Vitreoretinal Surgery on Video

Tape 3

Giant retinal tears (GRT)

GRT with mobile retina: treatment with and without perfluorocarbon liquid (PFCL)
GRT with advanced proliferative vitreoretinopathy (PVR) and immobile retina: treatment with and without PFCL

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Tape 1. Retinal detachment combined with proliferative vitreoretinopathy (PVR) I
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Tape 4. Traumatic retinal detachment I
Tape 5. Traumatic retinal detachment II
Tape 6. Proliferative diabetic retinal detachments (PDRD)
Tape 7. Macular surgery
Tape 8. Complications in cataract surgery, intraocular tumors and miscellaneous

INTRODUCTION TO THE SERIES

"Vitreoretinal Surgery on Video" shows a selection of operations performed in the last eight to ten years. The series is meant for vitreoretinal surgeons who have mastered the initial difficulties of this area and now encounter more and more difficult cases in their daily work. Nonetheless, even the experienced vitreoretinal surgeon, who does not exclude any patients from his practice but treats even the most complicated cases himself, will find difficult cases here in all the regular indication groups.

The cases on the videos are divided into the usual indication groups.

From the point of view of philosophy and surgical concepts, vitreoretinal surgery has not changed much in the last ten years. The surgery undertaken in this series is based on the philosophy and surgical concepts described in my book Silicon Oil in Vitreoretinal Surgery, which are still valid. The field has, however, undergone significant modifications in its techniques. The development of new instruments, the introduction of the perfluorocarbon liquid (PFCL) and of the wide angle system are the most important recent innovations. This development can be followed on the videos in the selection of cases, but none of the cases presented can be seen as an isolated technique. On the contrary, surgeons who are not in the situation to apply the most recent techniques in their daily work will be able to see how it is possible to operate successfully with less sophisticated means. Surgeons who are in a position to apply all the modern techniques available will also find sufficiently many cases of interest.

The videos are divided into several texts and films. Each text gives relevant facts on the patient, a description of the course of the operation, with the emphasis on specific moments in the surgery, and the instruments which were used. The videos on proliferative diabetic retinopathy and on macular surgery do not always follow
the described pattern, for obvious reasons. In a number of cases we have added a short comment.

In most cases, the surgery was performed by myself, in some, particularly in the macular surgery and miscellaneous videos, the surgeon was Dr. Carel Claes. The name of the surgeon is given after each case. The text and comment of the course of the operations was written by Dr. Taraprasad Das in cooperation with myself. Most instruments presented and used in the surgery were manufactured by the Dutch Ophthalmic Research Center International.

R. Živojnović, M.D.

PART I

Patient data

Fifteen-year old male patient, highly myopic. The right eye was lost after surgery for giant retinal tear. He suffered loss of visual field for a week and on examination was found to have 270° giant retinal tear with retinal detachment. The macula was attached.

Surgery

1. Lensectomy with the vitreous cutter, mostly using the suction alone since the lens was soft, and removal of the lens capsule with the help of the intraocular forceps.

2. Pars plana vitrectomy. The vitreous was attached to the detached retina. (No posterior vitreous detachment).

3. Removal of the anterior flap of the retina with scleral indentation.

4. Induction of posterior vitreous detachment in the nasal half and vitrectomy.

5. A small bubble of perfluorocarbon liquid (PFCL) injected to protect the still attached macula.

6. The posterior vitreous adherent to the temporal lip of the detached retina was stripped unimanually using the forceps. This caused the formation of an iatrogenic retinal break.

7. Further peripheral vitrectomy was done using the vitreous shaver and scleral indentation.

8. To facilitate bimanual surgery, it was converted to four-port vitrectomy by introducing the endo-illuminator through the inferior sclerotomy port. The stripping of the posterior vitreous adherent to the detached anterior edge of the retina was thus completed.
9. Air injection into the anterior chamber. Air is used as wide field system.
10. Injection of final bubble of PFCL and endophoto-coagulation, followed by PFCL-silicone oil exchange.

Instrumentation

Sato knife; serrated end-gripping forceps; long spatula; vitreous shaver; four-port vitrectomy.

Surgeon: R. Živojnović

PART II

Patient data

Twenty-year old male patient, highly myopic. The left eye was lost after surgery for giant retinal tear. He had a two-months old history of visual loss. On examination he was found to have 360° retinal tear with two bridges at 9 and 3 o’clock meridian. The retinal bridge at 9 o’clock meridian had broken shortly after the beginning of the operation. Because of the severity of the case, we decided to use a four-port system with independent light source during the whole operation. Operation on the right eye.

Surgery

1. Four-port pars plana vitrectomy.
2. Lensectomy completed before detecting a closed funnel retinal detachment.
3. Initial retinotomy to open the funnel-bimanual technique under the co-axial illumination of the operating microscope. Removal of the peripheral contracted retina.
5. Nasal peripheral retinectomy after initial diathermy.
6. Injection of perflurocarbon liquid (PFCL).
7. Removal of the last part of the peripheral retina. Due to retinal contraction, macula was found very close to the disc; retinal massage done.
8. PFCL-silicone oil exchange.

Instrumentation

Four-port vitrectomy system; Sato knife; vitreous forceps: straight and hockey stick; retinal knob; curved vitreous scissors.

Surgeon: R. Živojnović

PART III

Patient data

Thirty-year old male patient with a history of trauma with corneo-scleral laceration; lens, iris and vitreous loss in the initial impact of trauma. Three months after the injury and the primary repair, he suffered a total loss of vision; on examination, he was found to have 360° giant retinal tear with grossly contracted and closed funnel retinal detachment. A small bridge of retinal attachment was present at 10 o’clock meridian. Operation on the right eye.
Most surgery was performed bimanually under the coaxial light of the microscope.

1. Trephination - 6.75 mm and removal of the corneal button.
2. Open-sky inspection of the retina.
3. Eckardt's temporary kerato-prosthesis (TKP) sutured.
4. Large subretinal proliferation, holding the puckered retina, was removed with the help of the hockey stick forceps.
5. Mechanical opening of the funnel, unimanual removal of epiretinal membranes from the posterior retinal surface and bimanual removal from the edges of the detached retina.
6. Application of the diathermy and removal of the curled edges of the retina.
7. Silicone oil injection and simultaneous endodrainage. (The surgery done in the pre-PFCL era).
8. Application of diathermy and retinectomy of the last traction of the retina supero-temporally.
9. Positioning of the retina and retinal massage, followed by endophotocoagulation.

Instrumentation

Temporary kerato-prosthesis (TKP): Eckardt type; intraocular forceps: end-gripping, hockey stick and serrated; retinal scratcher and retinal knob; silicone-tipped back-flush needle.

Surgeon: R. Živojnović

Part IV

Patient data

Forty-five year old male patient. He had previously had the following surgery: pars plana vitrectomy for giant retinal tear using perfluorocarbon liquid (PFCL) and long acting gas. Three months after the last surgery with PFCL in the anterior chamber, the patient had partially cataractous lens, 340° giant retinal tear with contracted retina, and PFCL behind the detached retina.

Surgery

1. PFCL bubbles in the anterior chamber; removed along with lens and lens capsule.
2. On inspection, the retina was found totally contracted with incarceration at 6 o'clock meridian at equator. The PFCL from the subretinal space was removed using the flute needle.
4. Cleaning of the back of the retina and mobilization of the retina.
5. Injection of PFCL.
6. PFCL-silicone oil exchange.
7. Retinectomy of the incarcerated retina under silicone oil, and peeling of the residual epiretinal membrane.

Instrumentation

Intra-ocular forceps: end-gripping and hockey stick; silicone-tipped back-flush needle; intra-ocular vertical scissors; retinal knob.

Surgeon: R. Živojnović
**Part V**

*Patient data*

Forty-five year old male patient. Operation on the right eye. He had previously had a pars plana vitrectomy for giant retinal tear with perfluorcarbon liquid (PFCL) and silicone oil. Three months after the last surgery with PFCL in anterior chamber, the patient had cataract, recurrent retinal detachment, and silicone oil in the subretinal space. There was emulsified silicone oil in anterior chamber.

*Surgery*

1. Silicone oil removal.
2. Attempted lensectomy and removal of bubbles of PFCL from the anterior chamber. The lens nucleus dropped into the vitreous cavity as it was rather too hard; the capsule of the lens was removed using intraocular forceps. The lens was later removed by crushing it between the light pipe and the vitreous cutter inside the vitreous cavity. Subsequent removal by suction and cutting of the vitreous cutter.
3. PFCL and silicone oil removed from the subretinal space.
4. Epiretinal membrane over the macula removed using the membrane spatula and the intraocular forceps; the surface of the retina cleaned with silicone brush.
5. Application of diathermy to the peripheral edges of the retina, and the peripheral retinal removed.
6. The remaining PFCL removed from the subretinal space and the back of retina cleaned.
7. Injection of PFCL and retinal massage.
8. Diathermy of the contracted retinal edges and removal of the redundant retina.
9. Air in the anterior chamber.
10. PFCL-silicone oil exchange.

**Instrumentation**

Cannula with side-port 19 g; intra-ocular forceps: end-gripping and hockey stick; retinal knob; silicone-tipped back-flush needle; vertical scissors.

Surgeon: R. Živojnović

**Part VI**

*Patient data*

Thirty-year old female patient, with a history of injury to both eyes. Her left eye was lost. Six weeks after the primary repair of the right eye, she suffered loss of visual acuity. On examination, she was found to have iris coloboma with iris retraction, aphakia, 340° giant retina tear and totally contracted retinal detachment. Operation on the right eye.

*Surgery*

1. The large scar at the inferior limbus seen. Removal of the subretinal proliferation bimanually under co-axial illumination of the operating microscope.
2. Attempted opening of the funnel and further removal of subretinal proliferating tissues.
3. Injection of PFCL.
4. Application of diathermy to the contracted, incarcerated retina, and retinectomy of the peripheral retina.
5. PFCL-silicone oil exchange and reposition of the retina.
6. Stretching of the iris with forceps and application of diathermy to the edges of the iris.
7. BBS injection to reform the anterior chamber.
Instrumentation

Intraocular forceps: end-gripping and hockey stick; retinal knob; silicone-tipped back-flush needle.

Surgeon: R. Živojinović

The video series “Vitreoretinal Surgery on Video” by R. Živojinović consists of eight videos, which are available in PAL and NTSC, either separately or as a complete set.

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