

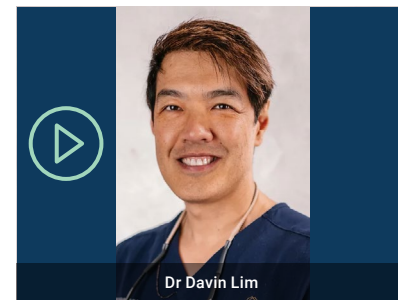
Are we too reliant on energy-based devices for the treatment of acne scarring?

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Disclosures: none



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OUTLINE: Over the past two decades the art and science of acne scar revision has undergone a significant change, influenced by a myriad of new energy devices. With new devices developing at a frantic pace, perhaps we have forgotten the value of manual skill sets, relying on fire and not preset solutions on these devices.

Revision treatments should be based on the patient's scar morphology, severity, skin type, downtime, age, time frame, finances and insight. This algorithmic approach may employ energy-based devices, manual non-energy-based treatments, or commonly a combination of both (Figure 1). With the growing body of evidence, there are however, certain scar patterns that lend themselves to manual non-energy-based therapies over energy devices. Methods include surgical subcision, excision, elevation, focal peels, microneedling, and volume replacement with dermal fillers.

KEYWORDS: acne scars, CROSS, TCA, subcision

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What scar signatures are amenable to manual methods of revision?

Though the Jacob classification¹ of scar revision is the most widely used classification of acne scarring, a simple algorithm is to class scars as superficial, deep or a combination of these depths.

Deep acne scar patterns include ice pick, rolling and atrophic variants. Ice pick scars are one of the most common forms of atrophic scarring.² Despite advances in laser technology, ice pick scarring is often refractory to treatment. The solution? Manual based methods such as trichloroacetic acid (TCA) or phenol chemical reconstruction of skin scars (CROSS) with wooden applicators, insulin syringe delivery or fine paint brushes are the treatment methods of choice for ice pick scars (Figure 2).^{3,4} These somewhat "primitive" techniques provide precise targeting of these scar variants, minimizing collateral damage to the surrounding tissue, optimizing results, and reducing treatment cost for patients.

Another treatment modality for icepick scars that provides more rapid results than CROSS technique

is simple punch excision (Figure 2).⁵ The author repurposes follicular extraction unit (FUE) punches in sizes ranging from 0.6 to 1.5 mm. These punches retain their sharp edge even after 100 excisions. Punch biopsies on the other hand blunt after 3-8 excisions.

Superficial scars such as linear, broad and classic boxcar scarring are amenable to procedures such as TCA or phenol croton oil. We have described a simple paint brush technique utilizing undyed fine brushes to effectively and safely treat these scar variants.⁴ With focal application of deep peeling agents we minimize collateral damage to the surrounding tissue, which in turn reduces side effects and speeds up recovery. Additionally, the use of focal peels reduces procedural costs for the patient.

Subcision is a minimally invasive surgical treatment for rolling and atrophic acne types. This method was first described by the Orentreich brothers in 1995 using tri-beveled hypodermic needles.⁶ Since its inception, a plethora of instruments have been used, ranging from blunt cannulas, larger hypodermic needles to cutting blades such as Nokor needles and novel instruments (Figure 3).⁷⁻⁹ These instruments are introduced into

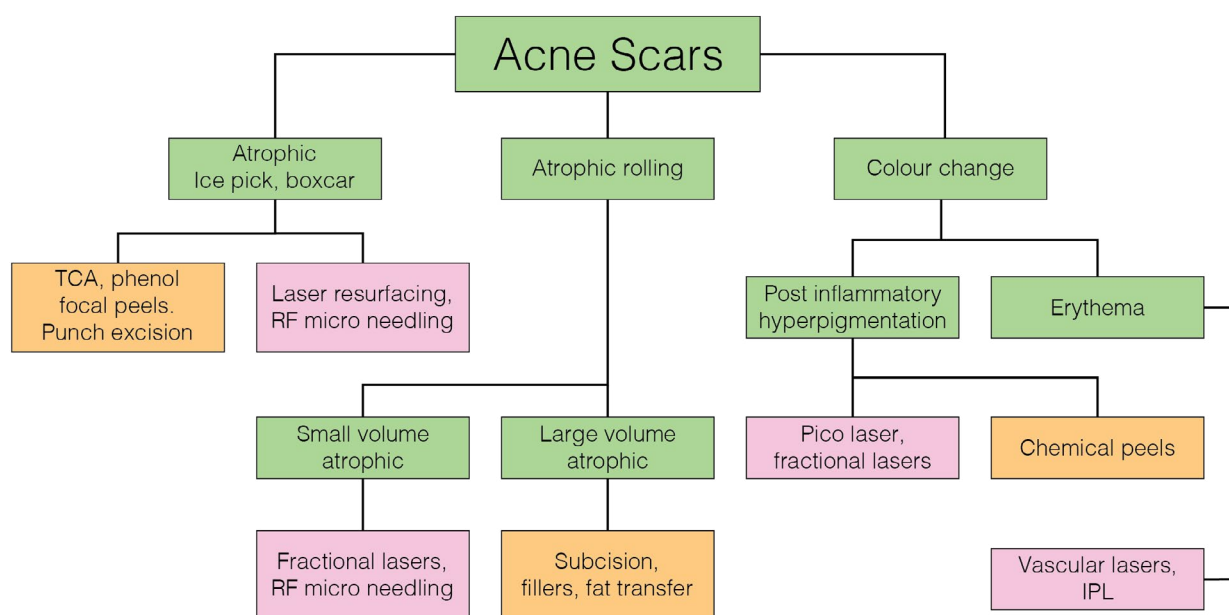


Figure 1. Acne scar repair algorithm for atrophic, rolling and colour scars



Figure 2. Focal TCA application and punches are simple, yet highly effective treatment methods for ice pick and boxcar acne scars



Figure 3. Cannulas and needles are simple instruments to transect fibrotic acne scars

the deep dermis and hypodermis parallel to the skin's surface. Rapid repetitive back and forth motion of the instrument dissects fibrotic scar tissue within these planes, in turn producing elevation of depressed areas in addition to stimulation of neocollagenesis.

Energy-based devices such as lasers and radiofrequency assisted microneedling rely on vertically delivered 'chance events' to disrupt deep scar tissue, in turn breaking down fibrosis and stimulating neocollagenesis.¹⁰ In comparison, a clinician trained in

subcision will identify fibrotic areas as their instrument passes through the deep dermal and subcutaneous layers of skin. With practice, a clinician deft in manual techniques will understand the varying resistance patterns of fibroseptal networks, retaining ligaments and atrophic, or conversely fibrotic scar patterns. With skill and precision, they can navigate their way through scar tissue, triangulating entry points to geometrically release underlying tethering with more predictability than energy devices.

The use of soft tissue filler for correction of atrophic scars was first reported in 1980, preceding US FDA approval for isotretinoin.¹¹ They remain invaluable in the management of rolling and boxcar acne scars with various studies showing improvements ranging from 33 to >70%.^{12,13} They provide a greater predictability in the treatment of larger volume atrophic rolling scars compared to energy devices, with less adverse events, immediate results and virtually no downtime. Various techniques have been reported using needles and cannulas.¹³⁻¹⁵ Filler classes employed for scar revision include recombinant hyaluronic acid, calcium hydroxyapatite, polymethylmethacrylate and poly-L-lactic acid.¹⁵⁻¹⁷

Though I am an enthusiastic optimist looking forward to newer energy devices, we must not forget the time-tested, often simple in-office procedures. We have at our disposal readily available instruments such as cannulas, needles, and punches which we can repurpose to revise scar tissue. Procedures such as focal chemical peels and soft tissue fillers can add to our skill sets.

In clinical practice, it is a combination of procedures that will yield the best outcomes. When the scar signature calls for non-energy-based methods, answer it with the methods you have learned and the skill sets which you have mastered. It is imperative we continue to perform and evolve these methods and not solely rely on the latest, newest device.

References

1. Jacob CI, Dover JS, Kaminer MS. Acne scarring: a classification system and review of treatment options. *J Am Acad Dermatol*. 2001;45(1):109-17.
2. Gozali MV, Bingrong Z. Effective treatments of atrophic acne scars. *J Clin Aesthet Dermatol*. 2015;8(5):33-40.
3. Agarwal N, Gupta LK, Khare AK, Kuldeep CM, Mittal A. Therapeutic response of 70% trichloroacetic acid CROSS in atrophic acne scars. *Dermatol Surg*. 2015;41:597-604.
4. Sun C, Lim D. Trichloroacetic Acid Paint for Boxcar and Polymorphic Acne Scars. *Dermatol Surg*. 2022;48(2):214-8.
5. Grevelink JM, White VR. Concurrent use of laser skin resurfacing and punch excision in the treatment of facial acne scarring. *Dermatol Surg*. 1998;24(5):527-30.
6. Orentreich DS, Orentreich N. Subcutaneous incisionless (subcision) surgery for the correction of depressed scars and wrinkles. *Dermatol Surg*. 1995;21(6):543-9.
7. Goodman GJ. Therapeutic undermining of scars (Subcision). *Australas J Dermatol*. 2001;42(2):114-7.
8. Barikbin B, Akbari Z, Yousefi M, Dowlati Y. Blunt blade subcision: an evolution in the treatment of atrophic acne scars. *Dermatol Surg*. 2017;43:S57-S63.
9. Al-Khenaizan S. Nokor needle marking: a simple method to maintain orientation during subcision. *J Drugs Dermatol*. 2007;6(3):343.
10. Alster TS, Tanzi EL, Lazarus M. The use of fractional laser photothermolysis for the treatment of atrophic scars. *Dermatol Surg*. 2007;33(3):295-9.
11. Stegman SJ, Tromovitch TA. Implantation of collagen for depressed scars. *J Dermatol Surg Oncol*. 1980;6:450-3.
12. Rkein A, Ozog D, Waibel JS. Treatment of atrophic scars with fractionated CO2 laser facilitating delivery of topically applied poly-L-lactic acid. *Dermatol Surg*. 2014;40(6):624-31.
13. Goodman GJ, Van Den Broek A. The modified tower vertical filler technique for the treatment of post-acne scarring. *Australas J Dermatol*. 2016;57:19-23.
14. Mohammed GF, Al-Dhubaibi MS. Triple steps acne scar revision technique: A new combination therapeutic modality for atrophic acne scars. *J Cosmet Dermatol*. 2022;21(10):4659-68.
15. Karnik J, Baumann L, Bruce S, Callender V, Cohen S, Grimes P, et al. A double-blind, randomized, multicenter, controlled trial of suspended polymethyl methacrylate microspheres for the correction of atrophic facial acne scars. *J Am Acad Dermatol*. 2014; 71:77-83.
16. Sapra S, Stewart JA, Mraud K, Schupp R. A Canadian study of the use of poly-L-lactic acid dermal implant for the treatment of hill and valley acne scarring. *Dermatol Surg*. 2015;41:587-94.
17. Beer K. A single-center, open-label study on the use of injectable poly-L-lactic acid for the treatment of moderate to severe scarring from acne or varicella. *Dermatol Surg*. 2007;33 (Suppl. 2):S159-67.