

A Simple Method for Removal of Particles from the Retinal Surface during Vitrectomy

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Removal of particulate materials from the retinal surface is somewhat difficult during small gauge vitrectomy. Simple injection of balanced salt solution into the vitreous cavity in a controlled manner using a connector tubing between the syringe and needle can produce enough turbulence to float the deposited material and remove it.

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INTRODUCTION

Vitreoretinal surgeons often face a condition in which particulate material has deposited on the retinal surface, mostly during vitrectomy for vitreous hemorrhage or during diabetic vitrectomy. Another similar condition may occur with triamcinolone-assisted vitrectomy when particles deposit over the retinal surface. The classic and useful instrument to handle this condition has been the back-flush needle. This is a simple extrusion flute complemented by a soft reservoir, which can be pressed by the surgeon's finger to push fluid into the eye. When the needle is held at a suitable distance from the retina, this action produces a flush of fluid that causes the deposited materials to be washed away from the retinal surface. With smaller gauge vitrectomy instruments however, the fluid current produced by the back-flush needle is weaker than that obtained by 20-gauge vitrectomy, and sometimes removal of deposited material from the retinal surface takes considerable time. Moreover, the pushing action over the reservoir causes some untoward motion of the needle tip, necessitating holding

of the needle in the mid-vitreous cavity to avoid touching the retina and causing trauma. To solve this problem, some surgeons use the suction action of the vitrectomy probe to produce fluid currents in the vitreous cavity but this method may not be very effective and does not always work in the intended way. Another solution is to use the soft tip needle very close to the retinal surface. This technique poses the danger of contact between the instrument and delicate retinal tissue. With modern vitrectomy machines, the reflux mode of the instrument followed by suction may be used to do the same task. But these options and their successful use may not be simple and readily available with older vitrectomy machines.

SURGICAL TECHNIQUE

I employ a simple method to remove particles from the retinal surface with the aid of a 5 ml syringe attached through a connector tubing to a 23-gauge soft tip needle (Figure 1). The surgeon holds the tip of the needle in the mid vitreous cavity, and the operation assistant slowly injects balanced salt solution into the eye. In this way,

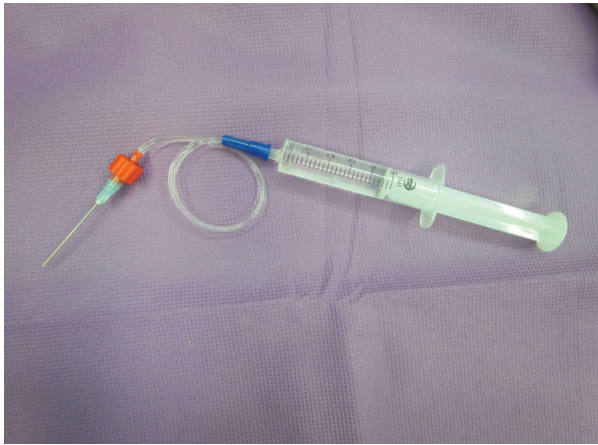


Figure 1. Simple tubing used for flushing particulate material off the retinal surface.

turbulent flow is produced in the vitreous cavity that washes the particulate matter from the retinal surface. Then active suction via the same instrument by the operation assistant or using the vitrectomy probe by the surgeon in a very slow and controlled manner can extrude the particles from the eye.

DISCUSSION

With the technique described herein, the primary objective is creating turbulent flow in the vitreous cavity without directing the fluid current toward the retinal surface. Important precautions should be exercised with this technique. Firstly one should avoid creating fluid currents toward retinal breaks, otherwise retinal detachment may develop. It is advised not to use this technique when a retinal break exists. Furthermore fluid should be injected slowly into the vitreous cavity.

I have used this technique in many of my operations, and have found it helpful when I use older vitrectomy machines without the capability of fluid reflux. This technique simplifies the operation and reduces the risk of retinal impact.

Conflicts of Interest

None.