Dermabrasion and Staged Excision of Facial Lesions in a Neurofibromatosis Case for Improvement of Facial Appearance

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Background: Neurofibromatosis may present with different skin lesions. Disfiguring lesions on the face might be challenging for the surgeon or clinician to correct and may have adverse effects on patients’ social lives, especially in young women.

Objective: To present the dermabrasion technique combined with serial excisions of a deeper accompanying lesion to treat superficial facial lesions in a young neurofibromatosis patient.

Methods: Dermabrasion was applied to superficial lesions on the face, and staged excision was applied to the deeper lesion located on the forehead.

Results: We obtained high patient satisfaction with the result. The deep lesion was excised totally, and superficial lesions were decreased with dermabrasion.

Conclusion: Dermabrasion may become a good alternative in cases of neurofibromatosis with superficial facial lesions.

Neurofibromatosis is a rare congenital condition that may be present in multiple facial cutaneous neurofibromas and other skin lesions. Facial lesions are present in approximately 48% of neurofibromatosis cases, and these may cause social and emotional problems, especially among young women. Cosmetic disfigurement is the main reason for seeking treatment. There is a lack of consensus in the treatment of cutaneous lesions of neurofibromatosis patients.

Dermabrasion is a common operation in the cosmetic surgery field and is used mainly for the improvement of skin appearance: decreasing wrinkling, antiaging, treatment of relatively small and superficial scars located in the skin, and tattoo removal. The aim of this study was to present a patient with neurofibromatosis who had facial lesions treated by staged excisions and dermabrasion.

Case Report

A 17-year-old female patient was admitted to our clinic seeking treatment for the lesions on her face. The patient’s medical history indicated that she had been previously diagnosed with neurofibromatosis after being seen in the neurology department, where she continued to routine treatment to the same clinic. She had a neurofibroma on the frontoparietal area (around 7 × 12 cm) and relatively flat common neurofibromatosis lesions on the entire face (Figure 1A).

Under local anesthesia, staged excisions were applied on the neurofibromatosis lesion located in the frontoparietal area (see Figure 1, A to C). A biopsy was obtained from the submandibular area to confirm diagnosis of the superficial lesions located on the face. Both lesions revealed diagnoses of neurofibromatosis in histopathologic examinations. To prevent unrealistically high expectations, the patient and her family were informed about a potentially limited cosmetic result from the dermabrasion treatment.

A dermabrasion treatment test was performed on a 1 cm² area under local anesthesia, followed by detailed discussion with the patient and her family, and the decision was made...
to apply dermabrasion, under general anesthesia, to the entire face.

No preconditioning was used before the dermabrasion procedure, nor was a refrigerant used. A number 13 diamond fraise (Robbins Instruments, Inc., Chatham, NJ) was used for the initial dermabrasion, and after an average seven to eight passes with 15,000 rounds per minute, a number 8 diamond fraise was used for feathering to achieve a smooth transition to the surrounding normal skin. The number of passes was higher in the area of larger lesions than the number of passes used in the other areas. Dermabrasion was ended when larger pinpoints of bleeding depth were reached.

Standard dressing was used for 6 days after the operation, and sun protection for 1 year was advised. After a 12-month follow-up period, second-stage dermabrasion was offered to the patient; she was satisfied with the initial outcome, however, and did not want to have any further operation under general anesthesia (Figure 2). No tumor acceleration, regrowth, or other complication was seen in 12 months of follow-up.

Discussion

Only one previous anecdotal case describing the application of dermabrasion to a patient with neurofibromatosis has been reported in the literature. The authors who presented the case concluded that there was no evidence of accelerated regrowth of tumors during follow-up. Even though we had a relatively limited follow-up period in our case, we did not see any regrowth or tumor accelerations. However, when considering the natural course of neurofibromas on the skin, a longer follow-up period is needed for optimal results and a discontinuation of the effects of the dermabrasion. On the other hand, patient satisfaction was high in our case.

Given that every lesion seen in neurofibromatosis cases (or even a majority of lesions) is not eligible for dermabrasion, the procedure should be considered only in select cases. However, one-stage or multistage excisions of facial neurofibromas are useful for most lesions. We used dermabrasion to treat all nonpapillomatous skin lesions with radii of less than 5 mm.

Using laser resurfacing with CO$_2$ for select cutaneous neurofibromatosis lesions is a technique that has been described in the literature. CO$_2$ laser treatments were used on the trunk and extremities for lesions with radii up to 1 cm. The literature reported that these patients had good improvement in their social and sexual
life. The use of photocoagulation with neodymium:yttrium-aluminum-garnet laser (ND:YAG), with good results, has also been reported in the literature. In our case, however, the lesions were smaller and more superficial than those in the laser treatment cases described in the literature. The risk of prolonged hyperemia on the face and hypertrophic scarring after CO$_2$ laser treatment pushed us to choose dermabrasion treatment. However, laser treatment may also be a treatment modality for these patients. Recently, shave excision combined with an ND:YAG laser for the treatment of multiple cutaneous neurofibromas in the body (except the face) has been used with satisfactory results and documented by Kim and colleagues. However, multiple small lesions located on the face, as in our case, are not eligible for shaving treatment because uncontrolled depth of shaving on the relatively thin skin of the face may have a risk of hypertrophic scarring.

Neurofibromas may bleed more than normal skin during surgery, so infiltration with a diluted adrenaline solution would expedite surgery. Patients with neurofibromatosis also should check for accompanying tumors and consult with Anesthesiology meticulously before they receive general anesthesia, in the interest of preventing anesthetic difficulties.

Conclusion

Although all lesions in neurofibromatosis cases are not eligible for serial excision and dermabrasion, surgeons should keep in mind that some patients with neurofibromatosis are suitable for these surgical approaches and that an acceptable result might be possible in select cases. Dermabrasion should be considered for lesions, especially relatively superficial and small lesions that are located on the face, for neurofibromatosis patients. It is necessary to have a discussion with the patient about a possible limited result. In our particular case, both the patient and the patient’s family were satisfied with the result.

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References

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