MATERIAL AND METHODS
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The present prospective study was carried out at department of ophthalmology, M.L.B. Medical college, Jhansi. 48 patients with either nonhealing corneal ulcer, persistent epithelial defect, descemetocle, bullous keratopathy, pterygium and symblepharon were selected from those attending the eye OPD between June 2001 to Aug 2003. An informed consent patient data including the demographic factors, previous medical, surgical and ocular history, were recorded. Clinical data, indications for surgeries and goal of treatments in each group are summarized in Table-A.

### TABLE A

**INDICATIONS FOR SURGERY AND CRITERIA FOR SUCCESS, PARTIAL SUCCESS AND FAILURE IN EACH CATEGORY**

<table>
<thead>
<tr>
<th>Indication for surgery</th>
<th>Success</th>
<th>Partial success</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non healing corneal ulcer</td>
<td>Healed ulcer</td>
<td>Incomplete healing</td>
<td>Non healing</td>
</tr>
<tr>
<td>Persistent epithelial defect</td>
<td>Healed epithelial defect</td>
<td>Incomplete healing</td>
<td>Non healing</td>
</tr>
<tr>
<td>Descemetocle</td>
<td>Complete healing</td>
<td>Incomplete healing</td>
<td>Non healing</td>
</tr>
<tr>
<td>Bullous keratopathy</td>
<td>Relieved pain and irritation</td>
<td>Transient relief in pain and irritation</td>
<td>Persistence of pain and irritation</td>
</tr>
<tr>
<td>Symblepharon</td>
<td>Released symblepharon</td>
<td>Some fibrovascular tissue</td>
<td>Recurrence</td>
</tr>
</tbody>
</table>
PREOPERATIVE EVALUATION

All the cases were examined for best corrected visual acuity. Slit lamp examination was done for tear film evaluation and measurement of epithelial defect. Lid was examined to rule out entropion and trichiasis and meibomitis, which were treated before AMT. topical antibiotic and artificial tear drops 4 times given at least 1 week before surgery.

PREPARATION OF AMNIOTIC MEMBRANE

Fresh Amniotic membrane was harvested from consenting seronegative (hepatitis B and C virus, syphilis and human immunodeficiency virus) maternal donors during elective caesarian section. Under sterile conditions, the placental membrane was washed in a balanced salt solution (BSS) to remove clots and debris. The membrane was then bathed in a cocktail of antimicrobial medium and stored at 4°C. The membrane was used in 24 hr of harvest.

SURGICAL TECHNIQUE

At the time of surgery amnion was seperated from chorion.After retrobulbar anaesthetic injection in eyes with deep corneal ulcer, the base of the ulcer was debrided, and the poorly adherent epithelium adjacent to the edge of the ulcer was removed up to the area where the epithelium became adherent. The amniotic membrane was transferred to the recipient
eye, and fitted to fill up the ulcer and cover the defect by trimming off the excess edges. This fashioned membrane with stroma-side down was then secured to the edge of the defect by interrupted 10-0 nylon sutures.

Fig-1:

*The diagram illustrates the amniotic membrane sutured to the cornea and covering a paracentral corneal epithelial defect.*

Alternatively, in case of a large ulcer, the AM was sutured to perilimbal episclera and the edge of the conjunctiva after peritomy covering the whole corneal surface.
The amniotic membrane is sutured to perilimbal episclera and to the edge of the conjunctiva (after peritomy) covering the whole corneal surface.

After the knots had been buried, the corneal surface became smooth as a result of the well-approximated amniotic membrane filling in the ulcer bed. Single layer amniotic membrane was used for persistent epithelial defect and Bullous keratopathy, More than one layer of amniotic membrane was used if the ulcer was deep and in those instances the bottom layers were left unsutured and only the top layer was sutured. Multilayer amniotic membrane was also applied in cases with descemetocoele and in cases with symblepharon.
**PRINCIPLE OF MULTILAYER AMNIOTIC MEMBRANE TRANSPLANTATION**

**Fig - 3**
*Amniotic membrane as a graft with epithelial surface facing upward*

**Fig - 4**
*Amniotic membrane as a patch with epithelial surface facing down*

**Fig - 5**
*Multilayer amniotic membrane*

[Diagram showing the principle of multilayer amniotic membrane transplantation with labeled parts for epithelium side, stromal side, and cornea.]*
Depending on the aqueous tear status and the eyelid blinking function, amniotic membrane as a temporary patch, or temporary tarsorrhaphy was added. **When amniotic membrane was used as a patch**, this was performed by placing an amniotic membrane over the cornea or extending it beyond the limbus with the basement membrane side facing down, and was sutured with interrupted 10-0 nylon sutures. In pterygium or symblepharon surgery, the membrane is applied to cover areas of conjunctival defects after removal of fibrotic tissue. The membrane was secured to the surrounding conjunctival edge with episcleral bites and at the lid margins using interrupted 9-0 or 10-0 Vicryl sutures. To ensure the depth of the newly created lower and upper fornices, the AM was secured with two double-armed horizontal mattress sutures of 6-0 silk, which were broughttemporally and nasally through the lid and tied over the skin with bolsters.
Amniotic membrane graft sutured to the bulbar conjunctiva and lid margin with interrupted sutures

Amniotic membrane graft secured to the deep fornix by passing double armed mattress suture through full thickness of the lid & tied over the skin with bolster

Fig – 6
Method of AMT for symblepharon

POSTOPERATIVE CARE AND EVALUATION

Before epithelialisation the patient was followed weekly and was routinely treated with topical 1% prednisolone acetate, three times a day and 0.3% ofloxacin twice a day. After epithelialisation was completed, the latter was discontinued but the former was tapered off. Fluorescein staining was used to detect epithelial defects. Following healing, topical antibiotics were discontinued and the topical steroid was tapered off.
COMPLICATIONS

Immediate complications, i.e., those developing within 1 month of surgery, detachment of amniotic membrane and conjunctivitis, lid abscess. Despite of detachment of amniotic membrane, the epithelial defect healed rapidly in 1 week in the patient with bullous keratopathy so that the patient became pain-free. The eye, which developed conjunctivitis was from a patient with Steven-Johnson syndrome as a result of bacterial infection and the membrane was detached and dissolved in that area. This complication was successfully treated with antibiotics.

Late complications was those which developed after 1 month of surgery and the epithelial surface had healed completely. It was corneal ulcer.