

A Prospective Observational Study on Rate of Wound Healing in Patients of General Surgery Department in Government General Hospital, Ongole

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Abstract: From ancient times, till now numerous pathways have been evolving to heal the wounds. A Prospective observational study was conducted to work on the factors which negatively impact the rate of wound healing in patients of the General Surgery Department in Government General Hospital. The study was performed in one ninety-nine (199) patients for a period of six months. Out of 199, 124 cases were male (62.3%) and 75 females (37.6%) who falls in between age group of (18-85 years). And 29 patients (14.57%) had previous history of diabetes, 17 patients (8.5%) were having infectious condition and considering the wound types 74 with Laceration, 65 were having puncture, 25 had amputation, 19 incision and 11 cases fall in atypical wound. And the wound characteristics were measured, and data validity was assessed by using BATES-JENSEN WOUND ASSESSMENT TOOL. By the end of the study, factors like advancing age, gender, diabetes, and infectious conditions ushered great impact on progression of wound healing. Considering these factors Healthcare Providers can predict people at risk for complications and educate them to take preventive measures.

Keywords: BWAT, General Surgery, Inflammation, wound type, laceration, infection, and diabetes

1. Introduction

Ancient Indian Surgeon, Sushruta Samhita has two different chapters which dealt with healing of the wounds and description of more than 100 plants for treating wounds singly or in combination. ¹ A wound can be defined as a type of physical injury in which the skin is punctured, torn, or cut. An opening in the skin which damages the mucous membrane of the skin. ² Wound's origin can be external or internal. Wounds of internal origin are caused by impaired circulation, neuropathy, or medical illness. ³ Wounds which are external occurred due to an outside force or trauma that causes both open or closed wounds. ⁴

Factors affecting wound healing: Various factors can lead to impaired wound healing. In general terms, it is categorized into local and systemic factors. In which local factors influence the characteristics of the wound itself whereas systemic factors involve individual health status or disease condition. ⁷

2. Methodology

A prospective observational study was done in the population of 199 period of 6-months Conducted in government General hospital Ongole. Bates-Jensen Wound assessment tool was used to measure the Wound Size clinical Examinations were performed to classify the type of wound and the data listed parameters such as age, gender, occupation, past medical and medication histories, infection. Social habits and dressing frequencies were documented in data collection forms. Statistical analysis was performed using SPSS Software Version 22.0. Pearson's Correlation Coefficient test was used to correlate assessed parameters and Mann Whitney U test was used to compare unequal Variants with Significant P value <0.05 to both inferential

tests. T test one tailed with two dependent means shows. That wound circumference was Significant with $P < 0.05$. Study criteria consist of two types of Inclusion criteria include Patients with Wounds caused by different etiologies such as venous insufficiency Burns, different types of ulcers were Included. Patients > 18 Year of Both Sexes were included. Patients who are willing to participate in the study were included. Exclusion criteria include pregnant women. Immunosuppressive patients who are not willing to participate in the Study were excluded. Therapy prescribed to the patients was not taken into consideration some of the factors like oxygenation, Stress, physical activity, high protein diet and drugs which influence duration of Wound healing are excluded due to in appropriate facilities in our study Surroundings.

3. Results

Influence of age on rate of wound healing: By considering the null hypothesis that there is significant association between age advancement and increase in rate of wound healing, Mann Whitney U test is applied. Obtained R value was 0.6423. The result is significant at $p < 0.05$

Age	BWAT Score DOA	BWAT Score LDO	P Value (<0.05)
<50 years	43.9	41.2	p= <.00001
>50 years	56.09	58.57	

Comparison of rate of wound healing between diabetics and non-diabetics: By considering the null hypothesis that there is increase in rate of wound healing in diabetics compared to non-diabetics, Pearson correlation coefficient test is applied. The obtained R value was 0.2316. The p value was 0.000997

	BWAT Score DOA	BWAT Score LDOF	P value (<0.05)
Diabetes	15.82	16.9	p=0.00078
Non-Diabetes	84.1	83.09	

Comparison of rate of wound healing between infectious and non-infectious patients:

By considering null hypothesis that there is decrease in rate of wound healing in infectious patients compared to non-infectious patients. Pearson correlation coefficient test is applied. Obtained R value was 0.2657. The P value was 0.000149 showing significance at $P < 0.05$.

	BWAT Score DOA	BWAT Score LDOF	P value (<0.05)
Infection	9.63	10.65	p=0.00074
Non-Infection	89.96	76.76	

4. Discussion

In our study rate of wound healing was delayed in aged individuals. Similar results were obtained in the study conducted by A D Gerstein et. al concluding elderly aged individuals have slowed wound healing process⁵. Our results were also like another study conducted in United States by Christopher G Engeland et. al concluding that wound closure in older individuals was clearly delayed.⁶ Our study showed delayed wound healing in diabetics compared to non-diabetics. These results were in accordance with the suggestions made by S. Guo states that there is impaired wound healing in diabetics due to certain conditions like hypoxia, dysfunction in fibroblasts⁷ and epidermal cells, impaired angiogenesis, and neovascularization, decreased host immune resistance and neuropathy⁸. Similar results were obtained in a study conducted by A Terranian and in another study by Sambashiva Rao G, Satyam G⁹ concluding diabetic patients have a delayed healing process. Delayed wound healing due to infectious conditions was observed in our study. Our study results were like those conducted by Mariana Berreto Serra et. al¹⁰, Snehal Kadam and Karishma S. Kaushik¹¹, Maria. Manuel Azevedo et. al¹², Allie Clinton et. al¹³. Concluding that infection delays wound healing by interrupting the wound healing process.

5. Conclusion

After monitoring each patient cautiously for 30 days in a 6-month period this study indicated that advancing age, diabetes, and infectious conditions negatively impact wound healing process prolonging the healing time. Health care providers should consider these factors when designing and implementing a comprehensive wound healing management regimen.

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Conflict of Interest

The authors declare no conflict of interest.

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