A simplified approach to the management of tangential retinal traction bands

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Summary We describe a simple technique for cutting preretinal fibrovascular traction bands. The instrumentation includes a vitrophage and a membrane dissector connected to a bipolar diathermy unit. The traction bands are rubbed between the membrane dissector and the vitrophage while they are simultaneously coagulated until they are transected.

Closed pars plana surgery was confined initially to the removal of opaque vitreous gel after vitreous haemorrhage. By modifying the cutting port of the vitrectomy instrument,1 taut intravitreal bands and thick secondary membranes could be severed. Because of their proximity to the retina, preretinal membranes and tangential retinal traction bands were difficult to manage. Although the use of a hooked needle2 facilitated the lifting of these bands from the surface of the retina, it was difficult to sever them with automated vitrectomy instruments or scissors. Scissors had to be miniaturised and their blades angulated to reach the bands from the proper direction.3-5 Often the surgeon had to insert one instrument inside the eye and exchange it later for another, a manoeuvre that increased the risk of inadvertent lens injury and retinal dialysis. This report describes a simplified technique for the management of tangential traction bands with use of bipolar diathermy in conjunction with a fibreoptic membrane dissector and a vitrectomy instrument.

Materials and methods

Instruments

The method of releasing retinal traction was devised for use with the 2-instrument technique, bipolar wet-field cautery, and intraocular illumination. The vitrectomy instrumentation preferred by the surgeon and the dissector are connected to a bipolar diathermy unit with alligator clips.

We use a wide-angle cutter vitrophage (or mini-phage) and a Peyman membrane dissector (Fig. 1). The dissector is combined with a fibreoptic light source for intraocular illumination. The dissector has a long sharp tip that is angled at approximately 100° to the shaft of the intraocular illuminator.

Operative Procedure

The eye is prepared as described previously for a pars plana vitrectomy.6 A second 2 mm long sclerotomy is then made approximately 160° away from the primary sclerotomy site and 3-5 mm posterior to the limbus. The second sclerotomy incision is made to accommodate the fibreoptic light pick or the membrane dissector. A vitrectomy is then performed until all circumferential and anteroposterior traction...
is relieved. Taut fibrous bands are dissected until a
free space is developed between the band and the
retinal surface; this is done easily with the membrane
dissector. The membrane dissector is then run along
the length of the band, and light diathermy is applied
to close vessels that may be contained within the
band. As the fibreoptic membrane dissector is held
stationary above the surface of the retina, the surgeon
carefully rubs the vitrophage over the traction band,
while current flow is gradually increased between
the 2 instruments (Fig. 2). Traction bands, which
previously could be cut only with vitreous scissors,
are seen to melt away from the effect of rubbing and
cauterisation. In addition any vessels that remain
patent are closed.

Caution should be taken so that (1) the dissector
remains stationary and slightly above the surface of
the retina to prevent coagulation of the underlying
retina and formation of tears; (2) coagulation
should be started on a low setting and slowly
advanced, for too high a setting can cause bubble
formation that obscures the view and disrupts the
tissue with possible haemorrhage; and (3) the fibrous
bands must lie between the 2 instruments. If the
instruments touch, current will pass through the
instruments and bypass the tissue to be cut.

**Discussion**

Many different types of surgical instruments, picks,
and needles have been designed to manipulate and
cut vitreous opacities and traction bands. These
instruments often have to be exchanged for scissors
when cutting preretinal traction bands. Repeated
exchange of instruments inside the eye enhances the
chance of retinal dialysis at the site of the sclerotomy.

Mechanical scissors tend to push away relatively taut
fibrous bands rather than cut them. When scissors
are used in place of a vitrectomy instrument,
visualisation can be compromised if any bleeding
occurs, because there is no constant exchange of
intraocular fluid.

Peyman,7 Shea,8 and Schepens et al.9 have
developed under-water diathermy probes that are
capable of coagulating intraocular vessels. While
effective in stopping intraocular haemorrhage,
these instruments have not been effective cutting tools.

O'Malley and Heintz10 developed an instrument to
perform 'electrovitrectomy'. This method of
performing vitrectomy and severing traction bands
suffered from many difficulties, including the rapid
loss of cutting efficiency owing to the accumulation
of debris on the tip of the instrument and the
inability to cut taut vitreous bands except with great
difficulty. Charles and associates11 have also
described a method of performing intraocular coagula-
tion by connecting each of 2 intraocular instruments
to a wet-field cautery.12 This proved to be an
extremely convenient and effective way of handling
intraocular bleeding. We are unaware of anyone
using the wet-field cautery to cut membranes.

By combining the technique of membrane
dissection with 2 intruments and bipolar intraocular
wet-field cautery we have developed a technique to
cut tractional bands. Vascularised membranes
closely apposed to the retina are cut safely after
being dissected away from the retinal surface. This
technique is advantageous in that (1) it eliminates
the need to interchange instruments during vitrec-
tomy; (2) the bands can be approached with ease
from various angles; and (3) the vascular portion of
the membrane is coagulated as the band is being cut.
The only disadvantage we have found is the occasional accumulation of coagulated material on the tip of the dissector. The material, however, is easily cleaned by the vitrophage without removing either instrument from the eye.

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References