A New Evisceration Technique using Ellman Radiofrequency

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Abstract: In this article we describe a new evisceration technique with the use of Ellman radiofrequency (RF) with the Goisis elevator [Patented 4-MHz dual radiosurgical unit, Ellman, NY], a new tool for orbital surgery with whom is possible to cut, coagulate, and dissect with greater precision, lower temperature, and reduced alteration of the tissue. With the Goisis RF Elevator we perform a conjunctiva peritomy, then, with the same device, is possible to get inside the chamber and excise the cornea and, after that, eliminate the globe content. The next step is to isolate and hook the superior and medial rectus muscles so that we can perform a full-thickness quadrant sclerotomy from the limbal incision to the optic nerve. The procedure is repeated in the superolateral, inferolateral, and inferomedial quadrants. In the end we can position a large implant between four scleral flaps previously shaped. This new technique makes the procedure to place a large orbital implant easier and faster. The advantages are both for the operator and the patient: enhanced speed, reduced pain, prompt healing, and lesser swelling.

Keywords: Eye, Surgery, Evisceration, Ellman, Radiofrequency.

INTRODUCTION

Evisceration is the most common orbital surgical intervention and usually it is performed by using scalpel, scissors and forceps. The Goisis RF Elevator [patented 4-MHz dual radiosurgical unit, Ellman, NY], a new radiofrequency instrument, is introduced to perform a new technique of scleral quadrisection The Goisis RF Elevator is similar to a Freer elevator and by using this tool is possible to cut, coagulate, and dissect with radiofrequency. With Goisis RF Elevator the evisceration gets easier and faster.

SURGICAL TECHNIQUE

Evisceration has got to be conducted under local anaesthesia with sedation: the retrobulbar space is medicated with a mixture of xylocaine 2% with epinephrine hydrochloride (1:100000) and hyaluronidase. To reduce bleeding and help the dissection a subconjunctival injection of Xylocaine 1% with epinephrine hydrochloride (1:100000) is done.

The Goisis RF Elevator is used to make a 360° peritomy of the conjunctiva around the corneal limbus, and the conjunctival plane is elevated by dissection (Figure **1**). With this instrument is possible to cut, coagulate and dissect. After entering the anterior chamber with the Goisis RF Elevator, an excision of the cornea is performed with a 360-degrees (Figure **2**).

With the Hudson forceps we grasp the edge of the residual scleral shell, after that the globe content is separated from the sclera with the Goisis RF (Figure **3**). In the end is possible to remove the choroid, retina, and vitreous. Using the same instrument is possible both to cauterize the central retinal artery and the vortex veins and to destroy with the radiofrequency the uveal remnants.

Successive step is to isolate and hook the superior muscle and medial rectus. Then, in the quadrant between these muscles the Goisis RF Elevator is used to perform a full-thickness sclerotomy from the limbal incision to the optic nerve (Figure **4**). The procedure is repeated in the others quadrants: the superolateral, the inferolateral, and the inferomedial. After that four scleral flaps are shaped.

At this point is possible to place an orbital implant properly sized between the scleral flaps that, right after, are closed over the implant with an interrupted 5–0 polyglactin suture (Figure **5**). The Tenon's fascia is closed in one layer using non-interrupted 5-0 polyglactin sutures after pulling it over the sclera. Then, over Tenon's fascia, the conjunctiva is sutured with interrupted 5-0 polyglactin sutures. Finally the insertion of a conformer previously sized is operated and it must be left in place until the ophthalmologist's examination in about 10 days (Figures **6**,**7**).

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Figure 1: Step A: A conjunctival peritomy is performed with the RF elevator for 360 degrees around the corneal limbus. The conjunctival plane is elevated by dissection with the same instrument. In this way, cutting, coagulation and dissection are obtained with the same instrument.

Figure 2: Step B: The anterior chamber is entered with the RF elevator, a 360 degree keratotomy is done and the cornea is excised.

Figure 3: Step C: The edge of the residual scleral shell is grasped with Hudson forceps, and the RF Elevator is used to divide the globe content from the sclera.

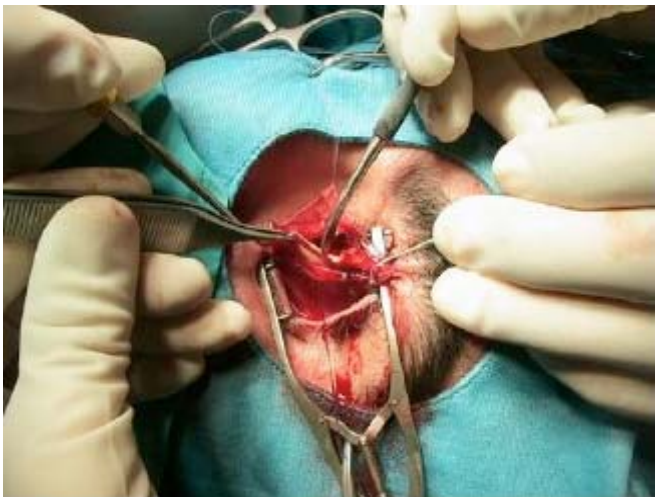

Figure 4: Step D: The superior and medial rectus muscles are isolated and hooked. Then, a full-thickness sclerotomy from the limbal incision to the optic nerve is performed with RF elevator in the quadrant between these muscles.

Figure 5: Step E: Then, an appropriately sized implant is inserted into the orbit.

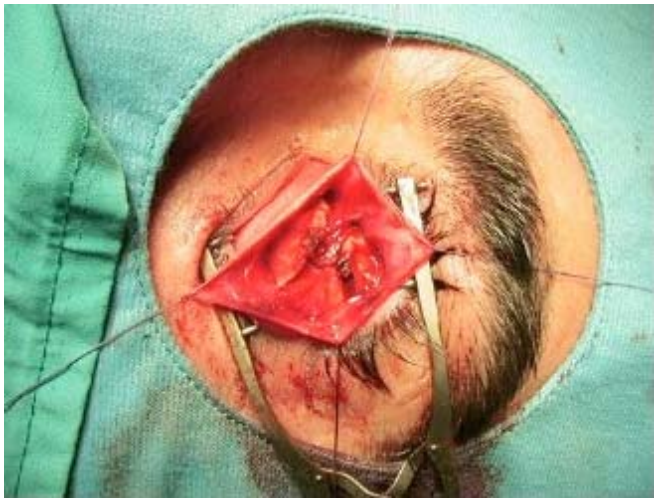

Figure 6: Step F: The four scleral flaps are closed over the implant with interrupted 5–0 polyglactin suture. Tenon's fascia is drawn over the sclera and is closed in a one-layered fashion using non-interrupted 5-0 polyglactin sutures. The conjunctiva is then sutured over the Tenon's Fascia with interrupted 5-0 polyglactin suture.

Figure 7: Preoperative view before evisceration of the left eye and the same patient 30 days after the surgical intervention.

DISCUSSION

Many evisceration techniques have been described recently, in particular for large implants, since the placement of small ones is associated with ectropion, ptosis (post-enucleation socket syndrome (PESS), enophthalmus and superior sulcus deformity [1-4]. Those techniques use relaxing scleral incisions and numerous sclerotomy procedures to enlarge the internal surface area of the sclera, in order to permit coverage of implants 20 or 22 mm in diameter with no tension.

The use of radiowave technology for evisceration with scleral quadrisection is a good option and, for what regards the Ellman radiowave surgery, it uses advanced high-frequency (4 MHz) wave forms. Furthermore it has a very low thermal effect that allows a clear cut and an efficient coagulation and it's useful in orbital surgery, because it produces less heat compared to classical low-frequency high-temperature electrosurgical machines. This results in less collateral tissue damage; the injury healing is faster and the damage of heat to the treated structures is diminished. These are the reasons why the Goisis RF Elevator is a new, very useful tool for this surgery; this new instrument is used for cutting, coagulating, and dissecting. Consequently, the evisceration is simpler and faster than standard starting from the first step, in which the conjunctival peritomy is made with the elevator that allows cutting and coagulation at the same time. Therefore, there is no blood loss and a higher accuracy during peritomy. For what regards the 360-degree keratotomy, again performed with the same elevator, the cornea excision is more precise and faster than the one made with the scalpel. Furthermore, is possible to use the same instrument for the next surgical step: the dissection of the globe content from the sclera. This dissection is relatively simpler, because it's possible to cut away the attachments of the globe content with the radiofrequency. Again the Goisis Elevator can be used to cauterize the central retinal artery and vortex veins and to operate the full-thickness sclerotomy from the limbal incision to the optic nerve. It's important to underline the precision of cutting and the absence of the risk of damage to the extraocular muscles.

At last there are other significant advantages like the moderate postoperative pain, the lower risk of complications like hematoma, faster healing, and modest swelling.

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All authors contributed equally.

REFERENCES

[1] Tyers AG, Collin JRO. Baseball orbital implants: a review of 39 patients. Br J Ophthalmol 1985; 69: 438-42. http://dx.doi.org/10.1136/bjo.69.6.438

[2] Kaltreider SA. The ideal ocular prosthesis: analysis of prosthetic volume. Ophthal Plast Reconstr Surg 2000; 16: 388-92. http://dx.doi.org/10.1097/00002341-200009000-00013

[3] Nakra T, Simon GB, Douglas RS, Schwarcz R, McCann JD, Goldberg R. Comparing Outcomes of Enucleation and Evisceration. Ophthalmology 2006; 113: 2270-2275. http://dx.doi.org/10.1016/j.ophtha.2006.06.021

[4] Goisis M, Guareschi M, Miglior S, Giannì AB. Enucleation *vs*. evisceration. Ophthalmology 2007; 114: 1960. http://dx.doi.org/10.1016/j.ophtha.2007.03.001

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