

A close-up photograph of a human eye, showing the iris, pupil, and surrounding skin and eyelashes. The eye is looking directly at the camera. Overlaid on the eye is the text "I CAN'T SEE!!" in large, bold, black capital letters.

I CAN'T SEE!!

A CASE OF RETINAL DETACHMENT IN THE SETTING
OF DIABETIC RETINOPATHY

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Clinical Presentation

Brian* presented to the emergency department at the Royal Melbourne Hospital; see ED clinical progress notes

He was anxious on presentation, as he was terrified of losing his sight.

No vision in his left eye; previously had 'floaters' in eyesight and tunnel vision.

History of Diabetes since childhood; fortieth decade of life.

Triaged for immediate ophthalmology consult and an emergency orbital ultrasound.

Brian was well known to the RMH ophthalmology team.

Time was critical for fast, effective management.



ED Clinical Progress notes

Presenting complaint: 42M presents with acute visual loss in left eye on background of known Stage IV eye disease secondary to T1DM.

He reports he was poked in the eye yesterday while playing basketball.

Had 'floaters' prior to loss of vision. Ongoing blurred vision.

OE: PEARL (Pupils Equal And Reactive to Light)

Decreased visual field to L) VA (visual acuity). R) 6/9 ; L) able to view board only; can't identify any letters. Referral for ophthalmology for review ? retinal detachment.

R/V by ophthalmology reg; likely retinal detachment , but difficulty in examination due to extensive vitreous haemorrhage.

Diabetic retinopathy and retinal detachment

Diabetic retinopathy: A major complication of diabetes.

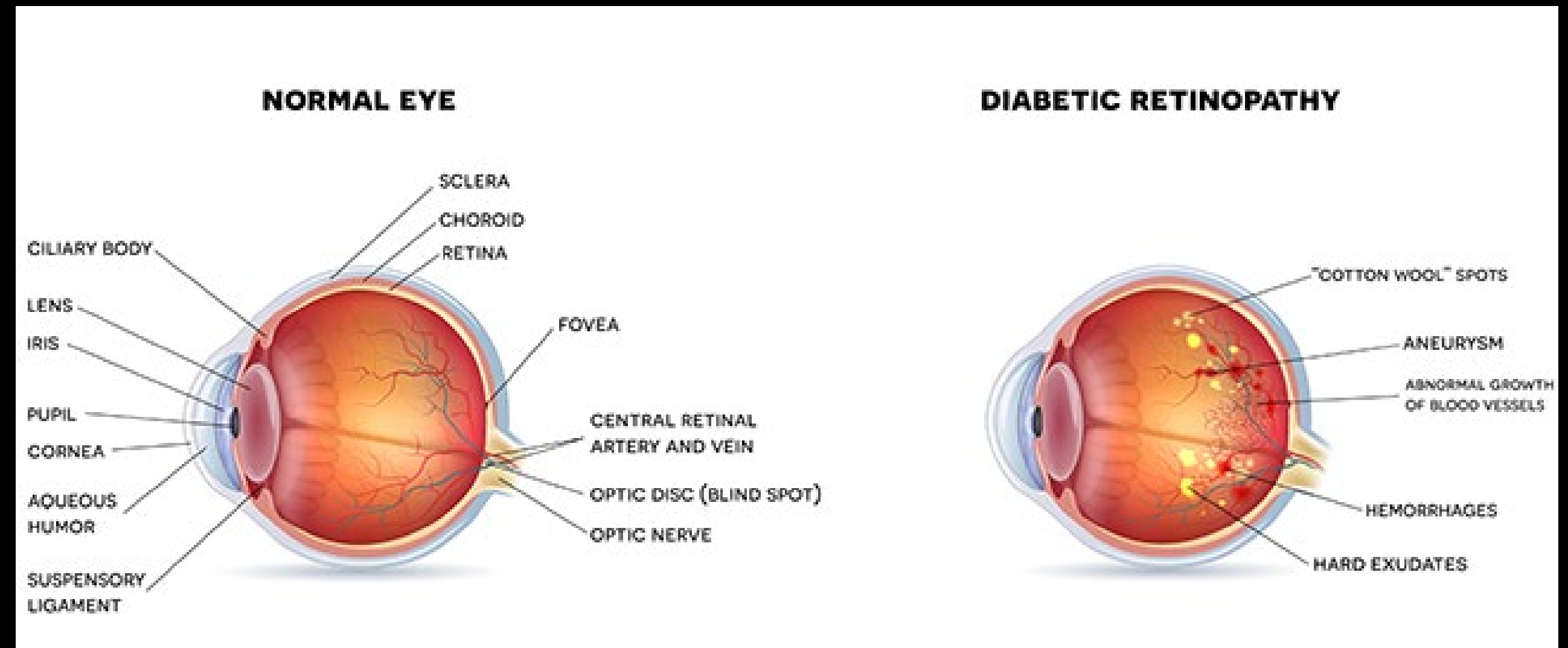
Prolonged high blood sugar blocks tiny blood vessels causing the growth of new abnormal blood vessels in the retina.

Retinal detachment, most advanced form of diabetic retinopathy.

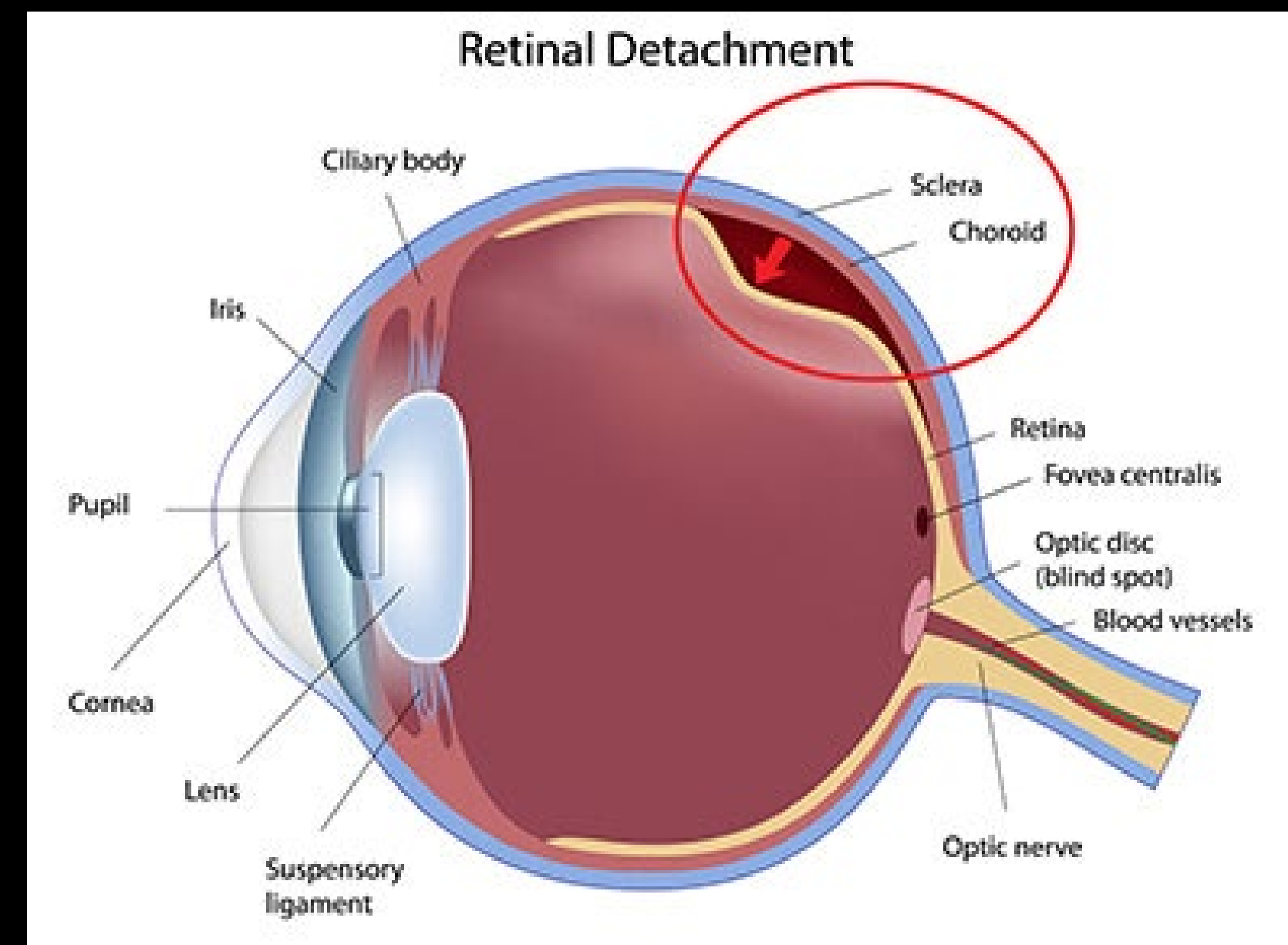
The abnormal blood vessels from the damaged vasculature of the retina, extend into the vitreous.

Vitreous becomes dense, develops into fibrous scar tissue.

Over time, scar tissue contracts, pulling and detaching retina.



Elma Retina Centre, 2020



Ophthalmic Specialists of Michigan, 2020

Ultrasound Imaging

Routine ultrasound was performed of the orbit (this imaging, in conjunction with the ophthalmology investigation aided in Brian's diagnosis).
See radiology report.

Sterile probe cover and sterile gel, eye closed, high frequency 18 MHz transducer.

Brian's eye had a hyperechoic, continuous, smooth structure in the vitreous of the eye. It was slightly mobile on real time imaging, this was the retina. The retina has a triangular or tented shape and can be seen inserting into the ora serrata or the optic disc.

Colour Doppler flow was demonstrated in the retina.

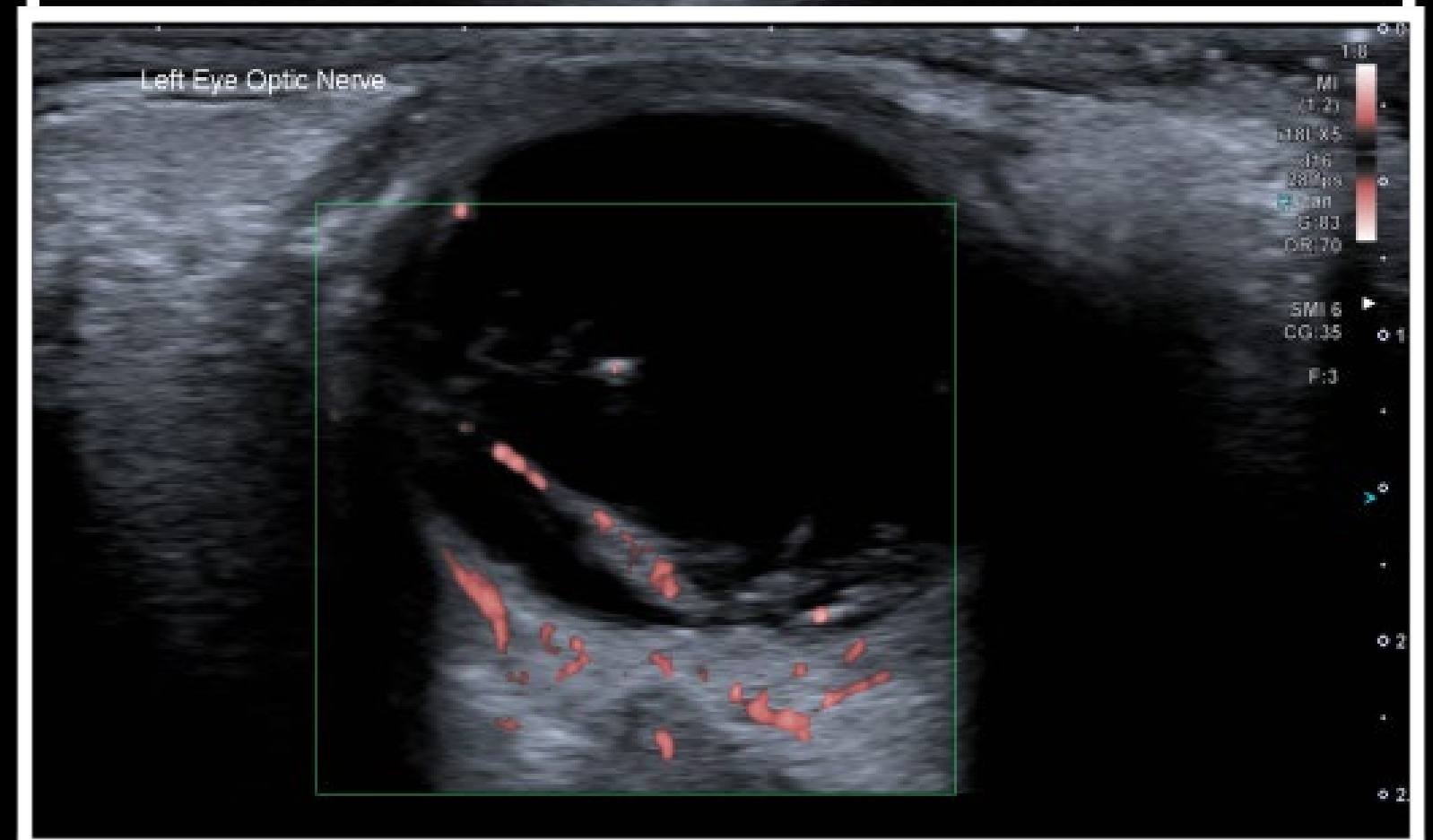
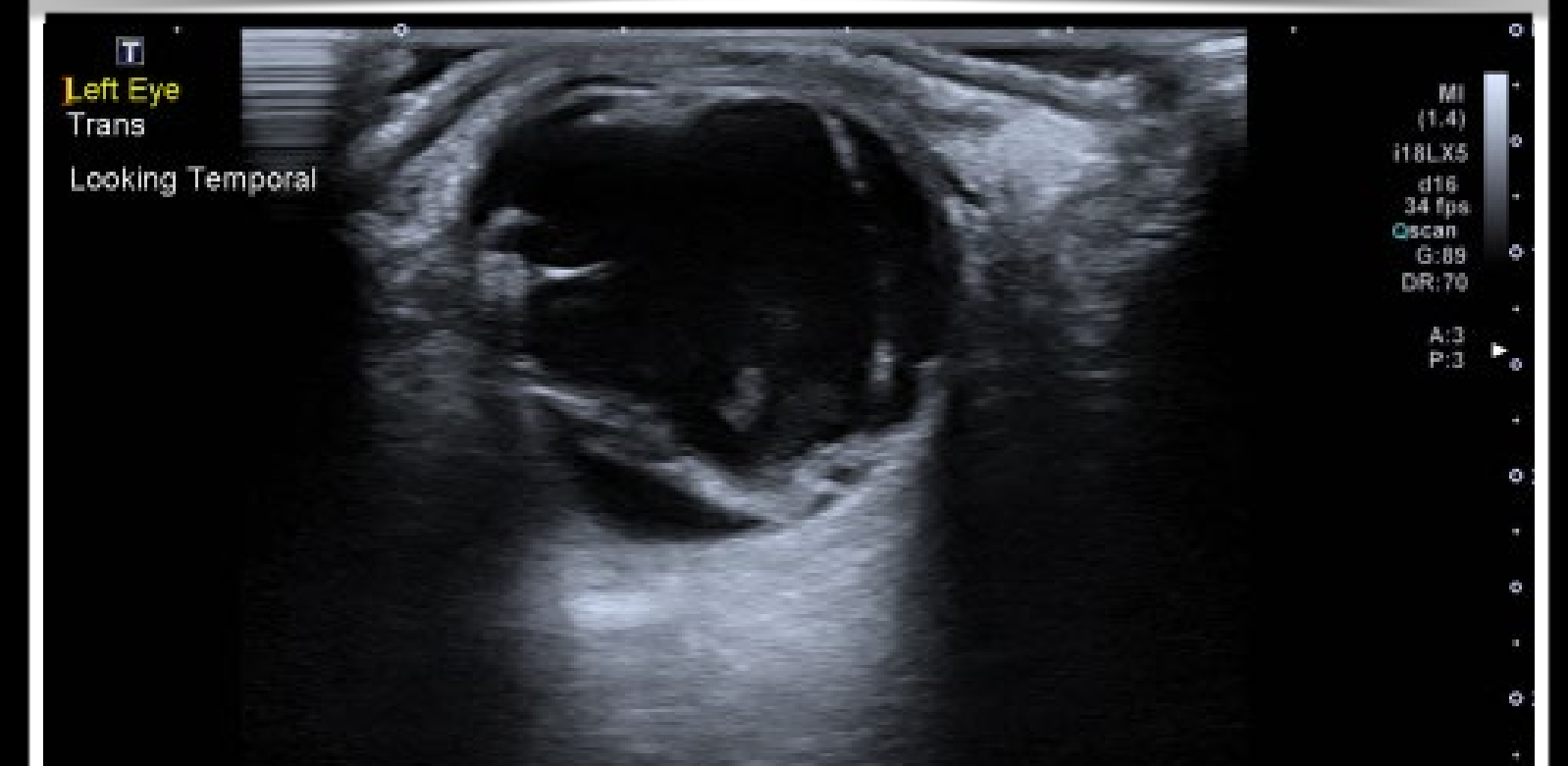
Vitreous haemorrhage was also visualised. These are the ill-defined, slightly echogenic areas in the vitreous of the eye.

*Tip; colour doppler aids in differentiation of a detached retina versus choroid/vitreous haemorrhage.

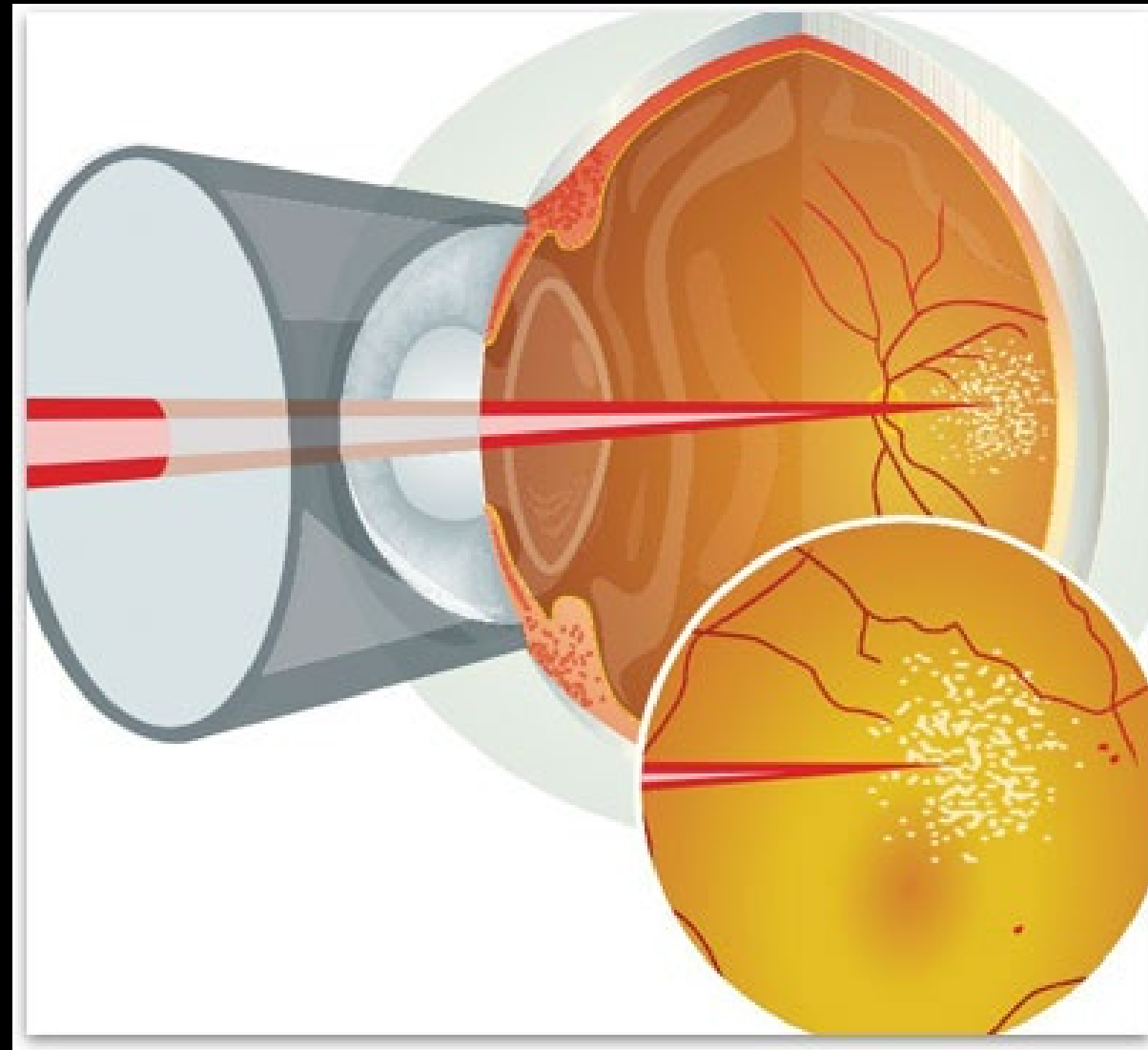
ULTRASOUND ORBITAL RADIOLOGY REPORT



No prior similar imaging.
Targeted study of the left orbit.
Ultrasound confirms retinal detachment, with typical triangular morphology compatible with extensive detachment.
Moderate vitreous haemorrhage.



Brian's treatment



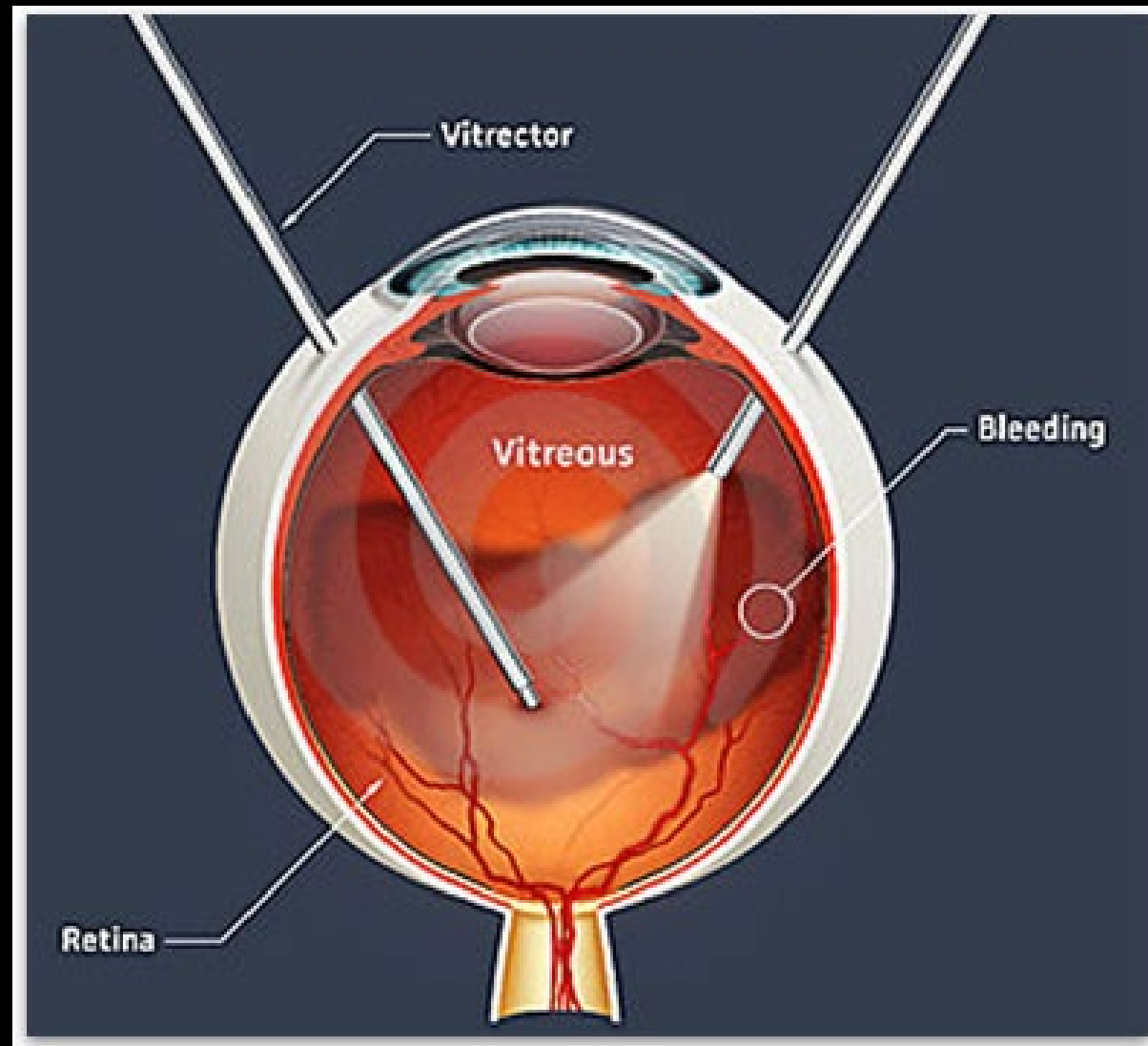
Prakash Nethralaya, 2020.

In terms of treatment; each patient is treated as a case by case basis. Success of surgical attachment depends on the extent and location of the retinal detachment. Time is critical. The outcome is generally better if the detachment is limited to the peripheral retina and the macula is not affected.

Brian had his repaired with laser, vitrectomy procedure and silicon oil. The operation report is located on the next slide.

Endolaser

Endolaser was applied to the affected areas; to repair the tears in the retina; see left, top image.



News-Medical.net. (2019). What is a Vitrectomy?

Vitrectomy

Vitreous gel is removed from the vitreous body and replaced with clear silicone oil to push the detached portion of the retina back onto RPE (retinal pigment epithelium); see left, lower image.

*Scleral buckling and pneumatic retinopathy are also other treatment options available. Brian has had a scleral buckle in the past however this was not utilised for his treatment this time.

What happened to Brian?

As we can see on the operation report; Brian had a successful surgery.

Unfortunately for Brian, he re-presented with another detached retina, 6 months post treatment. This is a common occurrence with diabetic retinopathy.

Fortunately, he was in the safe hands of the Royal Melbourne ophthalmology team and was able to have it repaired again.

Take home messages

Detached retina, serious complication of diabetic retinopathy.

When used in conjunction with ophthalmology investigation; orbital ultrasound aids in fast, effective treatment for the patient.

Use movement, colour to differentiate between a detached retina/choroid/vitreous haemorrhage.



OPERATION REPORT

Left eye tractional retinal detachment secondary to PDR (proliferative diabetic retinopathy)

Multiple breaks

Macular stable but affected

PPV/EL (Pars Planar Vitrectomy/Endo laser)

All traction resolved

Moderate haemostasis

FAX (Fluid/air exchange)

1000 Cs Silicon oil

Thankyou for taking the time to read our poster. Brian's story, is a reminder of how important orbital ultrasound plays in the diagnosis and treatment of retinal detachment.

Thankyou to the ultrasound team at RMH and to the ASA for the opportunity to contribute to the virtual conference.

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References

Butts, C. (2019). The Speed of Sound: Ultrasound for Retinal Detachment is about Ruling In, Not Ruling Out. Emergency Medicine News, [online] 41(5), p.16. Available at: https://journals.lww.com/em-news/fulltext/2019/05000/the_speed_of_sound_ultrasound_for_retinal.16.aspx

Lahham, S, Shniter, I, Thompson, M, Le, D, Chadha, T, Mailhot, T, Kang, TL, Chiem, A, Tseeng, S & Fox, JC 2019, 'Point-of-Care Ultrasonography in the Diagnosis of Retinal Detachment, Vitreous Hemorrhage, and Vitreous Detachment in the Emergency Department', JAMA Network Open, vol. 2, no. 4, viewed 17 September 2020, <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6481597/>>.

Wang, W. and Lo, A. (2018). Diabetic Retinopathy: Pathophysiology and Treatments. International Journal of Molecular Sciences, [online] 19(6), p.1816. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6032159/>.

Mohamed, IE, Mohamed, MA, Yousef, M, Mahmoud, MZ & Alonazi, B 2018, 'Use of ophthalmic B-scan ultrasonography in determining the causes of low vision in patients with diabetic retinopathy', European Journal of Radiology Open, vol. 5, pp. 79–86.

Nih.gov. (2019). Diabetic Retinopathy | National Eye Institute. [online] Available at: <https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/diabetic-retinopathy>.

IrisVision. (2019). What is Retinal Detachment? Various Types, Causes and Treatments. [online] Available at: <https://irisvision.com/what-is-retinal-detachment-various-types-causes-and-treatments/>

Harvard Health Publishing (2017). Retinopathy - Harvard Health. [online] Harvard Health. Available at: https://www.health.harvard.edu/a_to_z/retinopathy-a-to-z.

www.frasereye.com. (n.d.). Retinal Detachment or Retinal Tear - Fraser Eye Care Center. [online] Available at: <https://www.frasereye.com/retina/detachment-tear/>

retinavitreous.com. (n.d.). Vitrectomy Surgery. [online] Available at: <https://retinavitreous.com/treatments/vitrectomy.php>

Saint Luke's Health System. (n.d.). Understanding Scleral Buckling Surgery. [online] Available at: <https://www.saintlukeskc.org/health-library/understanding-scleral-buckling-surgery> [Accessed 17 Sep. 2020].

Ophthalmic Specialists of Michigan, 2020, <https://www.osmich.com/retina-dearborn/>.

Shuttershock, shuttershock.com, 2020 .

American Academy of Ophthalmology. (2020). What Happens During a Vitrectomy? [online] Available at: <https://www.aaopt.org/eye-health/treatments/what-happens-during-vitrectomy>

News-Medical.net. (2019). What is a Vitrectomy? [online] Available at: <https://www.news-medical.net/health/What-is-a-Vitrectomy.aspx>

Elma Retina Centre, 2020, <http://www.elmanretina.com/services/treatments-and-services/diabetic-macular-edema/>

Royal Melbourne Hospital, images accessed 2020.

Treatment of diabetic retinopathy in india | Prakash Nethralaya. [online] Available at: <https://www.ayurprakash.com/ayurvedpedia/diabetic-retinopathy/if-you-are-looking-for-the-treatment-of-diabetic-retinopathy-in-india-then-look-here>