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PROSPECTIVE OBSERVATIONAL STUDY ON CONVENTIONAL DRESSING VS AMNIOTIC MEMBRANE DRESSING IN FACIAL BURN

Plastic Surgery

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ABSTRACT

Background: Facial burns represent one fourth to one third of all burns. Conventional dressing and Amniotic membrane application are the approaches in management of facial burn. The current study was conducted to evaluate the effectiveness in aesthetic outcome and pain management among facial burn patients undergoing conventional dressing and Amniotic membrane application. **Materials & methods:** In this descriptive observational study with prospective design, total 30 patients with facial burns were managed by dressing using Amniotic membrane (AM) or with conventional dressing (CD). They were followed-up thrice around 14, 30 and 180 days post procedure. Aesthetic outcome based upon FACE Q scoring and pain response was compared between two groups of patients. All the data were analyzed by Microsoft Excel and Statistical Package for Social Sciences (SPSS version 20) software. Data were checked for normal distribution using tests for normality and comparison was done either by parametric or non-parametric tests accordingly; p value of less than 0.05 was considered statistically significant. **Results:** The mean (SD) age of patients among Group AM was 30.87 (±5.61) years and among Group CD was 28.47 (±4.34) years. The intensity of pain was significantly lower among the AM group than CD patients. The mean score of Satisfaction was significantly higher AM group than CD with facial appearance overall and Satisfaction with facial appearance of skin. Majority of the patients had improved recovery among AM group than CD on follow up, which was statistically significant (p value<0.001). **Conclusion:** Amniotic membrane dressing was found to be superior to conventional in terms of less painful, better aesthetic outcome, improved recovery, higher satisfaction regarding decision and outcome.

KEYWORDS

Facial burns, Amnion, Aesthetic outcome, pain response, FACE Q scoring

INTRODUCTION

Globally, Burns has been a major public health problem, estimated to 180 000 deaths annually according to World Health Organization (WHO) [1]. Most of these deaths occur in low- and middle-income countries and almost two thirds occur in the WHO African and South-East Asia regions[1]. The cases of non-fatal burns carry a far greater impact, causing morbidity, including prolonged hospitalization, disfigurement and disability, resulting stigma and rejection very often[1]. In India, around 7 million people suffer from burn each year with 1.4 lakhs deaths and 2.4 lakhs people suffer from disability[2].

Severity of facial burn injury and deformity ranges from minor to severe. Early wound excision and skin grafting is not done in facial burn. Therefore, conventional dressing and Amniotic membrane application are the approaches in management of facial burn.

Even relatively minor facial disfigurement can have severe psychological and social impact on victim. The advantages of amniotic membrane in "superficial" burns (superficial 2nd degree) and "limited" burn size (less than 20%) has already been studied and demonstrated[3-4].

There has been a very lack of data regarding the efficacy of Amniotic membrane in facial burn dressing over conventional dressing. In this context, the current study was conducted to evaluate the effectiveness in aesthetic outcome and pain management among facial burn patients undergoing conventional dressing and Amniotic membrane application at a tertiary care healthcare facility at Kolkata.

MATERIAL AND METHOD:

The present study being a descriptive observational study with prospective design was conducted over one year duration at the Burn unit of R G Kar Medical College and Hospital, Kolkata. The study population was all the adult patients of 18 years and older with First and Second degree facial burn with or without other site burns, admitted within 48 hours of time of incidence of burn and <40% of total body surface area burn.

A total of 30 cases were selected by complete enumeration technique and included after applying the exclusion criteria- patients with third and fourth degree facial burn, Infected and neglected burn wound, Burn in areas other than face, Inability to follow-up, Patients dissatisfaction with the use of amniotic membrane, refusal to participate, and Chemical burns.

After obtaining the ethical approval from Institutional Ethics Committee, study patients were enrolled into two groups of 15 patients in each group where dressing was done using Amniotic membrane (AM) or with conventional dressing (CD). Placenta of healthy women who underwent C-section delivery was used after comprehensive serology screening. Amnion was separated and kept in proper media. They were followed-up thrice around 14, 30 and 180 days post procedure. A pre-designed and pre-tested schedule was prepared and subjects were interviewed regarding variables: Aesthetic outcome based upon FACE Q scoring[5, 6]: The FACE-Q utilizes five scales to measure the psychometric, Quality of life (QoL), patient experience, and cosmetic outcomes. Raw scores are transformed to a 0-100 scale with a higher score indicating a better outcome:

- Satisfaction with facial appearance overall and Satisfaction with skin by Appearance Appraisal Scales (AAS)
- Improvement in psychological wellbeing by Quality of Life scale (QLS)
- Recovery-early symptom by specific Likert's scale
- Satisfaction with decision and outcome of procedure by Process of Care Scale
- Pain response was assessed by Visual Analogue Scale. All the data were analyzed by Microsoft Excel and Statistical Package for Social Sciences (SPSS version 20) software. Descriptive analysis was done in the form of proportions for categorical variables and mean or median for continuous variable. Data were checked for normal distribution using tests for normality and comparison was done either by parametric or non-parametric tests accordingly; p value of less than 0.05 was considered statistically significant.

RESULTS:

The current study was conducted among two groups of 15 patients in each group where dressing was done using Amniotic membrane (AM) or with conventional dressing (CD). The mean (SD) age of patients among Group AM was 30.87 (±5.61) years and among Group CD was 28.47 (±4.34) years. And the difference of age and sex among the group was not statistically significant, making the group comparable in terms of age and sex (Table 1). The intensity of pain was lesser among the patients receiving Amniotic membrane procedure than conventional, which was also statistically significant at 14, 30 and 180 days of follow up (Table 2). Satisfaction with facial appearance overall and Satisfaction with facial appearance of skin by Appearance Appraisal Scales (AAS), was higher among the AM group than CD,

which were statistically significant (***p value<0.001***) (Figure 1 and 2). that on evaluating Psychological well-being, most of the patients among AM group were happy with the procedure than CD on follow up, which was also statistically significant (***p value<0.001***) (Table 3). Majority of the patients had improved recovery among AM group than CD on follow up, which was statistically significant (***p value<0.001***) (Figure 3). Satisfaction with Decision regarding worth the time and effort gradually increased to more than 90% among AM group than CD on follow up, which was statistically significant (***p value<0.001***) (Table 4). Satisfaction with outcome gradually increased to more than 85% among AM group than CD on follow up, which was statistically significant (***p value<0.001***) (Table 4).

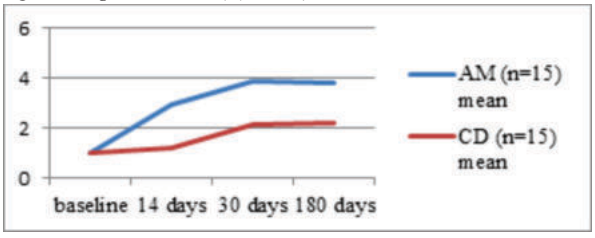

Figure 1: Distribution of AAS (Overall) among the groups

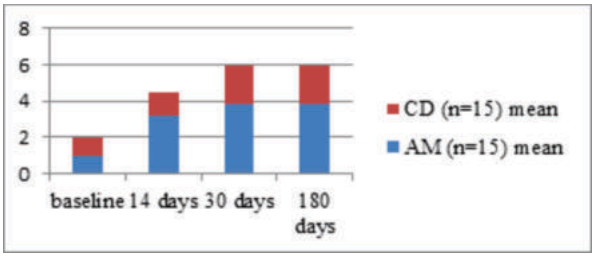

Figure 2: Distribution of AAS (Skin) among the groups

AAS: 1=very dissatisfied, 2=Dissatisfied, 3=Satisfied, 4=Very satisfied

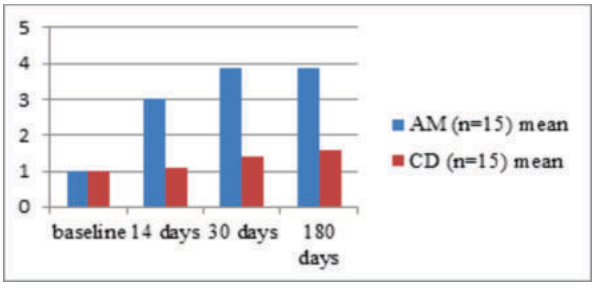

Figure 3: Distribution of Recovery early symptoms among the groups

Recovery early symptoms: Avoided certain facial movements for 2 days; 1= not at all, 2= a little of the time, 3=some of the time, 4=most of the time

Table 1: Distribution of age and sex among the subjects

Variables	AM (n=15) n (column %)	CD (n=15) n (column %)	p value*
Age (years)			0.713
<30	6 (40)	7 (46.7)	
≥30	9 (60)	8 (53.3)	
Sex			0.409
Male	5 (33.3)	3 (20)	
Female	10 (66.7)	12 (80)	

AM- Amniotic membrane, **CD**- Conventional dressing *Chi square statistics

Table 2: Distribution of VAS (Visual analog scale) among the groups

VAS	AM (n=15) n (column %)	CD (n=15) n (column %)	p value*
Baseline			0.269
3	8 (53.3)	5 (33.3)	
4	7 (46.7)	10 (66.7)	
14 days			<0.001
2	13 (86.7)	2 (13.3)	
3	2 (13.3)	13 (86.7)	
30 days			<0.001
1	12 (80)	2 (13.3)	
2	3 (20)	2 (13.3)	
3	-	11 (73.3)	
180 days			<0.001
1	14 (93.3)	1 (6.7)	
2	1 (6.7)	14 (93.3)	

VAS: 1=no pain, 2=mild pain 3=moderate pain, 4=Severe pain, *Chi square statistics

Table 3: Distribution of QLS (Psychological well-being) among the groups

QLS	AM (n=15) n (column %)	CD (n=15) n (column %)	p value*
baseline			-
1	15 (100)	15 (100)	
14 days			<0.001
1	-	14 ()	
2	1 (6.7)	1 ()	
3	13 (13)	-	
4	1 (6.7)	-	
30 days			<0.001
1	-	9 (60)	
2	-	6 (40)	
3	2 (13.3)	-	
4	13 (86.7)	-	
180 days			<0.001
1	-	7 (46.7)	
2	-	7 (46.7)	
3	2 (13.3)	1 (6.7)	
4	13 (86.7)	-	

QLS: Feel happy- 4=definitely agree, 3=somewhat agree, 2=somewhat disagree, 1=definitely disagree, *Chi square statistics

Table 4: Distribution of Satisfaction with Decision and outcome of procedure among the groups

Satisfaction with Decision	AM (n=15) n (column %)	CD (n=15) n (column %)	p value*
baseline			0.624
1	13 (86.7)	12 (80)	
2	2 (13.3)	3 (20)	
14 days			0.001
1	1 (6.7)	7 (46.7)	
2	1 (6.7)	6 (40)	
3	5 (33.3)	1 (6.7)	
4	8 (53.3)	1 (6.7)	
30 days			<0.001
2	-	13 (40)	
3	2 (13.3)	1 (6.7)	
4	13 (86.7)	1 (6.7)	
180 days			<0.001
2	-	14 (93.3)	
3	1 (6.7)	1 (6.7)	
4	14 (93.3)	-	
Satisfaction with outcome			
baseline			-
1	15 (100)	15 (100)	
14 days			<0.001
1	1 (6.7)	3 (20)	
2	1 (6.7)	11 (73.3)	
3	13 (86.7)	1 (6.7)	
30 days			<0.001
2	2 (13.3)	12 (40)	
3	1 (6.7)	2 (6.7)	
4	12 (80)	1 (6.7)	
180 days			<0.001
2	1 (6.7)	13 (86.7)	
3	1 (6.7)	1 (6.7)	
4	13 (86.7)	1 (6.7)	

Satisfaction with Decision: worth the time and effort & **Satisfaction with outcome:** Result was just expected:-4=definitely agree,

3=somewhat agree, 2=somewhat disagree, 1=definitely disagree

DISCUSSION:

In India, over one million people are moderately or severely burnt every year[1]. It has huge socio-economic impact too due to direct cost of hospitalization, surgery and rehabilitation; indirect cost includes loss of wages, prolonged care, and psychological problems due to deformity. Our face is our window to the world. Patients with facial burns present the clinician with the challenge of treating both functional and aesthetic needs. Conventional dressing do not produce good aesthetic outcome. In this study Amniotic membrane application for facial burn dressing was evaluated in terms of Aesthetic outcome and pain responses in subsequent follow up visit for 6 months. The FACE-Q is a standardized tool which has been being validated using a rigorous mixed methods approach to measure outcome comprehensively.

Although there are only few studies were conducted regarding this aspect especially in this part of the world, we tried to discuss our study findings with the similar studies done here and abroad.

The current study found that the mean age was more than 25 years among both the group of patients and The majority of the subjects were aged 30 years and above and were females among both the group of facial burn patients. The findings correspond with the findings from the study done by Shankar et al.[7]: Epidemiological study of burn injuries in North Karnataka.

In the present study we observed that the intensity of pain was significantly lower receiving Amniotic membrane dressing than conventional at every follow up visit for 6 months. The study by Mohammadi et al.[8] in their study on "Amniotic Membrane Dressing vs Conventional Topical Antibiotic Dressing in Hospitalized Burn Patients" also reported similar occurrence of lesser pain intensity among Amniotic Membrane Dressing.

Amniotic membrane dressing was found to be superior to conventional in terms of less painful, better aesthetic outcome, improved recovery, higher satisfaction regarding decision and outcome.

There are many advantages of amniotic membrane as a wound dressing, especially in prevention of infection, alleviation of pain, acceleration of wound healing, and good handling properties[9-14].

Early recovery and feasible mobility of patients with application of amnion seems to be a secondary effect of its pain subsiding.

Soleimani H et al.[15] in their randomized clinical trial study evaluating short-term outcomes following amniotic membrane and conventional dressing in skin graft donor site reported use of amniotic membrane for dressing second-degree burn wounds, compared to the routine dressings, has better results and benefits such as less pain.

As there is scarcity of data on effectiveness of amniotic membrane over conventional dressing, the findings of this study will be very helpful in bridging the gap in our knowledge and practice. The limitations of this study will be its small sample size and study setting. A higher study design with multi-centric study with larger sample size would be recommended.

CONCLUSION:

The consequences of facial burns are not only functional and aesthetic but also psychological. This study demonstrated that the use of amniotic membrane as a temporary biological dressing was an effective method in reducing pain, better aesthetic outcome, higher recovery, more satisfaction among the patient regarding outcome than conventional dressing in facial burn, especially among younger age and among females.

Conflict of Interest: None to declare

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