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Alternative technique for insertion of Eva Dorc® infusion cannula in vitreoretinal surgeries

Técnica alternativa de inserção da canula de infusão do Eva Dorc® em cirurgias vitreorretinianas

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Abstract

This paper provides a fast and inexpensive technique to prevent slippage of the infusion cannula from the EVA DORC® 27-gauge system. After the usual retrobulbar anesthesia, antisepsis and asepsis, a 2% hydroxypropyl methylcellulose drop is placed around the infusion cannula in the trocar to hold it in position. This technique prevents the slippage of the infusion cannula and both the surgical time and creation of the first sclerotomy in the eye can be shortened slightly.

Keywords: *Cannula; Minimally invasive surgery; Vitrectomy*

Resumo

Este artigo fornece uma técnica rápida e barata para evitar o deslizamento da cânula de infusão do sistema EVA DORC® 27-gauge. Após a habitual anestesia retrobulbar, antissepsia e assepsia, uma gota de 2% de hidroxipropilmetilcelulose é colocada ao redor da cânula de infusão no trocater para mantê-la em posição. Essa técnica evita o deslizamento da cânula de infusão e o tempo cirúrgico e da criação da primeira esclerotomia no olho podem ser ligeiramente reduzidos.

Descritores: Canula; Cirurgia minimamente invasiva; Vitrectomia

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Introduction

The goal of pars plana vitrectomy (PPV) surgery is to remove vitreous without leaving any traction that causes iatrogenic retinal tears or unwanted tissue aspiration into the vitrectomy probe.[1] The 25- and 27-gauge vitrectomy systems facilitate minimally invasive surgeries with rapid postoperative visual recovery, improved wound construction, and greater ability to maneuver in small spaces. These advantages have increased the use of small-gauge vitrectomy.[2-6]

When performing a sclerotomy, using the EVA system (Dutch Ophthalmic Research Center [DORC], Zuidland, The Netherlands) with a 27-gauge trocar with an infusion cannula, the cannula detaches easily from the trocar. (Figure 1) Intraoperatively, if the trocar detaches, the surgery is prolonged. In the current study, we suggest a new technique to ensure continuous attachment of the cannula to the trocar without affecting the sclerotomy.

The Alcon Constellation system (Alcon, Fort Worth, TX) and the EVA are the vitrectomy systems compatible with the 27-gauge surgery. The EVA has an increased infusion rate and higher aspiration power compared with other systems.[7] The EVA also provides the new concept of two-dimensional cutting for the 27-gauge probe; it allows the pneumatic oscillation to cut while moving forward and backward past the cutter opening. This provides 16,000 cuts/minute and theoretically a faster vitrectomy that is close to the 25-gauge surgical time.[1,2,4])

However, the 27-gauge system has disadvantages, such as a longer vitrectomy time, low instrument rigidity, fewer available instruments, and longer times required to inject and remove oil.[1,4,8]

Case Report

The surgery is performed under retrobulbar anesthesia. Eyelid and periocular skin asepsis are performed with 10% povidone-iodine solution, and following placement of a lid speculum, 0.25% povidone-iodine drops are instilled onto the eye.

Before the infusion cannula sclerotomy with the 27-gauge Ultra Short One-Step cannula system (DORC), a 2% hydroxypropyl methylcellulose drop is placed around the cannula in the trocar to hold it in position and facilitate creation of a perfect sclerotomy without detachment of the cannula. (Figure 2)

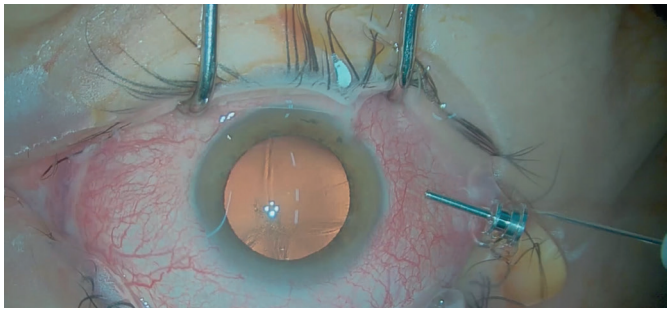

Figure 1: The irrigation cannula detaches easily from the EVA DORC® 27 gauge trocar

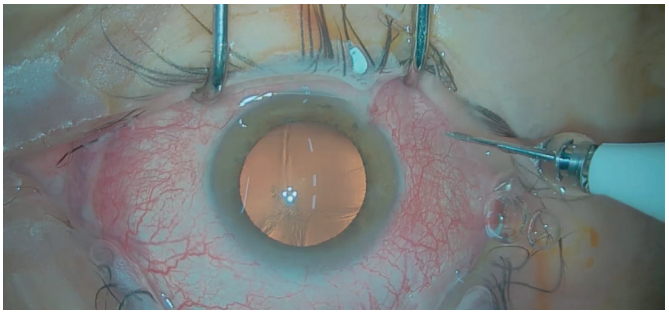

Figure 2: Sclerotome with a 2% methylcellulose drop holding the cannula to the trocar

Discussion

Vitrectomy is a complex blend of high-technology microsurgery applied to a complex pathobiologic system. This growing field with evolving technologies requires well-trained surgical teams and efficient surgical abilities.[9] Thus, every step is important to perform a satisfactory vitrectomy, including the irrigation cannula sclerotomy, which is the first maneuver.

The methylcellulose provides a higher adherence of the cannula to the trocar due to its higher viscosity providing more adherence to many materials, such as the trocar. In the food industry, it`s used as a thickener or gelling agent. [10]

This technique provides an easy solution for detaching the cannula from the 27-gauge Ultra Short One-Step cannula system. The 2% methylcellulose secures the sclerotomy, and the surgical time is shortened by preventing cannula detachment (Video). Although not used in this technique, any other type of methylcellulose could perform the same task.

This technique provides a fast and inexpensive solution to prevent slippage of the infusion cannula from the EVA DORC 27-gauge trocar system. As a result, both the surgical time and creation of the first sclerotomy in the eye can be shortened slightly.

References

1. Pavlidis M. Two-dimensional cutting (tdc) vitrectome: in vitro flow assessment and prospective clinical study evaluating core vitrectomy efficiency versus standard vitrectome. J Ophthalmol. 2016;2016:3849316.
2. Veritti D, Sarao V, Lanzetta P. A propensity-score matching comparison between 27-gauge and 25-gauge vitrectomy systems for the repair of primary rhegmatogenous retinal detachment. J Ophthalmol. 2019;2019:3120960.
3. Romano MR, Stocchino A, Ferrara M, Lagazzo A, Repetto R. Fluidics of single and double blade guillotine vitrectomy probes in balanced salt solution and artificial vitreous. Transl Vis Sci Technol. 2018;7(6):19.
4. Kasi SK, Hariprasad SM, Hsu J. Making the jump to 27-gauge vitrectomy: perspectives. Ophthalmic Surg Lasers Imaging Retina. 2017;48(6):450–6.
5. Mitsui K, Kogo J, Takeda H, Shiono A, Sasaki H, Munemasa Y, et al. Comparative study of 27-gauge vs 25-gauge vitrectomy for epiretinal membrane. Eye (Lond). 2016;30(4):538–44.
6. Recchia FM, Scott IU, Brown GC, Brown MM, Ho AC, Ip MS. Small-gauge pars plana vitrectomy: a report by the American Academy of Ophthalmology. Ophthalmology. 2010;117(9):1851–7.
7. Magalhães O Jr, Maia M, Maia A, Penha F, Dib E, Farah ME, et al. Fluid dynamics in three 25-gauge vitrectomy systems: principles for use in vitreoretinal surgery. Acta Ophthalmol. 2008;86(2):156–9.
8. Mori R, Naruse S, Shimada H. Comparative study of 27-gauge and 25-gauge vitrectomy performed as day surgery. Int Ophthalmol. 2018;38(4):1575–82.
9. Schachat AP. Ryan's Retina. 6th ed. Edinburgh, Scotland: Elsevier; 2018.
10. Moreira R, Chenlo F, Silva C, Torres MD. Rheological behaviour of aqueous methylcellulose systems: effect of concentration, temperature and presence of tragacanth. Lebensm Wiss Technol. 2017;84:764–70.

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