New technique allows for simple scleral fixation of IOLs

Dermot McGrath
in London

A NEW technique for suture retrieval and scleral fixation through a corneo-scleral pocket offers a simplified and elegant method for fixation of IOLs or capsular fixation devices, according to Richard Hoffman MD.

“Common to all transscleral fixation techniques is the need to bury, cover or rotate the scleral knot in order to prevent conjunctival erosion and subsequent endophthalmitis. This new technique covers the knot and avoids conjunctival dissection, scleral cautery or the need to suture the wound closed,” he said.

Putting the technique into context, Dr Hoffman, O’Regan Eye Institute, O’Regan, US, said that intracapsular fixation of secondary and subluxed IOIs can be accomplished with iris fixation or transscleral fixation through the ciliary sulcus or the pars plana. While noting that iris fixation is becoming increasingly popular, he advised that there are still some surgical situations that are better suited to a transscleral approach.

“These include subluxed intraocular lens and capsular bag complex, adjunctive capsular devices such as Cionni capsular tension rings, Ahmed ring segments, repair of iridodialysis and fixation of iris prosthetic lenses,” he said.

Using some video footage of a patient with a subluxed IOI and capsular bag complex, Dr Hoffman explained the basic steps to be taken with the new technique.

“The first step is to create two grooved clear corneal incisions of between 300 to 400 microns in depth. These are placed in the meridian of where the haptics can be easily sewn to the sclera. This is dissected posteriorly approximately 3.0mm and a 1.0mm paracentesis is created from each clear corneal incision into the anterior chamber to aid in suture placement. Placing the paracentesis just anterior to the clear corneal incision instead of within the incision facilitates passing the Prolene sutures since the external opening of the paracentesis can be more easily identified. The paracentesis can also be placed immediately adjacent to the clear corneal incision,” he said.

The 1.0mm paracentesis can be used to place single iris hooks to expose the peripheral capsular bag or concealed IOI haptics. A small quantity of ophthalmic microsurgical device (ODV) is then placed in the anterior chamber through one paracentesis in order to stabilise the anterior chamber. An ODV can also be placed in the ciliary sulcus underlying the scleral pocket to aid the suture passes.

Suture placement is initially directed toward the haptic that was exposed through the pupil secondary to the IOI decentration, explained Dr Hoffman. A 27-gauge needle is passed through the conjunctiva and the full thickness of the scleral pocket 1.0mm posterior to the surgical limbus. This needle is inserted far enough into the eye behind the iris and in front of the capsular bag to allow visualisation of the bevelled tip.

Using a technique that has been previously reported in the literature by Ahmed and Moreno-Montanes, a double-armed 10-0 Prolene suture (or preferably 9-0 Prolene) on a long straight needle is then inserted through the opposite paracentesis, docked into the 27-gauge needle and both are removed externally through the scleral pocket and the conjunctiva. The 27-gauge needle is again passed through the conjunctiva and the full thickness of the scleral pocket 1.0mm posterior to the surgical limbus and 1.0 to 2.0mm adjacent to the first pass of the needle. This 27-gauge needle is inserted into the eye but behind the capsular bag equator. The needle perforates the capsular bag central to the IOI haptic and passes completely through the posterior and anterior capsules.

Dr Hoffman explained that the first pass of the Prolene is in front of the haptic, and the second pass, which is also docked with a 27-gauge needle, is behind the haptic. These sutures are then pulled through, essentially looping the Prolene suture around the haptic. The needles are then removed from the suture and the suture is retrieved through the scleral pocket. While the first suture has been retrieved and is held in place with forceps, the remaining suture is retrieved by placing a Sinskey hook into the scleral pocket and pulling it through the pocket.

Once both ends have been retrieved and externalised the suture is tightened and tied allowing the knot to lie under the protection of the scleral pocket roof. No suture closure of this pocket is necessary, said Dr Hoffman, and the same procedure can then be performed for the opposite scleral pocket.

Discussing the advantages of the scleral pocket fixation technique in more detail, Dr Hoffman said that it allows for simpler creation of a suture knot and avoids the need to rotate the knots.

“Furthermore, there is no conjunctival dissection or scleral cautery, which allows for a faster procedure than a traditional triangular flap procedure. It also allows for easier conversion to a scleral fixed procedure if necessary – for instance in a patient undergoing cataract surgery under topical anaesthesia, where unforeseen complications require a scleral fixation. There is also a larger surface area created with this approach than with a triangular flap or a scleral groove and this should facilitate suture passage for both an ab interno or ab externo approach,” he said.

Easier dissection and possibly less-induced astigmatism are other advantages of the new technique, he added.

“I have found that it is easier to dissect the distal fixation site because we are dissecting ‘downhill’ away from the surgeon rather than ‘uphill’ toward the surgeon. There may also be less induced astigmatism because there are no radial sutures placed as with triangular scleral flaps. There is, however, a small amount of flattening in the meridian of the grooved incisions, but this results in a relatively small amount of induced astigmatism that can be adjusted by changing the depth of initial groove created to initiate the scleral pocket. Overall, I feel that the scleral pocket fixation technique is an incremental improvement in our current scleral flap techniques and it can be used to repair dislocated IOIs, implant secondary IOIs, Cionni rings, Ahmed ring segments and for repair of iridodialysis,” he concluded.

rs.hoffman@finemd.com