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A modified technique for bedside amniotic membrane application to the eyelid margins for Stevens-Johnson syndrome

Amniotic membrane (AM), the innermost layer of the placenta, is commonly used as a graft and dressing to promote healing and ocular surface reconstruction. It has been used successfully in the treatment of various ocular surface conditions, such as Stevens-Johnson syndrome (SJS) and toxic epidermolysis necrolysis (TEN) to protect the ocular surface.[1,2] Amniotic membrane application typically takes place in the operating room, unless the patient is too unstable for transport. The technique described by Shammas et al. involves suturing the amniotic membrane over the eyelid margin, then pushing the membrane into the fornix with a muscle hook.[3] We report a streamlined technique of amniotic membrane application that can be rapidly performed at the bedside under local anaesthetic.

Methods

The procedure is performed with local and topical anaesthesia without intravenous sedation. For each eyelid, a 3.5 cm × 3.5 cm cryopreserved amniotic membrane (AmnioGraft and Prokera Bio-Tissue, Miami, Fla.) was used. First, a Prokera device was placed, and then attention was directed toward placement of the free amniotic membranes to the eyelid margins and palpebral conjunctiva (Fig 1). The cryopreserved AM is packaged with a paper backing. The AM was partially peeled off of the paper backing, and the partial attachment to the backing helps with orientation and minimizes folding of the AM onto itself (Fig. 1). The membrane was placed with the stromal surface against the ocular surface. Two 6-0 double armed prolene sutures were preplaced in each leading corner of the amniotic membrane. This ensures that when the amniotic membrane is pulled into the fornix, the stromal side is in contact with the healing eyelid margin. With the eyelid distracted from the globe by a Desmarre retractor, the double-armed sutures were placed deep into the fornix and externalized through the skin. Traction was applied to the externalized sutures, which subsequently draws the amniotic membrane deep into the fornix. With the paper backing still partially attached, the membrane remains in proper orientation. As the surgeon pulls the membrane into the fornix, an assistant carefully peels the remaining membrane off the paper backing. The trailing edge of the amniotic membrane is then folded over the eyelid margins and draped over the Prokera, which also folded the eyelashes away from the eye. This technique therefore negates the need for eyelash trimming, which may actually create a more abrasive surface for the amniotic membrane. The externalized sutures were then passed through the folded amniotic membrane and tied off with foam bolsters for support. The identical procedure was repeated for the remaining 3 eyelids. Fig. 2 shows a patient who underwent AM placement who presented with TEN.

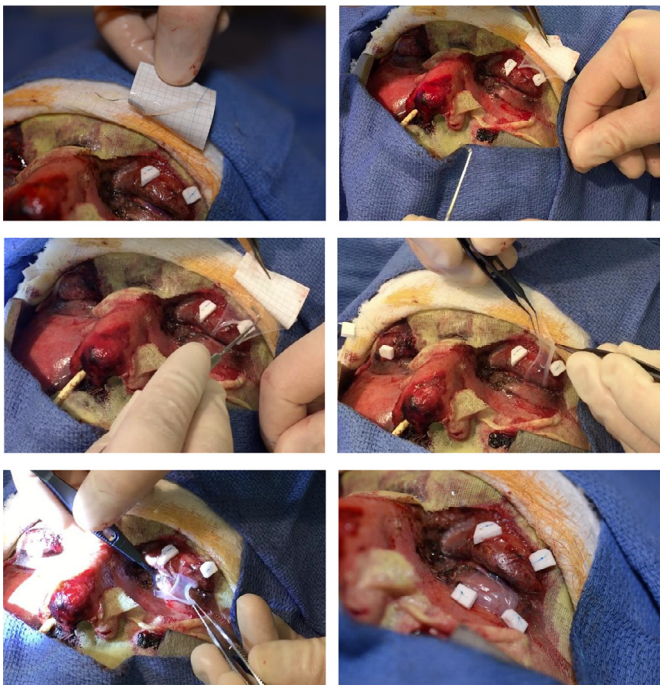

Fig. 1—Amniotic membrane application on left lower lid of a patient with toxic epidermolysis necrosis (TEN) at the bedside with local anaesthetic. (Top, left) Amniotic membrane partially attached to the paper backing and placed opposite of the lower lid on the forehead. Two 6-0 double-armed prolene sutures were preplaced in each leading corner of the membrane. (Top, right) The double-armed sutures were placed deep into the fornix and externalized through the skin. (Center, left) The surgeon pulled the membrane while an assistant used a muscle hook to dissect the membrane off the paper backing. (Center, right; bottom, left) The remaining membrane was folded over the eyelid margins. (Bottom, right) Externalized sutures were passed through folded membrane and tied with foam bolsters.

TEN, toxic epidermolysis necrolysis.

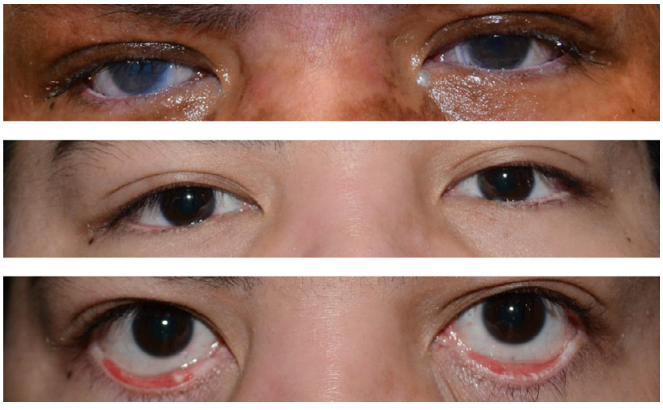

Fig. 2—Patient with TEN after treatment with Prokera and amniotic membrane application with the modified technique. (Top) Eyelid margin keratinization after Prokera placement and before amniotic membrane application; visual acuity 20/200 both eyes. (Center and bottom) Six months after amniotic membrane application, demonstrating marked improvement of ocular surface conditions with visual acuity of 20/25 in both eyes.

TEN, toxic epidermolysis necrolysis.

Conclusions

SJS and TEN have devastating ocular consequences, including cicatrizing conjunctivitis with symblepharon formation, severe dry eye, trichiasis, eyelid margin keratinization, and limbal stem cell deficiency.[4,5] Survivors of SJS and TEN often experience debilitating chronic photophobia and eye pain. A number of case reports and case series have demonstrated improved outcomes in patients with SJS and TEN who are treated with AM application.[3,6–10] While prior techniques preferred application of amniotic membrane in the operating room, patients with SJS and TEN are often medically unstable for transport. We describe a method of amniotic membrane application that can be

performed at the bedside with local anaesthetic (Fig. 2). Moreover, each margin takes 10 to 15 minutes, and only 2 double-armed prolene sutures and two knots are needed for each margin. This modified technique may increase the efficiency of future amniotic membrane application procedures.

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Bleomycin sclerotherapy of a distensible orbital venous malformation without image guidance

An orbital varix is a distensible venous malformation consisting of vascular channels that directly communicate with the systemic venous system. It can present with variable pain, proptosis, diplopia, spontaneous hemorrhage, or even vision loss, and these symptoms typically worsen with Valsalva maneuver. Treatments proposed include vascular clipping, endovascular glue embolization, endovascular coiling, surgical resection, or combination therapy.[1] Recurrence is common, however, and devastating visual complications can occur with procedural interventions such as surgical resection and endovascular procedures.[2] Previous reports of using bleomycin sclerotherapy to treat vascular malformations have focused on lymphatic venous malformations, cavernous hemangiomas, and high- and low-flow orbital venous malformations.[3,4] There is only one previous case report of bleomycin sclerotherapy used to treat an orbital varix, and this case utilized angiography-guided catheterization through the cavernous sinus, a microcatheter balloon, and contrast-enhanced sclerotherapy mixed with bleomycin.[5] Here the authors describe the first reported case of non-image-guided bleomycin sclerotherapy for treatment of an orbital varix.

Case Presentation

A 35-year-old female presented with a 5-year history of progressively worsening left orbital pain with episodes of severe intractable pain, distensible orbital swelling, and headaches that were exacerbated by bending down and Valsalva maneuver. Examination showed normal vision and extraocular motility but was significant for mild enophthalmos and a visible purplish lesion overlying the medial bulbar conjunctiva (Fig. 1A, B). With Valsalva maneuver, the lesion enlarged with associated proptosis and periocular fullness (Fig. 1C,D). Magnetic resonance imaging (MRI) revealed a 3.3 × 2.2 × 0.9 cm lesion centered in the inferonasal orbit that enhanced with gadolinium, extended from the ocular surface to the orbital apex, and involved the medial and inferior recti and optic nerve without contiguous intracranial extension (Fig. 2A,B). Catheter angiography demonstrated a slow filling of the lesion without clear feeder vessels, consistent with a low-flow orbital varix. Under general anaesthesia, a traction suture was placed at the medial limbus to abduct the eye, thereby inducing improved access to the lesion. The traction suture induced slight retropulsion of the eye, reduced orbital venous outflow, and caused further engorgement of the lesion. Intralesional injection of 2 mL of 3 mg/mL bleomycin was administered transconjunctivally with a 27G 1.5 inch needle. Multiple retrograde injection passes were made along the medial orbit by advancing the needle into the orbit and only injecting medication while the needle was being withdrawn. The visible superficial portion of the lesion was also injected transconjunctivally. Postoperatively, the