RANZCO Eye Museum

Winding the Future of Vision: The Innovation of von Hippel

While training in ophthalmology in the 1970s, I became accustomed to the new technology of complex microscopes, lasers and later, phacoemulsification. This explosion of technology did not start suddenly but was stimulated by a long history of technical innovation in instruments and techniques dating from the 19th century.

The RANZCO Eye Museum has many examples of early innovations, some of which lasted and others that were later superseded. Long before electronics and miniaturisation, there were many examples of beautiful diagnostic brass instruments. Later, cutting mechanical devices often driven by clockwork were produced early in the 20th century. Some examples from the RANZCO Eye Museum show the early innovation in instrument design.

Von Hippel Trephine (1888)

The German professor, Arthur von Hippel (1841-1916), developed a number of graft instruments including a clockwork trephine and advocated lamellar xenografts.

The ornate key winds the mechanism and is also used to adjust the depth of the cut in the cornea.

In 1888, von Hippel described his technique of lamellar inlay grafts. Eduard Zirm performed the first full thickness 5mm graft in 1905 using this device.

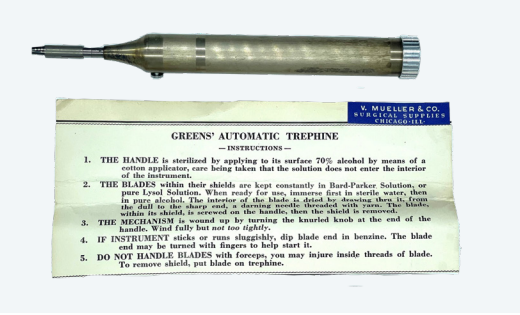
The dawn of vitrectomy involved the development of the vitreous infusion suction cutter (VISC). This collaborative project between Melbourne University and Miami produced several models, with a micromotor and guillotine cutter removing vitreous blood and later membranes.

Read the history of vitrectomy on the **Presentations page** of the RANZCO Eye Museum website: Dr Robert Machemer: The Father of Vitrectomy and History Symposium 2021 Video (Early Vitrectomy starts at 108.00).

The VISC depended on miniature grasping and cutting tools invented by Geoffrey Sutherland in Melbourne.

Dr David Kaufman
Eye Museum Curator

The button on the stem releases a clockwork mechanism to rotate the von Hippel corneal trephine.



Greens, clockwork trephine. Handheld using small 1-2 mm trephines, the button operated mechanism trephined a scleral opening behind the limbus to provide subconjunctival drainage for glaucoma.

Prototypes of Sutherland micro manipulators for vitrectomy.