

Incision-related Complications of Sutureless Vitrectomy

Rare complications of vitrectomy with small-gauge instrumentation can significantly affect vision.

BY SUSANNE BINDER, MD

In this issue of Retina Today, Susanne Binder, MD, discusses three complications that can occur with small-gauge vitrectomy.

We extend an invitation to readers to submit surgical pearls for publication in Retina Today. Please send submissions for consideration to Ingrid U. Scott, MD, MPH, (iscott@psu.edu); or Dean Elliott, MD. We look forward to hearing from you.



—Ingrid U. Scott, MD, MPH; and Dean Elliott, MD

After its introduction in 2002¹⁻⁵, small-gauge surgery was typically reserved for standard macular pucker and macular hole procedures. Recently, however, surgeons have increasingly turned to sutureless vitrectomy to manage complex cases of retinal detachment, diabetic retinopathy, and trauma. Compared with 20-gauge instruments, smaller instrumentation allows the surgeon more precision during vitreous removal, especially when separation close to the retina is necessary. Additionally, patient comfort is improved with small-gauge surgery, particularly in the first postoperative week. Surgeons must be aware of potential incision-related complications in sutureless vitrectomy. Subconjunctival silicone deposits, posterior capsular rupture during trocar insertion, and choroidal hemorrhage are infrequent, but significant, complications of sutureless vitrectomy.

SUBCONJUNCTIVAL SILICONE DEPOSITS

Subconjunctival silicone has been observed in eyes with thinned sclera after multiple surgical procedures or in the conjunctival recesses of eyes with a history of silicone oil surgery.⁶ Silicone oil, a long-acting tamponade frequently used in surgery for proliferative or diabetic vitreoretinopathy, can escape through unsutured sclerotomies during the postoperative course. Subconjunctival silicone deposits are frequently found in eyes that have undergone sutureless vitrectomy. Patients may experience chronic conjunctival swelling and redness combined with foreign body sensation. Ptosis and muscle distur-

bances may occur as a result of large silicone deposits.

We have observed this complication in eyes with a transient rise in intraocular pressure (IOP) after vitrectomy and in eyes with recurrent retinal detachment. An increase in IOP may cause silicone to prolapse through the unsutured wound. In the case of recurrent retinal detachment, the silicone is pushed more anteriorly, which can also facilitate transscleral escape. For patients in whom subconjunctival silicone deposits occur after sutureless vitrectomy, there is increasing discomfort over the entire postoperative course. Because silicone is embedded in tissue in hard droplets that must be opened one by one, removal can be time-consuming. Therefore, I believe that silicone oil use should also include tight wound closure. Small-incision instrumentation can still be used. The patient may experience discomfort in the first postoperative week due to the sutures; however, he or she is not likely to experience chronic irritation and redness from subconjunctival silicone deposits.

POSTERIOR CAPSULAR RUPTURE

One- and two-step incisions in small-gauge vitrectomy are performed with sharp instruments designed to penetrate the sclera with ease. However, incision creation can deform the globe considerably in an eye with low IOP and/or a rigid sclera. The posterior lens capsule can be hit and opened easily with these small lancets. If only vitrectomy is planned in these eyes, the surgery is difficult because the view is hindered in the area of capsular perforation. Therefore, the surgeon might decide to remove the lens immediately. If simul-

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taneous phacoemulsification and posterior chamber lens implantation is planned, early perforation of the posterior capsule leads to a difficult lens extraction maneuver.

In the past 15 months, we have seen four cases—each by a different experienced vitreoretinal surgeon—of posterior capsular perforation. None of the surgeons had previously experienced this complication using 20-gauge sclerotomies. These cases were manageable, but lengthy cortex removal was necessary before a posterior chamber lens could be implanted in these eyes. Combined surgery was planned and biometry was performed.

It is a rule at our clinic that all patients undergoing vitrectomy also have biometry performed before surgery, even if cataract surgery is not planned. If lens removal becomes necessary during vitrectomy, the biometric data indicate the correct lens for immediate implantation and visual rehabilitation.

CHOROIDAL HEMORRHAGE

One of the most dramatic complications during or after vitreoretinal surgery is choroidal hemorrhage, which is typically described as an infrequent complication.^{7,8} In a study in which we compared 20- with 23-gauge vitrectomy, we described three cases of postoperative choroidal hemorrhage after 23-gauge incisions.⁹ In the first case, surgically indicated for synchysis scintillans and preretinal membrane, the blood absorbed without creating further complications. In the second, a case of macular pucker, an entry-related retinal detachment occurred 3 weeks after the hemorrhage. The patient needed multiple surgeries, including cerclage and silicone oil tamponade to regain 0.1 visual acuity. In the third case, also macular pucker, a massive choroidal hemorrhage developed, and surgery with silicone oil was performed. The retina reattached, but the patient ended up with only ambulatory vision in this eye.

We have gained experience with oblique incisions at our clinic over the past 6 years.

An insulin-dependent 35-year-old man with diabetes developed a massive choroidal hemorrhage after combined

cataract surgery and vitrectomy for tight epiretinal membrane and chronic macular edema unresponsive to grid laser or injection of an antiangiogenic agent. During a second vitrectomy, performed 5 days after the primary intervention, the case was managed by inserting the infusion at the limbus and maintaining intraocular stability with perfluorocarbon liquid (PFCL) while massive blood was released through the sclerotomies. Finally, it was possible to remove most of the blood, exchange the PFCL with silicone, and create a stable retinal situation. Postoperatively, the patient experienced an increase in IOP and pain, and his vision was 0.1. IOP was managed with medication, but the patient developed severe depression and sought psychological treatment.

CONCLUSION

Subconjunctival silicone deposits, posterior capsular rupture, and choroidal hemorrhage can turn a seemingly straightforward case into a disastrous one with severe vision loss. Hopefully these events will remain rare occurrences in large series of successful surgeries, but the surgeon should be prepared to face them, and if they occur they should be reported. ■

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