

A Case for Early Bilateral Sequential Phacovitrectomy for Terson's Syndrome

Hannah Roomi¹, Chloe Shipton², Kaleena Michael³, Zachariah Koshy³

1. FY3 West Midlands North 2. ST2 Ayrshire & Arran 3. Consultant Ophthalmologist Ayrshire & Arran

Introduction

This is a case of Terson's syndrome (TS) from a sub-arachnoid haemorrhage who subsequently underwent bilateral sequential phacovitrectomy. Following surgery, significant improvement in cognitive ability was noted due to visual improvement, allowing for more effective neurorehabilitation.

This case aims to highlight:

- The need for early assessment in diagnosing TS
- The benefits of surgical intervention in the form of bilateral same day phacovitrectomy

Case Presentation

A 56-year-old male patient presented with right sided leg weakness and acute confusion. Pertinent past medical history included hypertension and transient ischaemic attack, for which he was on dual antiplatelets.

Examination findings:

- Alert but agitated and confused
- Unable to communicate verbally
- Able to follow one-step commands
- Right pupil fixed and dilated
- GCS 11 (E₄V₂M₅)

Results:

- CT head - subarachnoid haemorrhage (SAH), secondary to an anterior communicating artery aneurysm with associated hydrocephalus.

The patient underwent external ventricular drain insertion followed by insertion of a right parieto-occipital ventriculoperitoneal shunt two weeks later.

At an Ophthalmology review 6 weeks post SAH vision was light perception with a poor red reflex and no fundal view in both eyes. The patient was diagnosed with bilateral vitreous haemorrhages secondary to TS. He underwent bilateral sequential phacovitrectomy under general anaesthetic, 9 weeks after his diagnosis of TS.

10 days postoperative review:

- Visual acuity (VA) improved to 6/9 uncorrected binocular vision
- Patient more alert and orientated to person but not time or place.
- Neuropsychiatry assessment: continued signs of cognitive and memory impairment, poor orientation and lack of insight but the patient is now able to follow two-part verbal instructions and complete executive tests that demonstrate some level of working memory. This allowed the patient to be potentially responsive to rehabilitation interventions.

Terson's Syndrome

TS refers to any intraocular haemorrhage, including vitreous, sub-hyaloid, intra-retinal, or sub-retinal bleeding that is caused by intracranial haemorrhage or traumatic brain injury. Majority of TS cases are caused by SAH and visual impairment, particularly in bilateral cases, is associated with poorer neuro-physical rehabilitation outcomes and prognosis.

Diagnosis:

- Fundoscopy
- B- Scan Ultrasonography

Causes of delayed TS diagnosis:

- Cognitive impairment
- Limited verbal communication
- Limited physical ability to comply with examinations and investigations

Some TS patients display spontaneous regression of intraocular haemorrhage but often surgical intervention is required with pars plana vitrectomy (PPV), particularly in cases of bilateral vitreous haemorrhage.

Bilateral immediate sequential vitrectomy is rarely performed. A case series of 14 patients who had bilateral immediate sequential vitreoretinal surgery found no adverse outcomes.

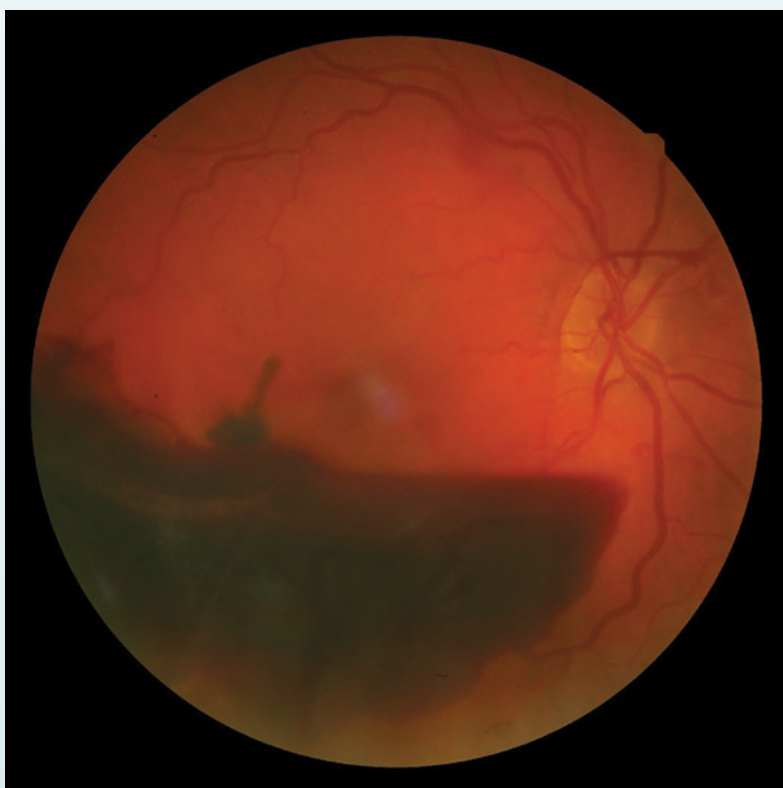


Figure 1. Image of a case of vitreous haemorrhage with a subhyaloid component in TS

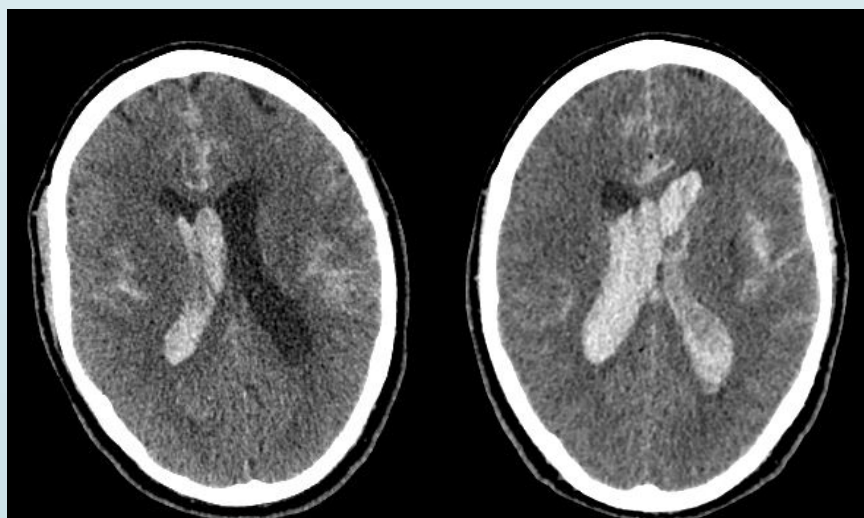


Figure 2. CT head scan of this patient showing a progressing subarachnoid haemorrhage at day1 (left) and day 2 (right)

Surgical Outcomes

PPV Benefits

Significant improvement in VA and depth perception

Significantly reduces risk of irreversible ocular damage

Improves neurorehabilitation

PPV Risks

Infrequent complications: retinal detachment, tears, macular hole and endophthalmitis

Risks of general anaesthesia in patients who cannot tolerate local anaesthetic

Neurological Outcomes

Visual impairment leads to deficits in cognition and motor control.

Improvements in visual acuity enables the patient to:

- Access and engage with efforts of neurorehabilitation
- Reduce length of hospital stay
- Increase cognition, bladder and bowel control,
- Improve psychosocial scores, self-care and mobility.

Early vitrectomy in this case showed objectively improved visual outcomes.

Conclusion

1. Assess for TS in all patients with SAH
2. Early intervention for dense vitreous haemorrhages facilitates recovery and rehabilitation
3. Bilateral immediate sequential vitrectomy is a safe and effective means to manage dense visual loss in this scenario

References

1. Munteanu M, Rosca C, Stanca H. Sub-inner limiting membrane hemorrhage in a patient with Terson syndrome. International ophthalmology. 2019 Feb 15;39(2):461-4.)
2. Skevas C, Czorlich P, Knospe V, Stemplewitz B, Richard G, Westphal M, Regelsberger J, Wagenfeld L. Terson's syndrome—rate and surgical approach in patients with subarachnoid hemorrhage: a prospective interdisciplinary study. Ophthalmology. 2014 Aug 1;121(8):1628-33.
3. Rubowitz AH, Rosenblatt HN. Immediate Sequential Bilateral Vitreoretinal Surgery: Descriptive Case Series and Literature Review. Ophthalmic Surgery, Lasers and Imaging Retina. 2020 Sep 21;51(9):494-8.
4. Thompson JN, Majumdar J, Sheldrick R, Morcos F. Acute neurorehabilitation versus treatment as usual. British journal of neurosurgery. 2013 Feb 1;27(1):24-9.