Kufa Journal for Nursing Sciences
Open Access Full Text Article

Publisher
University of Kufa, Faculty of Nursing

Received: 02 April, 2025
Accepted: 11 June, 2025
Published: 22 June, 2025
Vol. 15(1), 2025: 57 – 65

https://doi.org/10.36321/kjns.vi20251.19006
ORIGINAL RESEARCH

Second-degree Burn Wound Healing with Amniotic Membrane Dressings

Atiya Kareem Mohammed [1], Mezjda I. M. Rashaan [2], Srwa Rasul Ahmed [3].

[1] *Maternal and Neonate Nursing, College of Nursing, University of Sulaimani, Sulaymaniyah, Iraq.*
[2] *Department of Surgery, College of Medicine, University of Sulaimani, Sulaymaniyah, Iraq.*
[3] *Ministry of Health, Sulaimani Burn, Plastic and Reconstructive Surgery Hospital, Sulaimani, Sulaymaniyah, Iraq.*

CORRESPONDING AUTHOR: Atiya Kareem Mohammed, Maternal and Neonate Nursing, College of Nursing, University of Sulaimani, Sulaymaniyah, Iraq.
Email: **ativa.mohammed@univsul.edu.iq**

ABSTRACT

Background: Amniotic membrane dressings are highly effective in managing burn wounds. They offer a cost-effective solution and contribute to reduced pain and accelerated wound healing in cases of burn injuries.

Objectives: This study aims to evaluate the utility of Amniotic Membrane dressings in treating second-degree burns.

Methodology: A quasi-experimental investigation was conducted at the Suleimani Emergency Hospital for Burn and Plastic Surgery. The study included 101 patients with second-degree burns, who were purposefully divided into a study and control group. The study monitored dressing changes and the healing process in both groups from April 3rd to December 2022. Data analysis involved descriptive and inferential statistical methods.

Results: The study's findings reveal statistically significant differences concerning pain scores between the study and control groups. Notably, there was a significant reduction in pain experienced during dressing changes ($P < 0.001$), and the healing duration was notably shorter in the study group. Additionally, no significant associations were found between the cause of burns and their location and the total burn surface area. Furthermore, no significant associations were observed between socio-demographic characteristics (age, gender, education) in the two groups.

Conclusion: This study concludes that the use of Amniotic Membrane dressings significantly reduces the frequency of dressing changes and accelerates the healing process for second-degree burns.

Keywords: treating second-degree burns; Amniotic Membrane dressings; A quasi-experimental investigation.

INTRODUCTION

Second-degree burns represent a common yet challenging clinical concern, characterized by damage to the epidermis and dermis layers of the skin. These injuries often result in excruciating pain and necessitate meticulous wound management to expedite healing and minimize complications [(1)].

A burn dressing should cover the damaged epithelium, protect against bacterial and fungal infection, and maintain the protective seal of the dressing. Furthermore, the dressing should be placed over the wound to conserve body heat and minimize exposure to cold. The severity of the burn determines the type of dressing to use. First-degree burns do not require dressings, while second-degree burns may necessitate topical antibiotic dressings, along with gauze and elastic bands that need to be changed daily [(2)].

How to Cite: Mohammed, A. K., Rashaan, M. I. M., & Ahmed, S. R. . (2025). Second-degree burn wound healing with amniotic membrane dressings. *Kufa Journal for Nursing Sciences, 15*(1), 57-65. https://doi.org/10.36321/kjns.vi20251.19006

Investigators have lately used amniotic membranes as a potential dressing for second-degree burns. The amniotic membrane, derived from the placenta, possesses some of the most exceptional biological properties, including anti-inflammatory, antimicrobial, and wound-healing capabilities. This biomaterial has been utilized for burn injuries because it helps painlessly nurture the tissue's healing while allowing for maximum tissue growth [3]. Davis first described it in 1910. It has provided new perspectives in the twentieth century, such as the superiority of regular dressings over other methods for treating burn wounds [4].

Several studies have focused on the cost-effectiveness of amniotic membrane dressings in managing second-degree burns, emphasizing pain relief and acceleration of healing time. One study established that an amniotic membrane used as a dressing material decreases epithelialization time, ameliorates scar tissue formation, and improves patient comfort during recovery.

The history of the human amniotic membrane (HAM) as a biomaterial for reconstructive surgery and wound-healing research dates back to 1910 when Davis first described it. It has provided new perspectives in the twentieth century; for example, it is superior to conventional dressings in treating burn wounds [6].

The amniotic membrane (AM) exhibits a wide range of proteolytic activity due to the suppression of inflammation initiated by the proteasomal AIM-2 complex, which is responsible for cornea abrasions. The AM is gently dissected at various developmental times because most of its anti-inflammatory and anti-angiogenic factors originate from the epithelial cells, allowing for easy detachment of the AM from the chorion [7].

Amniotic-membrane dressings are an advanced methodology for wound healing. These types of dressings can help address the issue of frequent changes in the early stages of a wound or the extended holding period of traditional dressings. Accordingly, amniotic membrane-based dressings should be the main intervention for addressing issues experienced during the healing process in burn patients.

AIMS OF THE STUDY

This study aims to evaluate the utility of Amniotic Membrane dressings in treating second-degree burns.

METHODOLOGY

Design of the Study

A quasi-experimental design was used to conduct the study. 101 patient with superficial second-degree burns who visited Suleimani Burn, Plastic and Reconstructive Surgery Hospital participated in this study and prospectively followed their wound healing. The study was conducted from February 2022 to March 2023.

The Sample of the Study

The study involved a sample of 101 patients who were purposively selected to seek treatment for burns at Sulaimani Emergency Hospital for Burn and Plastic Surgery. There were two groups: a case group of 50 patients treated with amniotic membrane (a biological dressing) and a control group of 51 patients matched for age and other characteristics. Nine patients were excluded from the study for various reasons, including failure to report pain and movement, unresponsiveness to researcher inquiries, changes in contact information, and seeking alternative natural remedies.

The eligibility criteria for participation in the study included having a superficial second-degree burn, being either male or female, visiting the hospital for burn treatment, and being over 2 years of age. Patients with medical conditions such as diabetes, immune diseases, or blood disorders were excluded.

Data was collected using a questionnaire and Follow-up Checklist that assessed follow-up visits and wound healing progress.

Data collection

For the study took place over nine months, from April 3rd to the end of December 2022. The process involved specific phases:

Collection of Placenta and preparation of human amniotic membrane

The study involved collecting and preparing human amniotic membranes for medical use. Placentas were collected from healthy mothers during delivery at a maternity teaching hospital. Amniotic membrane was obtained exclusively from cesarean sections performed on mothers who tested negative for HCV, HBV, and HIV. The amnion was carefully separated from the chorion and cleansed of blood using tap water.

After collection, the placenta and amniotic sacs were stored in cold containers within 6 hours. The amniotic membranes were manually separated from the chorionic membrane and transported to a burn and plastic surgery centre. There, they were cleaned with aseptic sodium chloride solution, placed in a container with sodium chloride and antibiotics, and refrigerated.

The hospital awaited lab results to ensure safety and compliance with health standards. The amniotic membrane was discarded if a swab test was conducted and the result was positive. Otherwise, it was stored at 4°C for 15 days for medical use. This meticulous process ensured the safe preparation of human amniotic membranes for potential clinical applications.

Follow-up Checklist

The study's Follow-up Checklist consists of various components, including Visiting follow-up, Patient admission, outpatient, Daily, every 2nd day, 3rd day, and twice-a-day assessment. The Visiting follow-up involves monitoring for signs of infection and the healing process.

Assessment: Patients meeting specific eligibility criteria, primarily those with superficial second-degree burns, were selected for the study. Patients were informed about the study's purpose and obtained oral consent. Data was collected through direct interviews using structured questionnaires and procedure forms. Each form was coded, and patients were individually questioned and examined to ensure confidentiality and a calm environment.

Planning: 101 applicants meeting the required criteria were selected, of whom 50 were assigned to the experimental arm and 51 to the control arm. Both arms were provided with initial management on admission, which included obtaining medical history, checking vital signs, and estimating the extent of the burns. Pain medication was administered as necessary, and the procedure was explained to the patient and family members.

Implementation: Surgeons who deal with burns evaluated all patients in a resuscitation room to establish the depth and extent of all burns. These patients also underwent two different dressing methods (Amniotic Membrane) for the study group and (Traditional Method) for the control group.

Amniotic Membrane Dressing (Study Group):

Patient Stabilisation: Ensuring patient safety and controlling pain.

Clothing and Debris Removal: Thoroughly clean the area around the burn.

Gentle Washing: Wash the burnt skin and wound using mild soap, then rinse thoroughly.

Cleanse and Debride: The burned skin is washed with saline, and loose skin is removed.

Sterile Dressing Technique: Asepsis should be followed.

Amniotic Membrane Preparation: The membrane is to be placed in saline.

Preparing the Burn Wound: Antiseptic surgical scrubs are applied, and a Burn Wound is performed.

Applying the Membrane: The Amniotic Membrane is placed onto the wound.

Dressing and Drying: The gauze is bound on the membrane. Signs of infection have to be watched for during the follow-up period.

Traditional Method (Control Group):

Patient Stabilization and Pain Management: Prioritize pain relief.

Clothing and Debris Removal: Carefully clean the burn area.

Gentle Washing: Wash the skin and the burn wound gently.

Cleansing and Debridement: Clean the burn area and remove loose skin.

Application of Dressing: Apply a non-adherent dressing.

Secondary Dressing: Apply secondary dressings as needed. Reassess wounds and redress.

Evaluation: The dressing should be changed according to protocol if an infection or exudate develops. Consistent redressing of wounds should be performed until the epithelial cells completely cover the wound, ensuring appropriate healing and recovery while minimizing complications.

Statistical analysis

Data from the study was coded after collection and analyzed using IBM SPSS Statistics version 23. The data were presented in tabular form to display the frequency and relative frequency distribution of various variables in both the amniotic and traditional groups. Chi-square tests were used to compare categorical data between the two groups. The difference in means between the two groups (cases and controls) was evaluated using an independent sample t-test. Bar charts were utilized for a graphical representation of select study variables. A significance level of $p < 0.05$ was adopted to determine the statistical significance of the tests.

RESULTS

The study found that the average age of the burn case in the control group was 29.7 ± 20.7 years, while the average age of the study group was 25.6 ± 17.3 years. There was a significant difference in age between the two groups (P = 0.29). Additionally, the study found that more than half of the patients in the study group were female (32%), while more than half of the patients in the control group were male (29%). There was no significant difference between the groups regarding educational level (P = 0.47). The study found that more than half of the patients in the study group were students (38%), while more than half of the patients in the control group were unemployed (15.7%).

Furthermore, more than half of the patients in the study group were housewives only (18%), while more than half of the patients in the control group were employed (23.5%). There was no significant difference between the groups regarding marital status (P = 0.04). As presented in Table (1).

Table 2 illustrates the dressing changes of the patients, with 94% of patients in the control group having dressings ≥ 5, whereas the lowest proportion (5.9%) utilized No. of dressings between 1-5. In contrast, the study group had 24% and 76% of patients using dressings between 1-5 and ≥ 5, respectively. These differences in dressing practices between the groups were statistically significant (P<0.001).

Examining Table 2 further, it is evident that the control group had most patients (31.37%) changing dressings daily, significantly higher than the study group's proportion (2%). On the other hand, dressing change every other day was significantly more common in the study group (82%) compared to the control group (50.98%). The study group had the lowest percentage (0%) for dressing changes twice daily. The statistical analysis indicates a significant difference between the groups regarding dressing change (P<0.001).

The data presented in Figure 1 indicate that nearly half of the study group received an application of amniotic membrane two days after the burn occurred and experienced healing within 8-14 days. Conversely, a minor proportion of the study group applied the treatment three days after the burn, and their healing process took place within 15-23 days.

The highest proportion of the samples in both groups had 8 - 14 days. From healing duration

(Days), 93.5% and 51% were in the Amniotic group compared to the Traditional group. At 15 - 23 days, the lowest proportion (6.5%) was in the Amniotic group, 49% in the Traditional group, while some had twice daily dressing. The findings show that statistically high significant variations are present between the groups regarding the healing duration (P< 0.001).

DISCUSSION:

The amniotic membrane has gained some interest in clinical practice as a light shock of active medications to manage burning wounds. Besides exhibiting immunological properties, these include anti-inflammatory, antibacterial, and antiviral, contributing to their healing efficacy in wounds [5, 6]. One of the best-known threats in managing burning wounds is the risk of infection.

In the control group, about half of the sample (59.4%) needed a dressing change of five or more, while a few cases (5.9%) required between one and five dressing changes. In comparison, the majority of the study group (76%) needed five or more, thus indicating significant differences between the two groups (p <0.001).

Regarding frequency, the highest percentage (40.6%) of study and control groups required regular dressing changes within 24 hours. In comparison, the lowest percentage (5.9%) required dressing changes for the feeling of imperfect healing till 48 hours from this would still not fit in the 48-hour block; therefore, to maintain comfort pattern IMMEDIATE CHANGES THROUGH 24 HOURS FOR REGULAR DRESSINGS. Very importantly, the study group needed a higher rate (38%) of daily dressing changes than the control group. Dressing-change characteristics of 2-3 times a day were noted in only 5.9% of cases, and dressing changes were required in the control group every 2 days higher than in the study group (49% versus 24% for wound treatment). These differences were statistically significant concerning dressing change criteria (p < 0.001).

This current study is in line with [2], where the amniotic membrane dressing change frequency was once a week, consistent with scientific literature.

Besides, in accordance with the current study findings [7]. conducted a randomized control trial in Sichuan, More, and it compared several features of the amniotic membrane with other dressings; it showed that the amniotic membrane group had fewer dressing change rates compared to both controls and silver sulfadiazine, with SMD being -3.53 with 95% CI ranging between -6.26 and -0.80 (p = 0.01). This study also found high heterogeneity, with I2 = 97% (p < 0.00001). Such findings were echoed in another study [8], who established that the amniotic membrane dressing group was changed every 3-4 days, while the traditional method used silver sulfadiazine plus gauze and changed twice a day. Another aim of this study is to find the efficacy of amniotic membrane dressing concerning the healing period expressed in several days. In both groups, most of the samples had a duration of healing from 8 to 14 days, represented in 93.3% for amniotic and 37.3% for traditional dressing; conversely, the least group members had healing of 15-23 days, with amniotic dressing having 6.7%, whereas traditional had 35.3% and some with dressing changes twice daily. There was a statistically significant difference between the groups on healing duration (p < 0.001) and format [9].

The present study's findings are consistent with [10], a randomized controlled trial conducted in the Plastic & Reconstructive Surgery Department of Jinnah Hospital and Burn Centre, Lahore. They showed that group A had a mean healing time of 15.73 ± 2.79 days for amnion, while group B, using Vaseline-impregnated gauze, had a mean healing time of 22.80 ± 4.44 days, with a p-value of 0.0001. Moreover, our study findings are similar to those of [11], who conducted a randomized, double-blind, phase I clinical trial. In the study, complete reepithelialisation in the amniotic membrane groups occurs in 10.1 ± 2.4 days and 11.3 ± 2.9 days, respectively. This demonstrates a significantly

accelerated healing process compared to the control group, with a mean closure time of 14.8 ± 1.6 days. Our current study is also in line with [12], which showed that healing with the amniotic membrane of grade III burn wounds took 6 to 7 days faster, with a mean of 19.5 ± 4.1 days, compared to the control group's mean healing time of 25.6 ± 5.3 days. The healing time for the intervention group (17.61 ± 2.56 days) was significantly shorter, $p < 0.05$, compared to 21.16 ± 3.45 days in the control group, supporting the findings of a faster recovery time in Said et al. The amniotic membrane's ease of preparation and application is a definite plus for user-friendliness in a clinical environment, which is particularly important in burn wards where strict and efficient care is necessary to speed up recovery and reduce complications. Research on human amniotic membranes has also examined the economics of treating burn wounds and their associated costs. The other authors, as reported by [12], stated that healing of third-degree burn wounds was quicker with amniotic membrane, and as a result, saved a considerable amount on hospitalization costs compared to traditional treatments.

CONCLUSIONS:

In conclusion, based on some very encouraging findings, amniotic membrane dressing seems to work well in providing the necessary care for second-degree burns. Global evidence indicates that amniotic membrane dressings seem to expedite healing, reduce inflammation, alleviate pain, and promote better outcomes, making this dressing an attractive option for consideration, given its ease of application and potential cost savings.

Strengths and Limitations of the study:

The study topic was unique, presenting a novel experience for both participants and healthcare staff, which posed challenges and encountered several barriers as follows:

- **Scarcity of Information:** Gathering adequate data was hindered by the limited availability of information in the hospital.
- **Special arrangements** were needed to coordinate between burn and obstetric hospitals for the research, adding complexity.
- **Time-Consuming Learning Process:** Learning the procedures for preparing, storing, and transferring the amniotic membrane was time-consuming.
- **High Drop-Out Rate:** Some patients missed follow-up appointments or failed to return, resulting in data exclusions.
- **Difficulties with Dressing Application:** Limited space in the outpatient department made amniotic membrane dressing application challenging.
- **Renovation-Related Obstacles:** Hospital renovations led to overcrowding and time constraints.
- **Decrease in Burn Cases:** The number of burn cases decreased due to changes in burning practices and the implementation of increased safety measures.
- **Limited Relevant Literature:** It is challenging to locate suitable references due to the limited research available.

Ethical Considerations: The protocol was reviewed by the Ethics Committee, and permission was requested from the Director of the Maternity Teaching Hospital and the Sulaimani Emergency Hospital for Burn and Plastic Surgery for assistance and cooperation in this research. Verbal consent forms were obtained from each study participant. Throughout the study, the confidentiality of all personal information was guaranteed through the patients' anonymity.

Acknowledgements: I thank the staff at the Sulaimani Emergency Hospital for Burn and Plastic Surgery in Sulaimaniyah City, Iraq, for their kind assistance and support in this study.

Disclosure: This research study has no financial disclosures or conflict of interest consequences.

Data Availability Statement: The data supporting the findings of this study are available within the article.

REFERENCES:

1. Schaefer TJ, Szymanski KD. *Burn evaluation and management*. Last Update: August 8, 2023.
2. Kazemzadeh J, Yousefiazar A, Zahedi A. Amniotic membrane dressing versus nitrofurazone-impregnated dressing in the treatment of second-degree burn wounds: a randomized clinical trial. *Wounds: a Compendium of Clinical Research and Practice*. 2021 Jan 1;34(1):11-6.
3. Dadkhah Tehrani F, Firouzeh A, Shabani I, Shabani A. A review on modifications of amniotic membrane for biomedical applications. *Frontiers in bioengineering and biotechnology*. 2021 Jan 13;8:606982.
4. Loeffelbein, D.J., Rohleder, N.H., Eddicks, M., Baumann, C.M., Stoeckelhuber, M., Wolff, K.D., Drecoll, E., Steinstraesser, L., Hennerbichler, S. and Kesting, M.R. (2014). Evaluation of human amniotic membrane as a wound dressing for split-thickness skin-graft donor sites. *BioMed research international*, 2014.
5. ElHeneidy, H., Omran, E., Halwagy, A., Al-Inany, H., Al-Ansary, M., & Gad, A. (2016). Amniotic membrane can be a valid source for wound healing. *International journal of Women's Health*, 225-231.
6. Jhumi, I. J., Arafat, T. A., Karmakar, P. C., Arifuzzaman, M., Hossain, M. S., Akhtar, N., & Asaduzzaman, S. M. (2023). Silver Nanoparticle Incorporated Human Amniotic Membrane Gel Accelerates Second-Degree Burn Wound Healing in Wister Rat. *Evidence-Based Complementary and Alternative Medicine*, 2023.
7. Yang, C., Xiong, A.B., He, X.C., Ding, X.B., Tian, X.L., Li, Y. and Yan, H. (2021). Efficacy and feasibility of amniotic membrane for treating burn wounds: a meta-analysis. *Journal of Trauma and Acute Care Surgery*, 90(4), pp.744-755.
8. Mohammadi, A.A., Eskandari, S. and Johari, H.G. (2017). Using amniotic membrane as a novel method to reduce post-burn hypertrophic scar formation: a prospective follow-up study. *Journal of cutaneous and aesthetic surgery*, 10(1), p.13.
9. Ahmed, S. R., Mohammed, A. K., & Mohammed Rashaan, M. I. (2023). Evaluation of amniotic membrane in the dressing of second-degree burn. *Mosul Journal of Nursing*, 11(2), 356-365.
10. Mujahid, A. M., Khan, H., Ishhaque, U., Ahmad, S., Mehmood, K., & Tarar, M. N. (2021). Comparison of the outcome of amnion versus conventional (Vaseline-impregnated gauze) dressing in superficial partial thickness burn patients in terms of healing time and mean pain. *The Professional Medical Journal*, 28(09), 1262-1268.
11. Momeni, M., Fallah, N., Bajouri, A., Bagheri, T., Orouji, Z., Pahlevanpour, P., ... & Fatemi, M. J. (2019). A randomized, double-blind, phase I clinical trial of fetal cell-based skin substitutes on healing of donor sites in burn patients. *Burns*, 45(4), 914-922.
12. Мустафакулов, И.Б., Карабаев, Х.К. and Джураева, З.А. (2021). Amniotic membrane-as an effective biological wound covering. *Узбекский Медицинский Журнал*, (SPECIAL 1).
13. Salehi, S. H., As' adi, K., Mousavi, S. J., & Shoar, S. (2015). Evaluation of amniotic membrane effectiveness in skin graft donor site dressing in burn patients. *Indian Journal of Surgery*, 77, 427-431.
14. Elkhenany, H., El-Derby, A., Abd Elkodous, M., Salah, R. A., Lotfy, A., & El-Badri, N. (2022). Applications of the amniotic membrane in tissue engineering and regeneration: the hundred-year challenge. *Stem Cell Research & Therapy*, 13(1), 1-19.

TABLES & Figures:

Table (1): Distribution of the study samples according to socio-demographic characteristics

Socio-demographic Variables		`Study participant		Total	P value
		Amniotic group	Traditional group		
Age	2 - 17 Years	18 (36%)	18 (35.3%)	36 (35.6%)	0.88
	18 - 44 Years	25 (50%)	24 (47.1%)	49 (48.5%)	N. sig
	> 44 Years	7 (14%)	9 (17.6%)	16 (15.9%)	
	Mean ± SD	25.6 ± 17.3	29.7 ± 20.7	27.7 ± 19.1	
Gender	Male	18 (36%)	22 (43.1%)	40 (39.6%)	0.46
	Female	32 (64%)	29 (56.9%)	61 (60.4%)	N. sig
Level of education	Educated	42 (84%)	40 (78.4%)	82 (81.2%)	0.47
	Uneducated	8 (16%)	11 (21.6%)	19 (18.8%)	N. sig
Occupation	Student	19 (38%)	8 (15.7%)	27 (26.8%)	0.05
	Housewife	9 (18%)	12 (23.5%)	21 (20.8%)	Sig.
	Employed	17 (34%)	19 (37.3%)	36 (35.6%)	
	Unemployed	5 (10%)	12 (23.5%)	17 (16.8%)	
Residency	Urban	39 (78%)	46 (90.2%)	85 (84.2%)	0.09
	Rural	11 (22%)	5 (9.8%)	16 (15.9%)	N. sig
Total		**50 (100%)**	**51 (100%)**	**101 (100%)**	

Table (2): Distribution of the study samples according to the number of dressing changes

Dressing change variable		Study participant		Total	P value
		Amniotic group	Traditional group		
Number of dressings	1 - 5 dressings	38 (76%)	3 (5.9%)	41 (40.6%)	< 0.001
	> 5 dressings	12 (24%)	48 (94.1%)	60 (59.4%)	H.sig
Dressing change	Daily	1 (2%)	16(31.37%)	17 (16.69%)	< 0.001
	Every second day	41 (82%)	26 (50.98%)	67 (66.49%)	H.sig
	Every third day	8(16%)	1 (1.96%)	9 (8.98%)	
	Twice a day	0 (0%)	8 (15.68%)	8(7.84%)	
Total		**50 (100%)**	**51 (100%)**	**101 (100%)**	

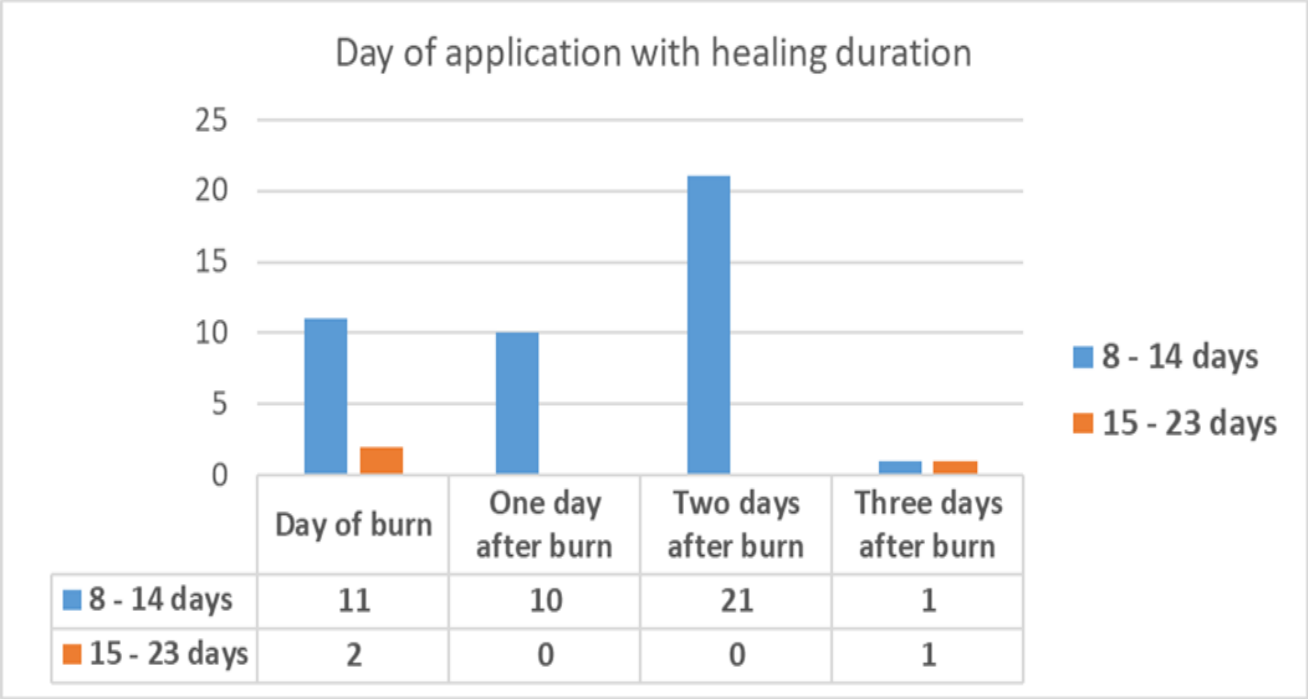

Figure (1): Association between the day of amniotic application with healing duration.

Table (3): Distribution of the study samples according to healing duration (Days)

Healing Duration (day) variable		Study participant		Total	P value
		Amniotic group	Traditional group		
Healing Duration (day)	8 - 14 days	43 (93.5%)	26 (51%) +	68 (70.8%)	0.001 H. sig
	15 - 23 days	3 (6.5%)	25 (49.0%)	28 (29.2%)	
	Mean ± SD	11.7 ± 2.0	13.7 ± 4.4	12.8 ± 3.6	
Total		**46* (100%)**	**51 (100%)**	**96 (100%)**	

* Performed by Independent t-test, ** performed by Chi-square test, +Some of them had twice daily dressing