

ACTAS DEL SECUNDUM FORUM OPHTHALMOLOGICUM

VITRECTOMY: Indication and technique

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Doctor Henning pointed out that we —not only because of the technical effort— differentiate between instruments for open-sky and pars-plana vitrectomy. These two surgical procedures are quite different regarding both indication and technique.

The opens-sky-vitrectomy is of more interest for routine surgery. With microsurgical techniques it is now possible to control unexpected as well as calculated complications.

Unexpected and not desirable is vitreous prolapse in cataract surgery. The percentage of this complication is small, but the result for the eye can be of great disadvantage. Incarceration of vitreous can lead to keratopathies, these again only can be treated by vitrectomy and transplantation.

TABLE 1

Indications for open-sky-vitrectomy

Vitreous prolapse in cataract surgery keratoplasty in aphakic eyes.
Severe perforating injuries vitreous abscess.
(Vitreous opacities in aphakic eyes).

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H. BORGMANN

Vitreous loss during keratoplasty in aphakic eyes is a more calculated complication, because in such eyes the anterior chamber is often—at least partly—filled with vitreous. After trephining and adaptation of the graft vitreous should not touch the endothelium, because it is more sensitive than in a normal cornea.

In severe perforating injuries lens material and vitreous can be mixed. Just to close the wound without removing the lens, great parts of the vitreous and blood, results in membranes and tough strands and at least in retinal detachment. The experience has shown that complications like this can be avoided. The postoperative results after a primary reconstruction of the eye are better than with previous techniques.

A rare indication for open-sky-vitreotomy is an abscess after panophthalmitis. Since medical treatment can stop only bacterial activity and not the serious changes in the vitreous in addition surgical treatment is indicated. In our movie we will show how we have treated an abscess with the vitreophage.

Going back to the introduction of open-sky-vitreotomy by KASNER we should not forget, that vitreous opacities in aphakic eyes can be removed through the pupil. This transpupillar vitrectomy—carried out with one of the instruments now available—irritates the iris less than when using the original method with sponge and scissors.

In open-sky-vitreotomy it is necessary to make at least a 180° corneal or corneoscleral incision. Removing clear, prolapsed vitreous it is possible to use a microscope with lateral illumination as for instance in cataract-surgery. After an unexpected prolapse the surgeon has to consider whether this situation is not caused by an expulsive haemorrhage.

Vitreous should not be removed before intraocular pressure is tested to be likely normal. To avoid incarceration and adhesions with the cornea or the iris it is necessary to carry out an at least 1/3 anterior vitrectomy. It is also important to clean the incision and the iris surface from the vitreous and fibrin membranes. For this purpose we use a small sponge. After injection of air into the anterior chamber the incision can be closed

Removing posterior vitreous opacities it is necessary to use a microscope with coaxial illumination, that means, the equipment has to be more specialized. The preparation must be much more careful because of the neighbourhood of the retina. The long duration of this procedure leads in

VITRECTOMY

many cases to a longer lasting postoperative irritation. Early local corticosteroid therapy may avoid anterior synechias and pupillary membranes.

From this standpoint of view it seems to be better to treat posterior vitreous opacities by a pars-plana-vitreotomy. Especially in diabetic patients the anterior segment of the eye is sensitive against all surgical manipulations.

The main indication for pars-plana-vitreotomy is the diabetic vitreous haemorrhage without tendency of reabsorption. There is no other therapy, which gives the patient a chance for better visual acuity.

TABLE 2

Indications for pars-plana-vitreotomy

Opacities due to vitreous haemorrhage.
Strands and membranes due to injuries massive vitreous retraction
Amyloidosis
Intraocular parasitism.

Vitreous changes are often followed by retinal complications. If you expect retinal detachment for instance by strands and membranes or massive vitreous retraction the cause of this development should be treated. This indication for pars-plana-vitreotomy is much more problematical and we have to wait for longer follow up results.

A rare but promising indication are amyloidosis and parasitism of the vitreous. In both cases the vitreous is more involved than the retina. The functional results can be expected much better than in the other indications.

The incision for the posterior vitrectomy is made 4-5 mm behind the limbus in the pars-plana-area. After coagulation of the choroid a Graefe-knife is inserted into the center of the bulbus to form a channel for the vitrectomy-canula. Next the tip of the canula has to be localized behind the lens. Then vitreous opacities should be removed from front to back. After the experience of MACHEMER it is often necessary to remove the lens too.

H. BORGMANN

For observation a contact-glass in combination with the coaxial, illumination of a microscope has to be used. For delicate preparations it seems to be better to use an intraocular illumination: a fiber-optic light pipe either on the vitrectomy-cannula or—in the bimanual procedure— combined with an infusion-cannula.

Further technical details will show you the following movie.

SUMMARY

Doctor Henning shows the differences in relation to techniques for open sky vitrectomy and vitrectomy through the pars plana. As a routine, the open sky vitrectomy is more used. A revision is made of the loss of vitreous in cataract surgery, during keratoplasty in aphakic eyes as well as in eyes with severe perforating injuries and in one unusual case of open sky vitrectomy due to an abscess following panophthalmitis.

The technique for open sky vitrectomy with a corneal or corneo-scleral incision at 180° is described, using a sponge and scissors to perform the vitrectomy.

For opacities in the posterior vitreous the use of the microscope with coaxial illumination is recommended, performing the vitrectomy through the pars plana. The main indication is the vitreous haemorrhage of a diabetic origin without a tendency to be reabsorbed.

Other unusual indications would be in cases of amiloidosis and vitreous parasitism.

The author describes the technique performed 4 or 5 mm. from the limbus in the area of the pars plana using a cannula placed behind the lens. For better observation, a contact lens, coaxial illumination of the microscope and intraocular illumination adapted to the vitrectomy cannula are used.

Additional details of the technique are shown in a film.

J. R.