

Chapter 7

Amniotic Membrane Transplantation in Stevens–Johnson Syndrome



Hajirah N. Saeed, Iason S. Mantagos, and James Chodosh

Indications

Ocular surface epithelial defects, pseudomembrane formation, or any eyelid margin defects during the first week after onset of SJS/TEN should be considered for AMT.

Essential Steps

1. Fashion a custom-made symblepharon ring with IV tubing or use a ready-made symblepharon ring (Fig. 7.1)
2. Upper and lower eyelashes trimmed
3. Amniotic membrane (AM) laid over the eye with the basement membrane side up
4. AM secured to the upper eyelid with or without bolsters
5. AM deposited into upper fornix
6. Symblepharon ring inserted
7. AM deposited into lower fornix
8. Symblepharon ring adjusted
9. AM secured to lower eyelid with or without bolsters
10. Excess AM trimmed

H. N. Saeed · J. Chodosh (✉)

Department of Ophthalmology, Massachusetts Eye and Ear, Harvard Medical School,
Boston, MA, USA

e-mail: James_Chodosh@meei.harvard.edu

I. S. Mantagos

Department of Ophthalmology, Boston Children's Hospital, Harvard Medical School,
Boston, MA, USA

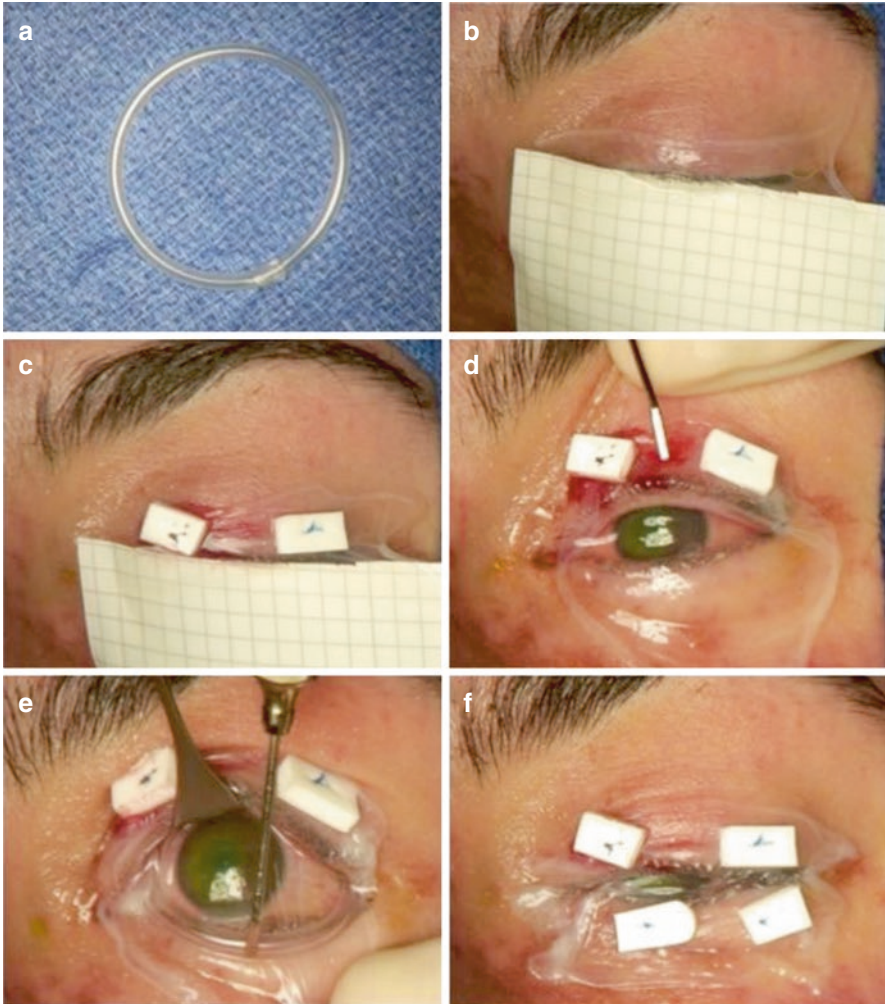


Fig. 7.1 Amniotic membrane (AM) transplantation, utilizing a single 5×10 cm sheet. (a) Creation of symblepharon ring with intravenous tubing. (b) Placement of AM over upper eyelid. (c) Anchoring of AM using 6-0 polypropylene mattress sutures and bolsters. (d) Unfolding of AM over the ocular surface. (e) Placement of the custom-made symblepharon ring in the fornices. The ring is already pushed into the upper fornix and is being gently deposited into the lower fornix. (f) Anchoring of AM to lower eyelid. Permissions from: Elsevier Limited. Article: Ma KN, Thanos A, Chodosh J, Shah AS, Mantagos IS. A Novel Technique for Amniotic Membrane Transplantation in Patients with Acute Stevens-Johnson Syndrome. *Ocular Surface* Jan;14(1):31–6. <https://doi.org/10.1016/j.jtos.2015.07.002>. Epub 2015 Sep 24. Figure on Page 33

Complications

Very few complications reported. Those reported include:

- Microbial infection (it is difficult to make any direct relationship between AMT and infection)
- Hemorrhage beneath the amnion
- Detachment of the membrane

Template Operative Dictation

Preoperative diagnosis: (*Stevens–Johnson syndrome/toxic epidermal necrolysis*) with (right/left/bilateral) ocular involvement

Procedure: Amniotic membrane transplantation (*OD/OS/OU*)

Postoperative diagnosis: *Same*

Indication: This ____-year-old (*male/female*) was admitted for management of SJS/TEN. Ophthalmic examination warrants placement of AMT. After a detailed review of risks and benefits, the patient (*or legal surrogate if patient sedated*) elected to undergo the procedure.

Description of the procedure (sutured): The patient was identified in the holding area, and the (*right/left/both*) eye(s) was/were marked with a marking pen (*or if done at bedside, indicate so*). The patient was brought into the OR on an eye stretcher in the supine position. The patient was prepped in the usual sterile ophthalmic fashion. Non-adhesive drapes were used to protect the skin. After proper time-out was performed verifying correct patient, procedure, site, positioning, and special equipment prior to starting the case, local anesthesia was administered (*if general anesthesia used, indicate so*).

The distance between the superior and inferior orbital rims was measured at ____cm and used to estimate the diameter of the symblepharon ring to be constructed. Sterile intravenous tubing was cut so that one edge was oblique and the other edge blunt. The oblique edge was threaded into the blunt opening.

Attention was then turned to the patient's (*right/left*) eye. The eyelashes were trimmed short. A 5×10 cm piece of amniotic membrane (Bio-Tissue, serial number __; exp. date __/__/__) was removed from its sterile packaging and placed over the eye with the basement membrane side up. Styrofoam bolsters made from the suture packaging (*or plastic if IV tubing was used instead*) were used to secure the amniotic membrane to the upper eyelid with 6-0 Prolene sutures in a partial thickness fashion about $2-3$ mm superior to the lash line.

An eyelid retractor was then used to lift the upper lid, allowing deposition of the amniotic membrane into the upper fornix. The previously fashioned symblepharon ring was then inserted into the upper fornix. The lower eyelid was then retracted to allow deposition of the amniotic membrane into the lower fornix. The membrane extending over the eyelid inferiorly was then sutured to the lower eyelid in the same manner as described above. Care was taken to spread the membrane over the entire ocular surface. Excess membrane was trimmed with Westcott scissors.

Description of the procedure (sutureless): The patient was identified at bedside, and the (*right/left/both*) eye(s) was/were marked with a marking pen. The patient was prepped in the usual sterile ophthalmic fashion. Non-adhesive drapes were used to protect the skin (this is a substerile procedure and draping is at discretion of the surgeon). After a time-out was performed verifying correct patient, procedure, site, positioning, and special equipment prior to starting the case, topical anesthetic was administered.

The distance between the superior and inferior orbital rims was measured at __cm and used to estimate the diameter of the symblepharon ring to be constructed. Sterile intravenous tubing was cut so that one edge was oblique and the other edge blunt. The oblique edge was threaded into the blunt opening (Fig. 7.2).

Attention was then turned to the patient's (*right/left*) eye. The eyelashes were trimmed short. A 5×10 cm piece of amniotic membrane (Bio-Tissue, serial number; exp. date __/__/__) was removed from its sterile packaging and placed over the eye with the basement membrane side up. Cyanoacrylate glue was then applied 4 mm above the eyelid margin to secure the amniotic membrane to the upper eyelid.

An eyelid retractor was then used to lift the upper eyelid, allowing deposition of the amniotic membrane into the upper fornix. The previously fashioned symblepharon ring was then inserted into the upper fornix. The lower eyelid was then retracted to allow deposition of the amniotic membrane into the lower fornix. The membrane extending over the eyelid inferiorly was then glued in the same manner as described above, 4 mm away from the eyelid margin. Care was taken to spread the membrane over the entire ocular surface. Excess membrane was trimmed with Westcott scissors.

If procedure was performed bilaterally – Attention was then turned to the patient's (*left/right*) eye, and the same exact procedure was then performed using

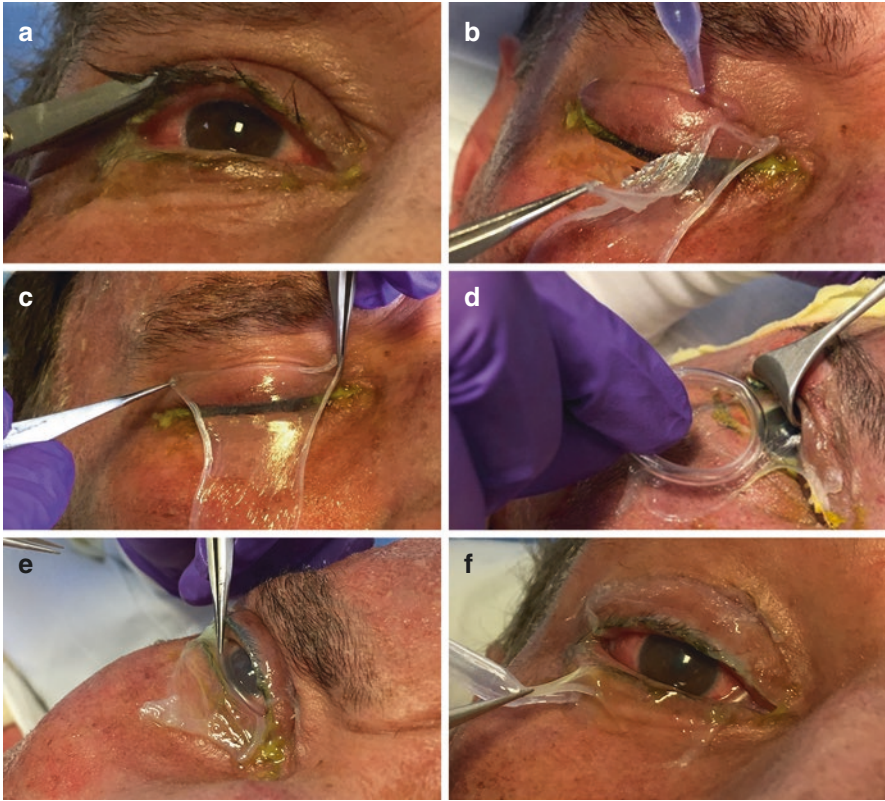


Fig. 7.2 Sutureless amniotic membrane transplantation. (a) Upper and lower eyelashes are trimmed. (b) Cyanoacrylate glue is used to secure the amniotic membrane (AM) sheet (5×10 cm) to the upper eyelid. Care is taken to ensure glue is placed at least 4 mm above the eyelid margin. (c) AM is held across the upper eyelid for 30 seconds to ensure adhesion. (d) Desmarres lid retractor is used to retract the upper eyelid to allow the symblepharon ring to be placed in the superior fornix. (e) The symblepharon ring is then tucked into the inferior fornix. (f) The inferior margin of the AM is secured to the lower eyelid with cyanoacrylate glue. The patient should be able to close the eye without any lagophthalmos caused by the symblepharon ring. Permissions from: Elsevier Limited. Article: Shanbhag SS, Chodosh J, Saeed HN. Sutureless amniotic membrane transplantation with cyanoacrylate glue for acute Stevens-Johnson syndrome/toxic epidermal necrolysis. *Ocular Surface*. 2019 Jul;17(3):560–564. <https://doi.org/10.1016/j.jtos.2019.03.001>. Epub 2019 Mar 11

another 5 \times 10 cm piece of amniotic membrane (Bio-Tissue, serial number ;
exp. date / /).

The drapes were removed and (antibiotic/steroid) ointment was placed on the eye(s). The patient tolerated the procedure well (and was transferred to the recovery room in stable condition—if done in operating room).

Additional Resource

<https://www.youtube.com/watch?v=Q5ZtBEne5IE>.