Paradigms in Complex Facial Scar Management

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Semin Plast Surg 2020;34:305–313.

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Abstract

The process of scar formation is a sequela of the healing following soft tissue injury extending to, or through, the reticular dermis. Scars, within the head and neck in particular, may be physically disfiguring with resultant psychosocial implications. Mitigation of excessive scar formation during the healing process following surgery, or in the setting of trauma, begins with meticulous soft tissue handling and reconstructive technique. The reconstructive surgeon's armamentarium must therefore include techniques that minimize initial scar formation and revision techniques that address unfavorable outcomes. With this in mind, this article reviews both conservative nonsurgical and surgical treatment modalities that mitigate scar formation or address mature scar formation.

Keywords

- facial scarring
- wound healing
- scar revision
- dermabrasion
- laser resurfacing

Although representative of the natural healing process, and thus an inevitable sequela of trauma or planned surgical intervention, facial scars may carry considerable morbidity with resultant functional deficits or psychosocial stigmata.¹ Fundamental techniques delineated by early surgical pioneers, such as William Halsted in the early 20th century, should be incorporated in the management of all soft tissue wound closures. These principles include gentle soft tissue handling, stringent aseptic technique, sharp tissue dissection, thorough hemostasis, aversion of tension, and obliteration of potential dead space.² In addition to these considerations, a patient's intrinsic physiological characteristics will also determine the extent and efficacy of wound healing.³ Patients should be counseled that scar maturation represents a continually evolving process that may take upwards of a year. Management of scars begins with the initial closure and optimization of the wound, appropriate counseling, and management of patient expectations, and extends to adjunctive procedures that augment tissue regeneration. In this article, we provide a practical overview of both clinical and surgical measures aimed toward the reduction and treatment of facial scarring.

Wound Healing Physiology and Scar Formation

Induction of the physiological cascade resulting in scar tissue formation begins with violation of the deep reticular dermis.

An understanding of the underlying physiology of wound healing is imperative to mitigate scar deposition. This physiological process may be divided into the following temporal phases: inflammatory, proliferative, and remodeling/maturation (►Fig. 1). Scar deposition occurs primarily in the latter two phases. During the proliferative phase, fibroblasts are recruited to the wound bed and initiate collagen synthesis. Type III collagen predominates during early wound healing and is eventually replaced by type I collagen as the scar tissue matures. Wound contraction is an integral component during the proliferative phase and is mediated by myofibroblasts. Maximal wound contraction occurs 12 to 15 days following initial injury onset.^{3–6} Contraction of a wound may be exacerbated in the setting of significant inflammation or in the setting of a chronically exposed wound. Wound contracture may be decreased if skin grafts are used but is not eliminated as full-thickness skin grafts have been shown to undergo approximately 20% contraction.⁷ During the remodeling and maturation phase, type I collagen replaces type III, resulting in strengthening of the maturing scar. Organization of collagen fibrils results in increased tensile strength and improved appearance of the scar with decreasing inflammation and associated regression of erythema and induration. Neovascularization of the wound bed similarly regresses, leading to relative avascularity of the matured scar. The remodeling process may be 12 to 18 months in

Fig. 1 Phases of wound healing. (Reproduced with permission of Pitzer and Patel.³)

duration, and the resulting scar typically displays 70 to 80% of its original tensile strength prior to injury.^{4,5}

Factors that delay wound healing, particularly prolongation of the inflammatory phase, will increase the risk of scarring. Therefore, measures should be taken to facilitate the physiological process of wound healing including optimization of (1) nutritional status, (2) adequate tissue perfusion, (3) proper wound care, (4) prevention of wound pressure or tension, (5) and minimization of potential bacterial contaminants.⁸ Conservative measures are consequently directed toward creating an optimal environment that facilitates the physiological cascade of scar maturation while also attempting to diminish sequela that may result from its prolongation.

Patient-Related Factors

Patient-related factors may also predispose individuals to increased scarring. For example, recent studies have shown that patients displaying joint hyperplasticity have increased dermal elastin and subsequently are more prone to scar formation.⁹ Age has also been postulated to impact the extent of potential scar formation. The remodeling phase has been shown to be prolonged in younger patients, potentially resulting in increased erythema and scar hypertrophy. The remodeling phase has been shown to decrease after the onset of puberty.⁹ This may be why children are prone to forming more thickened scars. As previously mentioned, any process that potentially prolongs the inflammatory phase, such as infection, foreign body retention, wound contamination, or connective tissue disorders, may increase the probability of scarring. Individuals with medical problems including diabetes, hypothyroidism, and immunocompromise all have an increased risk of poor healing. A careful patient history is therefore of paramount importance with regard to appropriate patient counseling and establishment of realistic expectations. Patients with nutritional deficiencies have an impediment to

healing and should their nutritional status should, when possible, be addressed prior to operative intervention. Patient factors leading to microangiopathy and decreased tissue perfusion such as active smoking, vasoconstrictive effects of nicotine, or a history of radiation therapy may result in inadequate healing and resultant scarring. A total radiation dose of > 50 Gy has been shown to result in obliterative endarteritis with decreased tissue perfusion, excessive fibrosis, and aberrant cellular regeneration.¹⁰ Pharmaceuticals chronic steroid use and chemotherapeutic agents may additionally alter the physiological healing process and should be noted and regimens potentially modified prior to intervention. Patients taking isotretinoin (Accutane) should delay elective cutaneous ablative procedures that require reepithelialization (i.e., ablative laser resurfacing, dermabrasion, or chemical peels).

Primary Management of Soft Tissue Injury and Scarring

Appropriate patient counseling, involving the establishment of realistic expectations, is of paramount importance prior to reconstructive efforts. Scarring is an inevitable process following soft tissue injury. However, the surgeon's goal is to create a scar that is nearly imperceptible. The ideal reconstruction will display favorable color, texture, and thickness matching the surrounding skin. As the wound matures, the resultant scar should be flat, thin, and pliable, without evidence of hypertrophic or keloid changes. Every effort must be made to preserve, or restore, premorbid facial topography and contour while preventing distortion of the aesthetic facial subunits (**►Fig. 2**).¹¹ One should be familiar with several techniques that facilitate reorientation of unfavorable scars, within 30 degrees, along relaxed skin tension lines (RSTLs). Planning the placement of incisions within these lines allows exploitation of the muscle force vectors to draw wound edges in apposition, thus facilitating tissue recruitment and wound

Fig. 2 Facial subunits and relaxed skin tension lines (RSTL) of the face. Facial scars should ideally be positioned along subunit borders or within 30 degrees of RSTLs to promote appropriate camouflage. (Reproduced with permission of: Vincent et al.¹³)

closure. Attention should be given to adequate tissue undermining as it plays a critical role in areas of skin tension. Wound tension should be minimized during closure as it often leads to dehiscence or disproportionate collagen deposition with an associated increase in scarring.^{12,13} Additionally, multilayered closure, when possible, reduces dead space and may help alleviate a component of wound tension. Placement of tape along surgical incisions may also decrease tension and potential scarring.¹⁴

The natural topography of the face is typically curvilinear with multiple areas of convexity, as such long linear scars traversing facial subunits are noticeable, even in the setting of optimal closure technique. With this in mind, irregularization of the wound should be through implementation of Z-plasty, M-plasty, or geometric broken line breaking them up into smaller less noticeable components. These techniques may additionally mitigate future scar contracture and facilitate scar lengthening.

Facial Subunit Considerations

Consideration should be given to the specific subunits involved as each consists of distinctive tissue composition and thickness and may therefore be suited for a particular reconstructive method. The nasolabial fold, for instance, may be used to conceal scars by employing a Z-plasty technique to reorient scars along RSTLs. Notably, Z-plasty with lateral limbs in close proximity to the RSTLs can help achieve optimal camouflage. Scars lying parallel to RSTLs may be managed with W-plasty, whereas those in an oblique orientation with respect to RSTLs are generally better addressed with Z-plasty. Perioral RSTLs extend along the cheek toward the zygoma and due to its convex broad plane scarring in this area is readily detectable.

Serial Z-plasty or geometric broken line functions well in this area as it reconfigures scars into smaller irregularized components while reorienting scars along RSTLs. If parallel to RSTLs, a W-plasty may be used in this region with favorable aesthetic outcome.

The forehead represents a relatively forgiving topographic region and is usually amenable to fusiform excision and linear closure. Notably, at the junction of the glabella and forehead, the corrugator supercilii muscle is oriented perpendicular to the frontalis, and therefore a combination of W-plasty and terminal Z-plasty may be an effective means of irregularization and camouflage. The periorbital region is particularly susceptible to unfavorable scarring due to the prominence of the supraorbital rim and the relatively thin skin surrounding the eyelids. Periocular scarring and contracture may result in lid retraction, leading to cicatricial ectropion or entropion. Malpositioning of the eyelid may then result in a lagophthalmos eventually leading to exposure keratopathy, corneal ulceration and scarring, and potentially blindness.^{15,16} Due to the convexity of the medial canthal region, it may be uniquely suitable for healing through secondary intention in specific circumstances precluding other reconstructive measures. Consideration should be given to the hair-bearing eyebrow region as well, and a beveled incision paralleling hair follicle shafts should be used when necessary.

Scars disrupting continuity of the orbicularis oris may cause significant functional deficits as well as noticeable notching, or depression, within this region and understandably displeasing cosmetic results. Care must therefore be taken to close all layers including the deep muscular layer in a multilayered fashion with precise realignment of the vermillion border.

Suture Material

In addition to appropriate suture technique, one's choice of suture may directly influence the degree of local inflammation within the wound bed and therein influence the extent of residual scarring. Absorbable sutures are used in a buried fashion to anchor the deep tissue layers to obliterate dead space and also anchor the dermal edges so that approximation of the cutaneous layer may be performed with minimal tension. Poliglecaprone (Monocryl, Ethicon) and Polygactin 910 (Vicryl, Ethicon) are often employed to close the deep component of wounds. Vicryl, a polyfilament absorbable suture, retains 50% tensile strength at 21 days. However, it may induce a localized inflammatory reaction. Comparatively, Monocryl, a monofilament absorbable, has been shown to have a lesser inflammatory response and retains 40% tensile strength at 14 days. In wounds with longer anticipated healing, polydioxanone (PDS II, Ethicon) may be used as it displays 25% tensile strength at 42 days, resulting in a greater duration of suture integrity. Careful attention must be given to deep closure of the wound as poor approximation may result in depressed scarring.

Superficial cutaneous closure should be performed with optimal eversion of wound edges. Consideration should be given to Prolene (Ethicon) or nylon nonabsorbable suture due to its immunologically inert nature with minimal tissue

Table 1 Absorbable suture properties

Suture	Configuration	Tensile strength	Absorption time	Tissue reactivity
Surgical gut (plain or catgut)	Twisted	Poor at 7–10 d	6–8 wk	Significant
Surgical fast-absorbing gut	Twisted	0 at 7 d	3–6 wk	Moderate
Chromic gut	Twisted	Poor at 21–23 d	8–10 wk	Moderate
Polygactin 910 (Vicryl)	Braided	50% at 5 d, 0 at 14 d	6 wk	Low
PDSII	Monofilament	70% at 14 d, 50% at 28 d, 25% at 42 d	24–26 wk	Low
Polyglyconate (Maxon)	Monofilament	70% at 14 d, 55% at 21 d	26 wk	Low
Poliglecaprone (Monocryl)	Monofilament	6–70% at 7 d, 30–40% at 14 d	13–17 wk	Low

Abbreviation: PDS, polydioxanone.

Source: Adapted with permission of Welshhans and Hom.⁸

reactivity and inflammation. If nonabsorbable sutures are used, they should be removed in a timely fashion to prevent persistent scar tracking or “railroad tracking.” Suture material with relatively short absorption times may be considered in the pediatric population when subsequent suture removal is anticipated to pose difficulty. **Table 1** displays a list of common absorbable suture types and their respective attributes.

Several meta-analyses and systematic reviews comparing absorbable and permanent suture materials did not definitively determine whether one resulted in better cosmetic outcomes. The studies concluded that a lack of uniformity and standardized objective outcomes make interstudy analysis difficult, and therefore large randomized controlled studies are needed to infer any potential benefit.^{17–19} A Cochrane review of randomized controlled trials (RCTs) examining the use of tissue adhesives in comparison to suture closure found no distinction in cosmetic outcome. Notably, this review only included simple linear superficial facial lacerations less than 4 cm in length. This study, however, did show an increased risk of 2.4% for wound dehiscence when tissue adhesives were used.²⁰ No current consensus exists among subspecialties with regard to suture choice.^{21,22} Ideally, the most nonreactive and smallest suture possible should be used with multilayered closure, minimization of tension, and appropriate tissue eversion.

Postprocedural Wound Care

Appropriate moisturization of healing tissue is critical in promoting reepithelialization and cosmesis.²³ Tissue moisturization is thought to facilitate unimpeded migration of epithelial cells. Conversely, in the setting of tissue desiccation, migration is impeded, thus delaying optimal wound closure, potentially inciting further tissue reactivity and inflammation, and delaying wound healing. Appropriate moisturization of the wound bed has shown to increase epithelialization rate twofold.²⁴ Occlusive and semioclusive dressings should therefore reach an equilibrated state in which a moist environment aids in healing while also preventing excess fluid accumulation, as seromas and hematomas promote bacterial overgrowth and are impediments to healing.^{25,26}

Topical wound products, such as petroleum ointment, water-based gels, and antibiotic ointments, may be used to promote moisturization. Topical antibiotic products provide moisture while also preventing infection. However, allergic contact dermatitis is reported in up to 13 to 34% of cases.^{26,27} However, current randomized controlled trials are confounding, as a recent prospective trial comparing white petroleum to bacitracin revealed no statistically significant differences in postprocedural infection, contact dermatitis, or healing between the two treatment arms.²⁷

Following epithelialization, 1 to 2 weeks, continued use of occlusive ointments is recommended.^{28–30} Silicone gels and sheeting have shown particular utility in increasing hydration to the stratum corneum with a resultant decrease in hypertrophic scarring.^{30–32} The proposed mechanism of action is through increased dermal hydration and modulation of the cytokine and growth factor microenvironment.³³ A prospective RCT showed that twice daily use of silicone gel for 2 months resulted in a statistical reduction of keloid and hypertrophic scar formation in the treatment group. The treatment arm also displayed a reduction in symptoms including paresthesia, pressure sensation, and dyschromia.³⁴ Evidence suggests that silicone gel sheeting compared with silicone gel alone may be more efficacious in preventing and improving the appearance of hypertrophic scars.^{31,34–37} Preliminary studies have indicated a potential efficacy of vitamin E and onion extract, or *Allium cepa*, in scar treatment. However, due to the paucity of scientific evidence and the associated risk of contact dermatitis with vitamin E application, there is insufficient evidence to support their routine use.^{38–41}

In addition to topical therapies, the role of sun protection during this time is critical, and use of a daily moisturizer with greater than 30 SPF has been shown to be beneficial in reducing pigmentary changes. Patients should be counseled to avoid sun exposure for several months, even in overcast conditions, and employ use of sunscreen 1 month following full epithelialization.⁴² Studies have also indicated that routine implementation of pressure dressings, 20 to 200 mm Hg, mitigate scar formation.^{43,44} When these dressings are unfeasible or poorly tolerated, scar massage may similarly help soften scar deposition and prevent hypertrophy.

Injectable Scar Modulators

Steroids

Intralesional injections of steroids have shown great utility in the prevention and management of scars, particularly in the setting of persistent tissue edema or as an adjunctive measure in the treatment of hypertrophic scars or keloids. The postulated mechanism of action of steroid injections is through the reduction of fibroblast proliferation and subsequent decrease in collagen synthesis, as well as an overall decrease in inflammatory mediators.⁴⁵ Injected triamcinolone acetonide has been shown to soften and smoothen hypertrophic scars and keloids by 50 to 100% and decrease recurrence rates.^{46–48} Intralesional injections may therefore obviate the need for surgical intervention if used in a timely and appropriate manner. Administration is performed between 4- and 6-week intervals, and patients are advised to massage the scar following injection for at least 24 hours. Overly aggressive treatment should be avoided as it may cause excessive subcutaneous fat atrophy and resultant contour deformity, telangiectasias, and dermal thinning. These complications may be mitigated with injection of lower concentrations performed at conservative time intervals with close clinical follow-up.

Nonsteroidal Injectable Scar Modulators

Use of 5-fluorouracil (5-FU) has shown significant capacity in modulation of scar formation and contracture following intralesional injection.^{49–51} Administration may be performed as early as the immediate postoperative period and may prevent scar hypertrophy and keloid size.^{26,52} Its proposed mechanism of action is through inhibition of rapidly proliferating fibroblasts, resulting in decreased collagen deposition and scarring.^{52,53} Use of 5-FU for scar management is currently off-label, and intravenous administration should be avoided as it has been shown to be associated with anemia, thrombocytopenia, and leukopenia.¹⁵

Intralesional injection of bleomycin, a cytotoxic antibiotic agent, can also be used in the setting of hypertrophic scarring or keloids. Despite a paucity of data, preliminary studies have shown potential benefit in the appearance of scars.⁵⁴

Filler

Depressed scars may be treated with autologous grafts including fat, collagen, or synthetic materials. An ideal filler will have minimal side effects, be easily injectable, and have limited donor-site morbidity.^{55,56} Fillers are easily administered in the clinic setting with topical anesthesia. Depending on the type of filler used, their duration may be for several weeks to months and, in some cases, permanent. In most cases, filler will resorb over time, necessitating reinjections. In certain circumstances, subcision, an incisionless subcutaneous procedure, may be helpful prior to injection of filler to release fibrous dermal attachments that may be tethering the overlying skin. This approach facilitates more effective contouring of the scarred area.

Botulinum Toxin

Tension distributed along wound edges may have profoundly deleterious effects on wound healing and the final cosmesis of a healing wound. Chemoimmobilization uses botulinum toxin, which is commonly used in aesthetic procedures to treat dynamic rhytids, in facial wounds to decrease tension along wound edges in particularly mobile facial areas. However, delayed onset of muscle inactivity necessitates that injections be administered 1 to 2 weeks prior in anticipation of surgical intervention. In a prospective RCT, local injection of botulinum toxin induced wound immobility was shown to enhance healing and improved cosmesis.⁵⁷ Botulinum toxin has also been shown to decrease the expression of collagen I and III within hypertrophic scars in animal models.⁵⁸

In addition to the aforementioned inhibitory effects on dynamic movement and minimization of wound tension, studies have shown that botulinum toxin may promote wound healing from a biochemical aspect. Injection of botulinum toxin prior to surgery inhibits secretion of norepinephrine, thus potentially increasing perfusion treated areas.⁵⁹ Botulinum toxin has shown particular utility in the treatment of hypertrophic scars through the inhibition of neurotransmitters, including glutamate and substance P, which then have a secondary inhibitory effect on downstream inflammatory mediators such as prostaglandins, bradykinin, and serotonin.^{60–64} Ultimately, this reduction in the inflammatory microenvironment results in a correlative decrease in hypertrophic scarring.

Botulinum injection has also shown improvement in patient symptoms including decreased erythema, pruritus, and tissue pliability indices when cutaneous scars were treated with up to 35 units once monthly for over 3 months of duration.⁶⁰ Additional studies have shown an inhibitory effect on fibroblast proliferation and recruitment, decrease in growth factors mediating fibrosis, and reduction in inflammatory mediators (e.g., transforming growth factor beta 1 [TGFβ1]).^{61–64} Animal studies have additionally shown decreased thickness of hypertrophic scars with histological reduction in collagen production.^{58,65}

Microneedling and Platelet-Rich Plasma

Microneedling, a form of collagen induction therapy, involves controlled injury to an area of interest using multiple small-caliber oscillating needles. This localized injury then induces collagen deposition with resultant increase in volume in the area treated. When used in conjunction with platelet-rich plasma (PRP), autogenous growth factors are thought to have an additive stimulatory effect on collagen production.⁶⁶ In cases in which patients are not amenable to PRP use, hyaluronic acid may be used as an alternative.⁶⁶

Resurfacing Modalities

Skin resurfacing, which may be performed using several modalities, selectively remove the superficial segments of the skin, extending to the papillary dermis, allowing for reepithelialization. Several techniques have been described including light amplification by stimulated emission of radiation (laser), dermabrasion, and chemical peels.

Dermabrasion

Dermabrasion improves scar irregularities through controlled mechanical resurfacing of areas with raised contours. It may be implemented in smoothing irregularities, correcting stepoffs or texture match at the interface of local flaps and native tissue, and addressing dyschromia. Dermabrasion is performed at 6 to 8 weeks following initial procedural intervention. Diamond fraises of variable coarseness are typically used. Wire brush heads may be used but are typically avoided when treating the face as there is an increased risk of unintended deep dermal injury. Dermabrasion is then performed along the area of interest at a 45-degree angle, with reference to the scar line, until diffuse pinpoint bleeding is encountered signifying depth within the papillary dermis. The reticular dermis displays a yellow chamois color with visible collagen strands and contains adnexal structures. This deeper layer should not be violated as it may induce increased scarring.⁶⁷

Laser Resurfacing

An alternative resurfacing option employs laser technology to induce selective photothermolysis. Lasers may be dividing into nonablative and ablative technology and subdivided further based upon the depth of penetration, chromophore, and fractionation. Laser therapy has typically been shown to be more efficacious in lighter skinned individuals (Fitzpatrick I–III).^{67–71} This technology should be used with caution in individuals with Fitzpatrick 4 to 6 skin type due to increased risk of hypopigmentation. Scars are traditionally treated with ablative lasers including carbon dioxide (CO₂) and erbium:yttrium-aluminum-garnet (Er:YAG), both of which have target chromophores of water and collagen. Their mechanism is similar to that of dermabrasion, inducing controlled injury to specific tissue layers to induce reepithelialization and collagen remodeling.

Nonablative pigment-specific lasers such as pulse dye, potassium titanyl phosphate, or neodymium:YAG may be used in hyperpigmented areas of scarring. These lasers target hemoglobin and are postulated to stimulate extracellular matrix deposition. It should be noted that lasers carry significant safety concerns and should be used following specific laser safety protocols. Their use may be associated with prolonged erythema, blistering, reactivation of herpes simplex virus, dyschromia, and exacerbation of scarring. The stacking of laser pulses, that is, multiple passes employed over the same area, may lead to reticular dermal injury and resultant scarring. Implementation of fractional photothermolysis, first introduced in 2004, has greatly reduced this risk. Fractionation refers to treatment of a fraction of the overall surface area with sparing of intervening tissue and allows for scars to be treated at a greater depth of penetration while mitigating risks of pigmentary change, thermal injury, and scarring.^{67–72}

Chemical Peels (Chemabrasion)

Although less commonly used than dermabrasion or laser resurfacing, chemabrasion is a useful option in improving

cosmesis and decreasing unpleasant scarring. Chemical peels may improve skin match with normal surrounding tissue in cases of reconstruction in which a flap or graft has been previously used. Chemabrasion induces the process of exfoliation and subsequent inflammation, neocollagenesis, and collagen remodeling. Depth of penetration is variable, and the type of peel is the determinant. The depth does, however, correlate with the extent of collagen remodeling and duration of erythema. Similar to dermabrasion, fair-skinned individuals (Fitzpatrick I and II in particular) have a low risk of postprocedural pigmentary dyschromia, whereas Fitzpatrick III and Vs patient have a relatively higher risk. As is true in other resurfacing modalities, the density of adnexal pilosebaceous structures in the treated area influences healing particularly with deeper peels. Greater density of these structures results in greater regenerative potential and overall greater resilience to the stress induced by the chemical process. A full review of chemical peels and their varying indication, risks, and techniques is beyond the scope of this article. Interested readers are directed to the references section for greater detail regarding this topic.^{73–76}

Adjunctive Radiotherapy

Radiation therapy has historically been used in the treatment of keloids.⁷⁷ However, due to their relatively low growth rate, treatment of mature keloids with radiotherapy typically results in partial regression and minor symptomatic improvement. However, postoperative treatment of resected keloids has, in stark contradistinction, shown significantly decreased rates of recurrence and has evolved as the preferred management approach toward particularly large lesions.^{78,79}

A recent meta-analysis indicated that a management protocol of excision followed by radiotherapy resulted in approximately 80% local control. Radiotherapy of keloids within the head and neck region seems to portend a better prognosis as this regimen has shown greater 90% success.⁸⁰ Complications of radiation therapy may be further divided into acute, shortly after treatment completion, or late, developing months to years following treatment. Complications tend to be dose-dependent and are generally mild and well tolerated. Most commonly, transient desquamation, erythema, and mild pruritus occur within the acute phase, whereas late side effects include pigmentary dyschromia and telangiectasia. The risk of carcinogenesis has been documented to be minute (< 1%).⁸¹

Surgical Scar Revision

Scars recalcitrant to conservative measures, or those requiring more aggressive primary management, may be best managed with surgical excision. Excision of a scar facilitates its reorientation within RSTL or aesthetic subunits, lengthening, and possible revision of prior interventions with appropriate soft tissue handling. However, excision effectively restarts the healing process, and patients should be counseled regarding their expected recovery timeline. Scar excision should be a primary consideration in cases with clear structural

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