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Research Article

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Application of Scoring System in Wound Assessment

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ABSTRACT
Wound management is an integral part of surgical specialties. The process of wound healing has been studied in detail and the management of wound and its myriad treatment options have been evolving since the advent of scientific advancements. Proper wound assessment is an important part of wound management. Here we share our experience with the use of Bates-Jenson Wound Assessment Tool in the assessment of wounds.

Keywords: Bates Jenson Wound Assessment Tool, Wound, Assessment, Management

Introduction

From the time of injury body initiates a process of tissue repair and wound healing. Wound healing is a dynamic process involving cellular, humoral and molecular mechanisms and consists of phases such as inflammation, proliferation and wound remodelling. Wound healing is a multifactorial process; hence both local and systemic factors should be included for effective assessment of wound. Appropriate assessment enables interventions at the right time. An adequate assessment is essential for making treatment and recognizing and preventing wound possible complications. Various wound assessment tools are described in literature. Here we describe our experience regarding decisions and management of healing process which involves monitoring and recognizing and preventing wound possible complications.

Materials and Methods

This study was conducted in the department of plastic surgery in a tertiary care centre. Informed consent was taken from all participants included in the study. Here we studied the use of Bates-Jenson Wound Assessment Tool in the management of wounds. A 70year old female patient with known hypertension and cardiac disease, resident of Cuddalore presented with alleged history of thermal burn injury on the right buttock included in the study who was admitted and treated in the burns ICU. Wound assessment was done for the right buttock wound using BJWAT Chart on admission and weekly after start of therapy for 4 weeks. Following are the details and guidelines followed while using.

BJWAT Chart: [3]
Bates-Jensen Wound Assessment Tool
Name
Complete the rating sheet to assess wound status. Evaluate each item by picking the response that best describes the wound and entering the score in the item score column for the appropriate date.

Location
Anatomic site. Circle, identify right (R) or left (L) and use "X" to mark site on body diagrams:
- Sacrum & coccyx - Lateral ankle
- Trochanter -Medial ankle
- Ischial tuberosity -Heel -Other Site

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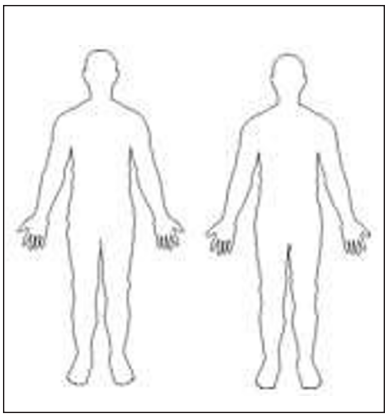
Shape

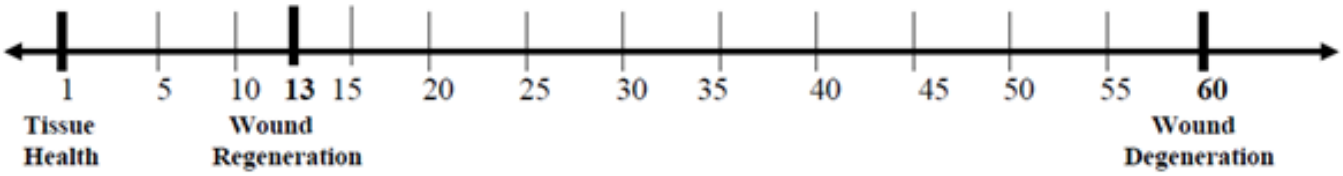
Overall wound pattern; assess by observing perimeter and depth.
Circle and date appropriate description:

- Irregular/ Linear or elongated
- Round/oval Bowl/boat
- Square/rectangle -Butterfly -Other Shape



Item	Assessment	Date Score	Date Store	Date Score
1. Size	1 = Length x width <4 sq cm 2 = Length x width 4--<16 sq cm 3 = Length x width 16.1--<36 sq cm 4 = Length x width 36.1--<S0 sq cm 5 = Length x width >SO sq cm			
2. Depth	1 = Non-blanchable erytherna on intact skin 2 = Partial thickness skin loss involving epidermis &/or dennis 3 = Full thickness skin loss involving damage or necrosis of subcutaneous tissue; may extend down to but not through underlying fascia; &/or mixed partial & full thickness &/or tissue layers obscured by granulation tissue 4 = Obscured by necrosis 5 = Full thickness skin loss with extensive destruction, tissue necrosis or damage to muscle, bone or supporting structures			
3. Edges	1 = Indistinct, diffuse, none dearly visible 2 = Distinct, outline clearly visible, attached, even with wound base 3 = Well-defined, not attached to wound base 4 = Well-defined, not attached to base, rolled under, thickened 5 = Well-defined, fibrotic, scared or hypnkeratotic			
4. Undermining	1 = None present 2 = Undermining < 2 cm in any area 3 = Undermining 2-4 cm involving < 50% wound margins 4 = Undermining 2-4 cm involving > 50% wound margins 5 = Undermining > 4 cm or Tunneling in any area			
5. Necrotk Tissue	1 = None visible 2 = White/grey non-viable tissue &/or non-adherent yellow slough 3 = Loosely adherent yellow slough 4 = Adherent, soft, black eschar 5 = Family adherent, hard, black eschar			
6. Necrotic Tissue Amount	1 = None visible 2 = < 25% of wound bed covered 3 = 25% to 50% of wound covered 4 = > 50% and < 75% of wound covered 5 = 75% to 100% of wound covered			
7. Exudate Type	1 = None 2 = Bloody 3 = Senasanguineotts: thin, watery, pale red/pink 4 = Serous: thin, watery, clear 5 = Punkin: thin or thick, opaque, tan/yellow, with or without odor			
8. Exudate Amount	1 = None, thy wound 2 = Scam, wound moist but no observable exudate 3 = Small 4 = Moderate 5= Large			

Item	Assessment	Date Score	Date Store	Date Score
9. Skin Color Surrounding Round	1 = Pink or normal for ethnic group 2 = Bright red &/or blanches to touch 3 = White or grey pallor or hypopipnented 4 = Dark red or purple &/or non-blanchable 5 = Black or hyperpipnented			
10. Peripheral Tissue Edema	"1 = No swelling or edema 2 = Non-pitting edema extends <4 cm around wound 3 = Non-pitting edema emends ≥4 cm around wound 4 = Pitting edema extends < 4 cm around wound 5 = Crepinu and/or pitting edema extends ≥4 cm around wound"			
11. Peripheral Tissue Induration	"1 = None present 2 = Induration, < 2 cm around wound 3 = Induration 2-4 cm extending < 50% around wound 4 = Induration 2-4 cm extending ≥ 50% around wound 5 = Induration > 4 cm in any area around wound"			
12. Gramnulation Tissue	"1 = Skin intact or partial thickness wound 2 = Bright, beefy red; 75% to 100% of wound filled &/or tissue overgrowth 3 = Bright, beefy red: < 75% & > 25% of wound filled 4 = Pink, &/or dull. dusky red &/or fills < 25% of wound 5 = No granulation tissue present"			
13. Epithelialization	"1 = 100% wound covered, surface intact 2 = 75% to <100% wound covered &/or epithelial tissue extends >0.5cm into wound bed 3 = 50% to <75% wound covered &/or epithelial tissue extends to <0.5cm into wound bed 4 = 25% to < 50% wound covered 5 = < 25% wound covered"			
TOTAL SCORE				
SIGNATURE				
WOUND STATUS CONTINUUM				



Plot the total score on the Wound Status Continuum by putting an "X" on the line and the date beneath the line. Plot multiple scores with their dates to see-at-a-glance regeneration or degeneration of the wound.

Table 3:

BJWAT was used and scores were calculated every week whenever the wound was debrided and wound bed preparation was done (Figures 1,2,3,4). The assessment tool was used by Plastic surgery trainees on this patient. Feedbacks were collected from them at the end of the study on the basis of which it was concluded whether B JWAT was helpful in their treatment protocol for their patients.

Figure 1: Wound with BJWAT Score 48 at admission (right buttock)

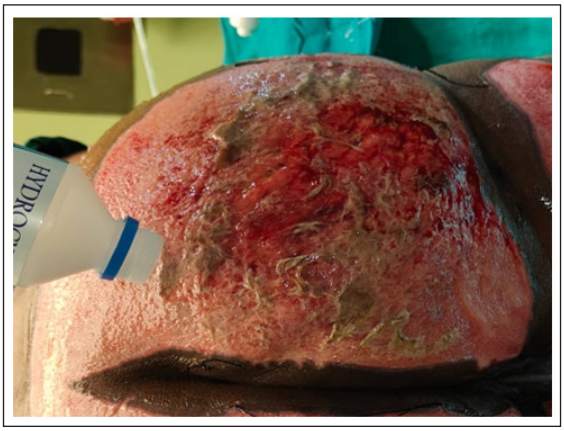


Figure 2: BJWAT Score 42 after treatment after 2 weeks

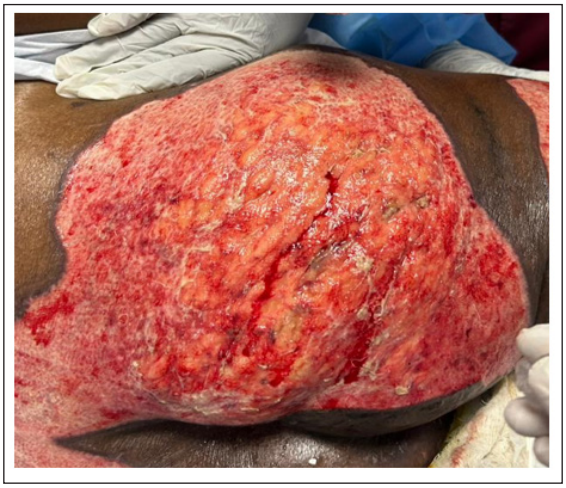


Figure 3: BJWAT Score 37 after treatment with regenerative therapy (week 3)

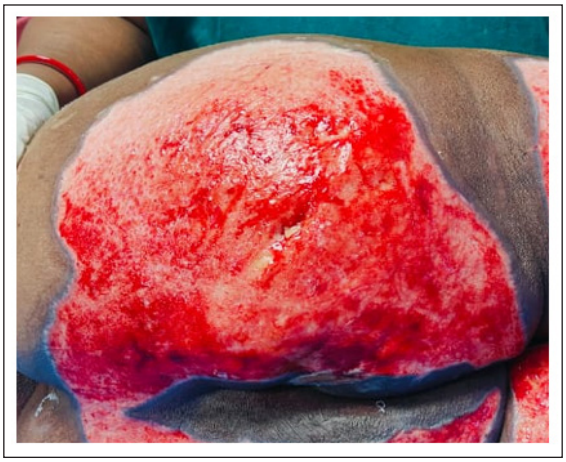


Figure 4: BJWAT Score 32 after treatment with regenerative therapy

Results

BJWAT was used on this patient on the right buttock by Plastic Surgery trainees and scores were calculated over a period of 4 weeks. The scores decreased from high to low (as in figure 4) during the period of 4 weeks, signifying wound regeneration (Table 1). The assessment scores helped in decision making and planning further management in addition to evaluating efficacy of the ongoing therapy. Based on the scores surgeons were able to plan their appropriate interventions for the desired results. It was found that BJWAT was useful in wound assessment but surgeons felt that it required modifications since it did not consider systemic factors affecting wound healing such as diabetes mellitus, anaemia, hypoalbuminemia, smoking etc.

Table 1: BJWAT Scores

S.N.	Week 1	Week 2	Week 3	Week 1
1.	48	42	37	32

Table 2: Questionnaire

Questions	Participants				
	1	2	3	4	5
Is the assessment tool easy to use and comprehend?	Yes	Yes	Yes	Yes	Yes
Were you able to assess the wound condition and able to plan the management?	Yes	Yes	Yes	Yes	Yes
Were you able to correlate the wound condition with the changing score?	Yes	Yes	Yes	Yes	Yes
Were you able to make changes in your management approach based on the score?	Yes	Yes	Yes	Yes	Yes
Do you think modifications are needed in the score?	No	No	Yes	Yes	No

Discussion

Wound assessment is an important aspect in efficient and effective management of wounds. Choosing a proper wound assessment tool becomes imperative in this setup. It is essential in deciding topical treatment based on wound status and for recognition of healing and deterioration requiring other interventions [1]. The process of wound assessment should be simple according to Doughty [2]. According to Harris C, wound assessment is a complex process requiring substantial visual and physical assessment skills, combined with clinical judgement and experience [3]. Kobza and Scheurich attribute a significant portion of increased costs associated with wound care to inadequate or variable assessment and inconsistent documentation [4]. One method of improving this process is the use of standardised instrument designed to guide clinicians through a systematic and consistent assessment and documentation [5]. Various wound assessment tools are used in medical practice including PUSH (Pressure ulcer scale for healing), BJWAT (Bates Jensen Wound Assessment Tool), DESIGN (Depth, Exudate, Size, Infection/Inflammation, Granulation tissue, Necrotic Tissue), DESIGN-R (Depth, Exudate, Size, Infection/Inflammation, Granulation tissue, Necrotic Tissue, Rating), PUHP (Pressure ulcer healing process), Wound bed Sore (WBS), Diabetic foot ulcer assessment scale (DFUAS). Most of the assessment tools are based on wound parameters like size, area, volume, depth, exudate, tissue type, signs of infection and inflammation.

Bates-Jenson wound assessment tool is one of the most prevalent wound assessment tools. Originally developed in 1990 as the Pressure Sore Status Tool (PSST), it was redesigned in 2001 and renamed by Barbara Bates-Jenson [4,6].

Although developed initially for assessment of pressure sores, BJWAT has been used to assess healing of chronic wounds of different etiologies and acute wounds as well. BJWAT assesses

13 wound characteristics with a numerical rating scale and rates from best (1) to worst (5). Total score ranges from 13 (skin closed) to 65 (profound tissue degeneration) (Table 3). Lower scores indicate a better healing index. It is imperative to watch the total score to note whether wound is healing or not. BJWAT has evolved to include measuring and predicting wound healing. Average content validity is 0.62 [6]. Validation studies indicate that in addition to having good content validity, BJWAT has excellent intra-and interrater reliability when used by experienced wound care clinicians [7]. There are very detailed instructions for using the BJWAT and Harris and colleagues gave a pictorial guide to help novice clinicians [3]. BJWAT assesses 13 parameters including size, depth, edges, undermining, necrotic tissue type, necrotic tissue amount, exudate type, exudate amount, skin colour surrounding wound, peripheral tissue oedema, peripheral tissue induration, granulation tissue, epithelisation. Higher scores indicate tissue degeneration and lower scores indicate tissue regeneration. A descriptive tool like BJWAT is not set out to be an outcome measure but rather used for initial assessment.

Conclusion

The assessment scores helped in decision making and planning further management in addition to evaluating efficacy of the ongoing therapy. Based on the scores surgeons were able to plan their appropriate interventions for the desired results. It was found that BJWAT was useful in wound assessment but surgeons felt that it required modifications since it did not consider systemic factors affecting wound healing such as diabetes mellitus, anaemia, hypoalbuminemia, smoking etc.

References

1. Beitz JM, Van Rijswijk L. using wound care algorithm, a content validity study. J. Wound Ostomy Ostomy continence Nurs. 1999. 26: 238-249.
2. Doughty DB. Wound assessment tips and techniques. Adv skin Wound care. 2004. 17: 369-372.
3. Harris C, Bates-Jensen B, Parslow N, Raizman R, Singh M, Ketchen R. Bates-Jensen wound assessment tool: pictorial guide validation project. J Wound Ostomy Continence Nurs. 2010. 37: 253-259.
4. Kobza L, Scheurich A. The impact of telemedicine on outcomes of chronic wounds in the home care setting. Ostomy wound management. 2000. 46: 48-53.
5. Sibbald R G, Williamson D, Orsted H L, D Krasner, D Sibbald , et al. Preparing the wound bed-debridement, bacterial balance, and moisture balance. Ostomy Wound management. 2000. 46: 14-35.
6. Bolton L, McNees P, van Rijswijk L, de Leon J, Lyder C, et al. Wound-Healing Outcomes Using Standardized Assessment and Care in Clinical Practice. J Wound Ostomy Cont Nurs. 2004. 31: 65-71.
7. Bates Janeson BM, Vredeaue DL, Bretch ML. Validity and reliability of the pressure sore status tool. Decubitus. 1992. 55: 20-28.