Case Report
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Multimodal aesthetic dermatological treatment of a nasal laceration managed without sutures: A case report

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Abstract

Facial lacerations are typically managed with primary suturing to achieve optimal cosmetic outcomes. However, when patient refuse surgical closure it may necessitate alternative approaches. We report a case of nasal laceration managed conservatively using topical adhesive, followed by multimodal dermatological interventions to optimize long-term cosmetic results.

A young male presented with a fresh lacerated wound on the nose following a roadside accident. The patient electively refused surgical closure. The wound was initially approximated using topical skin adhesive after achieving hemostasis. Early outcome was suboptimal, with poor cosmetic satisfaction at one week. Subsequently, the patient underwent a staged dermatological rehabilitation plan including fractional CO_2 laser resurfacing, Q-switched laser sessions for post-traumatic pigmentation and microneedling. Over a 4-month follow-up period, the patient demonstrated marked improvement in scar texture, pigmentation, and overall cosmesis, exceeding initial expectations.

This case underscores the potential of multimodal dermatological therapies in enhancing cosmetic outcomes of traumatic facial wounds, especially when surgical closure is not an option. It highlights the evolving role of dermatologists in post-trauma scar modulation and aesthetic rehabilitation.

Keyword: Nasal laceration; Topical skin adhesive; CO2 LASER resurfacing; Q switched LASER; Microneedling.

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Introduction

The nose, being the most prominent and protruding feature on the face, is particularly vulnerable to trauma in road traffic accidents (RTAs), other types of assaults and facial injuries. Owing to its central anatomical location and delicate structural framework, lacerated wounds tend to pose significant threat to its beauty and cosmetic outcome.

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Primary skin suturing remains the gold standard for the management of such wounds and lacerations, offering reliable edges approximation and reducing the risk of complications particularly hypertrophic scarring or wound dehiscence. Reported success rates of primary surgical closure in nasal and auricular lacerations are high, with most studies reporting satisfactory cosmetic outcomes in 70–90% of patients when performed promptly and under optimal conditions. However, the complex three-dimensional and curved shape of the nose often makes suturing challenging, particularly in zigzag and non-linear wounds. Moreover, patient reluctance or contraindications to invasive procedures may occasionally necessitate alternative, non-surgical approaches.[1]

Topical skin adhesives have emerged as a convenient and minimally invasive method for wound approximation, particularly for linear lacerations under low tension. While they may be excellent choice at various places on the body, their efficacy in high-tension and curved anatomical sites such as the nose is less predictable. In such scenarios, adjunctive aesthetic and regenerative dermatology techniques- such as fractional CO2 laser resurfacing, pigment-targeting lasers, microneedling and mesotherapy can play a vital role in optimizing long-term cosmetic outcomes.[2]

Here, we present a case of nasal laceration following an RTA, managed conservatively due to refusal of surgical closure, where a combination of topical adhesive and staged dermatological interventions yielded favorable cosmetic rehabilitation.

Case report

A 34 years old male presented to us with lacerated wound along with profuse bleeding on his nose inflicted by a road traffic accident **(Figure 1)**. The patient reported four hours after injury. After ruling out deep tissue trauma on nasal speculum and throat examination, radiography was carried out immediately to rule out underlying bone fracture.

Meanwhile, a detailed history revealed that he had just recovered from a febrile illness that was associated with upper respiratory tract infection. No other comorbidities were detected on routine scrutiny. Patient was generally well oriented and quite cooperative.

As seen in the picture of the incident day, there was a curved laceration approximately 2cm long that had cut through his skin on top of nasal bridge on the cartilaginous part. However there was no obvious gaping of the wound. The skin surrounding the skin laceration was clean without any abrasion or bruising.

Since the patient had not given consent for surgical closure, hemostasis was achieved and topical skin adhesives were applied. According to patient, he was

Figure 1 Curvilinear laceration on nose with profuse bleeding.

advised to avoid pricking and rubbing, taking long showers and frequent face washing. Also, he was counseled not to apply any ointment on top of adhesive.

After 7 days, the skin had healed completely and wound edges were closed without any complication. However, there was a visible linear scar along with mild hyperpigmentation. The patient was very much concerned about it, therefore, we had to plan some multimodal, yet minimally invasive dermatological interventions to improve scar appearance and cosmetic outcome **(Figure 2)**.

Figure 2 Post-inflammatory pigmentation with scarring after healing.

Figure 3 Greatly improved scarring with smoothening of edges of wound but with post-inflammatory hyperpigmentation.

Figure 4 Greatly improved scar with very mild pigmentation.

He underwent three sessions of CO2 fractional resurfacing laser using low fluence and intershot distance 1mm. The scar improved a lot in terms of surface texture, but to a lesser extent in pigmentation.

Next we did microneedling with topical glutathione and vitamin C serum keeping needle depth at 0.5mm, followed by 1064-nm Q-switched Nd:YAG laser with low-fluence in same session. After 3 sessions of this combination treatment performed 3 weeks apart, his scar improved significantly both in terms of surface texture and pigmentation **(Figures 3,4)**.

A cosmetically acceptable outcome was achieved after treating the patient for 5 months. During this treatment period, he was advised to apply a protective sunscreen (SPF 30) during daytime and a moisturizing lotion at night.

Discussion

Injuries to the face are emotionally upsetting as well as physically damaging. It is extremely important to address issues pertaining to facial appearance of the patient well in time to accelerate the psychological, medical, and aesthetic elements of recovery.

Since accident inflicted injuries on face are of diverse nature owing to three dimensional structural shape of the face with particular curvatures and protuberances and also to the type and severity of injury sustained, the treatment modalities have to be tailored to meet best clinical and cosmetic outcomes.

Soft tissue injuries to face, whether isolated or in combination with other injuries, are among the most common traumatic injuries encountered by emergency department and plastic surgeons, accounting for nearly 10% of all emergency department visits.[3]

Despite this high incidence, there are very few studies that systematically investigate the patterns of injuries and their specific management plans. That's why no widely accepted classification scheme or treatment algorithm exists to guide evaluation and treatment.

Choices for primary wound closure traditionally are surgical suture closure, skin staples, tissue adhesives and wound closure tapes. The choice then depends upon various factors; wound related and patient related. Sutures are preferable when the laceration is skin deep including the dermis and requires careful wound approximation, and is with actively bleeding edges; but the speed of wound closure is slow and appearance of scar is skill and technique dependent. Topical skin adhesives on the other hand are preferable when the wound is linear with low tension. Our choice of skin adhesive initially was guided by these principles, although the outcome was suboptimal,

emphasizing the importance of multimodal management in complex cases.[4]

The resulting post-inflammatory pigmentation and scarring after wound healing is mostly bothersome for the patient and demands careful assessment and management keeping in mind the most result oriented treatment options in particular Fitzpatrick skin type.

Fractional CO2 laser has been reported to be highly effective in treating post-traumatic scars.[5] For Fitzpatrick skin type III & IV, preferable treatment options for pigmentation remain Q-switch and PICO lasers. The 1064-nm Q-switched Nd:YAG laser with low-fluence has been found effective in Asian population particularly pigmentation after chemical peeling and laser surgery.[6,7]

The data for Korean skin elicits positive response to pulse-in-pulse mode intense pulsed light (IPL) for facial post inflammatory hyperpigmentation. Similarly, picosecond 755-nm Alexandrite laser has been found very effective in Asian population for post-inflammatory hyperpigmentation and melasma.[8] Our patient also reported to have lesser skin pigmentation after 3 sessions of Q switched laser.

Similarly, the efficacy of microneedling for pigmentary disorders of skin particularly post inflammatory hyperpigmentation has been ascertained.[9]

Given our patient's combined presentation of hyperpigmentation and scarring, a multimodal approach was employed. This included resurfacing with fractional CO_2laser, targeted pigmentary laser therapy, and microneedling which together yielded an optimal cosmetic outcome.

Conclusion

Wound healing on facial skin is amenable to be paired with either post inflammatory hyperpigmentation or scarring or both and multimodal management with all available therapeutic armamentarium actually helps produce best results.

Declaration of patient consent The authors certify that they have obtained all appropriate patient consent.

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Author's contribution

AG: Have made substantial contributions to conception and design, acquisition of data. Have been involved in drafting the manuscript and revising it critically for important intellectual content. Has been given final approval of the version of the manuscript to be published.

ZA,WN,ZA: Have made substantial contributions to acquisition of data, analysis and interpretation of data. Have been involved in revising it critically for important intellectual content. Have given final approval of the version of the manuscript to be published.

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