Vitrectomy with Cryopexy and Gas (Moorfield Technique)

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Ulrich Spandau

11.1 Introduction

This surgical method is the most common employed technique for retinal detachments at Moorfield eye hospital in London. This technique is a fusion of pneumatic retinopexy and phaco/vitrectomy. In this technique the vitreous is removed so that the gas tamponade cannot cause a vitreous traction. At Moorfield's hospital this technique is used for all types of retinal detachment, even for macula-off detachments. The technique in short: A core and peripheral vitrectomy is performed. The vitreous base is not shaved. Then a retinal cryopexy is performed and gas is injected. A phacoemulsification is *not* performed. An advantage of this technique is that it requires very little material and instruments: Endodiathermy, laser, PFCL and a chandelier light are not needed. At our hospital we limit the indication for this technique to all detachments with ruptures from 8 over 12 to 4 o'clock. We do *not* operate macula-off detachments with this technique in order to prevent a macular fold (Figs. 11.1, 11.2 and 11.3). Another advantage is that cryopexy can be performed on a detached break whereas laser requires an attached break.

Remark: We switched from pneumatic retinopexy to the Moorfield technique because this technique is easy and fast. We use this technique in approximately 30% of retinal detachments.

Anaesthesia: We use subtenonal or peribulbar anaesthesia. General anaesthesia is not necessary.

11.2 Surgery

Instruments
1. 25/27-Gauge 3-port trocar system
2. Cryopexy.

Tamponade
Postoperative: 20% SF_6.

The main surgical steps:
1. 25G/27G 3-port system
2. Core and peripheral vitrectomy
3. Cryopexy of retinal ruptures
4. Aspiration of subretinal fluid
5. Fluid/air exchange
6. Gas tamponade
7. Removal of trocars

The surgery step-by-step:
1. 25G/27G 3-port system
2. Core and peripheral vitrectomy
3. Aspiration of subretinal fluid

Insert three 25G or 27G trocar cannulas. Then start with a core vitrectomy and continue with a

U. Spandau (✉)
St. Eriks Hospital, University of Stockholm, Stockholm, Sweden
e-mail: ulrich_spandau@yahoo.de

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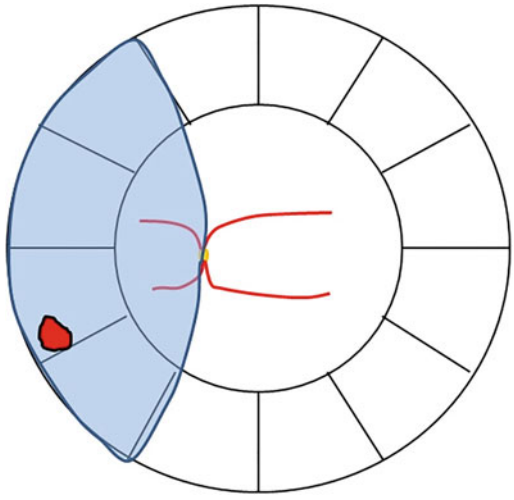

Fig. 11.1 A nasal retinal detachment with attached macula and one retinal break at 8 o'clock

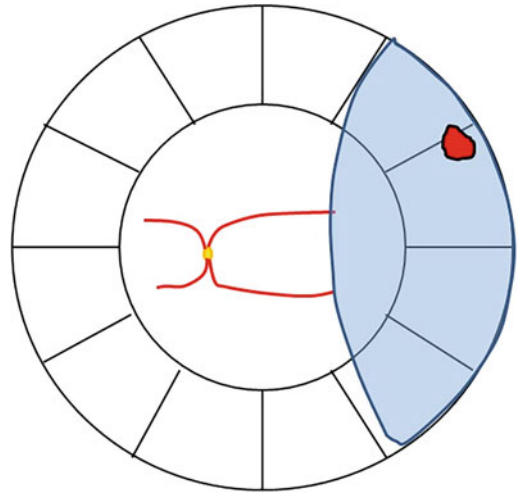

Fig. 11.3 A temporal retinal detachment with attached macula and one retinal break at 2 o'clock

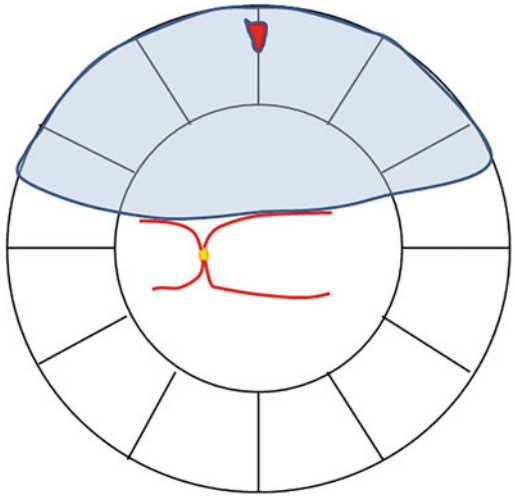

Fig. 11.2 A superior retinal detachment with attached macula and one retinal break at 12 o'clock

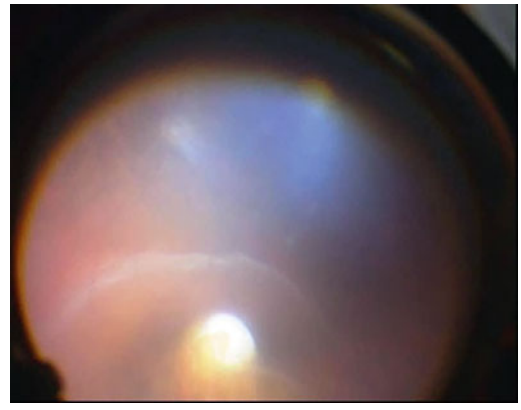

Fig. 11.4 Cryopexy of the retinal break. Note the retinal bleaching

peripheral vitrectomy. A vitreous base shaving is not required. Aspirate then as much subretinal fluid as possible with the vitreous cutter.

4. Cryopexy of retinal ruptures
5. Fluid/air exchange
6. Gas tamponade
7. Removal of trocars.

Treat now the retinal ruptures with cryopexy (Fig. 11.4). The cryopexy is performed on a detached retina. Continue with a fluid against air exchange. Try to remove some subretinal fluid. Stop the fluid against air exchange as soon as the subretinal fluid reaches the temporal arcade, an approximately 70–80% fluid air fill is sufficient. Then continue with a 20% SF_6 tamponade. Remove finally all trocar cannulas.

11.3 Postoperative Posture

Macula-on detachments: The head is positioned so that the apex of the gas bubble is located against the break.

Macula-off detachments: After the gas is injected, postoperative posture starts with immediate face down positioning for approximately 4 h. Then the steam roller maneuver is employed to push the subretinal fluid towards the break. The steam roller maneuver is a sequence of head positions utilized in order to reduce the time required to achieve retinal reattachment, followed by gradual elevation of the head (30 degrees per hour) until the head is upright. Then, the patient is positioned so that the apex of the bubble covers the retinal breaks.

11.4 Helpful Tips

In case of a bullous detachment we insert a chandelier light, indent the sclera, remove the vitreous traction at the break and aspirate some subretinal fluid. Then we proceed with cryopexy and fluid x air exchange. The advantage is that very little subretinal fluid is pushed towards the central pole.

Caution: You can use this technique also for **macula off** detachments but the risk for macular fold is increased because a complete removal of subretinal fluid is not performed.

To avoid this complication, we comply with the following precautions:

1. We operate only macula-on detachments, the superior arcade should be attached.
2. We aspirate as much subretinal fluid with the vitreous cutter as possible.
3. We perform a fluid against air exchange only until the subretinal fluid reaches the superior arcade.

11.5 Questions and Answers

Q: Do you perform this technique in eyes with PVR?
A: No, I use this technique only for fresh detachments.

Q: Do you perform routinely a PVD?
A: No, not routinely. If you induce PVD, you have less ERM induction.

Q: What is the pathophysiological advantage of this technique compared to pneumatic retinopexy?
A: In the Moorfield technique the vitreous traction at the retinal rupture is removed.

Q: Why do you perform cryopexy in a fluid filled eye? Cryopexy is easier in an air filled eye because the tear is attached.
A: I prefer cryopexy in a fluid filled eye because the view to fundus and to the break is better. If the tear is very detached and I am not able to apply cryopexy then I remove partially the subretinal fluid.

Q: Do you operate macula off detachments with this technique?
A: No. But Moorfield hospital does so. They recommend a postoperative steam roller maneuver or alternatively a strict head down posture for approximately 4 h.