The structural properties and biologic actions of cryopreserved amniotic membrane have recently been reported to improve the surgical outcomes of various glaucoma procedures including:

- Trabeculectomy
- Deep sclerectomy
- Repairing the conjunctival buttonholes
- Repairing the leaking blebs
- For exposed glaucoma drainage devices

**Trabeculectomy Using Cryopreserved Amniotic Membrane**

Cryopreserved amniotic membrane (CAM) has shown impressive anti-inflammatory, anti-fibrotic, and anti-angiogenic properties. Because of these features CAM can be used in trabeculectomy to prevent fibrosis that is the main cause of bleb failure. This beneficial anti-fibrotic effect is without complications such as thin bleb, bleb leakage, hypotony or infection that may be seen with 5-fluorouracil (5-FU) and mitomycin C (MMC). Many investigators have used CAM under the scleral flap and/or under the conjunctiva during trabeculectomy with promising results in both experimental and clinical studies.1-12 Experimental studies have shown that using CAM in trabeculectomy was associated with fewer fibroblasts than the control groups, and this may be similar or more than that of MMC.1-4 Clinical studies especially in patients with high risk glaucoma have found that trabeculectomy with CAM to be effective in controlling the intraocular pressure.5-11 Moreover, it was demonstrated that compared to trabeculectomy with MMC, using CAM in this surgery resulted in higher success, more desirable blebs and a lower complication rate.8-12

**Deep Sclerectomy Using Cryopreserved Amniotic Membrane**

CAM may be used under the scleral flap in deep sclerectomy to prevent scarring. It has been shown that deep sclerectomy with adjunctive CAM was associated with good surgical outcome in controlling intraocular pressure with no complication.13-14

**Repairing Intraoperative Conjunctival Buttonholes Using Cryopreserved Amniotic Membrane**

Closure of conjunctival buttonholes during glaucoma surgery may be difficult particularly in eyes with thin conjunctiva which has repeatedly cheese-wired with additional suture passes resulting in multiple buttonholes. CAM has been used with favorable results to close the intraoperative buttonholes in fragile conjunctiva not amenable to primary closure.15

**Repairing Leaking Blebs Using Cryopreserved Amniotic Membrane**

Conventional surgical modalities for late-onset bleb leak have varying rate of success and may be associated with the risk of loss of bleb function. CAM can be used to cover or replace the leaking bleb. It has been shown that CAM may result in good surgical outcome with cessation of the leakage while the bleb function has been maintained.16-19

**Cryopreserved Amniotic Membrane for Exposed Glaucoma Drainage Devices**

Repair of exposed glaucoma drainage devices (GDD) usually requires using a scleral patch and covering this patch with conjunctiva. If inadequately covered with conjunctiva, donor sclera will melt with re-exposure of the GDD. However, in eyes with multiple prior ocular surface surgeries, closure of the conjunctival covering can be very difficult, if not impossible, because of the fragile nature of the tissue and the firm adherence to underlying scar tissue. In eyes with eroded GDD, CAM has been used as an alternative to conjunctiva to cover the scleral patch with favorable results in long-term.20-22 Furthermore, a single layer of CAM has been utilized over the exposed GDD without using the scleral patch in a case with good results during 6 months of follow-up.22
References


