

ENDOPHTHALMITIS FOLLOWING STRABISMUS SURGERY

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Aim

To describe a case of infective endophthalmitis occurring after apparently routine 3-muscle exotropia surgery, and discuss implications for strabismus surgery from this case and the published literature.

Introduction

- Endophthalmitis following strabismus surgery is very rare (incidence rates between 1:3500 and 1:18500)¹
- Presentation typically 3-4 days post-operatively
 - Worsening pain, vision, conjunctival injection and asymmetrical lid swelling.
 - Children may present later (communication difficulties)
 - Fever is a common feature¹.
- Causative pathogens commonly commensals¹
 - Coagulase-negative Staph. aureus, Strep. species commonly reported, Haemophilus influenzae more common in children.
- Visual outcomes reported range from 20/20 to no light perception with subsequent enucleation despite aggressive systemic and intravitreal antibiotics¹⁻³.
- Cases described in literature usually not immune compromised¹⁻³
- Surgery most commonly routine.
- Histological examination of enucleated cases has not found evidence of perforation but may have been affected by the subsequent phthisis¹
- Localised spread of an extra-scleral abscess (or spread of infection along intra-scleral suture path), suggested as mechanisms producing endophthalmitis without scleral perforation⁴.

Case Report

- 66 year old Vietnamese male presented to our Ocular Motility Clinic with a long-standing exotropia, desiring reconstructive surgery.
 - Past ophthalmic history: bilateral aponeurotic ptoxis.
 - Past medical history: well-controlled asthma and hypertension (no immunosuppression).
- Examination:
 - Unaided visual acuities 6/6 R and 6/9 L.
 - Right/alternating exotropia 59 Δ (**Figure 1**)
 - Ductions full, versions showed mild elevation in adduction bilaterally, consistent with V-pattern of his exotropia.
- Surgery performed after informed consent obtained
 - Skin and conjunctival cul-de-sac prepared with povidone-iodine before draping.
 - Fornix conjunctival incisions
 - Bilateral lateral rectus recessions with half-tendon width superior offsets
 - Right: 10 mm hangback 6-0 Vicryl
 - Left: 9 mm fixed 6-0 Vicryl
 - Right medial rectus 6.5 mm resection 6-0 Vicryl
 - Conjunctiva closed with 6-0 plain gut
 - Drop of povidone-iodine to both eyes at conclusion of surgery.
 - No intra-operative complications were noted.
- Post-operatively, gutt neomycin and Prednefrin-Forte four times daily.
- Day 1 post-operative: excellent motor result (LET 8 Δ, LXT 4 Δ)
 - 20 Δ of uncrossed diplopia indicating abnormal retinal correspondence.
- Day 8 post-operative: presented with 3 days of redness and irritation from left eye (**Figure 2**).
 - Visual acuity of 6/36
 - Temporal conjunctival injection
 - 3+ anterior chamber cells
 - Vitritis with haze
 - Fundoscopy: temporal retinal or vitreous opacity indicating possible abscess at site of lateral rectus recession (**Figure 3**).
 - IOP 20.
- Management:
 - Admitted for left vitreous and anterior chamber tap, with intravitreal and subconjunctival injection of vancomycin and ceftriaxone.
 - Commenced on topical Prednefrin-Forte and homatropine, oral prednisolone 50 mg daily, and intravenous cefazolin.
 - Moderate subjective and objective improvement over following 48 hours.
- 12 days post-operative: site of the left lateral rectus recession explored
 - Very friable sclera with scleral defect and vitreous presentation.
 - Scleral defect closed with 6-0 nylon, and 6-0 vicryl suture removed.
 - Lateral rectus not disturbed.
- Microbiological culture of vitreous tap grew Staphylococcus aureus (widely sensitive) from enrichment broth.
- As fundal view improved retinal incarceration was visible at the site of previous abscess, corresponding to the site of the scleral defect.
- Discharged 12 days after admission (18 days after initial surgery).
- Retina remained flat, no fibrovascular ingrowth developed. Within a few months a flat retinal scar developed.
- Two months post-operative:
 - Left visual acuity 6/9.
 - Alternating exotropia 40 Δ, with no diplopia.
- Five months post-operative:
 - Alternating exotropia 10 Δ
 - Ductions and versions full (no evidence of left lateral rectus underaction)
- Two years post-operative:
 - Left best corrected visual acuity 6/6
 - Alternating exotropia 15 Δ for distance, 30 Δ for near (happy with alignment).
- Left cataract surgery required 11 years later
 - Excellent result: 6/5 visual acuity unaided, fine epiretinal membrane noted.

Conclusion

This case is an important reminder of the serious complications that may result from strabismus surgery. It is reassuring our patient had a benign final outcome, with his residual exotropia perhaps contributed to by the infection and inflammation at his left lateral rectus insertion.

It cannot be determined from this case whether endophthalmitis developed with or without scleral perforation with the 6-0 vicryl suture. Dilated funduscopy was not performed until significant vitritis had developed. The scleral defect noted at the time of exploration could potentially be due to infective scleritis from an extra-ocular source at that point, or an enlargement of a (unrecognised) perforation wound from the original surgery. Prospective studies find scleral perforations are rare (~0.2% per muscle) and almost always recognised intra-operatively^{5,6}.

The findings at exploration in this case do suggest, however, that the 6-0 Vicryl suture may have been the original focus of contamination and infection. Microbiological studies of suture needles and materials after strabismus surgery have found 15-25% of suture needles or material are contaminated (usually with coagulase-negative Staphylococci species)^{7,8}.

This case reinforces the importance of meticulous surgical prepping and draping for strabismus surgery, even though it is often regarded as an 'extra-ocular' procedure. It behoves the surgeon to mention the possibility of endophthalmitis, vision loss (and even enucleation) when obtaining informed consent for strabismus surgery. Patients (and carers) need to be advised of relevant symptoms and signs to watch out for in the first week after surgery, including the presence of fever in a child who may not otherwise verbalise worsening pain.

References

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6. Cibis GW. Incidence of inadvertent perforation in strabismus surgery. Ophthalmic Surg 1992;23:360-1.
7. Carothers TS et al. Quantification of incidental needle and suture contamination during strabismus surgery. Binocul Vis Strabismus Q 2003;18:75-9.
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Figure legends

Figure 1. Pre-operative ocular motility findings

Figure 2. Anterior segment appearance of left eye 9 days post-operative

Figure 3. Fundal view of left eye 9 days post-operative. Note: apparent temporal vitreous abscess.

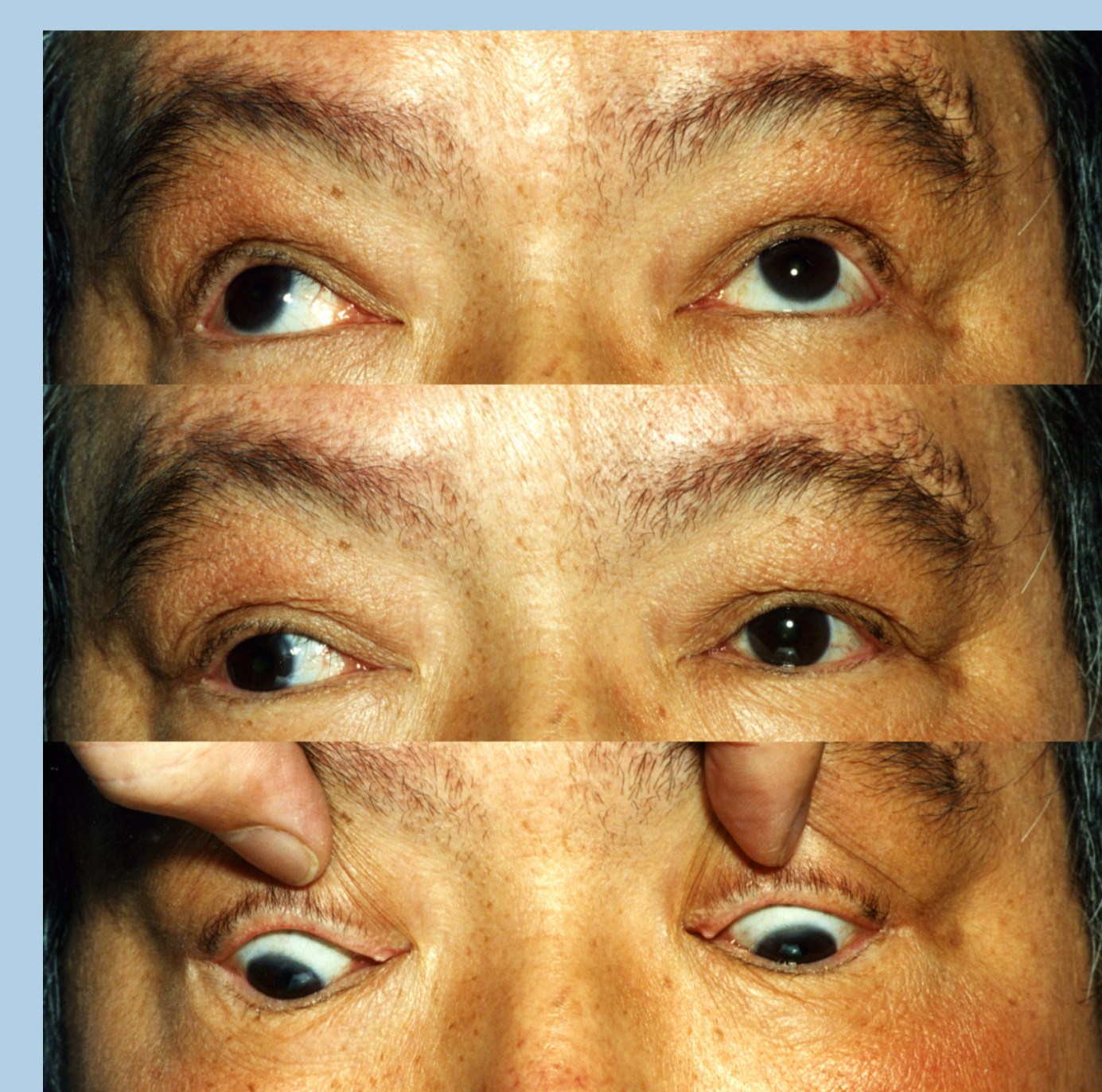


Figure 1

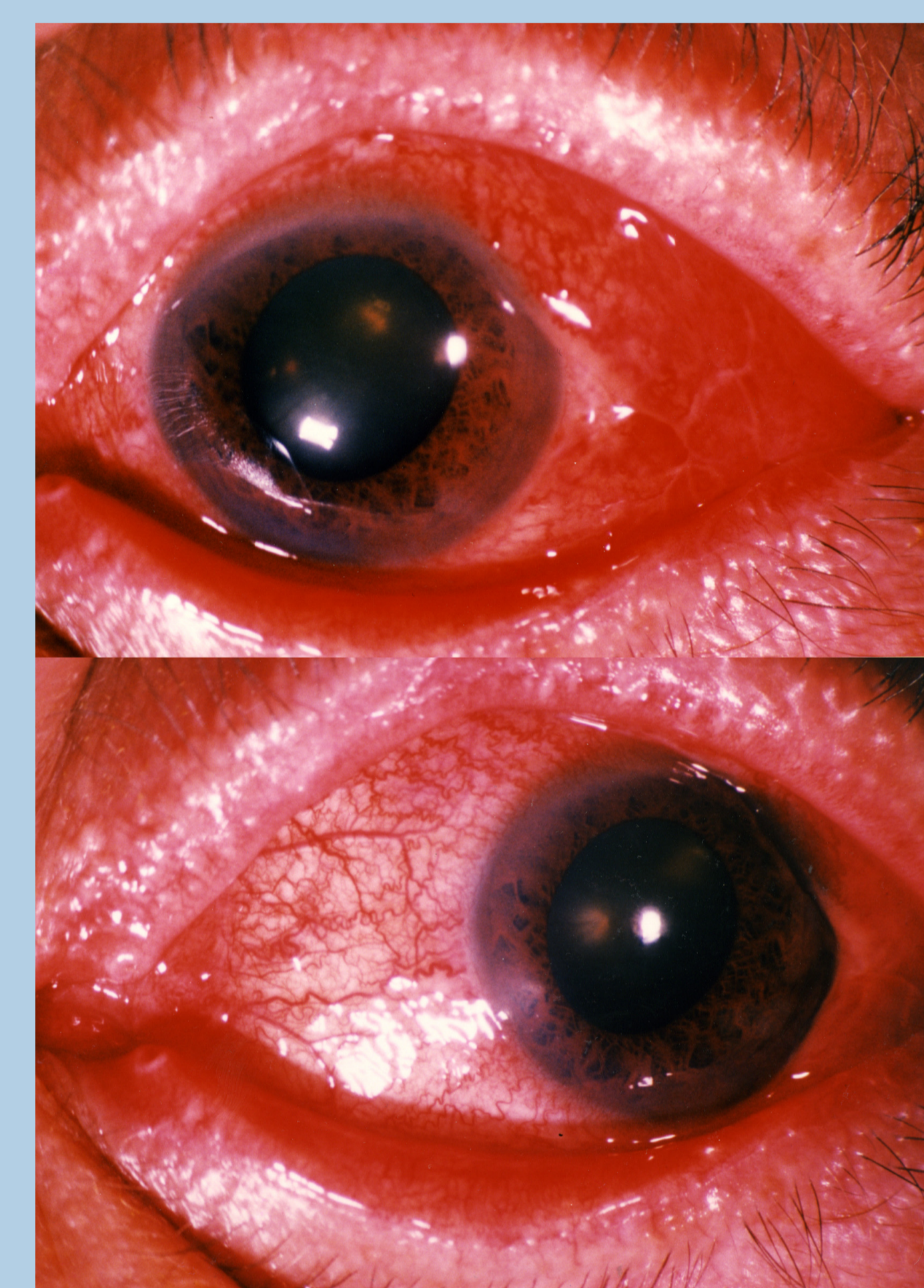


Figure 2

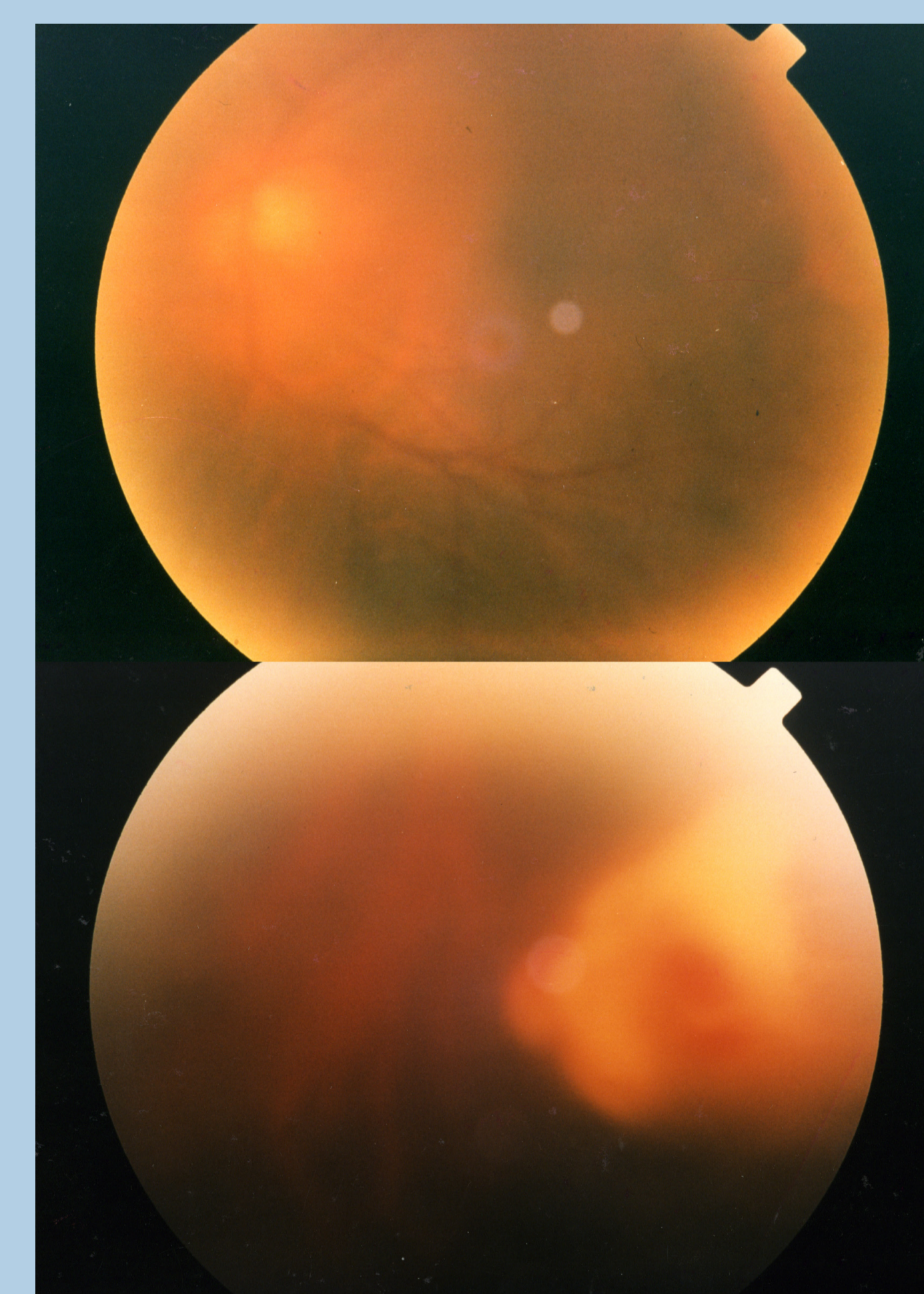


Figure 3



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