keyword: Lumbar canal stenosis, Left optic neuritis, Prone position, Peri operative complete visual loss, Retino-optic nerve pathway dysfunction

INTRODUCTION

Peri operative visual loss following prone spine surgery occurs in 0.013% to 2% of cases and is variously attributed to ischemic optic neuropathy (ION: anterior ION or posterior ION (reported in 1.9/10,000 cases: constitutes 89% of all POVL cases), central retinal artery occlusion (CRAO), central retinal vein occlusion (CRVO), cortical blindness (CB) direct compression (horseshoe, prone pillows and eye protectors Dupaco Opti-Gard) and acute angle closure glaucoma (AACG), rarely epidural spine injections and occasional other factors (e.g., right-left atrial shunt with micro vascular embolisation).¹⁻⁶ Recovery of peri operative visual loss following spine surgery in prone position under General Anesthesia has been infrequently mentioned in the literature.⁷ We report a case of a young girl, who underwent uneventful surgery on her lumbar spine and presented with left sided uniocular complete loss of

vision for 3 days after surgery followed by steady and gradual recovery of vision over a period of 4 months.

CASE REPORT

An 18 years old female came to emergency with low back pain radiating to left lower limb for 8 months. The patient had no comorbidities as such and was hemodynamically stable on admission with HR-72/min, BP-120/60 mm hg, Spo2-98% in room air, RBS-125mg/dl. Patient was diagnosed with L5-S1 PIVD with lumbar canal stenosis and was planned for L5-S1 instrumented spinal stabilization with L5 laminectomy and discectomy under general anesthesia. Preoperative status of patient was stable. Perioperatively the patient had acute uniocular left sided complete loss of vision during recovery from general anesthesia. Immediate consultation and prompt treatment by ophthalmologist restored her vision after 4 months.

Initially, on examination of left eye, visual acuity was perception of light, Pupil virtually not reacting to light and fully dilated, extra-ocular muscles movement restricted to all direction, proptosis of left upper eyelid, fundus was normal. Right eye examination findings were normal.

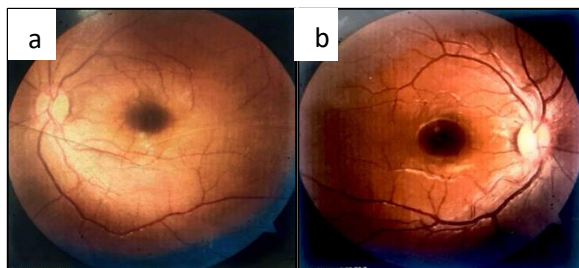


Figure 1 (a) and (b): Depicting fundus photographs of left and right eyes respectively, showing the optic disc, macula and retinal vasculature.

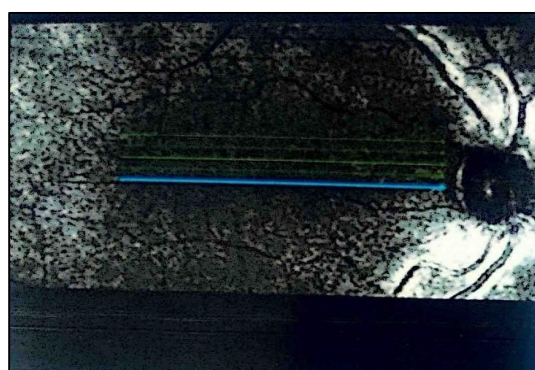


Figure 2: Depicting scanning laser ophthalmoscopy (SLO) image with an optical coherence tomography (OCT) scan overlay, showing a cross-sectional left retinal scan aligned with the optic nerve head (optic disc). thinning of the peripapillary retinal nerve fiber layer (RNFL) could indicate or optic neuritis.

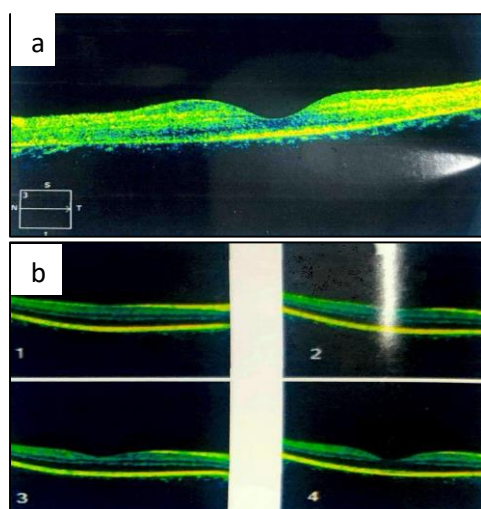


Figure 3 (a) and (b): Depicting optical coherence tomography (OCT) scan of the retina.

Postoperatively, Patient had a repeat blood report of Hb-10.7, PCV-33.1%, sodium-141, potassium-4.8, PT-15.7, INR-1.2, APTT-27.6. X-ray of LS spine showing L5-S1 internal fixation done. MRI brain showing nothing significant. contrast enhancement MR Imaging of Both Orbits showing features are suggestive of left optic neuritis with likely surrounding inflammatory changes in left orbit. Visual evoked potential study showing left sided severe retino-optic nerve pathway dysfunction. Digital fundus photo was taken and Optical Coherence Tomography was done.

Patient was started on IV methylprednisolone for 3 days followed by oral and intraocular high dose methylprednisolone, carboxymethylcellulose eye drop, oral vitamin A and E supplements, oral anti platelet, oral acetazolamide with potassium supplementation and other medications routinely given for spine surgery. Gradually the vision improved from day 4 and vision restored to normal condition after 4 months.

In Figure 3b, image 1 and 2 (top left and right) likely represents a normal retina or mild early-stage pathology. Image 3 and 4 (bottom left and right) depicts irregularity and thickening in the central macula and possible fluid accumulation or subretinal elevation.

Further imaging e.g., Contrast Enhancement MR Imaging of Both orbits showed features suggestive of left optic neuritis with likely surrounding inflammatory changes in left orbit and the Visual Evoked Potential Study showed Left sided severe Retino-Optic nerve pathway dysfunction.

DISCUSSION

The aetiology of peri-operative visual loss is poorly understood. Proposed risk factors include obesity, cardiovascular disease, prone position, intraoperative hypotension, diabetes, less usage of colloid, prolonged procedures and anaesthesia.^{8,9}

Several studies addressed physiologic changes associated with prone position. Without proper padding and bolster placement, significant pressure is put on thorax and abdomen.¹⁰ Pelvic and abdominal compression results in increased intra-abdominal pressure causes direct pressure on inferior vena cava and venous pooling and decreased venous return.^{10,11} Increased thoracic pressure causes decreased left ventricular compliance and filling, resulting in reduced ventricular volume, stroke volume and cardiac index, while raising central venous pressure.¹⁰⁻¹³ Reduced stroke volume and cardiac index results in a drop in blood pressure often seen when a patient is turned from supine to prone.¹²

Prone position also increases intraocular pressure as the episcleral venous system is connected to the central venous system by valveless vessels.^{10,14} Thus an increase in central venous pressure will result in an increase in

episcleral venous pressure and intraocular pressure.¹⁵ As we have discussed that, in spite of all the normal preoperative investigations, an 18 years old girl underwent spinal surgery in prone position under General Anesthesia leading to Peri-operative acute uniocular left sided complete loss of vision due to left optic neuritis with severe Retino-Optic nerve pathway dysfunction. Patient had complete restoration of her monocular vision to normal condition after 4 months. A similar study was published in 2006, where a 60 years old male underwent a cervical spine surgery in prone position. Unfortunately, unlike in our case report, his vision did not recover.¹⁶

It is likely that combination of intraoperative hypotension, general anesthesia with propofol and prone position resulted in a reduced perfusion pressure to the optic nerve leading to visual loss of our patient.⁸ Prompt and outstanding treatment by spine surgeon, anesthesiologist and ophthalmologist restored the vision of the patient.

CONCLUSION

Though we have seen lots of case reports of Peri and Postoperative visual loss, this case elicited a very rare case report showing a journey of miraculous recovery of perioperative acute monocular loss of vision in a teenage girl following spine surgery in prone position under general anesthesia.

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Ethical approval: Not required

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