MATERIAL AND METHOD

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The present study has been conducted at M.L.B. Medical College Hospital, Jhansi from May 1982 to April 1983 to compare the effects of amniotic membrane and Full thickness foetal membrane (Amnion-Chorion) over thermal burns as bio-dressings.

Collection of membranes

The amniotic membrane and Foetal membranes were collected from the labour room and obstetric operation theatre of M.L.B. Medical College Hospital, Jhansi at the time of labour and caesarian section. The mothers having intact membranes and without any history suggestive of genital tract infection were selected. Parity and blood groups of mothers were not considered.

Separation of Membranes from placenta

The placenta with intact membrane was taken directly in a clean tray and was washed thoroughly in running tap water to remove blood and mucoid material then it was transferred to another clean tray filled with water. For full thickness membrane intact chorion and amnion was cut around placental margins and for amniotic membrane, it was separated from chorion starting from periphery upto the base of umbilical cord and was cut around. The separated membranes were spread over a flat surface in a sterile container filled with sterile normal saline and any remaining clots were removed gently from its surface with the help of sterile gauze pieces. These membranes
were again rinsed in sterile normal saline for four-five times.

**Preservation of membranes**

Membranes thus obtained were either applied immediately to burn area or kept separately in sterile normal saline treated with 10 lac units of Benzyl penicillin and 1 gm of Streptomycin sulphate and preserved at 4°C till the time of application. The preserved membranes were continuously watched for bad odour or change in colour and texture. Membranes preserved for more than one month period were not used.

**Selection of cases**

All the cases having burn less than 50% of body surface, either deep or superficial, who came to emergency department or out patient department of this hospital within 72 hours of the thermal injury were included in this study, irrespective of their age, sex socio economic 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 and time of healing .

    - Date and time of burn (duration)
    - 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:** The case was examined for general condition, pulse, blood pressure, temperature, respiration and hydration.

**Local Examination:**

(A) **Percentage of Burn:** It was calculated by "Wallace's rule of Nine" in the adult and by "Lund and Browder Chart" in children.

(B) **Depth of Burn:** Superficial/deep.

**Estimation of depth of Burn:**

The 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 third degree deep burn hair pulls out easily and without pain. This test is of value in borderline cases of second degree burn.

In addition, help of the following criteria was also sought:

<table>
<thead>
<tr>
<th>Classification of depth</th>
<th>Appearance of Burn area</th>
<th>Pain sensation</th>
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<tbody>
<tr>
<td>I degree</td>
<td>Strythenous</td>
<td>Painful and hyperaesthetic</td>
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<tr>
<td>II degree</td>
<td>Blisters with reddened base and moisture</td>
<td>Painful and hyperaesthetic</td>
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<td>(A)</td>
<td>Blisters with Blanched base and moisture</td>
<td>Painful,hypoaesthetic or anaesthetic at places</td>
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<td>(B)</td>
<td>Leathery pale or pearly white or charred dry.</td>
<td>Painful and anaesthetic</td>
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<td>III degree</td>
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</table>
The I and II (A) were considered 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/or cow dung, mud etc.

(D) Area involved : Diagramatic representation of area involved was made.

Resuscitation and general treatment

Prior to application of membranes, patients were resuscitated and general treatment was given to every patient (i.e., i/v infusions, blood and plasma infusion, analgesic, antibiotics and tetanus prophylaxis).

Local management of wound

Patients were devided into following groups :

Group 'A' : Amniotic membrane was applied over full burn area.
Group 'B' : Full thickness fetal membrane was applied over full burn area.
Group 'C' : Amniotic membrane was applied over one part ($C_1$) and full thickness membrane on other part ($C_2$).

Procedure :

The burnt areas to be grafted were prepared by thoroughly debriding the dead skin and cleaning them with 5% savlon solution and sterile saline solution. Spirit was applied over adjacent normal skin. After this burnt areas were again assessed for degree and percentage of burn.
Fresh or preserved membrane (amniotic membrane or full thickness foetal membrane) was stretched out and was applied on the burnt surface. The application was done in such a way that the membrane extended beyond the borders of the burn, overlapping the normal skin. This was done to help keep the membranes in place since it adheres easily to dry skin. The amniotic membrane was applied with smooth surface facing the wound while full thickness membrane was applied with chorion facing the wound.

In movable areas like the extremities and joints, the graft was held in place by covering it first with sterile gauze then bandaging with sterile rolled gauze. In relatively immovable parts like the chest and abdomen, the membrane was left alone as applied without any additional dressing.

No anaesthetics were used on the burn areas before membrane application.

Assessment of the case

The assessment of the results was done daily following the application of the membranes.

The patients were asked about:

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

Physical Examination

General Examination: Patients were examined for general condition, hydration, pulse, blood pressure and signs of toxemia.

Local Examination: Observation for the following was done:

1. Presence of discharge and/or soakage,
(2) Appearance of membranes 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 membranes, a slit was given in it and pus was squeezed out. A Pus swab was taken for culture and sensitivity. If the pus was present underneath the whole of the membrane then membrane was removed. Pus swab was taken for culture and sensitivity and wound thoroughly cleaned. The 2nd application of membrane was done after control of infection.

1) Result of healing

Investigations:

1. Routine - Complete blood haemogram
   - Urine - gross and microscopic examination.

2. Culture and sensitivity test for Pus if present.
   Pus swab was taken for culture and sensitivity and antibiotics were given according to reports.
Name

Occupation

Address

Group

Age/Sex

Rural/Urban

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) Oliguria

(vi) Discharge from wound surface

(vii) Difficulty in swallowing or in inspiration

(viii) Any other

PHYSICAL EXAMINATION

(a) General examination at the time of admission

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

- Temperature - Hydration
(b) Local examination

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

Progressive report -

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Healed on

Time of healing
Investigations

Blood - TLC
   DLC
   Hb%
   ESR

Urine - Albumin
   Sugar
   M/E

Pus - Culture & Sensitivity

Treatment

(i) I/V fluids
(ii) Blood
(iii) Sedative
(iv) Analgesics
(v) Systemic antibiotics
(vi) Local application
Photograph 1: Showing separation of amnion with chorion from the placenta.
Photograph 2: Showing separation of amnion from chorion.
Photograph-3: Showing separation of amian up to the base of umbilical cord.