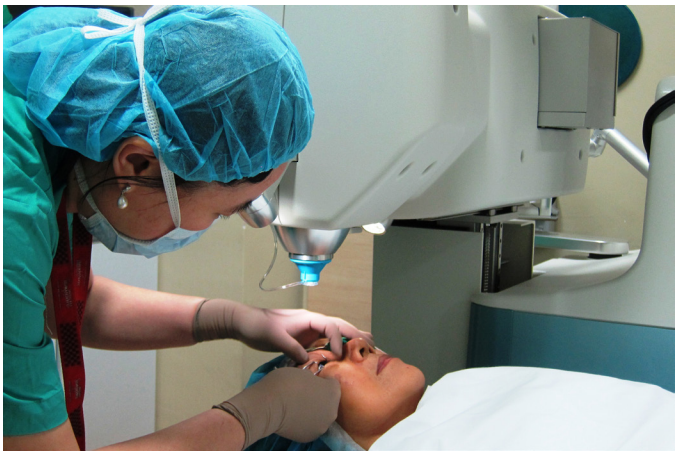
BLADELESS SURGERY FOR EYE

A CATARACT IS A CLOUDING OF THE LENS OF THE EYE, OBSTRUCTING THE PASSAGE OF LIGHT FROM THE environment into the eye. Many things could potentially lead to the formation of cataracts, from long-term exposure to ultraviolet light to genetic factors, but for the most part they appear to be part and parcel of growing old.

Cataracts primarily causes a loss of visual acuity and contrast sensitivity, making colours seem less vivid, contours less sharp and so on. Combined with decreasing the affected eye's ability to veil glare, cataracts can have a significant impact on one's quality of life,

Thankfully, there is an easy solution: bladeless cataract surgery. As its name suggests, bladeless cataract surgery differs from traditional methods of cataract surgery by the absence of a blade. Instead, it utilises femtosecond lasers, which are optical pulses of light of extremely short duration (a femtosecond is one-quadrillionth of a second, or 10-15 seconds), to cut through tissue with great precision and practically no heat development.



In conventional cataract surgery, the eye surgeon first uses a blade to make very small incisions on the cornea of the affected eye. The surgeon then uses forceps to tear an opening in the front of the lens capsule to remove the lens. The cataract is separated manually, and the lens is emulsified with ultrasonic energy (a process called phacoemulsification) and aspirated from the eye. Finally, an artificial lens is then implanted to restore vision.

In bladeless cataract surgery, the femtosecond laser makes the incisions on the cornea, cutting the opening in the lens capsule and breaking the lens up into smaller pieces so that less ultrasonic energy is needed to remove the cataract. This entire process is done with image guidance systems which provide the surgeon with real time, three-dimensional high-resolution images of the eye at all times during the procedure.

The circular openings created by femtosecond lasers are more architecturally round and perfectly centered. Studies have shown that this allows the lens to be better positioned, achieving greater stability and refractive predictability. Lens fragmentation by the laser - which in turn allows less ultrasound energy to be used during phacoemulsification - also reduces the risk of capsule complications and corneal injury, and the computerised image guidance system allows the surgeon a great level of control, precision and customization.

There are of course a few disadvantages to bladeless cataract surgery. Aside from the increased cost, prior to delivering the laser, a patient's eye must be stabilized relative to the optical system of the laser. This is achieved by a curved lens and suction system. As a result, eyeball pressure may rise and subconjunctival haemorrhage (bleeding in the white of the eye) may occur. However, these are minor side effects and do not in any way threaten the success of the surgery or compromise the patient's overall quality of life.

Patients with cornea disease or glaucoma, or whose eyes are unable to tolerate or cooperate with the docking suction system (necessary to stabilise the eye before the lasers operate) are also not able to enjoy the benefits of bladeless cataract surgery. ■

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