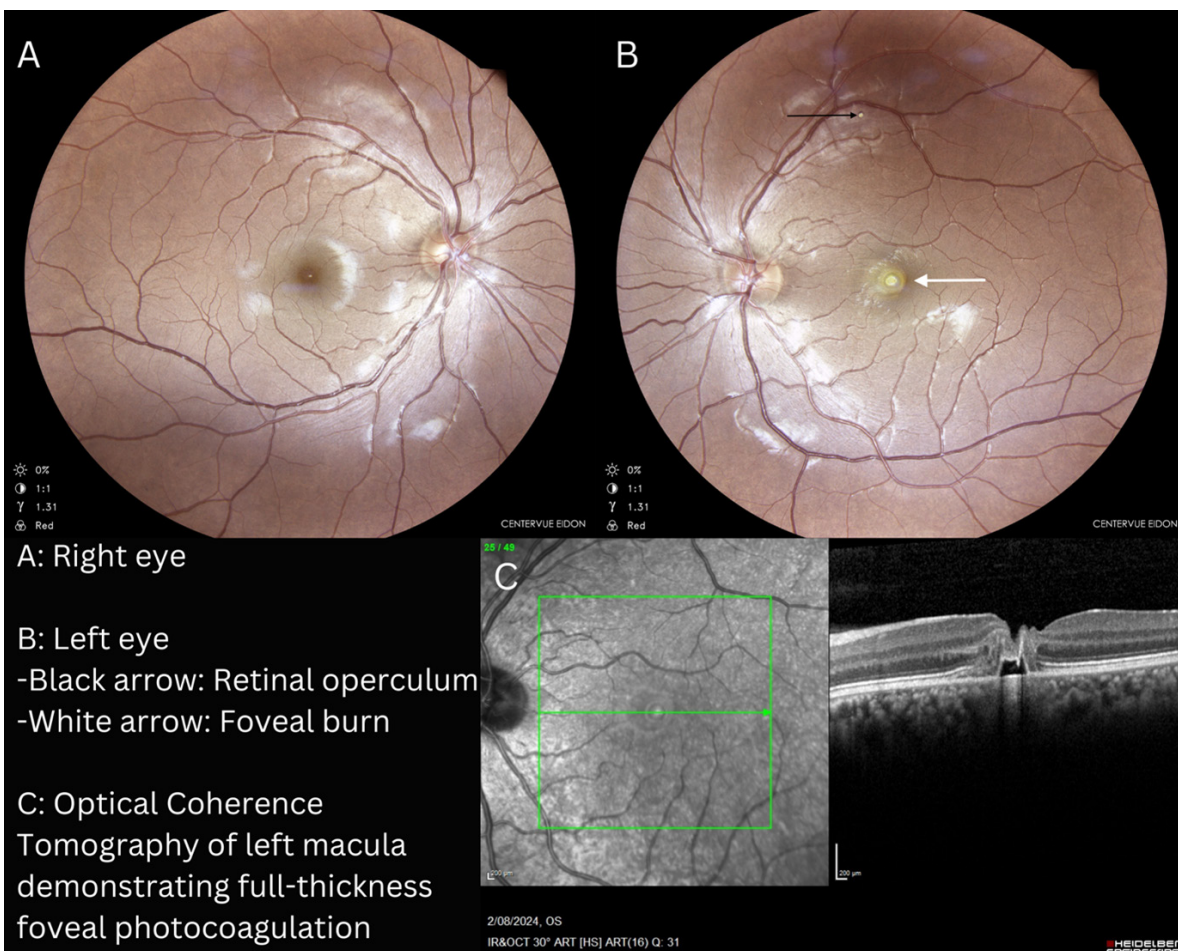


Accidental foveal burn from 755nm Alexandrite cosmetic laser

James Steven Lewis, James C Y Leong

Figure 1: Left foveal burn from accidental 755nm Alexandrite laser exposure.



A 33-year-old beauty therapist presented to the emergency department with painless loss of central vision in her left eye just hours after the accidental activation of a 755nm Alexandrite cosmetic laser during instrument cleaning. The incident occurred when the therapist inadvertently depressed the foot pedal that activates the laser while holding the scope up to her eye for cleaning, resulting in direct retinal exposure.

Examination of the right eye was normal, while the left eye exhibited counting-fingers vision, mild conjunctival injection and anterior uveitis with a

focal foveal burn and retinal operculum. Optical coherence tomography confirmed full-thickness retinal photocoagulation and macular oedema.

The patient was treated with topical corticosteroid for uveitis and ascorbic acid to promote fibroblast activity. While one case report suggests that vitamin C may aid recovery in similar injuries, its efficacy in this context remains unproven and warrants further study.¹

Although the uveitis resolved after 1 week, her vision did not improve, and prognosis for recovery is poor, with risks of secondary macular neovascularisation requiring long-term monitoring and

possible intravitreal anti-vascular endothelial growth factor (VEGF) injections.

Subthreshold laser treatment has been proposed as a means to improve central vision and minimise scar enlargement over time, though its utility in this setting is experimental and should be approached with caution pending robust evidence.²

Currently, the treatment of retinal burns primarily relies on anecdotal evidence and case reports, as no randomised controlled trials have been conducted in this area. The variability in presentations and outcomes makes it challenging to establish standardised treatment protocols. Management typically focusses on mitigating inflammation and secondary complications while monitoring for long-term sequelae.¹

This case underscores the dangers of Alexandrite lasers, which can penetrate even closed eyelids and harm ocular structures.³

These lasers are commonly used for hair removal and other dermatologic treatments, delivering energy at a wavelength of 755nm designed to selectively target melanin.⁴ Despite regulatory guidelines requiring safety interlocks and protective eyewear, this incident highlights the potential for severe injury from inadvertent activation. Infrared lasers in this spectrum pose

additional risks as they do not trigger protective ocular reflexes like the Bell's reflex.⁵

While Alexandrite lasers typically include safety features such as interlocks and automatic shut-off mechanisms, these alone cannot prevent all incidents. This case underscores the equal importance of operator training and adherence to safety protocols. Manufacturers and operators share responsibility for preventing such injuries, with manufacturers providing robust safety features and operators ensuring appropriate use.^{6,7}

In New Zealand, the regulatory framework for cosmetic lasers does not fall under the *Radiation Safety Act 2016*, which primarily covers ionising radiation. Instead, oversight is provided by local government bylaws and industry standards, such as the Auckland Council's Code of Practice for pulsed light and laser treatments and guidelines from the New Zealand Association of Registered Beauty Professionals. These frameworks emphasise operator training, equipment maintenance and adherence to safety protocols, but vary in enforcement across settings.^{7,8}

This incident highlights the critical role of operator training and adherence to established safety practices. Public awareness and education on laser safety are crucial to preventing similar injuries.⁸

COMPETING INTERESTS

Nil.

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