Case Report

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Triangle of Wound Assessment (TOWA) and its Use in Postoperative Wound Management

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Abstract

Wound management forma a key part of the plastic surgeon's daily practice. In addition to being a financial burden to the patient, it is a major social and emotional problem. The key to management of any wound is proper wound assessment. Wound assessment not only enables the treating physician to know the current status of the wound but enables us to monitor the progress of the wound to intervention. Though many wound assessment tools are available currently, none assess the periwound skin which also forms an integral part of the wound. In this article, the authors have assessed the efficacy of the triangle of wound assessment (TOWA) and its application in the management of postoperative wounds.

Keywords: TOWA, wounds, periwound skin

Introduction

Wounds, acute or chronic, represent a major burden to the society. In addition to being an emotional and social problem, they pose a major financial burden to the patient and society [1]. Optimum management of these wounds is necessary to enable the patient to return to his daily functions and reducing hospital stay. Good wound management starts with wound assessment. Proper wound assessment enables the treating physician to monitor the status of the wound and the effect of any intervention on the wound [2].

The development of wound assessment tools has been a major step in developing a systematic approach to management of wounds.

Many tools have been devised over the years for assessing wounds. These include Pressure Sore Status Tool (PSST), the National Pressure Ulcer Advisory Panel Pressure Ulcer Scale for Healing (PUSH), the Wound Healing Scale (WHS), the Sussman Wound Healing Tool (SWHT) [3], Bates – Jensen Wound Assessment Tool (BWAT) and many more. The Triangle of Wound Assessment (TOWA), a new tool developed by Dowsett et al. [4], assessed the wound in three main areas; the wound bed, wound edge and periwound skin. In this article the authors describe their experience with the use of TOWA (Figure 1) in management of a postoperative wound.

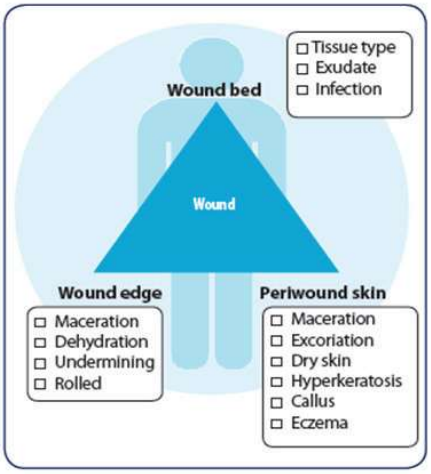

Fig. 1: Triangle of wound assessment

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Case Report

A 60 year old female patient, a case of carcinoma oral cavity post wide local excision and cover with pectoralis major myocutaneous flap, post adjuvant radiotherapy, presented with a contracture band on the left side of the neck. Release by Z Plasty was done for the same. Postoperatively, patient developed necrosis of the skin flap (Figure 2) and developed a raw area of size 5 x 6 cm. Assessment was done using TOWA. Patient initially had necrotic tissue (80%) with slough of 20%, low exudate which was watery, with signs of infection such as pain, erythema, oedema and local rise in temperature. There was maceration of the wound edge with periwound skin showing dryness (Figure 3). Debridement of the necrotic tissue was first done and emollient was applied on the periwound skin to tackle the dryness and excoritiation. Following debridement, the patient was placed on negative pressure wound therapy. Reassessment was done with TOWA after three days. The wound bed was covered with slough completely, with medium amount of watery exudate and erythema (Figure 4 and 5). The wound edge showed maceration and undermining from 2'o clock to 5'O clock position. The periwound skin showed reduced amount of excoriation and dryness. The patient was continued on negative pressure wound therapy and emollients for the periwound skin and reassessed at 3 day intervals for a total period of 2 weeks. Appropriate intervention was administered after assessing the wound using TOWA. After a total period of 3 weeks, the final assessment done showed wound that had decreased in size, with granulation tissue covering 98% of the wound, with no exudate or signs of inflammation with an epithelising wound edge and healthy peri wound skin (Figures 6 and 7).

Fig. 2: Postoperative picture showing flap necrosis

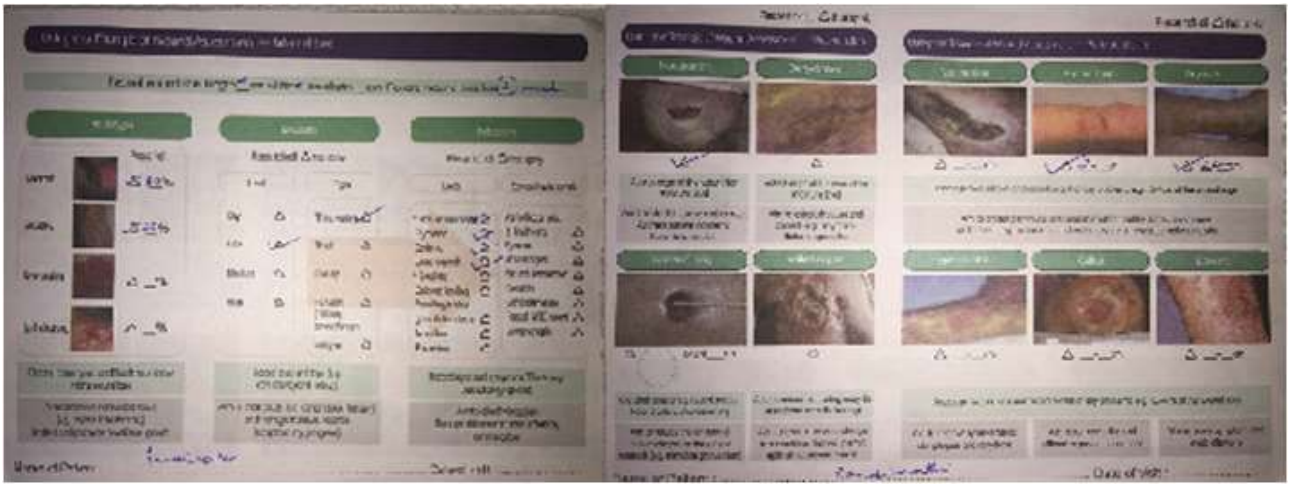

Fig. 3: Assessment using TOWA

Fig. 4: Wound following debridement

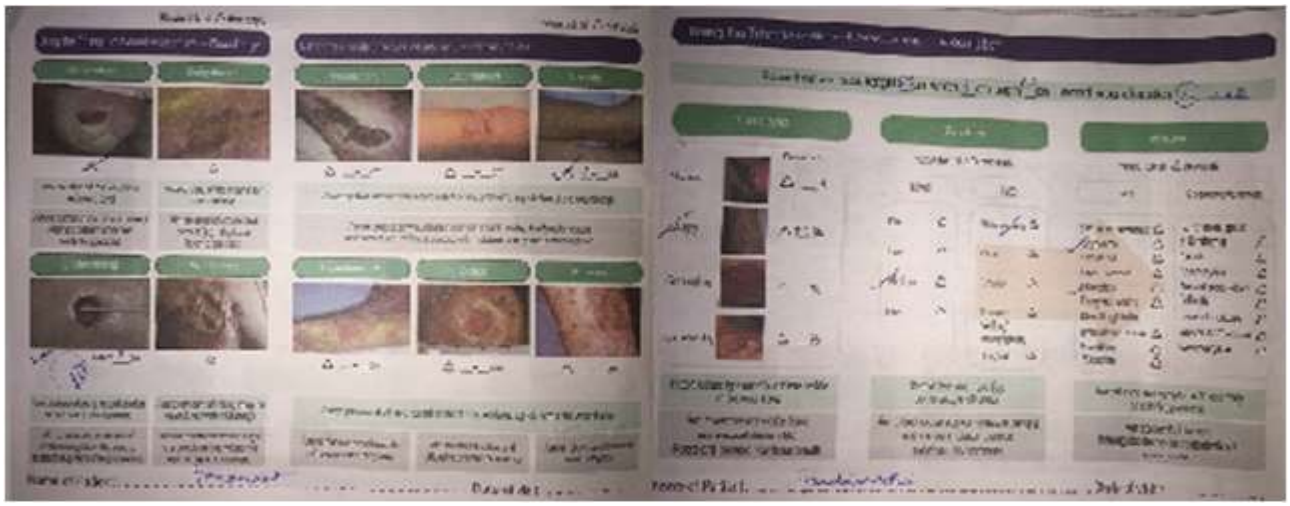

Fig. 5: Re assessment done with TOWA

Fig. 6: Wound after 3 weeks of treatment

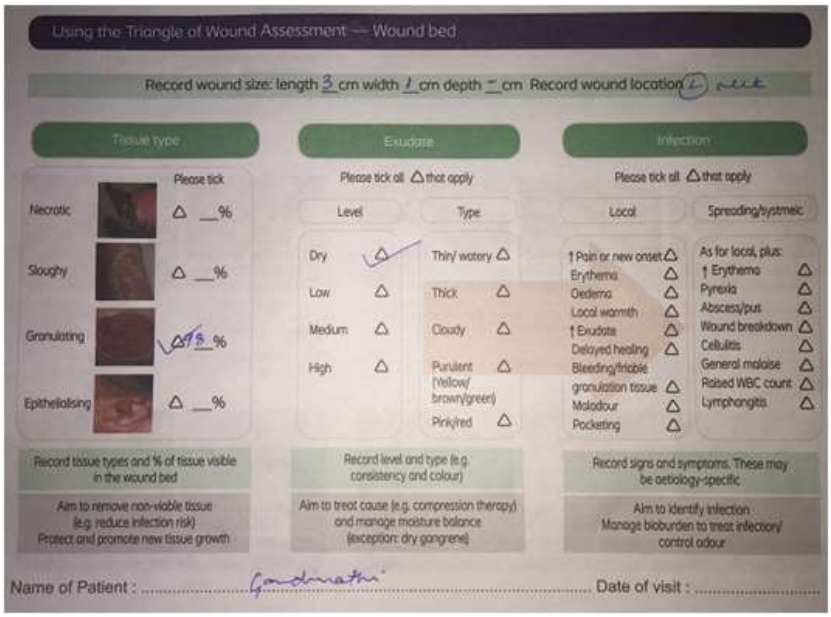

Fig. 7: final wound assessment

Discussion

Chronic wounds pose a unique set of problems. There is failure of the normal response mechanisms to injury resulting in non healing. As the wound remains open for long periods, there is a high propensity to become heavily colonised by bacteria and other organisms. They remain open for prolonged periods of time. In addition, poor blood flow and local hypoxia together lead to deviation from the normal healing process and impaired wound healing [5].

The TIME concept of wound bed preparation proposed in 2003 [3] concentrated on 4 components of the wound; T – Tissue, I – Infection/ Inflammation, M – moisture balance and E – epidermis. Similarly, the SWCR guidelines proposed by the society for wound care and research in 2013 [7], looked at the following components; S- systemic analysis of patient and wound, W- Wound Bed Preparation, Clinical Decision and R- repair, reconstruct and rehabilitate. The triangle of wound assessment, though a wound assessment tool rather than a tool for wound bed preparation makes us look at a different entity of wounds – the periwound skin [7].

The wound bed is observed for the tissue type, presence of exudate or infection. Maceration, undermining, dehydration and rolled edges form the components of wound edge assessment. Similarly, the peri wound skin is observed for the presence of maceration, excoriation, dry skin, hyperkeratosis, callus and eczema. Once assessment is done, an integrated plan of action is formulated which enables us to identify all factors that delay wound healing and to provide more appropriate intervention at the proper time. The application of TOWA in the management of this patient enabled us to address factors such as peri wound dryness and excoriation which would otherwise not have been given enough importance and would have hindered optimum healing.Though we have found the tool to be extremely effective in treating the above patient, a larger sample size with analysis of our results and comparison with the existing assessment tools ids necessary to further validate our observation.

Conclusion

The triangle of wound assessment is an effective tool for assessment of wounds. It addresses the peri wound skin which has not been included in previous wound assessment tools or in wound bed preparation methods enabling the treating physician to achieve complete and faster healing of wounds.

Disclosures: None

Conflicts of Interest: None

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