

# Treatment of a traumatic atrophic depressed scar with hyaluronic acid fillers: a case report

Syed Nazim Hussain<sup>1</sup>  
Greg J Goodman<sup>2,3</sup>  
Eqram Rahman<sup>4</sup>

<sup>1</sup>Royal Lush Skin Hair & Laser Clinic, Saket, New Delhi, India; <sup>2</sup>Department of Primary Care, Monash University, Clayton, <sup>3</sup>Skin and Cancer Foundation Inc, Carlton, VIC, Australia; <sup>4</sup>Faculty of Medical Science, Postgraduate Medical Institute, Anglia Ruskin University, Chelmsford, UK

**Background:** Hyaluronic acid filler has been documented in the treatment of atrophic depressed acne scars relatively frequently in the literature but rarely in chronic depressed traumatic atrophic facial scars.

**Methods:** This case report discusses the use of hyaluronic acid fillers in the correction of a post-traumatic facial atrophic scar on the right cheek.

**Results:** The right cheek scar was substantially corrected with one session of two different hyaluronic acids injected in a deep and superficial plane.

**Conclusion:** Relatively accurate, simple and effective correction of this atrophic traumatic scar may suggest that fillers are a suitable alternative to surgery for such scars.

**Keywords:** scarring, scar correction, filler, hyaluronic acid, facial scar

## Introduction

Treating atrophic depressed scars with hyaluronic acid biodegradable dermal fillers has been shown to yield satisfactory results with high patient satisfaction and minimum risks but the literature predominantly confines the nonesthetic utilization of hyaluronic acid fillers to depressed acne scars.<sup>1-3</sup> There have been a few cases reported in the literature where steroid-induced atrophic scars have been successfully treated with hyaluronic acid fillers;<sup>4,5</sup> however, there is only a single case reported, where a depressed non-acne scar on patient's forearm was successfully treated with hyaluronic acid filler.<sup>6</sup>

We present here an additional case of a chronic post-traumatic scar treated purely with hyaluronic acid without the use of subcision or other surgical procedure.

## Case report

A 42-year-old female presented with a traumatic depressed scar of ~8×1 cm over the right cheek, extending from the lower eyelid to the nasolabial fold (Figure 1A). Historically, the scar originated 20 years prior to presentation as a result of a road traffic accident. This scar caused significant psychological distress to the patient and resulted in her seeking multiple consultations with plastic surgeons for surgical reconstruction. The patient was not keen on surgical scar revision and sought an alternative to this approach. After counseling and discussion about the likely outcome with dermal fillers, the patient decided to undertake correction with dermal fillers.

Optimal correction was achieved by injecting a total of 2.0 mL hyaluronic acid filler with a flexible 24G blunt cannula. One milliliter of Juvederm Voluma XC (Allergan Inc Irvine Cal) was injected deeply into the scar tissue and 1.0 mL Juvederm Ultra XC (Allergan Inc, Irvine Cal) was injected more superficially into wrinkled atrophic scar

Correspondence: Eqram Rahman  
Faculty of Medical Science,  
Anglia Ruskin University,  
Bishop Hall Lane, Chelmsford CMI 1SQ,  
UK  
Email eqramur.rahman@anglia.ac.uk



**Figure 1** (A) Patient before scar correction with hyaluronic acid fillers. (B) Patient after 2 mL of hyaluronic acid filler.

tissue. Treatment proved safe and effective for the correction of the scar, as immediately after the procedure the correction achieved was visible and satisfactory (Figure 1B). The scar was filled up to the level of normal adjacent skin with no erythema, pain/or tenderness, lumps/bumps, swelling and bruises or bleeding. The face appeared more symmetrical while comparing with the left side (Figure 1B). A follow-up review conducted at 2 weeks and long-term clinically meaningful results were still apparent at 6 months following the procedure. There were no complications.

The patient has provided written informed consent to have the case details and any accompanying images published.

## Discussion

Atrophic scarring may be improved by many methods. These include re-excision of the scar, which was not favored in this case by the patient. Subcision is an elegant procedure for post-acne, post-disease and post-trauma scarring<sup>7</sup> but usually requires more than one treatment<sup>8</sup> and is relatively inaccurate relying on the individual patient's wound-healing ability. Additions to this technique have been made such as suction techniques that may add to its efficacy.<sup>9</sup> However, it remains a significant procedure for a patient with a scar as long as this case report. Fat transfer is also an alternative here<sup>10</sup> but requires a procedure to extract and prepare the fat and although a very useful procedure may be variable in its results.<sup>11</sup> Ablative and fractional energy-based devices may also be considered<sup>12</sup> but given the volume deficit here it is unlikely that these would be efficacious in this case.

Fillers are accurate in their placement and are a relatively elegant approach to volume-related scarring but, oddly, have been seldom reported for this purpose.<sup>1,13</sup> The versatility and accuracy would suggest that these agents are ideally situated to serve the purpose of adding volume to atrophic scarring of all types.

Hyaluronic acid, in particular, is well positioned to treat this condition. As well as its reversibility,<sup>14</sup> accuracy of attainable correction and variable products with different lifting and spreading abilities, it is a relatively atraumatic and easily understandable procedure to the patient.

The end result, behavior and the clinical outcome of hyaluronic acid filler depend on parameters of the filler such as gel hardness ( $G'$ ) that determines the stiffness of gel, the concentration of hyaluronic acid that establishes its stability and durability, particle size and degree of crosslinking.<sup>15</sup>

This case demonstrates the use of two types of crosslinked hyaluronic acid, taking advantage of the slightly different characteristics to allow an accurate two-layer correction of this difficult scar.

Specifically, the deep underpinning layer was placed with Juvederm Voluma XC, a biodegradable hyaluronic acid dermal filler. This is a mixture of low- and high-molecular weight hyaluronic acid at a concentration of 20 mg/mL containing 0.3% lidocaine. It has proven efficacy and longevity of 24 months.<sup>16</sup> In this case, the 27-gauge needle supplied in the pack was not used but instead the hyaluronic acid positioned using a flexible blunt 24-gauge cannula.

Juvederm Ultra XC has an extended longevity of 12 months<sup>17</sup> and may achieve longer durations with repeated injection<sup>18</sup> and is more a filler when more superficial placement and support is required. This was used in a more superficial level here to maximize accuracy of correction of the scar with the 30-gauge needle incorporated in the Juvederm Ultra XC package.

Although major utilization of hyaluronic acid fillers has been in filling of lines, fighting the effects of aging, face sculpting and volumization,<sup>19-21</sup> this case further strengthens the additional benefits of hyaluronic acid fillers in treatment of traumatic atrophic scars with no major short-term or late complications. Utilizing the different gel characteristics injected at different levels of skin, deep to superficial resulted in restoration of a natural facial shape with much improved esthetic results in this patient. Juvederm Voluma XC is recommended for deep subcutaneous injections and Juvederm Ultra XC for more superficial planes.<sup>16</sup>

## Conclusion

Atrophic depressed facial scars can be effectively treated with hyaluronic acid fillers with esthetically satisfactory clinical outcome with a low risk or complications. This case reports that appropriate selection of hyaluronic acid fillers with varying characteristics is a feasible option for the treatment of traumatic atrophic depressed scars.

## Disclosure

Greg Goodman has served as an investigator, advisory board member and consultant for Allergan Inc. The authors report no other conflicts of interest in this work.

## References

1. Goodman GJ, Van Den Broek A. The modified tower vertical filler technique for the treatment of post-acne scarring. *Australas J Dermatol*. 2016;57(1):19–23.
2. Zaleski-Larsen LA, Fabi SG, McGraw T, Taylor M. Acne scar treatment. *Dermatol Surg*. 2016;42(Suppl 2):S139–S149.
3. Goodman GJ, Baron JA. Postacne scarring: a qualitative global scarring grading system. *Dermatol Surg*. 2006;32(12):1458–1466.
4. Elliott L, Rashid R, Colome, M. Hyaluronic acid filler for steroid atrophy. *J Cosmet Dermatol*. 2010;9(3):253–255.
5. Richards KN, Rashid RM. Twenty-four-month persistence of hyaluronic acid filler for an atrophic scar. *J Cosmet Dermatol*. 2011;10(4):311–312.
6. Khan F, Richards K, Rashid RM. Hyaluronic acid filler for a depressed scar. *Dermatol Online J*. 2012;18(5):15.
7. Goodman GJ. Therapeutic undermining of scars (Subcision). *Australas J Dermatol*. 2001;42(2):114–117.
8. Orentreich DS, Orentreich N. Subcutaneous incisionless (subcision) surgery for the correction of depressed scars and wrinkles. *Dermatol Surg*. 1995;21(6):543–549.
9. Aalami Harandi S, Balighi K, Lajevardi V, Akbari E. Subcision-suction method: a new successful combination therapy in treatment of atrophic acne scars and other depressed scars. *J Eur Acad Dermatol Venereol*. 2011;25(1):92–99.
10. Admani S, Gertner JW, Grosman A, Shumaker PR, Uebelhoer NS, Krakowski AC. Multidisciplinary, multimodal approach for a child with a traumatic facial scar. *Semin Cutan Med Surg*. 2015;34(1):24–27.
11. Azzam OA, Atta AT, Sobhi RM, Mostafa PI. Fractional CO(2) laser treatment vs autologous fat transfer in the treatment of acne scars: a comparative study. *J Drugs Dermatol*. 2013;12(1):e7–e13.
12. Jensen JD, Keane C, Huang CC, Northington ME. Ablative fractionated CO2 resurfacing yields excellent result for severely atrophic traumatic scar on the face. *J Drugs Dermatol*. 2014;13(7):861–862.
13. Karnik J, Baumann L, Bruce S, et al. A double-blind, randomized, multicenter, controlled trial of suspended polymethylmethacrylate microspheres for the correction of atrophic facial acne scars. *J Am Acad Dermatol*. 2014;71(1):77–83.
14. Haneke E. Managing complications of fillers: rare and not-so-rare. *J Cutan Aesthet Surg*. 2015;8(4):198–210.
15. Hee CK, Shumate GT, Narurkar V, Bernardin A, Messina DJ. Rheological properties and in vivo performance characteristics of soft tissue fillers. *Dermatol Surg*. 2015;41(Suppl 1):S373–S381.
16. Callan P, Goodman GJ, Carlisle I, et al. Efficacy and safety of a hyaluronic acid filler in subjects treated for correction of midface volume deficiency: a 24 month study. *Clin Cosmet Investig Dermatol*. 2013;6:81–89.
17. Pinsky MA, Thomas JA, Murphy DK, Walker PS, Juvéderm vs Zyplast Nasolabial Fold Study Group. Juvéderm injectable gel: a multicenter, double-blind, randomized study of safety and effectiveness. *Aesthet Surg J*. 2008;28(1):17–23.
18. Smith SR, Jones D, Thomas JA, Murphy DK, Beddingfield FC 3rd. Duration of wrinkle correction following repeat treatment with Juvéderm hyaluronic acid fillers. *Arch Dermatol Res*. 2010;302(10):757–762.
19. Danhof RS, Cohen JL. A combination approach to perioral rejuvenation. *J Drugs Dermatol*. 2016;15(1):111–112.
20. Rivkin AZ. Volume correction in the aging hand: role of dermal fillers. *Clin Cosmet Investig Dermatol*. 2016;9:225–232.
21. Gilbert E, Calvisi L. Midface and perioral volume restoration: a conversation between the US and Italy. *J Drugs Dermatol*. 2014;13(1):67–74.

### Clinical, Cosmetic and Investigational Dermatology

#### Publish your work in this journal

Clinical, Cosmetic and Investigational Dermatology is an international, peer-reviewed, open access, online journal that focuses on the latest clinical and experimental research in all aspects of skin disease and cosmetic interventions. This journal is included on PubMed. The manuscript management system is completely online

Submit your manuscript here: <https://www.dovepress.com/clinical-cosmetic-and-investigational-dermatology-journal>

Dovepress

and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors