



Subretinal Surgery Ab Externo: A Novel Approach to Access the Subretinal Space Without the Need for Retinotomy

Description of Technique

Setup

The technique described here is for a scleral buckling operation. Retinal visualization is established by means of operating microscope and non-contact wide-angle viewing system and insertion of a chandelier illuminator at the pars plana. Application of cryopexy and a segmental buckle is performed in standard fashion to treat the detachment and is not further described here.

Subretinal Access

A standard 23-gauge or 25-gauge valved trocar is positioned externally next to the sclera at an area corresponding to the most elevated retina. During internal visualization, the trocar is advanced at an angle of $\sim 15^\circ$, penetrating the sclera and the choroid, and entering the subretinal space (Figure 2). Once it has been visually confirmed that the cannula entered the subretinal space, the trocar is removed and the cannula remains in the subretinal space. Controlled access of the subretinal space has now been achieved. There will be no drainage of the subretinal fluid because the valve of the cannula prohibits this.

Maneuver

Vitreoretinal forceps can now be introduced through the valved cannula to grab (Figure 3) and remove (Figure 4) subretinal membranes through the cannula. After complete membrane removal,

From the Northcliff Eye Centre and Johannesburg Eye Hospital, Johannesburg, South Africa.

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Reprint requests: Bernard Wolff, FC Ophth (SA), Northcliff Eye Centre, Box 1002, Roosevelt Park 2129, South Africa; e-mail: bwretina@gmail.com

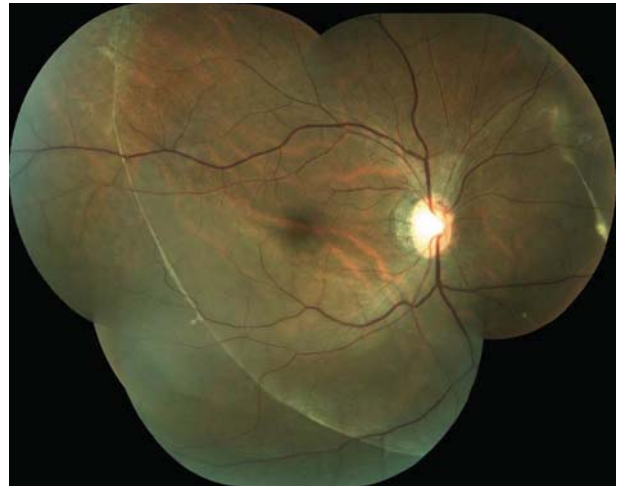


Fig. 1. A preoperative fundus image showing inferior retinal detachment. Tight subretinal membrane can be seen.

a flute needle is inserted through the cannula and subretinal fluid drainage can be performed in controlled manner while applying external scleral pressure. The cannula is now removed, and surgery is finished as usual (see **Video, Supplemental Digital Content 1**, <http://links.lww.com/IAE/A343>).

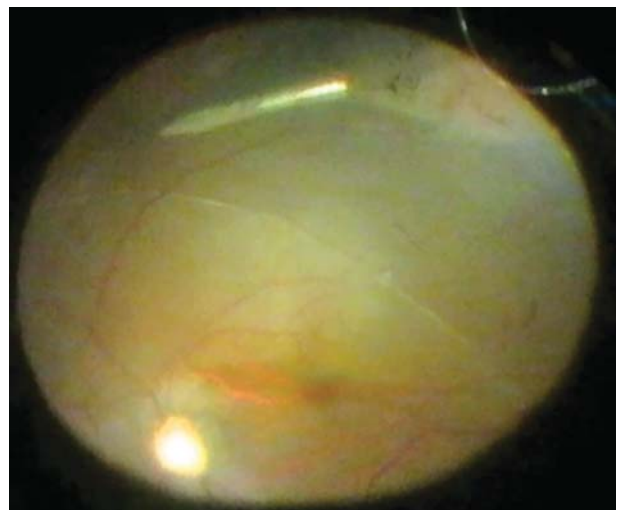


Fig. 2. The trocar can be seen inserted in the subretinal space.



Fig. 3. A pair of vitreoretinal forceps is introduced through the cannula, and the subretinal membrane is grabbed.

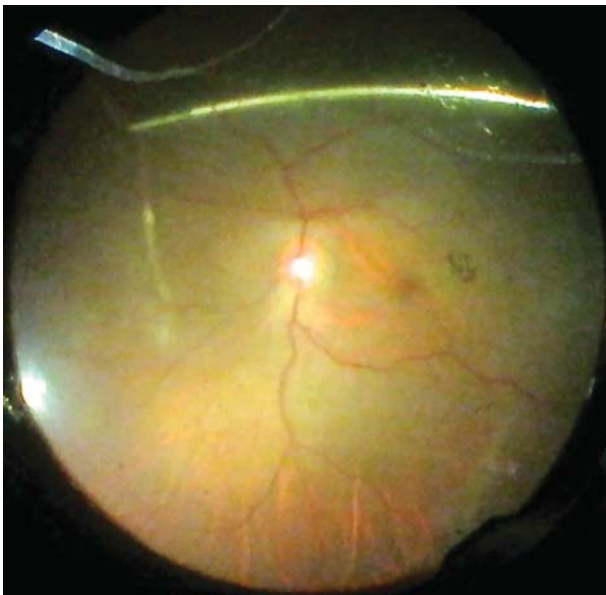


Fig. 4. The subretinal membrane is pulled toward and removed through the cannula.

Discussion

The following scenario in retinal detachment is currently problematic: a young patient who presents with a non-posterior vitreous detachment, round-hole



Fig. 5. Day 1 postoperative appearance.

chronic detachment with significantly tight subretinal bands (Figure 1). It is problematic because first, one would not prefer to perform vitrectomy in a young patient with non-posterior vitreous detachment, and second, the subretinal space cannot be accessed without performing retinotomy (i.e., vitrectomy). The surgeon is left to choose between either a buckling procedure without the ability to remove the subretinal membranes, or vitrectomy with the risk associated with having to induce a posterior vitreous detachment and then creating retinotomy as well as removing membranes through this retinotomy, which will often enlarge retinotomy significantly.

This single case presented, shows a novel access to the subretinal space that allows the surgeon to remove subretinal membranes without the need for vitrectomy or retinotomy. The result of this case was a complete retinal reattachment at Day 1 without any residual retinal lifting of the subretinal band (Figure 5).

Potential problems of this technique are inability to access the subretinal space because of anatomical variations, subretinal hemorrhage, and retinal injury, with the trocar tip or forceps.

Key words: ab externo, scleral buckling, subretinal, subretinal membrane, transscleral, trocar, vitrectomy, vitreoretinal forceps.

BERNARD WOLFF, FC OPTH (SA)