



A COST EFFECTIVE NOVEL METHOD OF DERMABRASION - A CASE SERIES

Plastic Surgery

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ABSTRACT

Dermabrasion is an abrasive process used to remove the epidermis and superficial dermis to treat a variety of skin conditions.

OBJECTIVE: To evaluate the household scrub pad as a tool for dermabrasion for the treatment of rhinophyma, congenital naevi and static vitiligo.

PATIENTS AND METHODS: It was conducted at the outpatient department of Plastic & Reconstructive Surgery, Govt. Chengalpattu Medical College & Hospital, during the period between January 2009 and December 2009. Six patients (four males and two females) were enrolled in this work. Their ages ranged from 20-60 years with the a mean of 40 years. Three with rhinophyma, two with congenital naevi and one with static vitiligo were taken up for the study. From each patient history was taken and physical examination was performed. Pre-operative medications and instructions were given to each patient. The procedure was done under local anesthesia. Postoperatively all patients were instructed to use steroid-antibiotic ointment. Follow up was done after 1 week, 1 month, and 3 months. Repeated sessions may be needed 1 month apart.

RESULTS: All six patients completed the study. Rhinophyma group: Three patients achieved partial change of contour after 2 sessions, while complete change of contour was noticed in 2 patients after 4, and 6 sessions respectively. The procedure resulted in very fine, less noticeable scar with smooth contour of the skin which was acceptable in all patients. Congenital naevi group: Both the patients had near complete removal of naevi. Vitiligo group: the patient had less than 5% residual lesion and was extremely satisfied.

CONCLUSION: Household scrub pad dermabrasion is an effective mode of treatment many skin lesions like rhinophyma, congenital naevi and vitiligo. It is safe in dark skinned people.

KEYWORDS

Cost-effective, Dermabrasion, Scrub pad

INTRODUCTION

Dermabrasion was first introduced in 1953 by Dr. Abner Kurtin, a New York dermatologist. This technique combines a hand engine with either diamond-studded fraises or wire brushes. The art of dermabrasion is knowing how deep to go. If it's done too deeply, scarring will be created but if not deep enough, the results will be suboptimal [1]. Dermabrasion is an abrasive process to remove the epidermis and superficial dermis resulting in a smoothing of contour irregularities [1]. It is an effective surgical procedure for treatment of variety of dermatological lesions [2]. The purpose of dermabrasive surgery is to organize or re-structure the collagen of papillary dermis without injuring the reticular dermis [3]. The success of surgical abrasion is dependent on the ability of the skin to re-constitute a new epidermal layer from deep lying dermal appendages. For this reason, favourable healing is seen in regions of the skin that have the largest number of adnexal structures and where the skin is thickest. The face with the exception of the eyelids, consists of thick skin, well endowed with epithelial adnexa, and heals rapidly after surgical planing. Re-epithelialization begins from the wound margins and from within the epidermal appendages that remain after dermabrasion [1]. Dermabrasion is a useful modality when employed for certain dermatological lesions like acne vulgaris [4], tattoo [5], post traumatic scars, wrinkles (rhytids), rhinophyma, congenital naevi and vitiligo. There is a variety of abrasive instruments available to perform dermabrasion like wire brush, diamond fraise, sand paper, curette, rasp, burrs, wheels, and others [4]. (Fig 1)

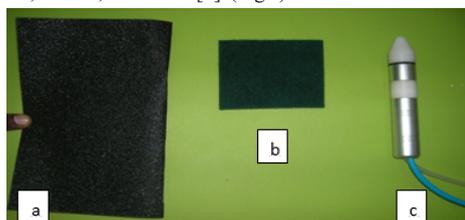


Fig. 1 – Dermabraders like sandpaper (a), scrub pad (b) and burrs ©

Non ablative 1,064 nm Nd:YAG laser had been used for treating acne scars resulted in significant collagen increases in the dermis [6]. Good results were achieved with the CO₂-Laser in the treatment of tattoos [7]. Dermabrasion with sandpaper is a simple and inexpensive method [8] of improving the appearance of scars. Advantages of the method apart from the low cost are that the operator does not need help from an assistant or any special equipment. Moreover, there is no blood splatter or aerosolized particles that could infect staff [9]. A disadvantage of the method is that it is operator dependent. Usually, the scars are initially abraded with 200-grade sandpaper until pinpoint bleeding is observed, and then the area is smoothed with 400-grade sandpaper [10]. This method of manual dermabrasion is more controlled and easier to use around difficult areas and prevents the sandpaper from slipping.

Dermabrasion had limitations in the treatment of dark skin people [4]. So the aim of this work is to evaluate the effectiveness and safety of household scrub pad dermabrasion to remove scars of rhinophyma, congenital naevi and vitiligo in dark skinned people.

Case Series

Case 1

A middle aged gentleman with rhinophyma presented to us. Rhinophyma is a glandular form of acne rosacea, an inflammatory skin condition. It is characterised by sebaceous hyperplasia, fibrosis, follicular plugging and telangiectasia of skin of nose. The male to female ratio is 12:1 and the incidence of occult cancer 15 to 30%. (Fig. 2 a, b, c, d, e, f)



Fig. 2 – Frontal (a) and lateral (b) photographs of the patient showing rhinophyma



c – Dermabrasion being done d – Post - procedure



1 month post – procedure, frontal (e) and lateral (f) views

Case 2
An elderly male with rhinophyma (Fig. 3)



Fig. 3 – Rhinophyma showing pre and post procedure after dermabrasion

Case 3

A 20 year old male with rhinophyma (Fig. 4 a, b, c, d)

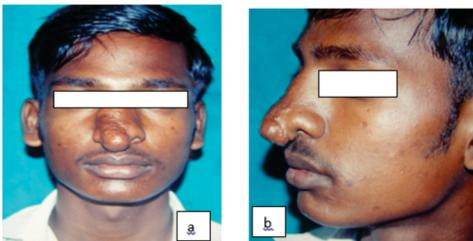


Fig. 4 – Frontal (a) and lateral (b) views of rhinophyma

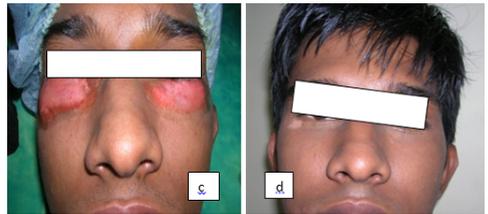


Post procedure photographs – lateral (c) and frontal (d) views

A 22 year old male with static vitiligo (Fig. 5 a, b, c, d)



Fig. 5 – Static vitiligo – frontal (a) and close up (b) views



c – Post procedure d – After 2 months post procedure

Case 5

A 21 year old female with congenital naevus forehead (Fig. 6 a, b, c, d)



Fig. 6 – Congenital naevus forehead (a) and post procedure picture (b)



c – 1 month post procedure d – 3 months post procedure

Case 6

A 44 year old female with congenital naevus of back and left shoulder (Fig. 7 a, b, c, d)

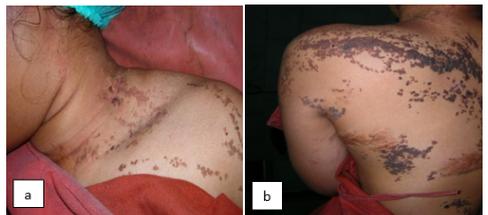
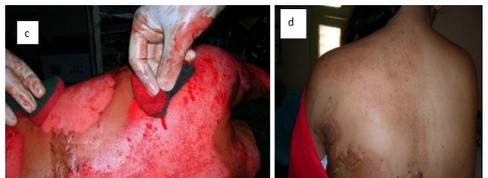


Fig. 7 – Congenital naevus of left shoulder (a) and back (b)



c – Dermabrasion being done d – 2 months post procedure

DISCUSSION

Iverson in 1947 showed favorable results in treating traumatic tattoo injuries by manual abrasion with sandpaper [11]. McEvitt in 1950 described a similar technique for the treatment of acne scars [12]. It had been mentioned that there were limitations in the treatment of dark skin people by dermabrasion[13]. This study was arranged to evaluate the safety of dermabrasion in the treatment of rhinophyma, congenital naevi and static vitiligo in dark skinned people. Dermabrasion helps to "refinish" the skin's top layers through a method of controlled surgical scraping. The treatment softens the sharp edges of surface irregularities, giving the skin a smoother appearance. Six cases of scrub pad dermabrasion were done and there were an overall good cosmetic results and with minimal transient side effects. The dermabrasion was well tolerated by most of our patients. The results were satisfactory to all patients. No post inflammatory hyperpigmentation was seen. This was similar to other study done for dark skinned people [14]. The other treatment modality of chemical peeling using trichloroacetic acid (TCA) 35% concentration in

combination with Jessner's solution for the treatment of acne scars achieved similar results to the present study [15]. Nd:YAG laser (1064nm) was used in the treatment of acne scars with comparable results and side effects [6]. Single pass CO2 laser skin resurfacing has been a favored treatment modality for acne scars in skin types I-IV with similar results to the present study [16]. Kuperman - Beade used 3 types of laser in the treatment of tattoo, Q-switched ruby laser (694nm); Q-switched Nd:YAG laser (532,1064) and Q switched alexandrite laser (755nm). They achieved similar results and side effects compared to this study [17]. The mechanism responsible for clinical improvement of acne scars after dermabrasion is unknown. There may be an increase in collagen type I synthesis [18]. The dermabrasion restructures layers of collagen parallel to the lines of tension to smooth contour irregularities and eliminates the epidermal component by upward and horizontal migration of epithelial cells from viable adnexal structures [13]. The mechanism involved in removing tattoo pigment is not fully understood, but mostly involves the release of ink particles into extracellular space with subsequent lymphatic drainage, and rephagocytosis of smaller residual ink particles, and the elimination of pigment by formation of scale-crust [19]. Sandpaper and scrub pad dermabrasion had less risk of injury from equipments to the eyelids or lips compared with the other instruments like diamond fraise and wire brush [20]. The advantages of using a household scrub pad are less expensive than laser, able to sterilise in cidex, no soddening of emmery paper, no loose particles which will produce linear deep scars, no need of expertise to use burr, depth is under control, able to use even over thin skin regions like eyelid, tissue is not contaminated with foreign materials like sand particles and no chances of going deep dermal by loose particles. The disadvantages are need extra energy as it is manual and the width of area of dermabrasion may exceed little as it is not precise. The scrubber is sterilized in an ETO chamber. Tumescent fluid to decrease bleeding and the depth has to be gauged carefully. Dermabrade with the scrubber slowly till the desired effect is achieved. Cover the wound with collagen and start antibiotics and ant inflammatory drugs to reduce the scar formation.

CONCLUSION

Household scrub pad dermabrasion is an effective, cheap and safe for the treatment of rhinophyma, congenital naevi and vitiligo in dark skinned people.

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