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Original Research Article

Role of early debridement in non-healing ulcer

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ABSTRACT

Background: Non-healing wound is a commonly encountered entity with a broader effect on both the sufferer and the treating doctor. Time taken in healing these wound is directly related to financial loss as well as loss of working hours, thus ultimately increasing the financial burden. Chronic wound has devitalized tissue at the base which is barrier to cell migration and acts as supportive environment for bacterial growth. Considering the effect of devitalized tissue on wound healing there lies importance of debridement in wound management. Debridement is an effective technique to achieve desirable wound bed preparation by removing the dead and devitalized tissue. Hence a study was conducted at a rural hospital with main aim to assess role of surgical sharp debridement in non-healing wound in complete healing or preparing wound for further definitive treatment.
Methods: The study was conducted at AVBRH Sawangi (Meghe), Wardha. Random 50 patients of non-healing ulcer were selected for the study. One group was of early debridement while other group of dressing with moist dressing only. Wound were assessed for healing, wound contraction, scar quality at regular intervals. They were assessed for duration of wound to heal completely/ get ready for further intervention like SSG/ Flaps, Cost of treatment and Time taken by the patient to return back to work.
Results: 36% of patients in moist dressing group heal completely by 4 weeks while 56% of patients in debridement group heal completely by 4 weeks. Early recovery leads to early normalcy so less loss of wages and thus making the group cost effective.
Conclusions: Early debridement was found to be an effective tool in wound healing in non-healing ulcers.

Keywords: Debridement, Moist dressing, Non-healing ulcer

INTRODUCTION

Non-healing wound is a commonly encountered entity with a broader effect on both the sufferer and the treating doctor. Time taken in healing these wound is directly related to financial loss as well as loss of working hours, thus ultimately increasing the financial burden.

Hence for faster recovery of the wound the concept of wound bed preparation came into picture.[1] To achieve such wound bed that is conducive to healing is basic requirement for fastening the process of wound healing.[2] Here debridement plays a vital role in wound bed preparation. Debridement leads to removal of the devitalized or non-viable tissue that acts as barrier to wound. In current medical practice new TIME acronym is used by the practitioners to assess the wound accurately and plan the required intervention appropriately.[3]

T = tissue (non-viable or deficient)
I = infection/inflammation
M = moisture (imbalance)
E = edge (non-advancing or undermined)

Thus, helping the wound to progress towards healing needs structured approach through the principles of time.

Why Debridement is must?

Wound healing is a sequential process involving various steps, each controlled by stimulators and inhibitors produced by body**.** Chronic wound has devitalized tissue at the base which is barrier to cell migration and acts as supportive environment for bacterial growth**.** Considering the effect of devitalized tissue on wound healing there lies importance of debridement in wound management**.**

Debridement is an effective technique to achieve desirable wound bed preparation by removing the dead and devitalized tissue. Debridement helps healing by converting chronic wound environment to more active and healing environment.[4] Debridement removes the dead tissue, foreign bodies or unwanted muscle or bony tissue which may act as nidus for active infection which eventually hinders the healing process.

Methods of debridement can be divided into several categories including autolytic, biologic, enzymatic, mechanical, and surgical. Here we are going to study surgical debridement.[5,6]

Surgical debridement dates back to ancient civilization where wound beds were surgically changes to enhance healing. It is also the fastest way of wound healing. Hence a study was conducted at a rural hospital with main aim to assess role of surgical sharp debridement in non-healing wound in complete healing or preparing wound for further definitive treatment. The objectives laid for the study were

- To study the effect of moist dressing and early debridement on epithelization of chronic wound in terms of time required for healing and the quality of scar it forms.
- To study the functional results both early and late.
- To study the practicality and the cost involved in using these modalities.

METHODS

The study was conducted at AVBRH Sawangi (Meghe), Wardha. Random 50 patients of non-healing ulcer were selected for the study. One group was of early debridement while other group of dressing with moist dressing only. The patients were randomly selected for both the groups. In debridement group the patients of non-healing ulcers were subjected to surgical debridement at the earliest as soon as patient is fit for the required anesthesia. While in the other group of moist dressing the patients were treated with moist dressing of the non-healing ulcer with normal saline only.

Wound were assessed for healing, wound contraction, scar quality at regular intervals. They were assessed for duration of wound to heal completely/ get ready for further intervention like SSG/ Flaps, Cost of treatment and Time taken by the patient to return back to work. Patient of non-healing ulcer with any co morbid condition leading to poor general status of patients were excluded from the study.

RESULTS

Total 50 patients of non-healing ulcer were included in the study. Non-healing ulcers were commonly seen in middle aged group. This group belonged to the age group of range 31-65 years. 65% of study population was of more than 30 years of age. The commonly encountered etiologies were traumatic (42%), venous (35%), diabetic (18%) then miscellaneous (7%). In the study group Males (72%) were affected more than females (28%). When the group of moist dressing was assessed over various parameters it was found that 4% of patients in this group took 1-week duration to heal by 41-50% of its size. Similarly, 16 % by 2 weeks, 36% by 3 weeks, 44 % by 4 weeks. Thus, most of the patients in this group showed healing after 3 weeks' time (Table 1).

Table 1: Reduction in wound size in moist dressing group.

Time in weeks	Percentage of reduction in size (Value in percentage)										No of patients	%
	No response	10-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100		
0-1	--	--	--	--	1	--	--	--	--	--	-	4
1-2	--	--	--	--	--	--	--	--	--	4	4	16
2-3	--	--	--	1	--	1	1	1	1	4	9	36
3-4	--	--	--	3	1	2	3	--	1	1	11	44
Total	--	--	--	4	2	3	4	1	2	9	25	100
%	--	--	--	16%	8%	12%	16%	4%	4%	36%	100	

When the patients in surgical debridement group were assessed for healin 8% of patients healed by 1st week similarly 28% healed by 2 weeks, 52% by 3 weeks while 12% by 4 weeks duration. Thus, it was seen that

maximum number of patients in this group showed healing by 3 weeks' time (Table 2).

When both the groups were assessed for cost of treatment the average cost of moist dressing group was Rs 912/- whereas for debridement group was Rs 2180/-. Complete healing was achieved in moist dressing group by 36 % of patients till 4 weeks' time. While in debridement group 56 % of patients achieved 100 % healing by 4 weeks' time.

Scar quality achieved in the debridement group was better while in moist dressing group scar quality was poor.

Table 2: Reduction in wound size in debridement group.

Time in weeks	Percentage of reduction in size (%)										No of patients	%
	No response	10-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100		
0-1	--	--	--	1	--	--	--	--	--	1	2	8
1-2	--	--	--	--	1	1	2	1	--	2	7	28
2-3	--	--	--	--	--	2	2	--	--	9	13	52
3-4	--	--	--	1	--	--	--	--	--	2	3	12
Total	--	--	--	2	1	4	4	1	--	14	25	100
%	--	--	--	8%	4%	12%	16%	4%	0%	56%	100	

DISCUSSION

When this study was compared to various other studies in the literature it was seen that: Middle aged and elderly are affected more by chronic wound as was also seen by Mustoe T et al who states that chronic wounds mostly affects elderly age group mostly above 60 years of age.[7]

Present study showed that 36% of patients treated with non-adherent dressing showed 70-100% of reduction in size of wound which closely co-relates to the study by Rolandas Dagilaitis et al who found out that rate of epithelization at 3 months to be 98% for ulcers < 3 cm^2 in size.[8] Also Xakellis G C et al found that the mean dressing time was more in gauze treated group.[9]

Study shows that 60% patients treated with sharp debridement showed 70-80% reduction in size. This study co-relates with Johanna Briggs Institute 2011 patients healed completely with sharp debridement in an average of 34 +/- 26 days Kirshen C also found that 20-21 patients out of 61 patients showed complete wound healing by 4-6 weeks.[10,11]

Cost of treatment in moist dressing group was Rs912/- This correlates with finding of Virginia et al who found that overall cost of wound care was significantly higher for patients in normal saline group due to higher number of visits, more duration of healing and cost of dressings.[7]

Sharp Debridement had average cost of Rs 2180/- the cost effectiveness of this group correlates with study by Young T.[13] Moist dressing group patients were treated on OPD basis as in the mentioned literature Virginia AC et al, Vermeulen H and Xakellis G C have been treated as out-patients.[9,12,14] Hospitalization was required in debridement group hence the costing of hospital stay increased by overall cost of treatment decreased due to early return back to life. As was mentioned in study by Hoppe I.[15]

CONCLUSION

Early debridement was found to be an effective tool in wound healing as: It promotes early wound epithelization hence leading to early wound healing. Scar quality in the debridement group is better. There is early back to normalcy as healing is faster. As the healing is early there is less loss of wages thus reducing the financial burden over the patient. Thus, ultimately early debridement is a cost-effective tool in management of non-healing ulcers.

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