

Once minimise
surgical trauma,
subsequent
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Once the implantation has been completed, the stent takes about two minutes to soften and then proceeds to conform to the shape of the surrounding tissue.

The mechanism of action of the XEN glaucoma implant is similar to that of full-thickness glaucoma surgeries like trabeculectomy and shunts, which bypass all potential outflow obstructions. The tubular implant maintains the microfistula between the anterior chamber and the subconjunctival space with spontaneous healing of the surrounding tissues (Fig 3). An iridotomy is not required, and this can potentially minimise surgical trauma, subsequent inflammation, and fibrosis. Of the MIGS devices available worldwide, only the Xen implant is slated for the India market within the coming year, following DCGI clearance. Cypass: (Fig 4) CyPass (Alcon) is a biocompatible polyimide tube 6.35-mm in length with a 300- μ m lumen. It is placed in the supraciliary and suprachoroidal space to increase uveoscleral outflow by creating a small cyclodialysis.

The FDA approved the CyPass Micro-Stent in 2016, making it the first FDA-approved MIGS procedure that targets alternative uveoscleral outflow. It is designed for transcorneal placement and fenestrations along the device allow aqueous to egress throughout its length. (Figure 1) The negative pressure gradient in the suprachoroidal space results in aqueous outflow and IOP reduction. Hydrus Microstent: The Hydrus Microstent (Ivantis) is SC scaffolding device, which aims to restore the conventional outflow into the Schlemm canal, avoiding the risk for hypotony because of the resistance encountered by the physiological episcleral venous pressure. The 8-mm stent is made from a highly flexible, biocompatible alloy of nickel and <https://assignbuster.com/once-minimise-surgical-trauma-subsequent-inflammation-and-fibrosisof/>

titanium (Nitinol), resides in the lumen of Schlemm canal without obstructing collector channel ostia located along the posterior wall. It is in Phase 3 FDA trials. Gold microshunt: The Solx Gold Shunt (Solx), an ab externo suprachoroidal trans-limbal shunt, draining aqueous into the suprachoroidal space. Aqueous flows both, through the channels in the body of the shunt as well as around its body, acting like a controlled cyclodialysis.

Eyepass: This bidirectional shunt also diverts aqueous from the anterior chamber directly into Schlemm's canal. InnFocus MicroShunt: The InnFocus Microshunt (Santen) is a minimally invasive, plateless glaucoma drainage microshunt made from an inert biomaterial called SIBS (polystyrene-block-isobutylene-block-styrene). The device shunts aqueous humor from the anterior chamber to the sub-Tenon capsular space. The MicroShunt differs from the Xen45 Gel Stent since it is implanted ab externo, requires a conjunctival incision, with potentially more scarring than with the Xen Ab Interno Canaloplasty Using the iTrack 250A Microcatheter, ABiC: ABiC opens up the whole outflow system and viscodilates all sites involved in the control of aqueous outflow. The procedure is performed with an illuminated microcatheter (iTrack 250A; Ellex) that is inserted via a corneal microincision. It restores the natural outflow pathway with minimal tissue trauma by viscodilation and leaves no foreign body (tensioning suture or stent) in the eye.

ABiC is also the only MIGS procedure that addresses collector channel blockages as well. Excimer laser trabeculostomy: Excimer laser trabeculostomy (ELT) is a form of ab interno trabeculotomy, that precisely ablates the trabecular meshwork without causing thermal injury to or scarring of the <https://assignbuster.com/once-minimise-surgical-trauma-subsequent-inflammation-and-fibrosisof/>

surrounding tissue. 1-3 This procedure uses a XeCl (308-nm) excimer laser coupled to an intraocular fiber optic delivery system to create long-term anatomic openings that connect the anterior chamber directly to Schlemm canal.

The photoablative conversion of trabecular meshwork tissue into gas enables pneumatic canaloplasty. NB: The following surgeries do not fit in into the current definition of MIGS, but have been traditionally classified in this group, since they are relatively newer surgeries. They are being mentioned in this review for the sake of completion. Non-Penetrating Glaucoma Surgeries: Aqueous egress is known to occur at the level of Schlemms Canal (SC) and its efferents and the selective removal of the inner wall of SC and the adjacent trabecular meshwork, leaving intact the innermost trabecular meshwork layers decreases the resistance to aqueous outflow.

The residual membrane, formed by the anterior and posterior trabecular meshwork, the internal endothelium of Schlemm's canal and Descemet's membrane in deep sclerectomy or viscocanalostomy, retains a degree of residual outflow resistance, making this surgery safer. Since the anterior chamber (AC) is not entered, these group of surgeries are called non-penetrating glaucoma surgeries CO2 laser assisted DS: CO2 laser energy ablates the underlying sclera layer by layer until the roof of SC is exposed. At that point fluid percolates in the thinned tissue and prevents further ablation, thus preventing a full thickness perforation. The laser thus is the fancy knife that makes the surgery safer, easier to perform, with decreased rates of perforations into the AC.

Canaloplasty: Canaloplasty and viscocanalostomy are procedures that rely on dilation of the SC to decrease outflow resistance. The tensioning suture within the SC, similar to the action of pilocarpine, as well as helps in maintaining a patent canal lumen. ExPress: The ExPress Glaucoma Filtration Device controls IOP by allowing a limited outflow of aqueous humor into the intrascleral space and thereafter into the subconjunctival space, with a mechanism of action similar to trabeculectomy. It makes a trabeculectomy more standardized with decreased complications.