SUTURELESS VALVED INCISIONS: FROM CATARACT TO VITREORETINAL SURGERY

INCISIONES VALVULADAS SIN SUTURA: DE LA CIRUGÍA DE CATARATA A LA CIRUGÍA VITREORRETINIANA

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After phacoemulsification became established as the surgical technique of choice for cataract surgery, valvulated corneal incision (also known as tunnelized) –together with the appearance of foldable intraocular lenses (IOL) which facilitated a smaller incision– allowed a sutureless closure of the incision be means of a mechanism for joining the lips of the wound with the aid of intraocular pressure. Since its first description, valvulated corneal incision has gained acceptance. In surveys among members of ASCRS a few years later (2001), nearly 60% of ophthalmologists described valvulated corneal incision as their technique of choice. This technique involved an important surgical development because it eliminated astigmatism induced by the suture in addition to accelerating recovery by eliminating possible inflammatory reactions against foreign particles in the tissue.

At present, the idea of valvulated incision is being extrapolated to scleral incisions at the pars plana level for performing a number of procedures in vitreoretinal surgery. Concepts such as oblique, angled or tunnelized incisions which seemed exclusively reserved for anterior pole surgery are frequently appearing in retina publications.

Traditionally, the 20-gauge vitrectomy was performed through direct path sclerectomies (perpendicular to the sclera). Several attempts were made to utilize tunnelized techniques (1), but failed to become mainstream practice.

With the appearance of micro-incision vitrectomy (25- and 23-gauge) the reduced diameter of the incision gave rise to the possibility of doing away with sutures, which reduced the inflammatory reaction found in vitrectomy post-ops at the level of the sclerectomy, caused by the suture material. Corneal topography studies have demonstrated a lower prevalence of post-surgery astigmatism induced in suture-free microincision vitrectomy. These two elements shorten the post-op recovery of our patients. However, there is a drawback in suture-free microincision vitrectomy, namely a greater prevalence of post-op hypotony. Recent studies (2) have demonstrated higher prevalence rates of endophthalmitis in 25-gauge vitrectomy when compared with 20-gauge vitrectomy. This leads us to think that suture-free incision is not an end in itself and that the surgeon must use sutures in case of doubt about the closure capacity.

In an attempt to improve the closure capacity of suture-free sclerectomies in microincision vitrectomy, the literature has described the use of valvulated scleral incision. Even though the 25-gauge technique was initially described by Fuji utilizing a direct (perpendicular) incision, subsequent works proposed oblique incisions (3,4) due to providing a greater closure capacity (5) diminishing intraocular liquid loss due to reflux. Due to its larger diameter, vitrectomy with 23-gauge incisions was already described by Eckhardt using angled incisions from the beginning.

Said tendency favoring the use of oblique scleral incisions was also utilized for intravitreous administration of drugs by means of pars plana injections. Oblique scleral injections have been described in two planes (6) as well as in one (7) in an attempt to diminish the loss of active substance due to reflux and subsequent subconjunctival accumulation (blister) in the case of direct (perpendicular) injection into the sclera.

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Another procedure frequently utilized by retina surgeons such as the placement of intraocular lenses (IOL) in the sulcus in the absence of capsular support, usually requires suturing to ensure fixation. Tunnelized scleral incisions can also be used in these cases, removing the need of sutures. Gabor (8) has described a technique for retaining the haptics in tunnelized scleral incisions parallel to the limbus and constructed at a distance of 1.5 mm thereof. In our experience the entrapment of the haptic in the scleral tunnel facilitates centering the implant and avoiding its inclination. The absence of sutures removes the possibility of late erosion of the suture and subsequent dislocation of the implant.

Accordingly, the use of valvulated/oblique/tunnelized scleral incisions in an attempt to improve the healing of the sutureless surgical would seems to be an option to be considered when considering procedures which require access to the vitreous cavity. When more experience is accumulated, it will be possible to determine the actual importance of this approach. It could well be that, as was the case with valvulated corneal incision in cataract surgery, it may become a technique widely used by a high number of surgeons.

REFERENCES