Sarcouncil journal of Medical sciences

ISSN(Online): 2945-3526

Volume- 01| Issue- 02| 2022

Research Article **Received:** 30-03-2022 | **Accepted:** 10-04-2022 | **Published:** 20-04-2022

Rule of Early Excision and Graft in Major Burn Injury

Dr. Athir M. Al Saad[1], Dr. Zinah S. Jaafar[2] and Dr. Ahmed R. Kafala[3]

[1]M.B.Ch.B.\ F.I.M.B.S. \ D.L.M. \ (Plastic & Reconstructive Surgery) Ministry of Health, Baghdad Al-Russafa Health Directorate, Imam Ali Hospital, Baghdad, Iraq

[2]M.B.Ch.B. \ F.J.M.C. \ E.M. \ (Emergency Medicine) Iraqi Ministry of Health, Medical City Directorate, Burn Specialised Hospital, Baghdad, Iraq

[3]M.B.Ch.B. \ D.E.M. \ (Emergency Medicine) Iraqi Ministry of Health, Medical City Directorate, Burn Specialised Hospital, Baghdad, Iraq

Abstract: This study aims to assessment the Rule of early excision and graft in Major Burn Injury. A cross-sectional study was conducted in different hospitals in Baghdad, Iraq, where 70 patients were collected and distributed into two groups: patients and control, and the proportion of females were more than males, where the patients were distributed according to gender (20 male patients and 50 female patients). Where this study was conducted retrospectively, where the time of the first circumcision was linked to infection and death, and the statistical analysis program SPSS IBM SOFT 2022 and Microsoft Excel 2013 was used to analyse the data and demographic information obtained from the electronic record. The age groups were divided into four groups and included each of (from 15 years old to over 50 years old). Early excision and grafting of small burn wounds is a generally accepted treatment—early excision of burn injuries greater than 25 % total body surface area (TBSA) in adults. Early excision and grafting of small burn wounds are generally accepted treatment. Early excision of burn injuries greater than 25 % total body surface area (TBSA) in adults, however, has not been universally accepted. In this study, 70 patients whose age groups were divided into four groups and included each of (from 15 years old to over 50 years old). with greater than 30% total body surface area (TBSA).

Keywords: TBSA, early, excision, WHO, burn, LOS.

INTRODUCTION

Burns are a global health problem, with an estimated 180,000 burn deaths worldwide each year. Most of these cases occur in low- and middle-income countries, and nearly two-thirds are in two WHO regions [WHO, 2012; Levine, B.A. *et al*., 1968]

Burn mortality rates are declining in many high-income countries, and the infant mortality rate from burns in low- and middle-income countries is now more than seven times higher than in high-income countries [Pietsch, J.B. *et al*., 2006].

Recent data indicate that women have slightly higher burn rates than men, in contrast to the usual injury prevalence pattern, which tends to show higher rates of injury for different mechanisms of injury in men [Janžekovic, Z. *et al*., 1970; Burke, J.F. *et al*., 1976].

First-degree burns (sometimes called superficial burns) are limited to the skin.

Partial burns (also called second-degree burns) involve part of the dermis and may be superficial or deep [Nguyen, T.T. *et al*., 1996; Irei, M. *et al*., 1986].

Superficial burns or partial thickness affect the papillary (superficial) layer of the dermis. These burns heal within 1-2 weeks, and the scarring is usually minimal. Healing begins with the epidermal cells that cover the ducts of the sweat glands and hair follicles. These cells grow on the surface and then migrate inward toward the cells of adjacent glands and follicles [Demling, R.H, 1983; Xiao-Wu, W, 2002; Ong, Y.S. *et al*., 2006].

Deep partial-thickness burns involve the deeper layers of the dermis and require ≥ 2 weeks to heal. Healing occurs only on the basis of hair follicles.

First Degree Burns

Full-thickness (third-degree) burns involve the entire dermis and underlying fatty tissue. Healing occurs from the ocean. These burns, with the exception of minor burns, require skin grafts [Vinita, P. *et al*., 2014; Kiser, M. *et al*., 2013].

MATERIAL AND METHOD

Patient Sample

A cross-sectional study was conducted in different hospitals in Baghdad, Iraq, where 40 patients were collected and distributed into two groups: patients and control, and the proportion of females were more than males, where the patients were distributed according to gender (20 male patients and 50 female patients).

Study Design

The patients were divided into two groups, the control group and the infection group, where the control group included 30 patients and the control ten patients. Patients were assigned based on the burning day (the first day to the sixth day), and the

Copyright © 2022 The Author(s): This work is licensed under a Creative Commons Attribution- NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) International License

***Corresponding Author:** Dr. Athir M. Al Saad

DOI- https://doi.org/10.5281/zenodo.6539723

electronic record was based on the existing electronic record to collect information. The demographic data of the disease, which consisted of (age, gender, TBSA burn).

The burn registry was established to collect patient demographic, clinical characteristics, and outcome data. Specifically, data points utilized in this study include age, sex, date of admission, mechanism of injury, time to presentation to hospital, percentage of total body surface area burn (%TBSA), comorbidities, laboratory values, date and type of operative procedures, length of hospital stay, and outcome (discharge, abscond, or death).

The factor of time, age, extent, depth, and location, together with comorbidities, will determine the severity of the condition and its prognostic progression, and by relying on the depth of the burn to the patients, excision was used for the partial and full thickness of burns.

Study Period

An agreement was made with the relevant committees in order to obtain the required licenses for this study, as the study period was for a full year and included following up on developments in addition to monitoring the patient and This study started from 4-8-2020 to 4-5-2021.

Aim of Study

This study aims to assessment the Rule of early excision and graft in Major Burn Injury.

RESULTS

Table 1: results of patients according to age

P	C N=70	P%	Chi –square
Less than 15	10	14.2	
From 15 to 30	10	14.2	
From 31 to 50	30	42.8	2.99
Above 50	20	28.5	

Table 2: results of control according to age

P	C N=20	P%	Chi –square
35-39	4	20	
40-44	12	40	1.23
45-50	4	40	

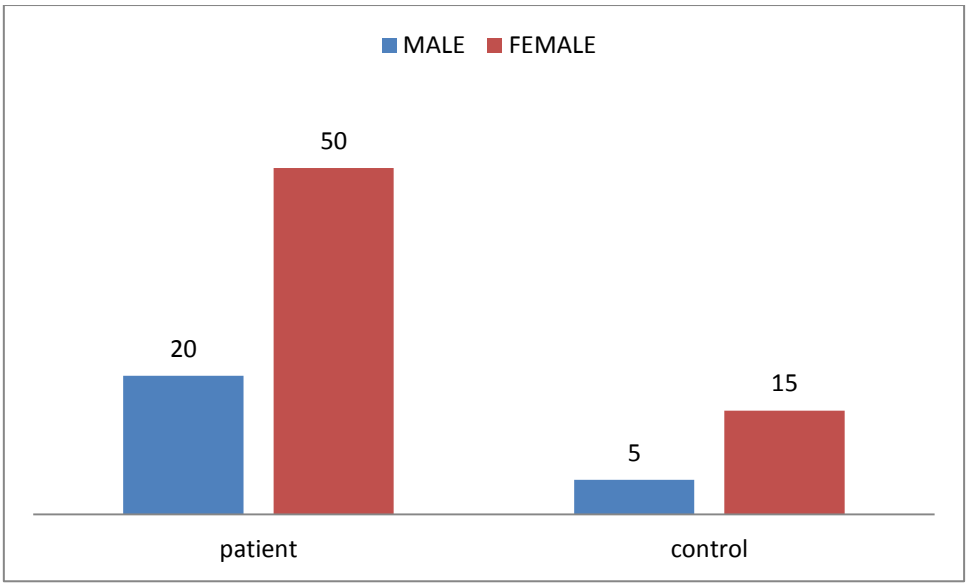

Fig 1: Distribution of patient and control according to sex

Table 3: Results and demographic data into the two groups

p	G1 m	G1 f	P-value	G2 m	G 2 f	P-value
Inhalation injury	12.66%	13.22%	0.087	8.8%	8.6%	0.98
TBSA mean	20 ± 16.0	21.2 ± 15.4	0.88	11±9.8	12.1±8.8	0.01
Size of first excision Cm2	3955±2100	3899±2233	0.01	4690±1880	4680±1877	0.033
LOS (days)	52+11	55.3+10.5	0.001	30.66+12.7	31.9+16.6	0.98

Copyright © 2022 The Author(s): This work is licensed under a Creative Commons Attribution- NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) International License

Publisher: SARC Publisher

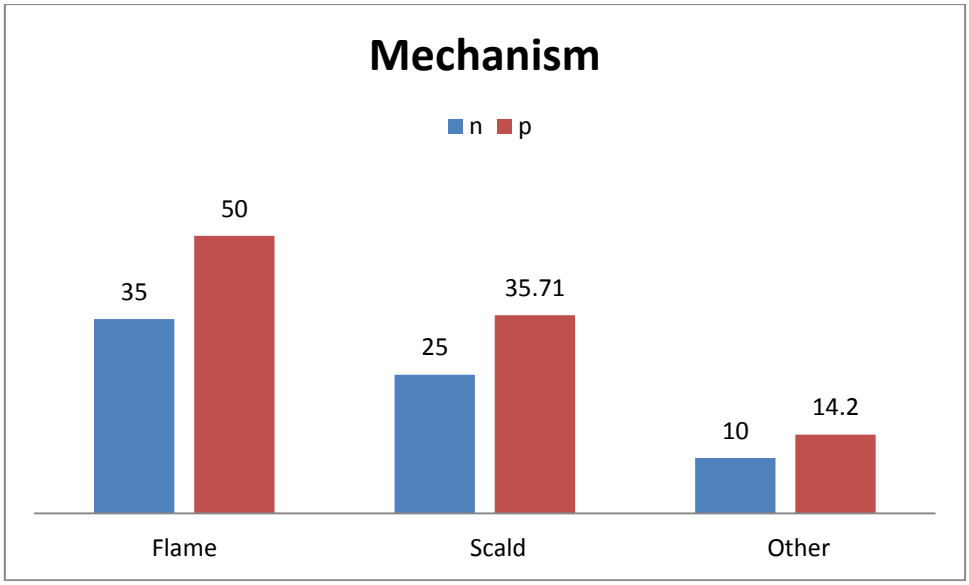

Fig 2: Distribution of patient according to Mechanism

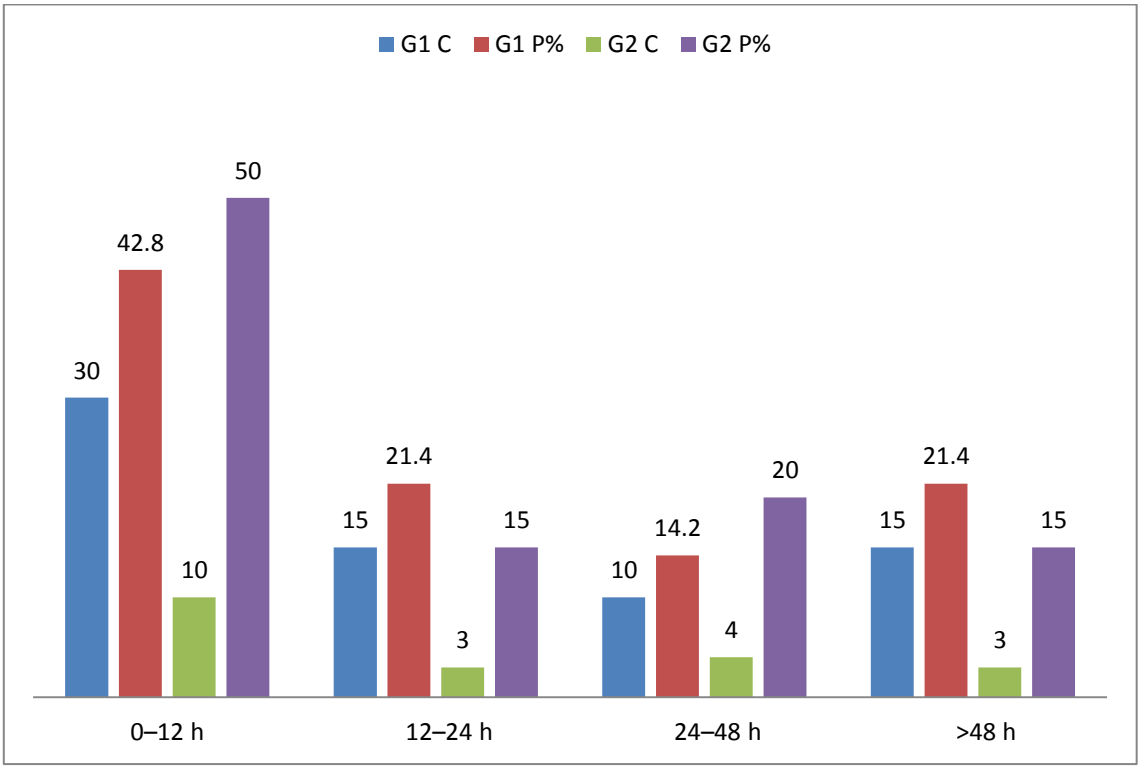

Fig 3: Distribution of patient according to Time presentation from injury

Table 4: Distribution of patients according to Mechanical Ventilation time

P (days)	Patient	Control	P-value
Less than five days	10	3	0.001
From 5 to 10	12	4	0.001
From 11 to 20	30	2	0.0044
From 21 to 30	18	2	0.0098
More than 30	----	8	00045

Copyright © 2022 The Author(s): This work is licensed under a Creative Commons Attribution- NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) International License

Publisher: SARC Publisher

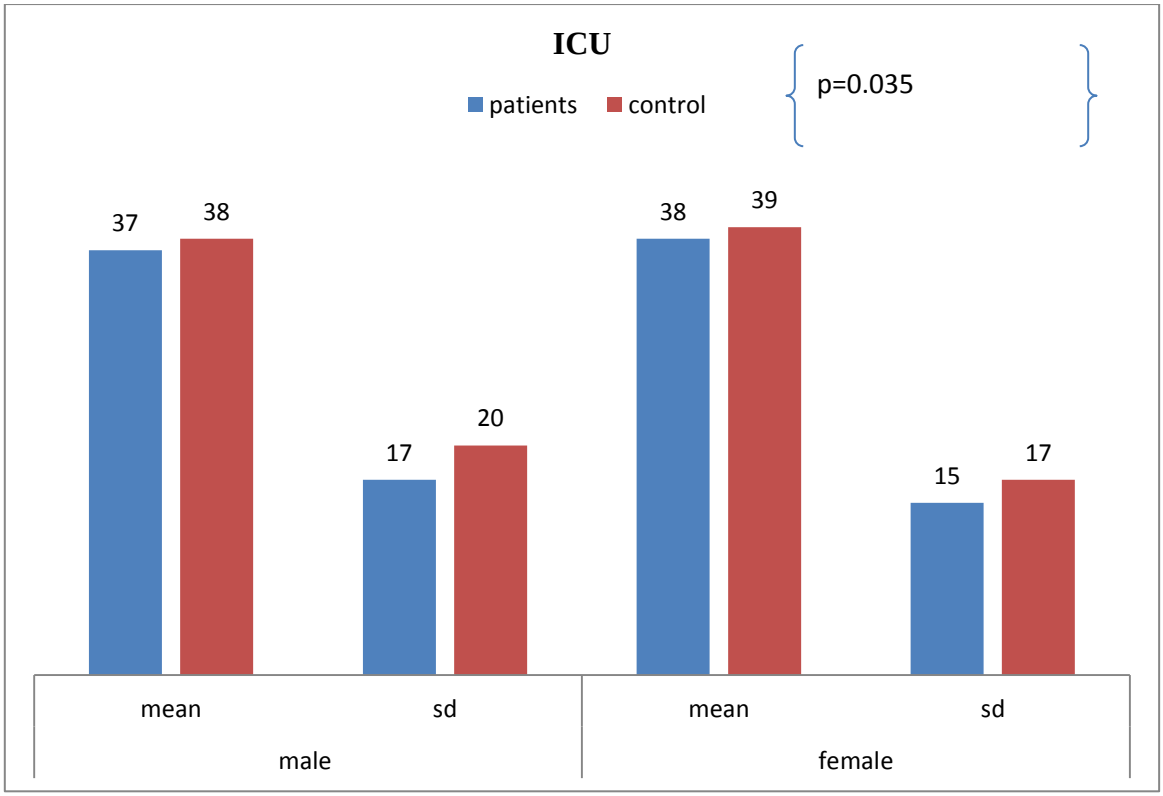

Fig 4: ICU stay

Table 5: outcomes results of patients between groups (early and late)

	Early (n = 30)	**Late (n = 40)**	**p-Value**
Age categories: *N*			
Less than 15	4	6	
From 15 to 30	3	7	0.01
From 31 to 50	12	18	
Above 50	9	11	
Gender: *N*			
Female	15	35	0.004
Male	13	7	
% TBSA			
Mean (SD) G1 M	14.3 ± 10.1	18.1 ± 9.9	
Mean (SD) G1 F	14.4 ± 10.1	18.7 ± 12.2	0.001
LOS (days)			
M	20±11 .19	37.8±10	0.006
F	21.1±11.2	36.8±9.9	0.001

Copyright © 2022 The Author(s): This work is licensed under a Creative Commons Attribution- NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) International License

Publisher: SARC Publisher

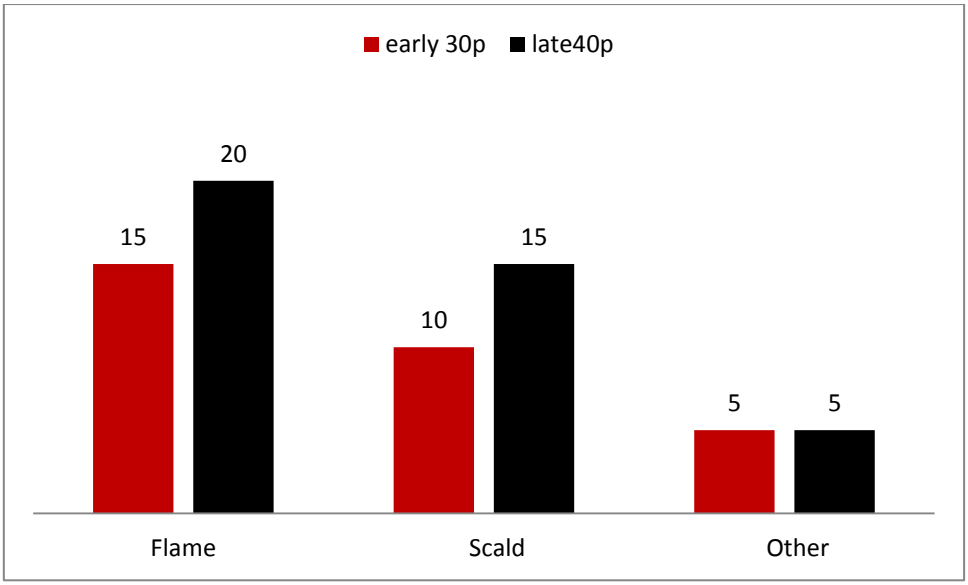

Fig 5: outcomes results of patients according to the mechanism

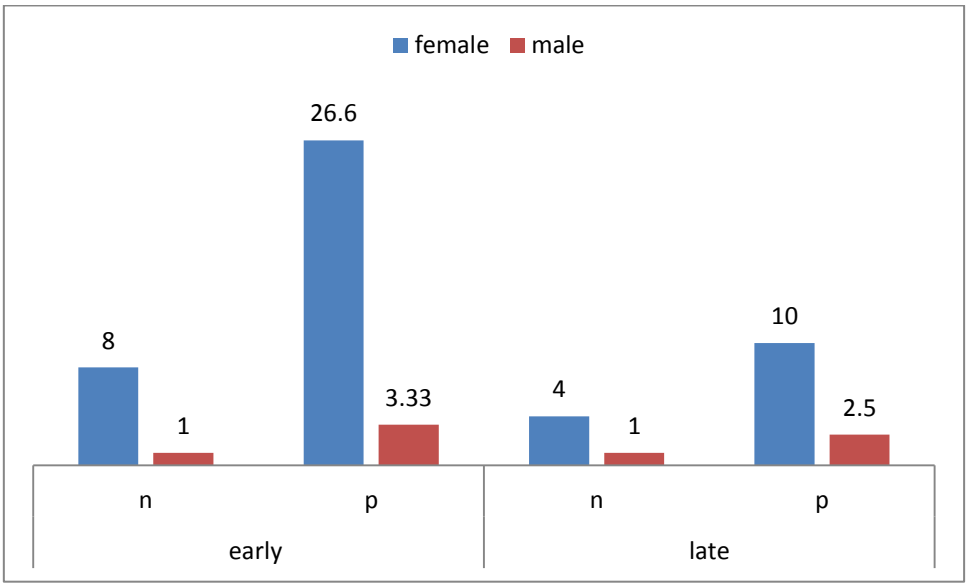

Fig 6: Compression between early and late excision according to mortality

DISCUSSION

Burns constitute an important surgical chapter, with growing multidisciplinary management and holistic treatment approaches given the size of the systems at risk.

They are lesions produced in living tissues as a result of the action of physical, chemical, or biological factors, which cause reversible functional changes, to necrosis or destruction of cells, and death. They are responsible for a great deal of high-cost medical care, a major source of disability, great human suffering, and a massive economic loss to society [Rousseau, A.F. *et al*., 2014; Mock, C. *et al*., 2008; Shahin, A. *et al*., 1998].

The mechanism of injury to these agents results both by direct destruction of tissues in contact with them by protoplasmic coagulation and by stimulation of vascular changes leading to intravascular coagulation, including necrosis due to persistent ischemia [Hultman, C.S. *et al*., 1997; Kisslaogglu, E. *et al*., 1997].

The factor of time, age, extent, depth, and location, along with comorbidities, will determine the severity of the condition and its prognostic progression.

Fifty years ago, hypovolemic shock and subsequent renal failure were the leading cause of death because, currently, widespread resuscitation measures have not been applied. Now, this attractiveness factor has given way to the

Copyright © 2022 The Author(s): This work is licensed under a Creative Commons Attribution- NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) International License

Publisher: SARC Publisher

prevailing problem of invasive infection, as well as the gradual selection of multi-resistant bacteria, largely offsetting advances in the topic. Indeed, sepsis is the leading cause of death, exceeding 50% in the different centres.

The greatest advances in the management of burn patients have been made thanks to special isolation unit systems, advances in the treatment of trauma, respiratory injury, sepsis, hypermetabolic, and early surgical removal of burns and deep burns.

The overall mortality rate was rather high in this study as the most common causative agents were hot liquids, fire, hot solids or molten metal, electricity, and chemical agents. The areas most at risk are the head, neck, and upper extremities. Fire produces more than 54% of burns in patients,

The epidemiology of burns allows a community to identify where their populations are most at risk and what needs to be changed to prevent or reduce the severity of these injuries on a small and large scale. Preventive measures should be based on a solid understanding of the aetiology of these infections, taking into account geographical differences and socioeconomic backgrounds. It is also necessary that the responsible authorities understand the problem and authorize the necessary funds.

Strategies used in this effort should be based on public education, legislative initiatives, regulation of workplace products and procedures, and improvement of care for these emergencies at all levels of hospital complexity. All general surgeons should appropriately administer resuscitation and emergency acute-phase treatment of a burned patient, as this procedure is of critical importance to the patient's survival [18].

In all patients with burns, the possibility of an airway hazard should be ruled out, signs of respiratory distress identified, and supportive measures initiated.

CONCLUSION

We conclude from this study that early excision with skin, In addition to the lack of resources, it greatly contributes to the increase in the mortality rate, as through the statistical analysis, a direct correlation was found with the increase in mortality rates, and a statistically significant relationship was found.

Delaying the timing of early excision and grafting of burn patients in this setting after post-burn day five may confer a survival advantage.

RECOMMENDATION

Excision and graft are highly recommended when the burn patient becomes fit for this procedure as early as possible to decrease the risk of mortality and morbidity.

Burns are preventable. Significant progress has been made in high-income countries in reducing burn mortality through prevention strategies as well as improving care for people affected by burns. Most of these advances in burn prevention and treatment have not been fully implemented in low- and middle-income countries. Increased efforts in this area could lead to a significant reduction in burn-related deaths and disability.

Prevention strategies should address risk factors for specific burn injuries, educate at-risk populations, and train individual communities in first aid.

REFERENCES

1. “World Health Organization estimates for 2000–2012: cause-specific mortality.” WHO (2012). http://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html
2. Levine, B.A., Sirinek, K.R. and Pruitt, B.A. "Wound excision to fascia in burn patients." *Archives of Surgery* 113.4 (1978): 403-407.
3. Janžekovic, Z. "A new concept in the early excision and immediate grafting of burns." *Journal of Trauma and Acute Care Surgery* 10.12 (1970): 1103-1108.
4. Burke, J.F., Quinby Jr, W.C. and Bondoc, C.C. "Primary excision and prompt grafting as routine therapy for the treatment of thermal burns in children." *The Surgical clinics of North America* 56.2 (1976): 477-494.
5. Nguyen, T.T., Gilpin, D.A., Meyer, N.A. and Herndon, D.N. "Current treatment of severely burned patients." *Annals of surgery* 223.1 (1996): 14–25.
6. Pietsch, J.B., Netscher, D.T., Nagaraj, H.S. and Groff, D.B. "Early excision of major burns in children: effect on morbidity and mortality." *Journal of Pediatric Surgery* 20.6 (1985): 754-757.
7. Irei, M., Abston, S., Bonds, E., Rutan, T., Desai, M. and Herndon, D.N. "The optimal time for excision of scald burns in toddlers." *The Journal of Burn Care & Rehabilitation* 7.6 (1986): 508-510.

Copyright © 2022 The Author(s): This work is licensed under a Creative Commons Attribution- NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) International License

Publisher: SARC Publisher

8. Demling, R.H. "Improved survival after massive burns." *The Journal of Trauma* 23.3 (1983): 179-184.
9. Xiao-Wu, W. "Effects of delayed wound excision and grafting in severely burned children." *Archives of surgery* 137.9 (2002): 1049-1054.
10. Ong, Y.S., Samuel, M. and Song, C. "Meta-analysis of early excision of burns." *Burns* 32.2 (2006): 145-150.
11. Puri, V., Khare, N.A., Chandramouli, M.V., Shende, N. and Bharadwaj, S. "Comparative analysis of early excision and grafting vs delayed grafting in burn patients in a developing country." *Journal of Burn Care & Research* (2014).
12. Kiser, M., Beijer, G., Mjuweni, S., Muyco, A., Cairns, B. and Charles, A. "Photographic assessment of burn wounds: a simple strategy in a resource-poor setting." *Burns* 39.1 (2013): 155-161.
13. Rousseau, A.F., Massion, P.B., Laungani, A., Nizet, J.L., Damas, P. and Ledoux, D. "Toward targeted early burn care: lessons from a European survey." *Journal of Burn Care & Research* 35.4 (2014): e234-e239.
14. Mock, C., Peck, M., Peden, M., Krug, E., Ahuja, R. and Albertyn, H. "A WHO plan for burn prevention and care [Internet]." *Genebra: World Health Organization* (2008).
15. Shahin, A., Shadata, G., Franka, M.R., Abusetta, A., Brogouski, A. and Ezzaidi, M.M. "Complications of burns in children–a study of 266 severely burned children admitted to a burns centre." *Ann Burns Fire Disasters* 11.1 (1998): 8-15.
16. Hultman, C.S., Yamamoto, H., DeSerres, S., Frelinger, J.A. and Meyer, A.A. "Early but not late burn wound excision partially restores viral-specific T lymphocyte cytotoxicity." *Journal of Trauma and Acute Care Surgery* 43.3 (1997): 441-447.
17. Kisslaogglu, E., Yüksel, F., Uccar, C. and Karacaogglu, E. "Rationale for early tangential excision and grafting in burn patients." *Acta Chirurgiae Plasticae* 39.1 (1997): 9-12.
18. Still Jr, J.M. and Law, E.J. "Primary excision of the burn wound." *Clinics in plastic surgery* 27.1 (2000): 23-47.

Source of support: Nil; **Conflict of interest:** Nil.

Cite this article as:
Al Saad, A.M., Jaafar, Z.S. and Kafala, A.R. "Rule of Early Excision and Graft in Major Burn Injury." *Sarcouncil journal of Medical sciences* 1.2 (2022): pp 1-7

Copyright © 2022 The Author(s): This work is licensed under a Creative Commons Attribution- NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) International License

Publisher: SARC Publisher