



EVALUATION OF THE EFFECTIVENESS OF VARIOUS SURGICAL METHODS FOR TREATING SCAR DEFORMITIES IN THE MAXILLOFACIAL REGION AND NECK

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<https://doi.org/10.5281/zenodo.14649534>

Abstract

Facial scars are a significant source of psychological and aesthetic discomfort for patients, negatively impacting their quality of life and self-esteem. Surgical interventions aimed at correcting scars require exceptional precision and rely heavily on the surgeon's professional perception of facial aesthetics. Since there is no universal approach to scar correction, the treatment process demands advanced skills and extensive practical experience.

This study investigates the effectiveness of various scar revision methods in restoring normal facial anatomy while minimizing complications. The severity of scar formation is generally influenced by factors such as the extent of skin damage, healing time, patient age, and the scar's location on the body. Although most scars fade over time, some remain prominently visible. The acceptability of such scars largely depends on the degree of functional or cosmetic impairment they cause and the patient's perception.

Scar correction on the face represents a complex challenge for maxillofacial surgeons and is regarded as one of the most critical skills in their professional arsenal. The study emphasizes the importance of precise surgical techniques in achieving satisfactory outcomes for patients.

Keywords: Scars, hypertrophic scars, wound closure methods, aesthetic surgery, scar revision, Z-plasty, W-plasty, VY-plasty.

Research Objective

Facial scars cause patients both psychological and aesthetic distress, significantly impacting their quality of life and self-esteem. Surgical interventions aimed at scar removal demand meticulous care and depend heavily on the surgeon's ability to perceive and create aesthetically pleasing outcomes. Since there are no definitive protocols for scar correction, this delicate process requires a combination of inherent talent and refined technical expertise. The primary objective of this study is to evaluate and compare the effectiveness of various correction techniques in treating facial scars. The aim is to achieve the restoration of normal facial anatomy while minimizing potential complications, thereby improving both functional and aesthetic outcomes for patients.

Materials and Methods

The study was conducted at the clinic from September 2022 to December 2023, involving 96 patients with facial scars resulting from trauma, burns, or iatrogenic factors. Written informed consent was obtained from all participants prior to surgery, and ethical committee approval was secured. Preoperative and postoperative photographs were taken for all patients to document progress and outcomes.

Patients underwent comprehensive consultations to ensure that their expectations aligned with realistic outcomes. Those with a history of keloid formation, coagulation disorders, use of oral anticoagulants, or uncontrolled diabetes mellitus were excluded from the study to avoid confounding factors.

To assess treatment effectiveness, patients were categorized into three groups based on the degree of improvement observed:

Excellent Outcome: Improvement exceeding 90%.

Moderate Outcome: Improvement between 75% and 90%.

Minimal Outcome: Improvement ranging from 25% to 50%.

The collected data were subjected to statistical analysis using the chi-squared test to ensure reliability and validity of the results.

Results of the Study

Scar revision surgery holds a unique place within the realm of plastic and reconstructive facial surgery. Patients requiring such procedures often suffer from significant tissue loss in the affected region or deal with suboptimal outcomes due to wound closures performed by less experienced surgeons, compounded by inadequate post-trauma wound care. A variety of techniques are available for scar correction, including Z-plasty, VY-plasty, W-plasty, and closure using geometric broken-line patterns.

Out of the 96 patients included in this study, 78 (81.3%) were male, and 18 (18.7%) were female. The age of the participants ranged from 19 to 55 years, with 50% of the procedures performed on individuals aged between 21 and 40 years.

Scar Revision Techniques Used::

- Z-plasty: 52 patients (54%).
- W-plasty: 35 patients (36%).
- VY-plasty: 9 patients (10%).

Treatment Outcomes:

- Excellent Results: Achieved in 57 patients (60%).
- Moderate Results: Observed in 29 patients (30%).
- Minimal Results: Reported in 10 patients (10%).

Complications:

The overall complication rate was 5%, with the following issues identified:

- Hematoma formation: 5 patients.
- Secondary infection: 5 patients.
- Delayed wound healing: 5 patients.

Conclusions

Scar formation is an inevitable and necessary aspect of the wound-healing process. There are numerous methods available for both the prevention and correction of scars. A thorough understanding of skin physiology, biomechanics, facial aesthetic principles, and the surgical

geometry of soft tissue operations can significantly reduce scar formation and effectively address existing scars caused by various factors.

Surgical scar revisions using Z-plasty, W-plasty, and VY-plasty have demonstrated high efficacy in improving patient outcomes. The choice of technique is determined by the location, size, and shape of the scar. Profound knowledge of skin physiology, biomechanics, aesthetic considerations, and the geometry of soft tissue structures enables surgeons to minimize scarring and deliver exceptional results.

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