

Iris prosthetic system with 'building blocks' customises iris replacement

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in Heidelberg

A NEW customisable iris prosthetic system (IPS) appears to be useful for the repair of many different types of iris damage, reported iris prosthesis specialist Heino Hermeking MD at the Congress of the German-Speaking Society for Intraocular Lens Implantation and Refractive Surgery (DGII).

The IPS®, designed by Dr Hermeking offers different modular 'building blocks'. The specially designed elements are made of pigmented PMMA (green, blue, black, and brown), and can be used to fulfil any number of anatomic, pathologic, or functional criteria.

"This new iris prosthetic building block system is applicable in any case scenario. The system includes both a novel foldable diaphragm-positioned IPS (dIPS) and a capsular, sulcus-positioned IPS (kIPS). It was developed for universal application and to do away with the requirement of a customised finishing of the product," said Dr Hermeking Wuppertal, Germany

The building blocks include single and double elements (both

available for either 3.0 mm and 4.0 mm pupil widths) for either sulcus or diaphragm fixation. All of the building blocks can be combined with an IPS fixation ring that serves to counteract secondary capsule shrinkage and stabilise the artificial aperture.

The elements are used alone or in combination, depending on the individual needs of the patient, to create a new iris diaphragm (pupil reconstruction) or correct partial and total iris defects. They offer optimal control of postoperative artificial pupil diameter. The standard designs and availability in different dioptric powers allow for in-house inventories.

Dr Hermeking explained that the biggest advantages of the IPS were that the iris surgeon could accommodate any anatomic or pathologic situation with this system. Also, the surgery is performed using small-incision techniques, as only a 3.5 mm width is required for implantation, which makes surgery using this building block IPS minimally invasive.

The IPS system (capsular or diaphragmatic) is chosen according to what is needed by the patient in a given situation. The system allows elements to be fixed with any of the standard fix-

ation options, allowing for what can be most easily and safely achieved by the surgeon, such as iris enclavation, ciliary sulcus position, endocapsular position, and transscleral suture. The latter is only used as a last resort, he noted.

"Although, 90% of the ocular findings are 10 years or older, we need a system that satisfies the anatomical, pathological and functional criteria of patients who require spontaneous care. This prosthetic system is feasible for use in acute traumatic situations as well as for chronic iris pathologies," he said.

Functional criteria for iris reconstruction or replacement include reducing glare and photophobia, and improving depth vision. As the implants augment the iris diaphragm, they reduce both photophobia and glare, which are the most common complaints in patients with damage to the iris.

Anatomically, an iris prosthesis has to form a diaphragm, with separation of anterior and posterior segments of the eye. The pathologic and anatomic findings can be genetic or pathological, ranging from aniridia, to iris defects such as coloboma, and iris

dysfunctions like traumatic mydriasis.

Dr Hermeking noted that although the role of a diaphragm in aqueous fluid dynamics and the formation of secondary glaucoma are still not clear, a diaphragm to separate the anterior and posterior segments is mandatory in the surgical realm for silicone oil surgery in PVR ablations.

A prosthetic iris also needs to be cosmetically acceptable, which is challenging in an extremely variable patient population.

"This new iris prosthetic building block system is applicable in any case scenario."

The system can be applied in a range of ways, Dr Hermeking said. For example, the capsular IPS may be fixated in the sulcus while the diaphragmatic IPS can be positioned in the sulcus or fixed to the iris, or both combined while also fixed by transcleral sutures.

"Iris prosthetics are central to the traumatological care of the eye. They must be adaptable, attainable, conform to small-incision surgery, and must adequately

replace the iris. Biocompatibility and the degree of light transmission (glare reduction) are important issues for the coloured iris prosthesis. Colour elements must be bound to the prosthesis; otherwise toxic pigments could be set free leading to chronic intraocular irritation. Pigments must be integrated into the PMMA," he said.

Dr Hermeking explained that prolonged rehabilitation times and minor bleeding, which usually resolve completely within one or two weeks could be expected

postoperatively. He urged surgeons to monitor for haematoclastic glaucoma and increased IOP due to lens swelling.

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