

Irregularly Irregular Stellate Incisions for Selective Reduction of Benign Facial Lesions

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Background: Cosmetic outcomes are among patients' top concerns when discussing treatment options for facial nevi. Benign lesions of the face often enlarge with time, and many patients seek care to minimize the perceived deformity. Complete excision remains the frontline treatment for facial lesions, but a choice must be made between the deformity from the lesion itself and scar deformity incurred from its removal. Traditional elliptical excision results in a linear scar that is often conspicuous, while alternatives to surgical excision seek to minimize scarring but possess their own disadvantages. We report a new application for nevus reduction (subtotal or near-total excision) to diminish deformity from the lesion itself while minimizing scar visibility with a novel "irregularly irregular stellate incision" approach.

Methods: Incisions are made in a stellate pattern with irregularly irregular borders circumscribed within the lesion. Therefore, the scar is restricted to the lesion surface, while a reduction in area and projection off the skin surface can be tailored to fit the patient's wishes for any benign skin feature.

Results: This technique has been employed with hundreds of facial lesions, with two representative cases shown. No significant complications have been observed and the method has been used on a wide variety of sizes and types of lesions.

Conclusions: The technique presented meets the need for minimal scarring when reducing benign lesions of the face. The method is applicable to a wide range of presentations and can also function as a method to biopsy lesions, should there be concerns about pathology. (*Plast Reconstr Surg Glob Open* 2022;10:e4408; doi: 10.1097/GOX.0000000000004408; Published online 7 July 2022.)

INTRODUCTION

Although surgical excision of large, pigmented nevi or other benign lesions has been part of the standard plastic surgical armamentarium for over a century,^{1,2} little has been published about elective reduction of smaller benign, but visually evident facial nevi. Removal of facial lesions can be a significant portion of the clinical care delivered in many surgical practices, but there is little dialog about this in residency training programs and few publications have addressed how to minimize

scars to improve outcomes. Traditional elliptical excision results in a linear scar line that is often conspicuous in most regions of the face.³ Alternatives to surgical excision such as laser ablation seek to minimize scarring but possess their own disadvantages such as hypopigmentation, hyperpigmentation, or recurrence.⁴ Alternatively, shave excision and cryotherapy frequently result in shiny, hypopigmented, or depressed scar patches.^{5,6} Punch biopsies often lead to depressed and shiny scar dents.⁷ As benign lesions can enlarge with time, we suggest that elective surgical nevus reduction can be added to the plastic surgical options given to patients who wish to minimize scarring while preserving unique features that are starting to draw unwanted attention. As a modification of our previously published incisional technique that proactively disrupts the linearity of surgical scars,⁸ we propose that a modified star-shaped incisional design

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confined within the circumference of the lesion and made irregularly irregular along its limbs can meet all criteria to minimize a patient's concerns without creating excessive scarring. Mulliken et al⁹ described the use of a purse-string suture to close larger excisions of pediatric hemangiomas. We independently realized that this same anchoring technique in the deep dermis in smaller resections produced permanent obliteration of the "dead space" without scar stretch. We have only seen a few suture extrusions among the hundreds of moles treated. Importantly, the excised full-thickness tissue—skin surface to subcutaneous adipose—can be submitted for frozen section or formal pathological evaluation, as clinically indicated.

MATERIALS AND METHODS

In the senior author's solo practice, the patient pool is diverse for gender and gender identity, age, ethnicity, sexuality, states of disease and health, and hormonal station. Irregularly irregular stellate mole reduction has been offered as the primary option for all patients with conspicuous benign-appearing facial lesions in locations where traditional linear scarring would rival the lesion for unwanted visibility.

A traditional methylene blue surgical marking pen is used but must be sharpened to a microfine point with an 11 blade (or similar) to map the minute irregularly irregular stellate incision design within the visible borders of the lesion, as shown in [Figure 1](#) and as diagrammed in [Figure 2](#). In our experience, degreasing the surface of any skin lesion with an alcohol swab and allowing it to fully dry prevents blurring of the marks. Indelible pens should be avoided to obviate iatrogenic tattooing. If necessary, loupes are used for magnification, and Alcon retinal scalpels or 11 blades provide suitable options for creating the fuzzy edges of the microflaps and for coring lesions from the surrounding dermis. Patients are instructed to avoid all aspirin-containing products, nonsteroidal anti-inflammatory medications, vitamin E, herbal products, antioxidants, creatine, and dietary supplements for 2 weeks before and 2 weeks after surgery. Although this regimen seems overly cautious, a hematoma in the full thickness cavity can delay healing and create significant scarring. In those patients taking therapeutic aspirin, we obtain advance clearance from the prescribing physician to stop for 2 weeks, then restart on the third postoperative day. The typical surgical approach is presented in the Video with a 2-week postoperative image from the same patient shown in [Figure 3](#). (See Video [online], which displays the basic technique for irregularly irregular stellate mole reduction that is demonstrated in the 52-year-old woman seen in [Figure 3](#). As this lesion exhibited peripheral telangiectasias that can be seen around nodular basal cell epitheliomas, the full-thickness tissue core was placed in formalin and submitted for pathological analysis. Any positive biopsies are easily followed by curative excision, even using the same technique.) Although some hyperemia can be seen for the first few weeks of recovery, most scars are nearly imperceptible by the third week.

Takeaways

Question: What method of mole reduction creates the least scarring while allowing patients to choose the size of reduction?

Findings: Mole removal is commonly done as complete removal through elliptical incisions. Patients trade skin lesions for straight-line scars, which can be noticeable on the face. Little has been published about reducing mole size while minimizing scar. We present a technique that keeps incisions and final scars within the boundaries of the original mole, reducing lesions to any desired size.

Meaning: Irregularly irregular stellate incisions let patients choose how much to reduce facial lesions for either size or projection, while minimizing visible scar.

SURGICAL PREPARATION AND MARK MAKING

Baseline preoperative photographs of the face and close-ups of the lesion are captured for the record. Topical numbing cream is applied for 30 minutes, then an alcohol wipe is used to eliminate all creams and to degrease the lesion before critical surgical marks are made. Close-up photographs of the marks are taken. Analgesia and complete vasoconstriction are obtained concurrently with a small field block of 1% lidocaine with epinephrine using a 31-gauge microfine insulin syringe around and beneath the lesion. A full 30-minute wait time ensures a bloodless field and helps achieve minimal scarring. Although some colleagues may find the long wait time unnecessary, we strongly discourage expediency at the cost of an undesirable scar on an unforgiving face. Importantly, before prepping the skin, we ask the patient to apply direct digital pressure to the lesion to drive most infiltrated edema out of the surgical site. By doing so, the shape and volume of the skin feature can be addressed most accurately.

OPERATIVE TECHNIQUE AND POSTOPERATIVE MANAGEMENT

Povidone iodine solution is applied and allowed to dry while a sterile field is established. When epinephrine-induced blanching is complete, a microfine surgical blade is used to incise the surface of the lesion, as shown in [Figure 1](#). The dissection is then beveled outwardly with the central portion of the surface skin still attached to the bulk of the lesion, creating a cylindrical core that is removed down to subcutaneous fat. The diameter of the core can be tailored to remove the desired percentage of the lesion's surface appearance. The core is then delivered through the tiny, splayed flaps, is photograph-documented, and can be submitted fresh or in formalin for pathologic evaluation, if indicated. Meticulous hemostasis is then obtained.

Wound closure is accomplished with deep buried permanent suture, as advocated by Gary Burget to prevent future scar stretch around his forehead flaps for nasal

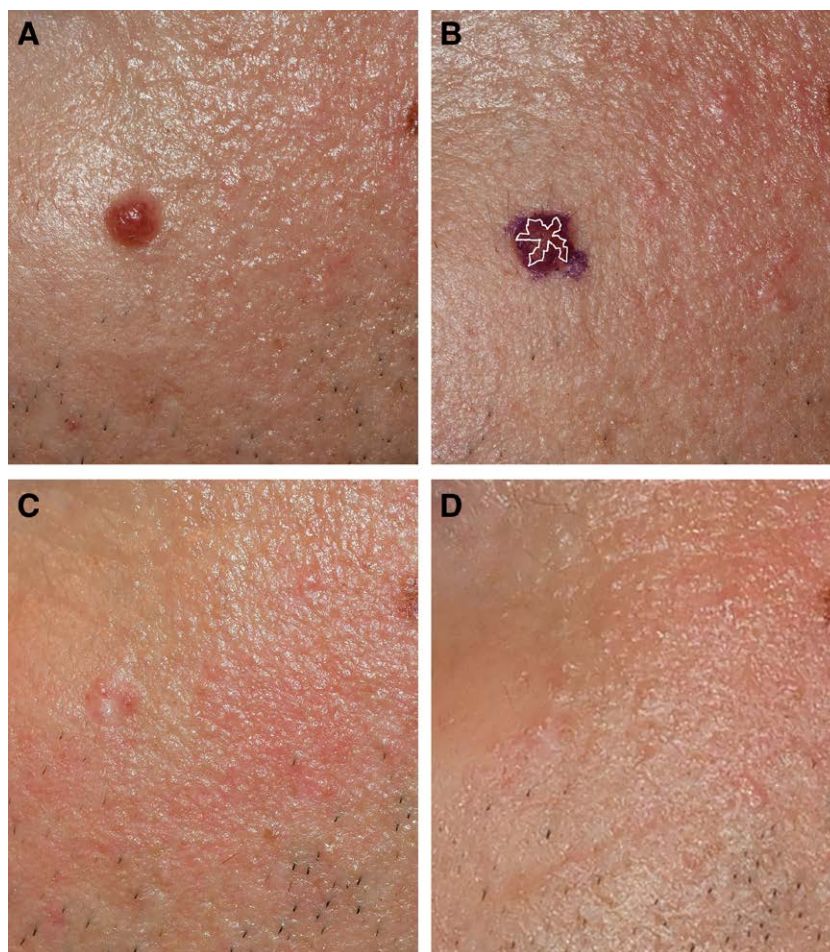


Fig. 1. Representative sequence of images for near-total reduction of a benign nevus using irregularly irregular star-shaped markings placed within the perimeter of the facial lesion for the patient also shown in [Figure 4](#). A, the nevus before intervention. B, the irregular stellate pattern of incisions to create microflaps through which the full thickness lesion will be delivered. C, scar appearance 24 months after reduction showing residual inflammation, and D, final result at 27 months after resolution of edema and hyperemia. The scars are typically difficult to discern. Note the seborrheic keratosis in the top right as a reference point and that the final scar shows no change in pigmentation relative to the surrounding skin.

reconstruction.^{10–12} 5-0 (or finer) polypropylene suture is used in a cerclage configuration in the reticular dermis to permanently collapse the cavity and minimize the chance of scar stretch, which can lead to a depressed circular scar.¹³ The tiny star-shaped surface flaps are then drawn centrally and held together with several simple sutures of 6-0 nylon or polypropylene, which are removed on the second or third postoperative day to minimize inflammation. Steri-Strips cut to 1/8" width are then anchored to the surface with Matisol glue placed around the perimeter of the excision. To minimize the chance of a hypersensitivity reaction, glue is not applied to the tiny wound itself. Camouflage makeup can be applied directly to the region once the Matisol dries and can safely be applied to the freshly healing scar and surrounding skin surface once the strips slough. We do not use dissolving suture materials, as these exacerbate inflammation that increases scarring.

RESULTS

A full 27-month progression from lesion to mature scar is illustrated in [Figure 1](#). Appearance of the same patient at social distance is presented in [Figure 4](#). In more than 20 years of applying this method to hundreds of lesions in a busy solo practice, there was never a lesion found that could not be handled using the stellate technique described. As published by Mulliken et al,⁹ congenital nevi and hemangiomas of considerable size have been successfully handled using a technique with similar centrally constricting sutures, at times with serial staging. However, in our adult population, the largest lesion addressed measured 1.6cm with typical favorable results after a single-stage reduction.

Importantly, in no patient has a benign lesion gone on to require secondary reduction. The results have been stable over time, as represented by a typical case in which no hypertrophy is seen in more than 13 years ([Fig. 5](#)).

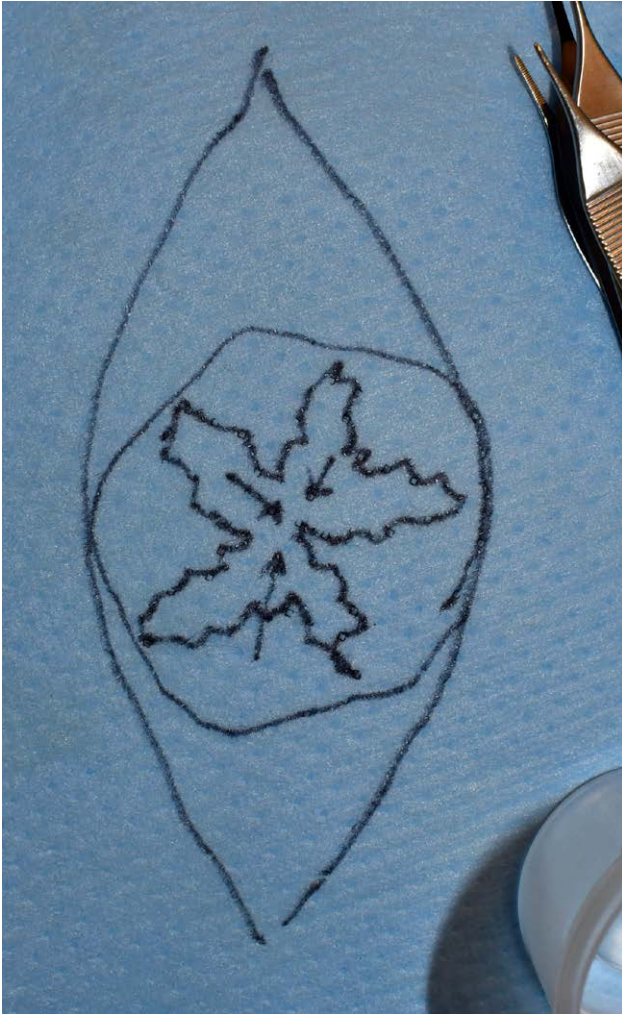


Fig. 2. The intralesional stellate incision plan is contrasted with a traditional fusiform excision on an actual surgical field. Note the limbs of the star-shaped pattern are circumscribed within the borders of the lesion to be reduced, and the flaps are to be drawn together toward the center.

DISCUSSION

Much has been published regarding skin lesion removal methods that aim to minimize scarring. Traditional techniques, such as shave and punch

excision, are inexpensive, but often create depressed or shiny scars.^{3,5,7} Elliptical excision can lead to full removal of the lesion, and the excised tissue can be analyzed for atypia, but the technique frequently creates a noticeable linear scar on the face.^{3,6} Methods such as cautery, cryotherapy, and laser ablation provide less invasive alternatives, but can lead to hypopigmentation, hyperpigmentation, or recurrence.^{4,6,14} Importantly, these options destroy tissue and prevent histologic evaluation. Despite the limitations, patients often elect to undergo one of these established techniques, sometimes presenting years later inquiring about scar minimization. As an added indication for our new approach of intralesional excision, we offer these individuals scar reduction using the same methodology.

With increasing concerns about facial scarring and aesthetic outcomes, we report a new approach that enables selective reduction in lesion size without perceptible linear scarring. Irregularly irregular stellate lesion reduction can be performed at low cost, and no patient has expressed concerns since development of the technique. Importantly, despite our diverse patient population, we saw no appreciable difference in the quality of the irregular stellate scars across the *skin pigment continuum*, nor did a single hypertrophic scar occur. Also, the technique can be altered to produce partial removal, near-total lesion reduction, or complete visual elimination. In the latter case, the limbs of the stellate excision would have to extend outwardly, beyond the original boundaries of the lesion.

The excised tissue can be histologically analyzed. We do not recommend partial removal of any lesion of uncertain behavior unless the reduction itself serves as the investigational biopsy with a plan for full removal should a worrisome tumor or atypia be identified.

This report comes with some limitations. Tiny irregular incisions are difficult to make without excellent vision or loupe magnification. The technique takes more time to complete than elliptical excision. Also, no direct experimental comparison has been made between our technique and other methods in a case-matched trial. However, we do not feel we can ethically randomize patients to either standard elliptical excision versus irregularly irregular stellate reduction to best compare results, given the marked improvement in scar quality



Fig. 3. Preoperative (A) and 2-week postoperative (B) views of the 52-year-old woman seen in the supplemental video, demonstrating that the stellate mole reduction approach tends to heal quickly with little visible remaining trace of the lesion. Temporary surface inflammation seen during recovery is easily covered with makeup.



Fig. 4. Benign intradermal nevus atop the left malar eminence (A) before the requested reduction and 24 months following the near-total reduction (B) requested by the same patient whose progress was tracked in [Figure 1](#).

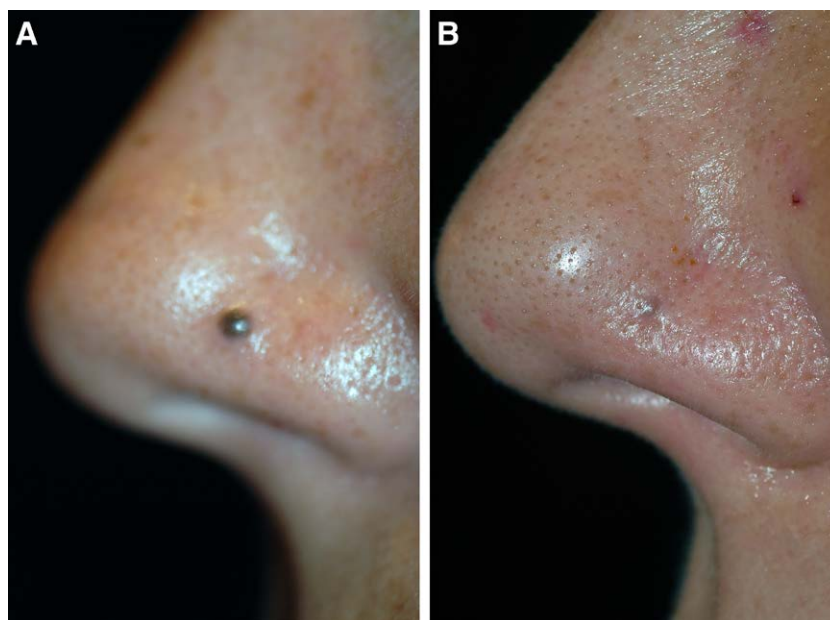


Fig. 5. Before (A) and 13-year-after (B) views of a stellate reduction/biopsy of a deeply pigmented nevus of the left ala. On histopathologic analysis, the lesion was benign. During a recent visit for another concern, the patient reported that she had not thought about the mole in many years.

seen to date using our method. We feel that differences in wound healing between the traditional fusiform excision and the irregularly irregular technique should be further evaluated.

CONCLUSIONS

Adaptation of an irregularly irregular incision into a stellate pattern has been successfully deployed to minimize scars created during elective reduction of benign facial lesions. This completely avoids elliptical excisions with their resulting visible linear scars and provides an effective alternative to reduce size, volume, and/or projection while minimizing the amount of detectable scar. The patient can choose the degree of reduction, from little to near-total, and the resultant scar invariably occupies a surface area smaller than the original lesion. In our experience, consistent results have been seen in lesions addressed in this way over the past 20 years with regular positive feedback. Patients should be counseled in advance that mild lesional erythema and edema may take

several years to resolve and must also be counseled to seek biopsy if the character of the healed excision site changes in subsequent years.

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PATIENT CONSENT

Patients provided written consent for the publication of their images.

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