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Wound Cosmesis and Scar Assessment Scales

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Abstract:

Background: In contemporary therapeutic treatment, wound cosmesis defined as the aesthetic look of a healed wound and subsequent scar has become a crucial consequence. Scar quality has a substantial impact on patient happiness, psychological health, and general quality of life in addition to more conventional metrics like infection rates and healing times. Standardized and trustworthy scar assessment instruments have been developed as a result of this move toward patient-centered care. The most popular tools for assessing scar features are the Vancouver Scar Scale (VSS) and the Patient and Observer Scar Assessment Scale (POSAS). POSAS incorporates both observer and patient viewpoints, providing a more thorough examination than VSS, which offers an objective clinician-based assessment. To improve therapeutic outcomes and advance research in wound healing and scar management, it is essential to comprehend and use these techniques .

Keywords: Wound cosmesis; Scar assessment; Vancouver Scar Scale; POSAS; Wound healing; Scar formation; Patient-reported outcomes; Hypertrophic scar; Keloid

Introduction:

The appearance of a healed wound and the scar that results from surgery, trauma, or skin treatment is referred to as wound cosmesis (1). Patients care far more about how a wound appears after it has healed than what doctors have historically studied, including infection rates or wound closure times. Scar appearance has been identified over time as a significant determinant of patients' quality of life and satisfaction with their care (1). Increased interest in creating trustworthy instruments to quantify scar outcomes in a consistent and repeatable manner has resulted from this change in clinical focus (2).

Any full-thickness wound will leave a scar, and noticeable scarring can have serious social and emotional repercussions (3). The necessity for standardized, repeatable scar evaluation techniques has increased across several surgical specialties as patients have become more involved in their own treatment and as surgical expectations have increased. The Vancouver Scar Scale (VSS) and the Patient and Observer Scar Assessment Scale (POSAS) are the two instruments that are most frequently utilized and researched. Both have been approved for use in clinical and research settings worldwide after being studied in sizable patient populations (2).

Pathophysiology of Wound Healing and Scar Formation:

Hemostasis, inflammation, proliferation, and remodeling are the four overlapping phases of wound healing (4).

Depending on how the body reacts, scars can take many various forms. Hypertrophic scars, which are elevated and stiff but remain inside the wound boundary, are brought on by an excessive amount of collagen being

deposited throughout the healing process. Due to excessive scar cells that do not shut down as they should, keloids tend to extend beyond the original wound margins over time (5). Scar scales are particularly made to evaluate the characteristics of both types, which are frequently red, stiff, and less flexible than normal skin. In contrast, atrophic scars, which are frequently shown following acne or chickenpox, are sunken and the result of insufficient collagen formation (4).

How deep the wound was, what caused it, where it is on the body, the patient's age, skin tone, and how well the wound was cared for during healing all have an impact on how a scar eventually appears. This helps explain why some patients develop more noticeable scars than others and why specific scar features need to be closely monitored during follow-up (4).

Psychosocial Implications of Wound Cosmesis:

According to studies, those who have visible scars frequently struggle with low self-esteem, social anxiety, and unfavorable attitudes about their appearance (3).

It is crucial to consult patients directly rather than depending solely on clinical observation because clinicians and patients do not always agree on how bad a scar looks (3).

One of the main motivations for the creation of the POSAS, which incorporates both perspectives into a single tool, was the discrepancy between observer-rated and patient-perceived severity (3).

The use of only clinician-rated scales provides an imperfect picture of how scars affect patients, according to reviews in the area. In order to guarantee that research reflects the patient's lived experience, observer scales and patient-reported outcome measures (PROMs) are widely advised (2).

The Vancouver Scar Scale (VSS):

Sullivan et al. (6) initially presented the Vancouver Scar Scale (VSS) as a clinician-rated instrument for evaluating burn scars. Because it has been used for many years and on a variety of patient populations, it continues to be one of the most well-known scar scales in the literature (2). Vascularity, pigmentation, pliability, and height are the four characteristics of a scar that the VSS evaluates. Total scores range from 0 (normal skin) to 13 (severely abnormal scar).

Based on how red or purple the scar appears, vascularity is assessed on a scale of 0 to 3. Additionally, pigmentation is rated on a scale of 0 to 3, based on whether the scar is darker or lighter than the surrounding skin, or a combination of the two. Higher scores indicate stiff or contracted tissue. Pliability, which measures how flexible the scar tissue feels to the touch, is rated from 0 to 5. The scar's height ranges from flat at 0 to more than 5 mm above the skin's surface at 3 (6). A qualified clinician performs all four examinations using tactile examination and direct visual observation.

The VSS has various well-known flaws despite its widespread use. It cannot inform clinicians whether the scar is painful, itchy, or emotionally upsetting because it does not include any information from the patient's point of view. In multicenter study involving several assessors, inconsistency may arise due to the pliability score's tendency to differ among raters (2).

The Patient and Observer Scar Assessment Scale (POSAS):

Draaijers et al. (7) created the POSAS because the scar instruments available at the time did not take the patient's actual scar experience into consideration. It is composed of two distinct parts: the Observer Scale, which is completed by a clinician, and the Patient Scale, which is completed by the patient. Every item is scored on a scale of 1 to 10, with 1 denoting normal skin and 10 denoting the worst possible condition. This structure enables medical professionals to objectively evaluate the scar's appearance with the patient's perception (8).

Vascularity, pigmentation, thickness, surface relief, pliability, and the extent of the affected area are the six characteristics covered by the Observer Scale. The six items on the Patient Scale—pain, itching, color, rigidity, thickness, and irregular surface—also represent the patient's experience. An overall assessment of scar severity is provided by the global impression rating at the end of both measures. Both patient and observer scores can vary

from 6 to 60, with higher values denoting a worse scar result (7). Later, an updated version, POSAS 2.0, was made available to fix wording problems and enhance usability in various clinical contexts and languages (2).

Numerous clinical populations have undergone extensive testing of the POSAS. The scale was shown to be feasible and reliable in burn patients by Draaijers et al. (7), with acceptable interrater agreement across observer-rated domains. The scale has since been applied to burn scars, surgical scars, and traumatic scars in many countries, and is increasingly expected as a standard outcome measure in well-designed scar treatment research. One of its most significant advantages over the VSS is generally acknowledged to be the inclusion of the patient's rating.

Comparing the VSS and POSAS:

While the VSS and POSAS evaluate some of the same scar characteristics, like vascularity and pliability, they differ in terms of the number of parameters they cover, the scoring system, and the information they give the physician. The VSS is useful in hectic clinical situations where time is limited since it is quicker and shorter to complete. But it doesn't address the patient's feelings regarding the scar, omitting details concerning pain, itching, and the patient's subjective opinion of their appearance (2).

The POSAS provides more measurement options than the VSS's fixed ordinal categories because it incorporates a patient scale in addition to the observer scale. The patient scale, in particular, captured information on symptoms and self-perception that the observer scale did not reflect, supporting the case for using both components together. This enables improved sensitivity to identify treatment-related change in clinical studies and more accurate statistical comparisons between groups. Because of these factors, the POSAS is typically a better option for study, while the VSS can still be utilized in conjunction with it to enable comparison with previously published data (2).

Clinical Application and Implications for Research:

The goal of the evaluation should determine which of the VSS and POSAS to use. The VSS can be utilized as a brief monitoring check during follow-up visits in clinical settings such burn units or outpatient wound clinics without significantly taxing staff time (2). Because it is more comprehensive and incorporates the viewpoint of the patient, the POSAS is a superior primary outcome measure for studies evaluating scar therapies, such as laser therapy, silicone gel, steroid injections, or surgery (3).

Validated rating scales are increasingly being used with physical measuring methods like color analysis, skin elasticity testing, and three-dimensional imaging in scar research (8).

Visual scales by themselves are unable to convey the level of detail that these objective tools provide. In order to better comprehend what it means to live with a scar on a personal level—information that cannot be fully captured by numbers alone—some studies additionally employ patient interviews. When combined with these techniques, the POSAS provides a more comprehensive view of the scar and its impact on the patient's life.

The need for scar studies to report results more consistently so that results from various trials may be compared and combined is becoming increasingly apparent in the field of wound care (2). In scar study design, it is now recommended to use a mix of at least one validated clinician-rated scale and one validated patient-reported measure. When used in tandem, the VSS and POSAS can meet this need and promote a more patient-centered and balanced method of measuring scar outcomes.

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