MATERIAL AND METHOD
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The present study has been conducted at N.L.B.I. Medical College and Hospital, Jhansi from June, 1983 to May, 1984 to evaluate the use of amniotic membrane as biological dressing in neglected cases of burn.

Collection of Amniotic membrane:

Placentae from clean vaginal deliveries and, emergency and elective caesarian section were collected by sterile technique. Placentae from mothers with history of premature rupture of membrane, veneral diseases, endometritis, pelvic inflammatory lesions, toxaemia of pregnancy and meconium staining or abnormal appearing liquor were rejected. The placentae with intact membrane was taken to directly in a clean tray and was washed thoroughly in running tap water to remove blood and mucoid material.

Separation of Amniotic membrane:

The thoroughly washed placentae was transferred to another clean tray filled with water. The amniotic membrane was separated from chorion and placentae, gently starting from the periphery up to the base of the umblical cord. The separated membrane was cut at the base of umblical cord and spread over flat surface in a sterile container filled with sterile normal saline. The remaining clots were removed from its surface with the help of sterilized gauge pieces. It is
washed further with sterile saline solution 3-4 times. Now the obtained amniotic membrane is thin, transparent, tensile, shining with whitish hue and strong which can cover a wide surface area.

**Preservation of Amniotic Membrane**

The obtained membranes were either applied immediately or can be preserved in sterile normal saline (400 cc) treated with 10 lacs units of crystalline penicillin, 1 gm of streptomycin sulphate and 50 ml of liquid metrogyl; and kept at 4°C in refrigerator till the time of application. The preserved membrane was continuously watched for bed odour, a change in colour from white to yellow or brown. Asepsis of membrane was tested by culture and sensitivity before application. The membrane showing negative culture can be used up to 8 weeks.

**Selection of cases**

All the cases with superficial and deep burns of less than 50% of body surface who came to the emergency or out patient department of this hospital after 72 hours of thermal injury were included in this study irrespective of their age, sex, Socioeconomic status, contamination of wound and mode of injury.

**Method of study**

The selected cases were subjected to detailed history and physical examination which were recorded on following lines:
1) **History**

**Introduction:** Name, Age, Sex, Occupation, rural/urban, address, date of admission, date of discharge, time of healing and Number of repeated application of membranes.
- Date and time of burn (Duration of burn)
- Place of accident and nature of work at the time of accident.
- Cause of burn.
- Prior treatment (if any)
- Symptoms.

ii) **Physical Examination**

**General Examination**
- General condition
- Temperature
- Hydration
- Pulse
- Blood Pressure
- Respiration

**Local Examination**

(A) Percentage of burn. It was calculated by 'Wallace's rule nine' in the adult and by 'Lund Browder Chart' in children.

(B) Depth of burn: Superficial/deep

**Estimation of Depth of burn**

A hypodermic needle was used to test the pain sensation. The area with increased sensibility was considered to be superficial or partial thickness burn. The area with markedly reduced or absent pain sensibility was considered to be deep or full thickness burn. This was also confirmed by pulling out a hair from burn surface. In the 3rd degree
or deep burn, hair pulls out easily and painlessly. The later test is of value in borderline cases of 2nd degree burn. In addition help of following criteria was also sought.

<table>
<thead>
<tr>
<th>Classification of depth</th>
<th>Appearance of burn area</th>
<th>Pain sensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st degree</td>
<td>Erythematous</td>
<td>Painful and hyperaesthetic</td>
</tr>
<tr>
<td>IIInd degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A)</td>
<td>Blisteres with red dened base and moisture.</td>
<td>Painful and hyperaesthetic</td>
</tr>
<tr>
<td>(B)</td>
<td>Blisters with blanched base and moisture</td>
<td>Painful, hyperaesthetic or anaesthetic at places.</td>
</tr>
<tr>
<td>IIIrd degree</td>
<td>Leathery pale or pearly white or charred dry</td>
<td>Painless and anaesthetic</td>
</tr>
</tbody>
</table>

The I and II(A) were included as superficial and II(B) and III were considered as deep burn.

(C) Contamination of wound

Apparently clean: No contamination of foreign body, clean, intact blisters.

Mild contamination: Slight contamination, ruptured blisters, open wounds.

Gross contamination: Heavy contamination with dirty cloth, foreign body, dust and pus etc.

(D) Area involved: Diagramatic representation of area.
Resuscitation and General Management

The patients were resuscitated prior to application of membrane by I/V infusions, blood, plasma infusion, analgesic, antibiotics and tetanus prophylaxis.

LOCAL MANAGEMENT OF WOUND

Preparation of burn surface: A culture swab from burn surface was taken for culture and sensitivity test. Patient was given necessary sedation or general analgesia after consent. A thorough debridement of wound was done by removing the necrosed skin, blisters and pus pockets. Then the wound was cleaned with 0.5% savlon solution three or four times and then final cleaning was done with normal saline twice. The spirit was applied over the adjacent skin around the margin of wound area. Any oozing from the wound area is stopped by pressure for some time.

Application of amniotic membrane

Fresh or preserved amniotic membrane was stretched out and was applied on the burnt surface. The application was done in such a way that the membrane extend beyond the borders of the burn, overlapping the normal skin. This was done to keep the membrane in place as it adheres easily to dry skin. The amniotic membrane was applied with smooth surface facing the wound in case of superficial burn and glistening surface facing the wound in case of deep burn. All air and fluid blebs
were smoothened out to ensure total contact with the surface and excess membrane was trimmed. No dressing was applied over the part covered with the membrane. At least 6 hours bed rest was ensured to prevent dislodgement of the membrane.

In movable areas like the extremeties and joints, in uncooperative patients and children, the membrane was held in place by covering it first with sterile gauze then bandaging with sterile rolled gauze.

**Assessment of the case**

The assessment of the result was done daily following the application of the membrane.

The patients were asked about

1. Pain and discomfort prior and after application of the membrane.
2. Fever
3. Any evidence of allergy as itching rashes, nausea and vomiting.

**Physical Examination**

**General Examination** - Patients were examined for general condition, hydration, pulse, blood pressure and signs of toxaemia.

**Local examination** - Observation for the following was done -

1. Presence of discharge and/or soakage.
2. Appearance of amniotic membrane as regard to surface, margin, thickness, lusture, colour, dryness and adherence.
3. Collection of pus under dressing. If the pus was localized in small area underneath amniotic membrane puncture was done in it. A pus swab was taken for culture and sensitivity test. If the pus is underneath whole of membrane localized at many places, then the membrane was removed and reapplication was done after further cleaning and control of infection.

4. Result of healing.

**Investigations**

1. Routine - Blood - complete haemogram.
   
   Urine - Gross and microscopic examination.

2. Culture and sensitivity test for pus if present.

   This was cultured on blood agar and chocolate agar media which were kept in refrigerator at 0-4°C temperature for 24 hours. Antibiotic sensitivity was done in the cases where growth of pathogenic bacteria was revealed. Antibiotic was given according to the sensitivity reports.
Photograph No. 1
Fresh Placenta in a tray after washing blood and mucoid material.

Photograph No. 2
Amniotic membrane is being separated from periphery.
Photograph No. 3
Amniotic membrane has been separated from periphery up to base of the cord.

Photograph No. 4
A preserved Amniotic Membrane.
PROFORMA

Name

Age/Sex

Occupation

Rural/Urban

Address

Date and time of admission

Date and time of discharge

Total time of healing

History

(i) Date and time of burn

(ii) Place of work and nature of work at the time of burn

(iii) Cause of burn

(iv) Prior treatment (if any)

Symptoms

(i) Pain

(ii) Burning

(iii) Blisters

(iv) Fever

(v) Discharge from wound surface

(vi) Any other

Physical Examination

a) General examination at the time of admission

- G.C. - Pulse - B.P.

- Temperature - Respiration - Hydration
b) **Local examination**

- Percentage of burn
- Depth of burn/degree of burn
- Contamination
- Appearance of raw surface area
- Area involved (Diagramatic).

\[ \text{Anterior} \quad \text{Posterior} \quad \text{Lateral} \]

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**Progress report**

**Days**

G.C.

**Pulse**

B.P.

**Hydration**

**Temperature**

Differences between input output.

**Albumin in urine**
Investigations

Blood - TLC

Urine - Albumin

DLC

Sugar

Hb%  

N/E

ESR  

pus - Culture & Sensitivity

Treatment

(i) I/V fluids

(ii) Blood

(iii) Sedatives

(iv) Analgesics

(v) Systemic antibiotics

(vi) Local application