

Erisophake: an outdated instrument for cataract surgery

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An erisophake is a surgical instrument designed to hold the human lens by suction during cataract extraction. It was widely employed for cataract extraction after the 1950s as an alternative to forceps.

Cataract extraction using an erisophake begins with the opening of a corneal or corneoscleral wound. This can be done using either a von Graefe knife or corneal scissors. The section should open at least 50% of the circumference of the cornea.¹ Peripheral iridotomy or a sector iridectomy is then performed. The enzyme alpha-chymotrypsin can be used to loosen the lens zonules. The erisophake cup is then placed against the anterior surface of the lens, and negative suction pressure then applied to hold the lens. The suction can be created by a

spring-operated syringe,² or a rubber bulb³ (Fig) or by connection to the operating room suction line.⁴ The lens can then be brought out by simply sliding or tumbling it out. The wound is subsequently closed with silk sutures. Complications of erisophake cataract extraction include loss of suction, anterior capsule tear, posterior capsule tear, vitreous loss, and corneal endothelial damage.⁵ In addition, the erisophake is more complicated and difficult to manipulate than forceps.²

Both forceps and erisophake cataract extraction gradually dropped out of use in the late 1960s and early 1970s, when cataract extraction could be more effectively performed using a cryoprobe (cryoextraction). The cryoprobe can be cooled to



FIG. Two erisophakes (measuring 6.2 and 7.0 cm in length) fitted with rubber bulbs, donated to the Hong Kong Museum of Medical Sciences in 2002 by Dr Kai-hung Lor

-196°C with liquid nitrogen. The probe is brought into direct contact with the cataract to freeze it and then extract it. Cryoextraction of cataract became even easier with the increasing use of operating microscopes. When using forceps, an erisophake, or cryoprobe, the cataractous lens is extracted together with the lens capsule and the procedure is called intracapsular cataract extraction. In newer methods only the anterior capsule is removed with the cataractous lens, leaving the posterior capsule intact. These newer methods are called extracapsular cataract extraction (ECCE).

In the original ECCE, the anterior capsule was manually opened and the nucleus of the cataract expressed through a corneal or corneoscleral wound. Subsequent development of phacoemulsification involves emulsifying the lens nucleus

using ultrasonic energy. The emulsified nucleus can then be aspirated through a much smaller wound. Today, femtosecond laser is used to assist in phacoemulsification by creating the corneal wound, making corneal cuts to treat astigmatism, making the anterior capsule opening, and cutting the lens nucleus into small pieces before using ultrasonic energy.

The introduction of phacoemulsification and femtosecond laser-assisted cataract surgery has made cataract extraction a minimally invasive procedure with a corneal incision of 2.8 mm or less. In addition, the advent of different types of intraocular lenses has resolved various refractive problems following cataract surgery. None of these was conceivable when erisophake cataract extraction was the norm.

References

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