Learning to buckle the sclera - The organic bench model for learning suturing skills

Dear Editor,

Among retinal surgeries performed by a surgeon buckling surgery for rhegmatogenous retinal detachment is one of the most basic and important surgeries to be learnt. There are multiple models and simulators for corneal, cataract, and vitreoretinal surgeries. Here we describe a suturing model based on lemon for practicing this surgery.

A fresh lemon (citrus limon) is obtained. Spiral of tillaux is marked on the lemon by dotted lines using a Camlin CD - DVD Black marker pen ( waterproof ink) and the four recti muscles are depicted by continuous lines on the same spiral of tillaux. The cornea is depicted by a 12 mm diameter circle in the centre, which is shaded in black using the marker pen [Fig. 1a]. The lemon is placed on mount ( patient interphase of Alcon wavelight FS200-applanation cone). Under surgical microscope/operating loupe the lemon is rotated and marks are made at 14 mm from the limbus using a caliper in all four quadrants. This mark represents an area just posterior to the ora serrata of an adult eyeball. Two box sutures (temporary) for buckle are placed in the inferotemporal quadrant. Single-band anchoring sutures are placed in the remaining quadrants [Fig. 1c]. A 5-0 braided polyester (ethibond) is used for passing the sutures. Following this buckle is passed in the inferotemporal quadrant [Fig. 1d] and band is passed 360 degree and sutures are tied [Fig. 1e]. The final tie is placed along superonasal quadrant [Fig. 1f].

In a report by Sagong et al., it was concluded that at least 30 buckling surgeries are needed to be performed to achieve stable clinical results by a retina expert.[1] Pujari et al. have demonstrated buckling surgery in goats eye previously.[2] Denadai et al. have shown the use of various vegetables for suture practice in the curriculum of surgery residents.[3] A fresh lemon is a fruit nearest resembling the eyeball. It can be acquired easily and also enables surgical practice without the need of a wetlab, even at home. The thickness of its skin is approximately 0.5 mm [Fig. 1b]. The passage of suture can be seen through the skin of lemon and it resembles the standard technique. Passage of band and buckle and tying of sutures can also be practiced in this model. Scleral tunnels for passing band also may be made in this lemon. The limitations in this model are absence of periorbital structures like conjunctiva and muscles, excessive space availability, easy maneuverability of the lemon comparing to the original surgical field. Also drainage of SRF cannot be done in our model. However, our model can be a definite asset for practicing suturing for buckling, which is a crucial step in the surgery.

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References
1. Sagong M, Chang W. Learning curve of the scleral buckling operation: Lessons from the first 97 cases. Ophthalmologica 2010;224:22-9.
2. Pujari A, Kumar S, Markan A, Chawla R, Damodaran S, Kumar A. Buckling surgery on a goat’s eye: A simple technique to enhance residents’ surgical skill. Indian J Ophthalmol 2019;67:1327-8.
3. Denadai R, Souto LR. Organic bench model to complement the teaching and learning on basic surgical skills. Acta Cirurgica brasileira 2012;27:88-94.

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