

## STUDIES

### THERAPEUTIC REGIONAL DERMABRASION IN PAPULAR LICHEN AMYLOIDOSIS OF SHINS

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Therapeutic regional dermabrasion of shins is a useful surgical method for planing away the persistent pruritic lichenified hyperkeratotic eruptions of papular lichen amyloidosis. Nine patients (6 females and 3 males) of 35 to 52 years age having papular lichen amyloidosis on shins, refractory to various medical lines of treatment for 5-12 years duration were subjected to regional dermabrasion. Extensor surfaces (shins) of both lower extremities (18 sites) in all 9 cases were treated by multiple sittings of spot dermabrasion. All 18 sites healed with superficial scarring and complete response (100%) with total clearance of lesions was observed in all 18 sites. Pruritus stopped in all the 18 dermabraded sites immediately. No local recurrence has been observed in any sites over a minimum follow up period of 1½ years. Apart from superficial scarring occurring at all 18 sites the other side effect observed was varying degree of hypopigmentation in 10 out of the 18 sites dermabraded. Complication in the form of parchment like deep atrophic scarring with persistent hypopigmentation, erythema and at places depigmentation were observed at 2 sites which were dermabraded deeply. Similar complications with delayed wound healing were observed at the 3rd site as sequel to secondary bacterial infection following spot dermabrasion.

**Key words :** Papular lichen amyloidosis, Dermabrasion

#### Introduction

The various medical therapeutics like local potent steroid ointments with or without occlusion,<sup>1,2</sup> intralesional steroid injections,<sup>2</sup> topical 10% DMSO,<sup>3</sup> etretinate,<sup>4</sup> long term use of cyclophosphamide<sup>5</sup> are used with varying degree of success in treating the hyperkeratotic scaly lichenified pruritic lesions of papular lichen amyloidosis (PLA). However the medical line of treatment is rather disappointing for PLA.<sup>1</sup> The lesions are extremely pruritic and refractory to oral antihistaminics.<sup>2</sup>

Dermabrasion is an extensively used surgical modality for treating many cutaneous problems from acne scars to removal of

tattoos or tumours to the revision of scars.<sup>6</sup> Therapeutic regional dermabrasion has been successfully used for the removal and control of actinic keratosis and other hyperkeratotic lesions like LSA, PLA etc.<sup>6-10</sup> In addition to eliminating these conditions, it has marked prophylactic effect against development of new hyperkeratotic and also precancerous lesions.<sup>8</sup> Apart from routine facial dermabrasion it is possible to dermabrade practically every portion of the body<sup>8</sup> by altering the methodology according to the anatomical feature of the region. Regional dermabrasion is known to have long term beneficial effect on the PLA of the shins.<sup>11</sup> In this study, regional dermabrasion carried out in multiple sessions of spot dermabrasions at the 18 sites (shins) of patients is reported herewith for PLA of shins.

#### Materials and Methods

Nine patients (6 women and 3 men, age range 35-52 years) participated in this study.

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Fig. 1. Papular lichen amyloidosis before dermabrasion.



Fig. 2. Dermabrasion in progress with manual dermabrader, note the electric hand machine with wire brush in the background.

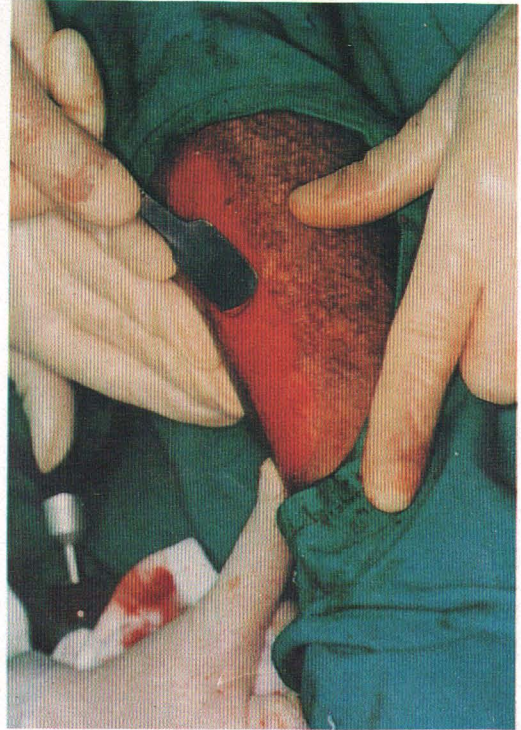


Fig. 3. Completion of dermabrasion.



Fig. 4. Healed lesion with superficial scarring and hypopigmentation.



All of them complained of severe local pruritus on the shins. Clinically the lesions consisted of multiple discrete, brown, dome shaped scaly verrucoid lichenified papules distributed symmetrically over extensor surfaces (shins) of lower extremities for past 5-12 years. In some, these papules were of dark brown colour and in few cases they had aggregated together at places to form lichenified plaques. In one man similiar lesions existed on extensor surfaces of thighs and forearms. In 3 women, skin of the extensor aspect of forearms was mildly lichenified and hyperpigmented with rippling pattern suggestive of macular lichen amyloidosis. All nine cases had in the past been treated topically with steroid (with or without occlusion) and retinoic acid ointments, multiple injections of triamcinolone intralesionally, various antihistaminics and steroids orally.

Dome shaped verrucous papular lesions were biopsied in all the nine cases. H & E stain showed epidermal hyperkeratosis and irregular acanthosis, widening of rete ridges with hyalinization of papillary dermis in close proximity to basal cell layer suggestive of amyloid deposits. This was confirmed by special staining with congo red which was positive in all cases. Hypertension and any cardiac problems were ruled out. Their haemogram, blood sugars and routine urine tests were done. Bleeding tendencies were ruled out by doing BT, CT, PT with platelet count in all of them. Their BCG scars or old scars were examined for keloidal tendency and informed consent for regional dermabrasion was obtained from each of the patients.

Main instruments used were either locally manufactured non-expensive manual dermabraders of various sizes or more convenient motor driven wire brushes or coarse diamond fraises mounted on electric hand machine and revolving at 5,000 to

30,000 rpm (average 15,000 rpm). After surgical preparation and isolation local anaesthesia was given with 1% xylocaine with adrenaline intradermally and subcutaneously to an area of 2" in width and 5" to 6" in length. Multiple (3 to 4) such rectangular strips were anaesthetised away from each other over one shin at a time, leaving island strips of equal area in between them. Standard dermabrasion of the anaesthetized rectangular strips was carried out with either manual dermabraders or electrically rotated wire brushes or coarse diamond fraises. The manual hand held dermabraders were moved in repetitive to and fro motion along the long axis of shin while planing. The electric hand machine was moved above downwards (not to and fro) along the long axis of the shin and perpendicular to the direction of the rotation of the wire brush or diamond fraise. First dry brown epidermal flakes came off, followed soon by appearance of multiple bleeding points as one reached upper papillary dermis. This was followed by appearance of whitish gray strands and more bleeding points indicating that the dermabrasion had crossed papillary dermis and had reached upper reticular dermis. Dermabrasion was terminated at this end point. Pressure was given to achieve haemostasis and area dressed with moist gauze pieces. A combination of, first planing till the multiple pin-point bleeding points appear with electric hand machine using wire brush for convenience of saving time, followed by planing with hand held manual dermabraders for better control till optimal depth is achieved will ensure speed and safety. However one can also employ them individually. Three or four such 2"x6" rectangular strips were dermabraded at a time on one shin, leaving island strips of sufficient dimension between the two abraded surfaces. This was done to facilitate : i) peripheral

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epidermal migration from the unabraded area into the dermabraded areas, ii) better patient mobility, iii) faster epidermal coverage-strips being narrow and long hence faster healing and recovery, iv) to avoid major complications like total regional deep necrosis with its subsequent complications, v) to avoid general anaesthesia and hence hospitalization if total area is planned at one time.

All the wounds were covered with double layer of sofratulle followed by gauze pieces, roller bandage and elastocrepe bandage. Patients were asked to raise the dermabraded leg, rest for 24 hours and return for change of dressing after 48 hours and then subsequently every 3rd to 4th day for a period of 2-3 weeks. Usually the oozing and draining is observed upto first two dressings. All patients were covered with antiinflammatory and analgesics for first few days. Small oral dose of steroid 5-10 mg of prednisolone for 1st 2-3 days results in lesser oozing and soaking of bandages. When all the dermabraded areas had healed, then the left out island strips were dermabraded at second sitting similarly to complete the procedure. Some large areas were covered in three such sittings. After completing the dermabrasion of the shin of one leg, shin of the other leg was abraded in similar 3 to 4 sittings. Thus both the legs required 4 to 6 sittings of dermabrasion. Only the shins were abraded and even though some patients had PLA lesions on extensor surfaces of the forearms these were not abraded to avoid superficial scarring in the cosmetically visible areas. All the cases were followed up every fortnight for first 3 months, every month for next 3 months, every 3 month for next one year. Like this all cases have been followed for 1½ years.

## Results

In all cases the dressings were soaked

considerably due to serous oozing in the first 24 to 48 hours necessitating change of dressing. Soaking gradually reduced over next 3 to 4 days and disappeared after one week. At all the 18 sites, there was total disappearance of rough PLA lesions and immediate relief from persistent pruritus. All 18 sites healed with erythema, hypopigmentation and superficial scarring in 2-3 weeks time. Erythema gradually diminished over next one month and disappeared by 3 months. Superficial scarring in the form of smooth shiny skin occurring at all 18 sites improved in its cosmetic look over next 1½ years but remains the major side effect of this procedure. Hypopigmentation gradually improved over next 3-6 months and disappeared totally in 5 sites but remained present in varying degree as another side effect in 10 cases. Complications occurred at 3 sites. Out of these in 2 sites where the dermabrasion was carried out unevenly to the depth of deep reticular dermis at places, the wounds healed with atrophic parchment like superficial and deep scarring with atrophic persistent hypopigmentation, erythema and at places depigmentation. This persisted even at the end of 1½ years. In remaining one case there was secondary bacterial infection. In this case patient had soaked the dressing while bathing and had discontinued the oral antibiotic prematurely after 1st 3 days. However on repeated local cleansing and dressing of the wound along with long term oral cephalosporins there was delayed wound healing (5 weeks), with superficial and deep scarring which persisted at the end of 1½ years. There has been no recurrence either of pruritus or of PLA lesions throughout the 1½ years of follow up period.

## Discussion

Regional dermabrasion as a therapeutic

surgical treatment modality is useful in treating PLA occurring on the shins.<sup>11</sup> Patients get immediate relief from the severe pruritus once the hyperkeratotic papules are planed to the level of upper/mid reticular dermis.<sup>12</sup> One can treat areas of any size with this method by carrying out multiple sessions of spot dermabrasions. The results are immediate and the lichenified rough scaly patch studded with multiple papulonodules is replaced by smooth skin. The procedure is carried out under local anaesthesia on OPD basis. Since the dermabrasion here is used for therapeutic rather than cosmetic purpose no special expertised training is required.

In this study at all 18 sites (shins) in 9 cases 100% clearance of the lesions was achieved by local planing. Most common major side effect seen was superficial scarring in all the 18 dermabraded sites which showed marginal cosmetic improvement with time. In dermabrasion reepithelisation takes place from remnants of dermal appendages.<sup>12,13</sup> Skin overlying the shin is not as rich as facial skin in dermal appendages and hence the epithelisation is slow and wound heals with superficial scarring. For faster epithelisation and to boost the epithelisation coverage, in this study island strips of PLA were left behind in between the spot dermabraded strip areas. Hypopigmentation observed at 10 sites like the hypopigmentation observed after routine facial dermabrasion<sup>9,10,12,14,15</sup> persisted upto 1½ years. In routine facial dermabrasion this usually lasts upto 3-6 months. Here it was delayed and persisted. Again the reason being that facial skin has rich reservoir of melanocytes due to presence of many hair follicles than on the shin and hence repigments faster. Also facial skin is exposed to normal UV radiations of sunlight.

Importance of dermabrading accurately

to the level of upper to mid reticular dermis<sup>9,10,12,15</sup> is brought out by the fact that at 2 sites where it was carried out to deeper levels the wounds healed with deep atrophic scarring and depigmentation along with areas of superficial scarring and hypopigmentation. This is a rectifiable complication once the art of accurate planing is learnt.

The other complication seen at one site was secondary bacterial infection. This can be avoided by taking care that there is proper compliance to change of dressings from patient's side during the post operative phase. Secondary bacterial infection not only delayed wound healing by extra 2-3 weeks but also the wound healed with deeper atrophic scars with persistent hypo and depigmentation at places.

In the earlier study carried out by Wong and Li in PLA,<sup>11</sup> regional dermabrasion gave 100% clearance with no recurrence and disappearance of severe pruritus which was confirmed in this study. In their study regional dermabrasion was found to have long term beneficial effects on PLA of the shins,<sup>11</sup> this again has been observed in this study with a follow up of 1½ years. However longer follow up period and submission of larger number of patients for study is needed to confirm the same. However immediate long term disappearance of distressing pruritus and 100% clearance response by therapeutic regional dermabrasion is a great welcome by patients.

In this study because the wound heals with superficial scarring and since the affected area is routinely hidden and not cosmetically visible, only the PLA lesions on shins were dermabraded. However PLA lesions occurring anywhere on the body apart from shins can also be planed away provided cosmetic regional end results are taken in account and necessary changes in the technique are made

according to the anatomical location.

Lastly this also brings out the therapeutic importance of regional dermabrasion. This technique is not only beneficial in PLA<sup>10</sup> but is also useful in other known hyperkeratotic lichenified conditions like actinic keratosis, LSC, Darier's disease, hypertrophic LP, linear verrucous neavus etc.<sup>6-10,12</sup> Therapeutic regional dermabrasion can also be combined with topical and intralesional steroids in some of them.<sup>16</sup>

## References

1. Drawber RPR, Walker NPJ. Physical and surgical therapy. In : Textbook of Dermatology (Champion RH, Burton JL, Ebling FJG, eds). 5th edn. London : Blackwell Scientific Publications, 1992 : 3111-2.
  2. Fine JD, Moschella SL. Diseases of nutrition and metabolism. In : Dermatology (Moschella SL, Hurley HJ, eds). 2nd edn. Philadelphia : WB Saunder, 1985 : 1481-8.
  3. Ollague W. Primary cutaneous amyloidosis. *Int J Dermatol* 1987; 26 : 135-6.
  4. Marschalko M, Daróczy J, Söös G. Etreinate for treatment of lichen amyloidosis. *Arch Dermatol* 1988; 124 : 657-9.
  5. Pasricha JS, Seetharam KA. Low dose cyclophosphamide therapy in lichen amyloidosis. *Ind J Dermatol Venereol* 1987; 53 : 273-4.
  6. Roenigk HH Jr. Dermabrasion. In : Dermatologic surgery : principles and practice (Roeningk RK, Roeningk HH Jr, eds). New york : Marcel Dekker, 1989; 959-78.
  7. Roenigk HH Jr. Dermabrasion for miscellaneous cutaneous lesions exclusive of scarring for acne. *J Dermatol Surg Oncol* 1977; 3 : 322-8.
  8. Epstein E. Dermabrasion for therapeutic purposes. In : Skin Surgery (Epstein E, Epstien E Jr, eds). 6th edn. Philadelphia : WB Saunders, 1987 : 344-7.
  9. Alt TH. Therapeutic facial dermabrasion. In : Skin Surgery (Epstein E, Epstein E Jr, eds) Philadelphia : WB Saunders, 1987 : 327-43.
  10. Alt TH, Coleman WP, Henke CW, et al. Dermabrasion In : Cosmetic Surgery of the Skin : Principles and Techniques (Coleman WP, Hanke CW, Alt TH, et al eds). Philadelphia : BC Deccar 1991 : 147-95.
  11. Wong CK, Li WM. Dermabrasion for lichen amyloidosis. *Arch Dermatol* 1982; 118 : 302-4.
  12. Yarborough JMJr. Bessan WH. Dermabrasion In : Asthetic Surgery of the Aging Face (Besson WH, McCollough EH, eds). Toronto : CV Mosby, 1986 : 142-81.
  13. McGregor IA. Free skin grafts. In : Fundamental Techniques of Plastic Surgery and their Surgical Applications (McGregor IA, ed). 8th edn. Edinburgh : Churchill Livingstone, 1989 : 39-63.
  14. Falabella R. Post dermabrasion leukoderma. *J Dermatol Surg Oncol* 1987; 13 : 44-8.
  15. Padilla RS. Dermabrasion. In : Cutaneous Surgery (Wheeland RG, ed). Philadelphia : WB Saunders, 1994 : 479-90.
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