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Uyo self-retaining and adjustable lens holder: A novel technique for vitreoretinal surgery

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Abstract

Background: Contact lenses still have a place in vitreoretinal surgeries despite the availability of much easier non-contact modality of placing lenses to view retina during surgeries. Uyo Self-Retaining and Adjustable Lens Holder (US-ALeH), enhances usability by not requiring suturing to cornea and adaptable to all sizes of contact lenses.

Objective: To describe an innovative do-it-yourself contact lens that is both self-retaining and adjustable.

Methods: Literature and internet search for relevant information on the subject of ophthalmic innovations relevant to discussion in view.

Results: US-AleH is useful in vitreoretinal surgery whenever shortened surgical time is desired and contact lens is still the choice based on surgeon's preference.
Conclusion: US-AleH is easy to use, achieves its purpose of a comfortable lens placement and above all does not infringe on surgical time

Keywords: Uyo, Lens Holder, Vitreoretinal Surgery

Introduction

The retina is not visible to the naked eyes, especially when patient is phakic. Indeed, the retina still cannot be seen with ophthalmic operating microscope without adjuvant lens. Therefore, to enhance visibility of vitreous and retina, a contact or a non-contact lens is used. These lenses render the retina highly myopic and brings retina image within the viewing capability of the operating surgeon. Widely available non-contact lenses are the EIBOS, BIOM (Binocular indirect Ophthalmo-Microscopy), Topcon OFISS system, Zeiss Resight and Volk Merlin. They come in pairs. Contact lenses like the Landers and Machemer vitrectomy contact lenses have more depth and magnification for macula membrane peeling. Unlike the BIOM system that requires stereoscopic diagonal inverter, they produce erect real images of the retina.[1,2,3] Contact lenses require lens holders. There are commercially available lens holders which the author has used. The aim of this write-up is to discuss an innovative lens holder that serves a simple role of "place-on-cornea-and-start" akin to what is obtainable with non-contact lens technique. It is hoped the technique as described here will assist in producing usable replica to ease vitreoretinal contact lens surgeries.

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US-ALeH design

US-ALeH is fashioned from two suitable finger rings. The first finger ring, the "mother ring" is truncated about 2mm to allow adjustment for bigger or smaller contact lenses. The choice of the finger

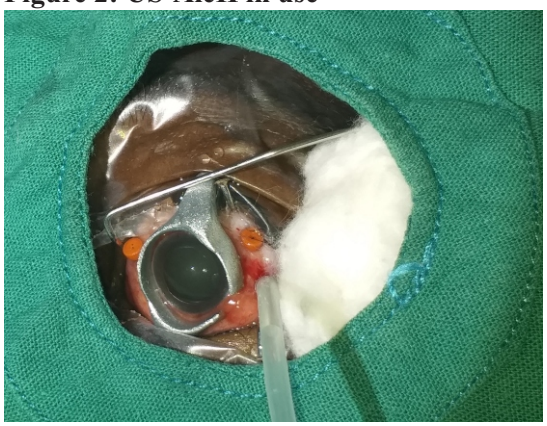
ring to use as the mother ring is based on the following criteria: appropriate size in terms of thickness, length, weight and diameter. The average adult cornea vertical and horizontal diameters are 11 and 12 millimeters respectively. Therefore, the mother ring should be about 12mm to obviate over- or under- size. It should be almost weightless with relatively sharp but non-cutting edges. This is to ease contact lens placement and retrieval intraoperatively. The second finger ring, called here the "daughter ring", contributes the flanges (about 3mm each on either side) for anchorage. The mother and daughter rings are assembled and welded to form US-AleH. During surgery, the circular part is placed on the cornea, while the flanges are manipulated under the eyelids superiorly and inferiorly or under the lid speculum whichever is easier.

Discussion

The challenge with use of contact lenses comes with stabilizing on a conical cornea which becomes slippery with addition of viscoelastic agent. One viable option to surmount this is to suture a lens holder to the limbus at 3 or 4 locations. The suturing encroaches into surgical time and it is associated with anaesthesia wear-off, pain and loss of patient's cooperation at a delicate stage of vitreoretinal surgery. US-ALeH does not need to be sutured to the limbus thus saves valuable surgical time. Some commercially available lens holders have flanges for support obviating the need to suture them to the limbus, but none is equipped with the ability to accommodate different sizes of contact lenses.[4-7] US-AleH has a truncated portion that can be gently adjusted to fit all sizes of contact lenses. This feature allows for more contact lens stability on slippery conical cornea and enhances its versatility.

Figure 1: US-ALeH made from a truncated "mother ring" and a "daughter ring" forming the flanges

Figure 2: US-AleH in use



Conclusion

US-AleH is a Do-it-Yourself, cheap and versatile miniature tool in the retinal surgeon's armamentarium that enables retinal contact lens surgical procedures.

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