

Future investigation of mechanisms underlying this change in systemic NLR may be helpful to understand the pathophysiology of psoriasis, with the potential to develop novel diagnostic and therapeutic options.

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Scalp threading with polydioxanone monofilament threads: a novel, effective and safe modality for hair restoration

Editor

The current medical treatment options for androgenetic alopecia (AGA), although effective, tend to show a plateauing-off of the response with no further hair growth.¹ Hair transplantation is unacceptable to many patients owing to it being a surgical modality and/or the cost involved.

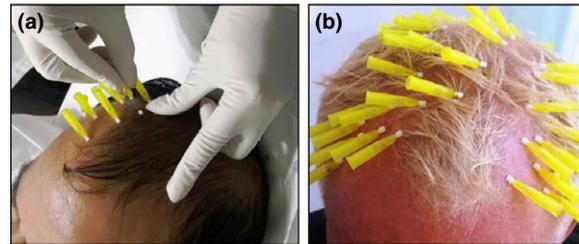


Figure 1 Insertion of the polydioxanone-loaded needles at regular spacing into the intradermal plane of the scalp skin (a), A completely threaded scalp with 35 polydioxanone-loaded needles inserted in a radial distribution (b).

Polydioxanone (PDO) threads have emerged popular for non-surgical face lift. Foreign body reaction-induced neocollagenesis, mechano-transduction (mechanical stimuli-induced fibroblastic response), regulation of gene expression and improved microcirculation seem to be the plausible mechanisms.²

Microneedling using a dermaroller is another efficacious facial rejuvenation procedure that creates cutaneous micropunctures with release of growth factors such as platelet-derived growth factor (PDGF) and others.^{3,4} This effect has been extrapolated to stimulate hair growth, confirmed by the results of a randomized double-blind trial.⁴ Akin to this therapeutic strategy, we assessed the response of male AGA to the scalp insertion of PDO threads.

We evaluated the efficacy and safety of PDO thread insertion into the scalp in five male patients of AGA with unsatisfactory response despite 18 months of treatment with 10% minoxidil and oral finasteride; enrolling them after written consent, ensuring a 3-month wash-off period from previous therapies, and having ruled out any contraindications.

The primary end-point of efficacy evaluation was the global photographic improvement (GPI), with secondary end-points being: (i) comparison of the trichoscopic hair count in the target area; and (ii) degree of patient satisfaction on visual analogue scale (VAS) ranging from 1 to 10. The trichoscopic hair count was done in 1 cm² targeted fixed area at baseline and at end of therapy (week 12).

Monofilament PDO threads (30 mm long) were inserted into the scalp (*vide infra*) under topical anaesthesia and sterile precautions. The threads were inserted in the intradermal plane, attempting to pass the thread through the maximum possible length per needle. Multiple needles were inserted at 1 cm spacing (Fig. 1a) in a radial orientation. The total number of needles inserted ranged from 20 to 40 per scalp (Fig. 1b). During insertion, the scalp skin was stretched by the surgeon's non-dominant hand to make it taut, and the needle was inserted through the desired point by the dominant hand. The needles were withdrawn leaving the PDO threads *in situ*. Oral antibiotics for 5 days, and a mild shampoo after 48 hours were suggested.



Figure 2 Preprocedure picture of a 31-year-old male patient with grade III androgenetic alopecia (a), postprocedure picture (at 12 weeks) of the same patient with around 60% global improvement (b).

Follow-up visits were done at 2 weeks, 6 weeks and 12 weeks after the procedure.

At 12 weeks, all patients ($n = 5$) had appreciable degree of increase in hair counts, confirmed with investigator-evaluated improvement in GPI (40%–75%; average of 57%) (Fig. 2), trichoscopic hair count increment (48–93 HFU/cm²; average of 67 HFU/cm²) and patient satisfaction evaluated with VAS ranging from 4 to 8 with a mean of 6 (Table 1).

Except for mild pain experienced during thread insertion ($n = 5$), and mild transient swelling ($n = 2$), the procedure was very well tolerated by all. There was no case of significant bleeding, ecchymosis, persistent pain, headache or postprocedure infection.

Polydioxanone (PDO) filament, a synthetic absorbable suture prepared from polyester, poly (p-dioxanone) has high flexibility and high retention strength, is non-allergenic and has a slow absorption rate (6–8 months). The risk of bacterial colonization or infection is minimal. As a non-surgical face lift modality, threads stimulate neocollagenesis within 2–3 weeks with clinical results expected to last for 2–3 years.¹ We preferred monofilament threads, instead of barbed/screwed.

Although the exact mechanism of action of hair growth stimulation by PDO threads remains speculative, it is likely to be similar to that of microneedling, involving enhanced expression

Table 1 The results of scalp threading in five male patients with androgenetic alopecia at 12 weeks

| Age (years) | Grade of AGA† | GPI (%) | Increase in Hair Count‡ | VAS |
|-------------|---------------|---------|-------------------------|-----|
| 27 | II | 75 | 93 HFU | 8 |
| 31 | III | 60 | 64 HFU | 6 |
| 32 | II | 50 | 59 HFU | 5 |
| 36 | IV | 60 | 71 HFU | 7 |
| 38 | III | 40 | 48 HFU | 4 |

†As per Hamilton-Norwood scale of male patterned baldness.

‡As per trichoscopic analysis of the premarked targeted area of the scalp. AGA, androgenetic alopecia; GPI, global photographic improvement; HFU, hair follicular unit; VAS, visual analogue score

of hair-related genes, release of growth factors like PDGF and direct activation of stem cells in the hair bulge area.^{3,5} A randomized trial by Dhurat *et al.*⁴ had indeed displayed the superiority of the combination of microneedling with minoxidil over minoxidil alone in MPHL.

Although this pilot study seems to offer scalp threading as a novel efficacious and safe non-surgical approach to hair regrowth, the limitations of this study including small number of cases, limited follow-up period and lack of scalp histological analysis warrant further research with controlled trials with a larger cohort. Further, the persistence of the hair growth-stimulating effect of the threads, and theoretical possibility of foreign body granuloma formation in the long term remain to be explored.

Disclaimer

“We confirm that the manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met, and that each author believes that the manuscript represents honest work”.

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Palmar melanoma: a tertiary centre experience

Editor

Acral melanoma is the most common subtype of melanoma in darker-pigmented individuals, and recent studies report that