A Single-Suture Technique for Placement of the Ganciclovir Implant

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The ganciclovir implant is a surgically implanted sustained-release drug delivery system used for the treatment of cytomegalovirus retinitis. The device is suspended in the vitreous cavity through a pars plana incision. Previous reports of the surgical procedure have described securing the implant on 1 suture, tied with an external knot. The ends of this suture were left long to avoid sharp ends eroding through the conjunctiva. The wound was then closed with 1 or more additional sutures, with the ends tied and cut short. We describe a technique whereby the wound is closed and the implant secured with a single running suture. The advantages of this technique include efficiency and elimination of exposed knots. We have observed no complications attributable to this technique.

The ganciclovir implant (Vitrasert; Bausch & Lomb Surgical, Claremont, Calif) is a sustained-release drug delivery system designed for the treatment of cytomegalovirus retinitis. It has shown unprecedented ability to achieve control of cytomegalovirus retinitis when implanted into eyes of patients with newly diagnosed retinitis, and may have a role in the treatment of recurrent cytomegalovirus retinitis.

Most of the risks of surgery are related to the creation and closure of a large, full-thickness eyewall incision. These wound-related risks theoretically include endophthalmitis, vitreous hemorrhage, retinal detachment, wound leaks, erosion or extrusion of the implant, and astigmatism.

The surgical technique for placement of the ganciclovir implant using multiple sutures was recently described in an article on the use of the implant. A detailed description is also available in educational materials distributed at seminars sponsored by the implant’s manufacturer. These descriptions of wound closure included a full-thickness suture with an external knot and long suture ends to secure the implant in addition to 1 or more additional sutures to close the scleral wound. We describe a single-suture technique for placement of a ganciclovir implant.

We recommend that 2 ganciclovir implants be available at the start of the operation so that a backup is available in the event of a defective or contaminated device. Using a 27-gauge hypodermic needle, a hole is punched in the strut of the device 1.5 to 2 mm from the edge of the pellet. The strut is then trimmed distally, but as close as possible to the hole. The corners of the strut are rounded. An 8-0 nylon double-armed suture is passed through the hole and secured with a single overhand knot as described by Morley et al. A limbal peritomy is performed at the selected implantation site (usually inferotemporally). Using a 15° blade, a 5.5-mm scleral incision is then created 4 mm posterior and parallel to the limbus. The wound is then gaped slightly with forceps to ensure that the incision passes through full-thickness sclera and pars plana. Vitreous extruding through the wound is excised with an automated vitreous cutter.

The implant is grasped by the strut with smooth forceps and placed through the wound with the pellet facing anteriorly. The wound is then closed using a modified running “shoelace” stitch using 8-0 nylon.
Clearance of the vitreous, and status of position of the ganciclovir implant, interrupted 6-0 collagen sutures. The knot remains within the wound. The suture are trimmed short and the wound and tied. The ends of the suture is tightened to approximate the wound is meticulously removed with a double-armed 8-0 nylon suture, incorporating the implant in the wound closure. All suture passes are through three-fourths scleral thickness. After the implant is placed in the vitreous cavity, one arm of the 8-0 nylon suture is placed through the anterior (1) and one through the posterior edge (A) of the wound. The end of the suture passing through the anterior wound is then passed in a radial manner across one end of the wound (2 to 3), then midway between the previous 2 passes (4 to 5), then midway between the original pass and the opposite end of the wound (6 to 7), then through the posterior sclera (B) and out through the posterior wound edge at the end of the incision. The other end of the suture is then passed, backhand, through the anterior sclera (B) and out through the anterior wound edge at the end of the incision. The suture ends are tied to approximate the wound and trimmed short. The architecture of the wound involves 5 equally spaced radial passes across a 5.5-mm wound. The implant is secured on the central pass.

A double-armed 8-0 nylon suture, incorporating the implant in the wound closure (Figure). All suture passes are through three-fourths scleral thickness. Prior to the final wound closure, any additional vitreous extruding through the wound is meticulously removed with an automated vitreous cutter. The suture is tightened to approximate the wound and tied. The ends of the suture are trimmed short and the knot remains within the wound. The conjunctival peritomy is closed with interrupted 6-0 collagen sutures. The position of the ganciclovir implant, clarity of the vitreous, and status of the retina are then checked with binocular indirect ophthalmoscopy. A subconjunctival antibiotic injection is given. Using this technique, the 5.5-mm wound is closed with 5 equally spaced radial suture passes and secured with a single buried knot.

We have used this technique in 36 consecutive primary ganciclovir implant placements and in 14 replacements. We have observed no complications related to improper wound closure (wound leaks, wound dehiscence, implant exposure or extrusion, dislocation of a free implant into the vitreous cavity, or endophthalmitis). Although astigmatism has not been measured, we have not observed a need for a change in the refractive correction of patients following surgery.

The principal advantage of this technique is its simplicity. The implant is secured and the wound closed with a single suture. This decreases operating time, in particular the time that the eye is “open” between scleral incision and closure. Fewer sutures mean that fewer sharp instruments are handled, reducing the risk of injury among members of the surgical team. Closure of the wound with a single buried knot eliminates exposed knots and long suture ends beneath the suture. Fewer sutures mean that fewer members of the surgical team. Clo- sure of the wound with a single buried knot eliminates exposed knots and long suture ends beneath the conjunctiva, theoretically reducing the risk of postoperative irritation, conjunctival erosion, and a possible route for introduction of microorganisms into the eye.

One might fear that this technique would make retrieval of the implant more difficult or dangerous during future implant exchange procedures. Using a technique similar to that of Martin et al, we have had no more difficulty retrieving devices secured by the single-suture technique than those secured by a separate suture. In no case was the implant dislocated into the vitreous cavity during its retrieval, and in no case were we unable to locate and remove the old implant. This may in part be due to the fibrotic attachment of the implant to the pars plana that forms by the time of the intended implant exchange.

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REFERENCES


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