

Scar assessment as a measure of outcome in cleft lip repair

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Introduction: As opposed to healing of wounds that occur in early intrauterine life which heals rapidly and without scarring¹, postnatal cutaneous wound healing is a complex and dynamic process and the end result is formation of a scar. Although the degree of scarring following any surgery depends on many factors, the likelihood of forming more profound howbeit hypertrophic scar may be more in the dark African skin. This has been noted to be a reason for reduced enthusiasm on the part of some adult Africans from embracing cosmetic surgical procedures². Varying degrees of scarring occur following the repair of clefts in children and the degree of scarring may affect the cosmetic and functional outcome of these repairs. With the advent of SmileTrain intervention in the management of clefts in Nigeria, there has been a great increase in the number of surgeries carried out for cleft lip repair such that the resultant scar from these surgeries needs to be assessed and controlled in order to improve the outcome of the surgical interventions. The aim of this paper therefore is to highlight the different methods by which these scars can be assessed and the assessment incorporated into the outcome measures of cleft lip repair.

Method: A literature search on scar assessment using the PubMed was conducted. The articles that were written in English Language were retrieved and reviewed with particular attention to those that focus more on the assessment of linear scars. Parameters employed in each of the assessment tools were noted and the suitability of such tool for our patient population was evaluated. Some of the assessment tools were applied to patients that had cleft lip repair in our centre to determine if they are appropriate for use in our patients and possible modifications for their use were suggested.

Result: Several scar assessment tools were indentified. The following were found to be applicable to cleft lip assessment specifically - Visual Analogue Scale, Vancouver Scar Scale (VSS), Patient and Observer Scar Assessment Scale (POSAS), Wound Evaluation Scale (WES), Manchester Scar Scale (MSS), Stony Brook Scar Evaluation Scale (SBSES). Application of the methods to our patient population reveals that there is need for some form of modification as discussed below in order to achieve best results.

Discussion: Patients who come for cleft lip repair present mainly because of the quest of the patients or their parents for improvement in their appearance. On the part of the surgeon however, the repair is necessary in order to restore form (cosmesis) and function. The degree of scarring after surgery has a role to play in outcome because it can affect both form and function. Assessment of post operative scars prompt the surgeon to take measures that will lead to an improvement of outcome in the subsequent patient he operates and the tools used for this assessment should be adequate to provide insight into what needs to be done to ensure improvement.

There are several tools that can be used to assess scars. These tools can be objective or subjective. Whichever tool is used, it has to be valid, reliable, responsive, interpretable and feasible⁴⁻⁵. The objective tools assess scars quantitatively by measuring the physical attributes of the scar while the subjective tools provide qualitative assessment of the scar by a patient or health care personnel. The objective tools measure scar attributes like pliability, firmness, colour, thickness, and perfusion with the aid of devices like pneumatonometer, cutometer, durometer dermaspectrometer, ultrasound scanners and laser Doppler perfusion imaging systems.

These instruments have demonstrated accuracy and reliability in comparative studies but there is lack of consensus regarding the most appropriate and applicable evaluation instrument³. However, they provide objective measures are appropriate for use in our patient population. The limitation of these objective measurement devices is that they are not readily available in our practice environment.

Common subjective assessment tools includes Visual Analogue Scale, Vancouver Scar Scale (VSS), Patient and Observer Scar Assessment Scale (POSAS), Wound Evaluation Scale (WES), Manchester Scar Scale (MSS), Stony Brook Scar Evaluation Scale (SBSSES). Table 1 shows the parameters measured by the different scar assessment scales. The limitation encountered when these scales were applied to our patients has to do with assessing the pigmentation.

Name of scale	Scores	Parameters analyzed
Vancouver scar scale	0-13	Vascularity, height/thickness, pliability, and pigmentation
Visual analogue scale with scar ranking	0-100	Vascularity, pigmentation, acceptability, observer comfort plus contour and summing the individual scores
Patient and observer scar assessment scale	5-50	Vascularity, height/thickness, pliability, pigmentation, surface area, patient assessments of pain, itching, color, stiffness, thickness, relief
Manchester scar scale	5-18 (best-worst)	Visual analogue scale plus scar color, skin texture, relationship to surrounding skin, texture, margins, size, multiplicity
Stony brook scar evaluation scale	0-5 (worst-best)	Visual analogue scale plus width, height, color, presence of suture/staple marks

Table 1: Parameters measured by scar assessment scales.

Modified from - R. Fearmonti, J. Bond, D. Erdmann, H. Levinson. Review of scar scales and scar measuring devices. *ePlasty*. 2010;10: e43.

In order to use them effectively in our dark skinned population therefore, significant modifications has to be made with regards to grading of skin pigmentation. One way is to grade pigmentation to three levels corresponding to hypopigmented, normal pigmentation and hyperpigmented. Other parameters that need inclusion in scar scales for our environment are width of the scars, presence and prominence of stitch marks (cross hatching) and changes that occur in length of the scar over time. Timing is of essence if all these parameters are to be captured in the assessment methods. Our suggestion is that the assessment should be according to the following protocol – First assessment should be at the time sutures are removed (5-7 days post operatively), at the end of the first month, at the end of three months, six months and one year. The use of photograph based scales will also be of use in our patients as this will obviate the problems posed by patients being lost to follow up.

Conclusion: Assessment of outcome is a fundamental part of cleft lip management that should be an integral part of the protocol of any cleft care programme. It should be used to complement the safety protocol currently in use to provide a comprehensive management of patients with cleft lip.

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