ORIJINAL TƏDQIQAT • ORIGINAL RESEARCH

Method for Optimizing the Restoration of Lower Eyelid Functions Limited by a Postoperative Subciliary Scar

N.N. Gasimova, A.A. Huseynov, G.İ. Gurbanaliyeva, Sh.R. Yusubova

Oral and Maxillofacial Surgery Department, AMU Educational Surgical Clinic

The prevention and correction of postoperative cicatricial deformities and contractures remain challenging problems in plastic and reconstructive surgery. The purpose of this study was to analyze the effectiveness of treatment using Kenalog, various ointments, and myogymnastics of the inferior eyelid muscles in order to improve the outcomes of treatment of fractures of the zygomatic-orbital region performed through a subciliary incision. The study included 87 patients. The method consisted of injecting Kenalog into the scar tissue; findings suggest that Kenalog is effective in restoring inferior eyelid function limited by scar formation and may improve cosmetic and functional outcomes.

Keywords: *subciliary incision, postoperative scar, Kenalog, lower eyelid, zygomatic-orbital fracture*

32. Introduction

Prevention of postoperative scar deformities and contractures, as well as their subsequent correction, is a complex problem in plastic and reconstructive surgery. In the face and neck region, where scars occur most frequently—in 87% of the total number of observations—they cause not only functional but also pronounced aesthetic defects. This leads to psychological disturbances in the patient. Rehabilitation of patients with scar deformities and contractures must solve two tasks: elimination of the contracture and restoration of a full skin covering.

In recent years, a significant increase has been noted in the frequency of fractures of the facial bones and, in particular, of the zygomatic-orbital complex, largely due to increases in road-traffic, occupational, domestic, and sports injuries. When providing first aid, the surgeon must perform primary wound treatment, apply plastic sutures, and ensure that the soft tissues of the zygomatic-orbital region and the lower eyelid assume an anatomically correct position, which prevents the formation of a scar band. Data on the frequency of zygomatic bone fractures are contradictory; these injuries account for 4.3% to 25% of all facial bone fractures and 67–71% of fractures of the middle facial zone [1].

In most cases, the subciliary approach is used, which provides a good view of the defect area and allows adequate fixation of bone fragments. When a subciliary incision is made, the skin, thin subcutaneous tissue, and muscle tissue are dissected; layer-by-layer suturing with appropriate suture sizes and avoidance of linear incisions are important. Normotrophic scars form during uncomplicated healing—inconspicuous, soft-elastic formations that do not cause functional or aesthetic defects. However, quite often, as a complication, a scar band forms that limits movement of the lower eyelid [7,8].

Objective. To improve the results of treatment of fractures of the zygomatic-orbital region through a subciliary incision by reducing the time required to restore lower eyelid function during treatment of a postoperative subciliary scar using Kenalog, various ointments, and myogymnastics of the lower eyelid muscles.

33. Materials and Methods

The studies were conducted in 87 patients who presented with fractures of the zygomatic-orbital complex (68 men and 19 women), aged 20 to 50 years. The method is based on acting on scar tissues in the operative field for early restoration of eyelid function. For this purpose, we propose injecting Kenalog into the scar tissues, beginning three weeks after suture removal.

The Kenalog injection procedure is performed under aseptic and antiseptic conditions. The intervention area is treated 2–3 times with 96% alcohol or furacilin. Because Kenalog is a crystalline suspension, the ampoule must be shaken thoroughly before opening; the contents should be close to body temperature to reduce pain. Kenalog is administered at a dose of 1 mg of active substance diluted with 2% novocaine solution or 1% lidocaine (or physiological saline in cases of anesthetic

intolerance). Injections are performed with an insulin syringe; 3–4 punctures are made along the scar line, and the solution is injected slowly. Uniform blanching of the scar indicates sufficient infiltration. Depending on drug effectiveness, the course includes one to three injections at intervals of 3–4 weeks, with simultaneous myogymnastics. Follow-up examinations were performed at 6 months and 1 year, including clinical, photometric, radiological, computed tomography, myographic, and anthropometric methods.



Fig. 1–2. Clinical documentation of the postoperative subciliary scar and restoration of lower eyelid function.

34. Results and Discussion

The quality of scarring processes is influenced by the thoroughness of approximation of the wound edges. The steroid drug Kenalog has a pronounced anti-inflammatory and antiallergic effect and activates collagenase activity, thereby slowing the formation of collagen fibers. If only ointments and myogymnastics are used, the treatment period is about 6–8 months. With Kenalog, partial restoration of functions occurs 1 month after the start of treatment, and full restoration occurs after 2–3 months. These data were confirmed by myographic studies.

The best-known current methods for treating pathological scars include local use of lidase (injections, electrophoresis or phonophoresis); pyrogenal injections; Contractubex ointment; terrilytin electrophoresis; Bucky rays; mechanical crushing of scars; cryodestruction; phosphorus applications; and curiosin. Such a variety of conservative methods, used separately or in combination, does not lead to complete disappearance of pathological conditions of the integumentary tissues.

In 2005, E.V. Chuguy used a complex of therapeutic cryoexposure technologies with porous titanium nickelide applicators, showing that cryoexposure on a forming scar from the second week up to 1 year promotes replacement of destroyed tissue with delicate connective tissue and helps avoid pathological scars [2]. In 2008, S.V. Bondarev used collagenase preparations, finding that administration into skin scars destroys excess collagen [3]. In 2009, T.N. Karpova performed electro- and ultraphonophoresis of Fermencol, concluding that it causes scars to transition from hypertrophic to normotrophic [4]. In 2005, Saray Y. and Güleç A.T. studied intralesional bleomycin for keloid and hypertrophic scars (14 patients, 15 scars): complete flattening occurred in 73.3% of cases with no recurrence [6]. In 2006, Stewart C.E. 4th and Kim J.Y. proposed a combined method of surgical excision with subsequent mitomycin-C administration (10 patients with head/neck keloids), reporting treatment success in 90% of patients [5].

35. Conclusions

The conducted study allows us to recommend the use of Kenalog for the restoration of eyelid functions limited by a postoperative subciliary scar, in order to improve the cosmetic and functional results of operations performed using a subciliary incision.

References

1. Monstrey S., Middelkoop E., Vranckx J.J., et al. Updated Scar Management Practical Guidelines: Non-invasive and invasive measures. *J Plast Reconstr Aesthet Surg.* 2014;67:1017–1025.
2. Chugui E.V. *Cryotherapy of Skin Scars.* PhD abstract, Moscow; 2005.

3. Toro D., Dedhia R., Tollefson T.T. Advances in scar management. *Curr Opin Otolaryngol Head Neck Surg.* 2016;24:322–329.

4. Karpova T.N. *Electro- and Ultraphonophoresis of Fermencol in the Correction of Skin Scars.* PhD abstract, St. Petersburg; 2009.

5. Stewart C.E. 4th, Kim J.Y. Application of mitomycin-C for head and neck keloids. *Otolaryngol Head Neck Surg.* 2006;135(6):946–950.

6. Saray Y., Güleç A.T. Treatment of keloids and hypertrophic scars with dermojet injections of bleomycin: a preliminary study. *Int J Dermatol.* 2005;44(9):777–784.

7. Gold M.H., McGuire M., Mustoe T.A., et al. Updated international clinical recommendations on scar management: Part 2. *Dermatol Surg.* 2014;40:825–831.

8. Jiang Z., Liao X.C., Liu M.Z., et al. Efficacy and Safety of Intralesional Triamcinolone Versus Combination of Triamcinolone with 5-Fluorouracil in the Treatment of Keloids and Hypertrophic Scars: A Systematic Review and Meta-analysis. *Aesthetic Plast Surg.* 2020;44:1859–1868.