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Volumeplasty of bulky nose using heat dermabrasion as a minor therapy

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ABSTRACT

Background: Ultrathick nasal skin and nodulation is one of the most daunting challenges in cosmetic nasal surgery. Rhinoplasty is a common surgical procedure to correct mostly gross abnormal nasal anatomical variation; however, many patients have minor bizarre shape or deformities that could not be well corrected by ordinary surgical procedures. So we should find other techniques to correct these unwanted or undesired nose shape abnormalities. **Objective:** The purpose of this article is to perform heat dermabrasion to reduce the size of bulky nose and to create new alar groove and to remove nose nodulations, acne or traumatic scarring. **Patients and methods:** In this study, we collected 40 patients with bulky nose during the period from 2009 through 2019; 21 females and 19 males and their ages ranged from 20-65 years. An Informed consent was taken from each patient before starting the study, after full explanation about the procedure. All patients had bulky nose, some had nodulation of nose and acne or traumatic scarring. Only one patient had history rhinophyma of several years duration. All patients were treated with heat dermabrasion using diathermy needle after local xylocaine anesthesia and patients were received topical antiseptic and oral antibiotics to be seen after 2 weeks. Then topical corticosteroid was used to prevent post-inflammatory pigmentation. **Results:** A total of 40 patients diagnosed with bulky nose were enrolled in this study; 21 (52.5%) patients were females and 19 (47.5%) were males. Age of patients ranged from 20-65 years with a mean of 42.5 years. The duration of the condition ranged from few months to several years. In all patients with bulky nose were improved and alar groove were created or maximized and gave satisfactory cosmetic results using heat dermabrasion. Post-inflammatory hyperpigmentation was noticed but overtime was gone. **Conclusion:** heat dermabrasion using diathermy is new simple innovative minor technique to reduce size of bulky nose or small cosmetic abnormalities that could not be corrected by the standard classical rhinoplasty. This were carried under local anesthesia, need one session with minimal down time, without complications. Compared to dermabrasion by diathermy, CO2 dermabrasion is costly and usually needs many sessions, in addition to the undue laser exposure.

Keywords: Nasal volumeplasty; heat dermabrasion; bulky nose; diathermy

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1. Introduction

The nose is the most important anatomic feature in a face. Writers throughout different ages and in different countries have been able to infer from the characterologic, emotional, and sociologic influence that the nose always had in the history of human beings.¹

Anatomically, the outward protuberance of the external nose encloses osseous, cartilaginous, epithelial, and neuroepithelial structures.² Although bones of the skull (frontal, nasal, maxillae) contribute to the skeletal framework of the human nose, most of its external shape is due to soft tissue structures rather than these underlying bones. Externally, the nasal profile consists of the root, dorsum, tip and columella, with the other sections of the nose consisting of the ala, alar sulcus and nostrils. These features are supported by underlying nasal structure consisting, besides bone, of cartilage, muscles, subcutaneous fat and possibly a ligament. The nasal skeleton consists of the nasal bones and the frontal processes of the maxillae. The anterior nasal spine projects from the medial superior border of the maxilla in the nasal cavity floor and is variable in shape and length.³

A bulky nose is a difficult issue to deal with and there is no one specific solution to this problem in the evolution of rhinoplastic surgery.⁴ People with extremely thick nasal skin generally have a more porous overall skin quality. Several factors have known to contribute to the variations in nasal skin thickness, including the patient's sex, race, genetics, and ethnicity.⁵ One Saudi study used CT scan to measure nasal skin thickness revealed that the thickness of the nasal skin in Saudis are similar to that in the Caucasian nose skin; it was thick over the nasofrontal angle then becomes thinner over the rhinion (the top of the nose where nasal bones meet with the cartilage part of the nose), thickens again at the tip, and becomes thinner over the columella (the midline prominence of the nose, extending from the nasal root to the tip), whereas the Korean nose has a thick-skinned bulbous shape⁵.

A recent study showed that although there are phenotypical differences, the Middle Eastern nose is similar to noses from other ethnicities, such as the African and Mestizo noses, in terms of thick nasal skin thickness.⁶ Middle Eastern nose is known to be comprised of over projecting osseo-cartilaginous vault that is covered by thick skin, numerous pilosebaceous units at the tip of the nose.⁶ Özkul et al, 2013 studied the nasal dorsal skin thickness and the right and left alar thickness in a group of Turkish men and women. Their results were in line with thick nasal skin, and their findings support that the Middle Eastern nose is inherently thick in nature.⁷

Ultrathick skin becomes most problematic in the oversized nose in which large-scale size reductions are needed to achieve a balanced facial appearance. Not only does ultrathick nasal skin tend to obscure attractive features of the preoperative skeletal anatomy, but it is also more likely to mask surgical enhancements of the skeletal framework by thickening during the healing process. The increased volume of ultrathick nasal skin and its susceptibility to edema further compound its inability to contract, thus inhibiting it from properly adhering to a surgically downsized nasal framework.⁸

Rhinoplasty is a surgical procedure of which technique depends on the anatomy of the nose to be operated upon. The technique varies according to the possible anatomic variations, making it the most challenging of the cosmetic surgeries.⁹ There seem to be an increase in the number of facialplastic surgical procedures, mainly due to the popularity of non-surgical procedures such as botulinum toxin and fillers. A study in US showed that the most popular aesthetic procedures were blepharoplasty followed by rhinoplasty.¹⁰ It was estimated that eight out of 10 patients are motivated by their wish for a change or seeing the outcome of successful surgery in others, but mostly by a declining self-esteem with advancing age.¹⁰

Dermabrasion was the first major advance treatment of acne scarring. Dermabrasion completely removes the epidermis and

penetrates to the level of the papillary or reticular dermis, inducing remodeling of the skin's structural proteins¹¹ It can also be used to effectively treat traumatic or surgical scars, irregular scarring from skin grafts, photo-damage, some benign tumors, actinic keratoses, rhinophyma, and perioral rhytides.¹² Dermabrasion has been used to manage superficial malignancies such as squamous cell carcinoma in situ and superficial basal cell carcinoma.¹³

Dermabrasion has been used to treat rhinophyma, a condition marked by swelling and redness of the nose caused by hyperplasia of the sebaceous glands and prominent vascularization of the skin. Thickening hyperplasia mostly present in the tip of the nose and in the alar regions.^{14, 15}

The focus of this study was to introduce a new and safe technique so called heat dermabrasion for reducing the bulky nasal skin and other minor deformities with satisfactory results and minimal adverse effects under local anesthesia.

2. Patients and methods

In this study, 40 patients with bulky nose were enrolled during the period from 2009 through 2019; 21 females and 19 males and their ages ranged from 20-65 years. An Informed consent was taken from each patient before starting the study, after full explanation about the procedure. All patients had bulky nose, some had nodulation of nose and acne or traumatic scarring. One patient had history of rhinophyma of several years duration with very bizarre bulky bulbous nose with nasal obstruction. All patients were treated with direct heat dermabrasion using diathermy needle after local xylocaine anesthesia and patients were received topical antiseptic and oral antibiotics to be seen after 2 weeks. Then topical corticosteroid was used to prevent post-inflammatory pigmentation to be seen again every month for three months.

3. Results

A total of 40 patients diagnosed with bulky nose were enrolled in this study; 21 (52.5%) patients

were females and 19 (47.5%) were males. Age of patients ranged from 20-65 years with a mean of 42.5 years. The duration of the condition ranged from few months to several years. In all patients with bulky nose were improved and alar groove were created or maximized and gave satisfactory cosmetic results using heat dermabrasion. Figure (1,2,3,4,5). Post-inflammatory hyperpigmentation was noticed but overtime was gone.

4. Discussion

Thicker nasal skin blunts the definition of the underlying osseocartilaginous frame and the delicate topography of the nose. There is a paucity of literature on how to overcome this problem. The approach to the thick nasal skin patient begins with an evaluation of the etiology of their skin thickness. Skin thickness secondary to sebaceous overactivity is diminished with the use of retinoic acid derivatives, lasers or isotretinoin (Accutane), commonly under the advice of the dermatologist. Rhinoplasty maneuvers include open technique, raising a healthy and reasonably thick skin flap overlying the tip, removing the remaining fat overlying and between the domes, creating a firm cartilaginous frame and eliminating dead space using the supratip suture reported by the senior author, and trimming redundant nasal skin envelope when indicated.¹⁶

Dermabrasion aim is to remove a controlled thickness of damaged skin to stimulate normal wound healing and skin rejuvenation, while avoiding the complications of scarring and pigmentary changes.^{17,18} Dermabrasion is used more often than laser resurfacing or chemical peeling for the face because it is less likely to cause pigmentary changes by injuring the pigment-containing melanocytes. When laser resurfacing and chemical peeling are applied to only a portion of the face, they often leave lines of demarcation between treated and untreated regions. Dermabrasion, however, can soften sharp edges of demarcated scars, making them inconspicuous. In addition, dermabrasion may be much less costly to the patient than laser

resurfacing or chemical peeling. The high concentration of pilosebaceous glands and the rich vascular network of the face aid in wound healing. This makes the face the most common and ideal site for dermabrasion, although other areas of the body can also undergo dermabrasion. The results of dermabrasion on areas other than the face are satisfactory but not as good, and scar formation is often increased.

Carbon dioxide resurfacing, Er:YAG resurfacing, and deep chemical peels may improve facial rhytides, but dermabrasion proves as efficacious or more efficacious at removal of both fine and moderate facial rhytides, with a slightly lower risk of permanent hypopigmentation and these conditions need many sessions to have satisfactory results^{19, 20, 21}



Figure 1. a fifty-year-old man with a bulky nose (a) before treatment with diathermy (b) two weeks after treatment (c and d) profile view, note the marked improvement in the skin texture.

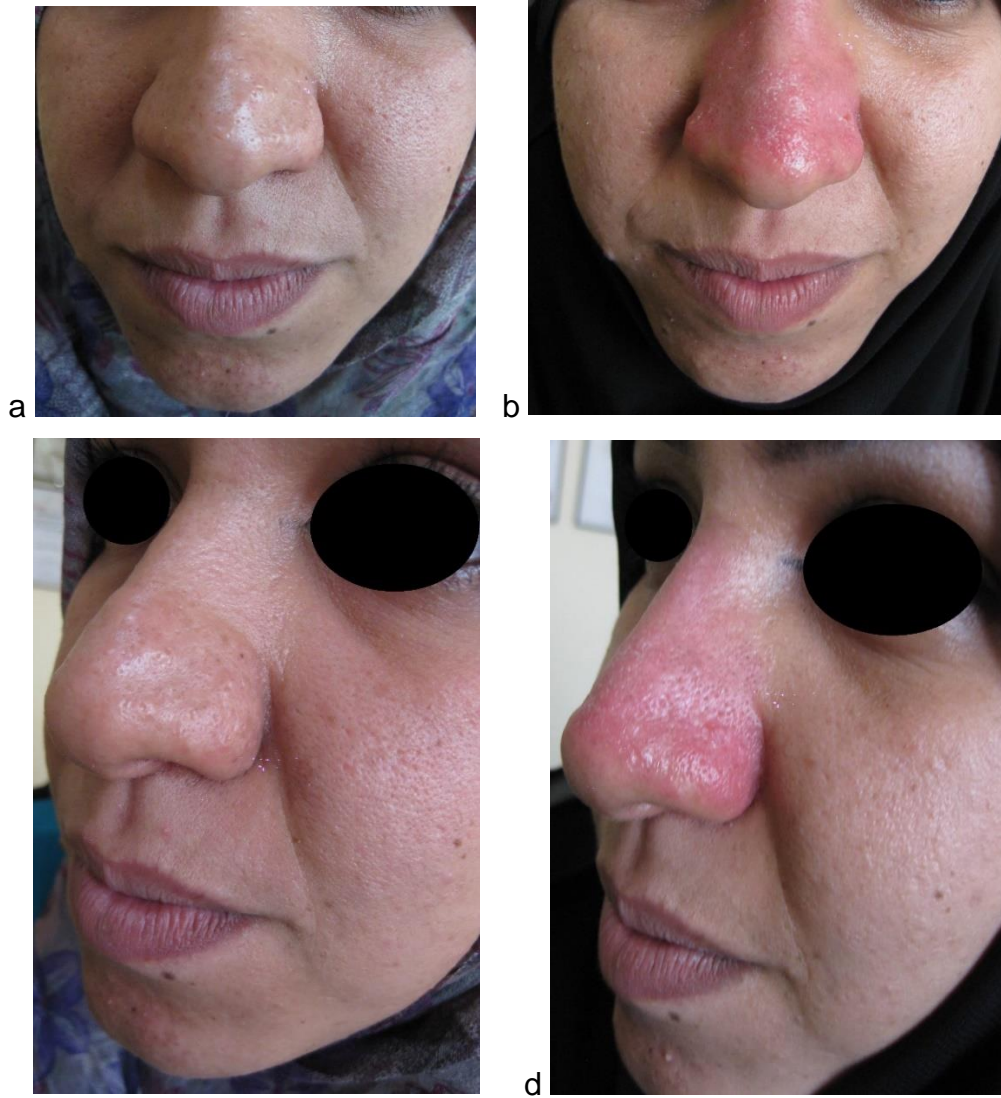


Figure 2 42-year-old woman with a bulky nose and nodulation (a) before treatment with diathermy (b) two weeks after treatment (c and d) profile view, alar groove was created.

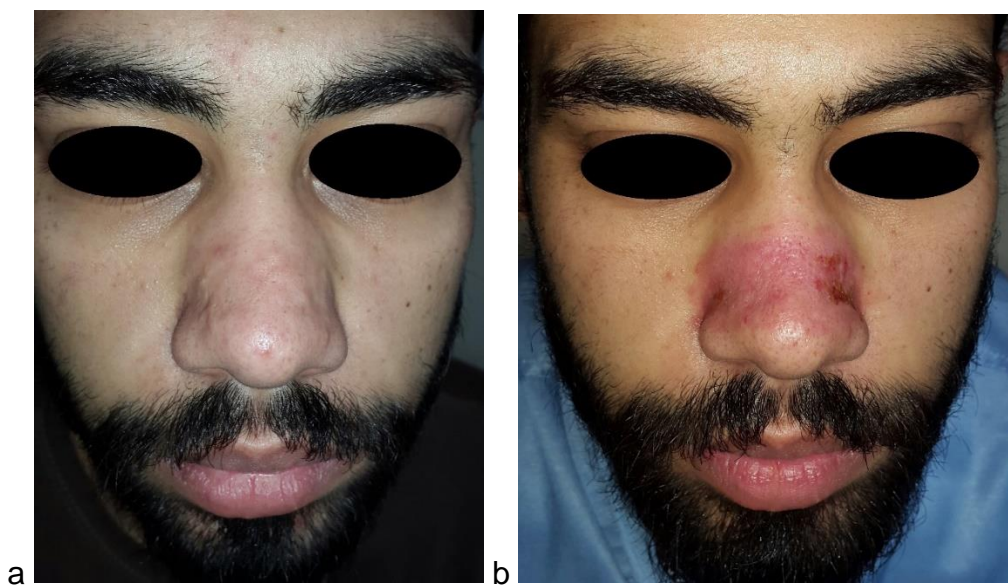


Figure3 .29-year-old man with a bulky nose and nodulation (a) before treatment with diathermy (b) two weeks after treatment, note the marked improvement in the skin texture and nodulation



Figure 4 (a) 65 year old man with bulkybizzare rhinophyma causing bulbous, cosmetic nasal deformity and distortion of the aesthetic subunits of the nose. (b) restoration of the nasal shape after one month of treatment



Figure 5 25 year old male patient (a) with traumatic scar of nose before and (b) after two months following heat dermabrasion

The present technique is new innovative simple procedure involved using diathermy to induce dermabrasion through the use of a high-frequency electrical current to produce intense heat to a specified treatment area to destroy unhealthy or unwanted tissue such as bulky skin and prominent nodulations. This very simple technique under local anesthesia, need one session with satisfactory cosmetic results ,with

no complications and could be repeated. Compared to dermabrasion by diathermy, CO2 dermabrasion is costly and usually needs many sessions ²², in addition to the undue laser exposure.

Rhinophyma is characterized by a bulbous nasal shape , skin pitting/scarring, and telangiectasias. Most commonly, the thicker and more sebaceous nasal tip and alae are preferentially

enlarged, but involvement can spread to the thinner nasal dorsum and sidewalls to a lesser degree. With progression, the aesthetic subunits of the nose merge and become obliterated. While the underlying frameworks are usually unaffected, patients often suffer from secondary nasal airway obstruction.²³

One patient who presented with gross bulky bizarre rhinophyma as a complication of rosacea and he had suffered for years both socially and psychologically from the unsightly deformity with nasal obstruction and the heat dermabrasion gave very satisfactory results.

Our experience in treating 40 patients with bulky nose had shown that all patients were improved and alar groove were created or maximized and gave satisfactory permanent cosmetic satisfaction, proving that heat dermabrasion using diathermy is new and safe technique to reduce size of bulky nose or minor cosmetic abnormalities with minimal down time posoperatively.²⁴

Conclusion

Heat dermabrasion using diathermy is new innovative technique to reduce size of bulky nose or minor cosmetic abnormalities which is carried out under local anesthesia and need one session with short down time without complications. Compared to dermabrasion by diathermy, CO2 dermabrasion is costly and usually needs many sessions, in addition to the undue laser exposure.

DISCLOSURE

This study was an independent study and not funded by any drug companies.

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