

Nail abrasion

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Summary

Certain diseases of the nail complex cause hyperkeratosis or alterations of the shape of the nail plate. These conditions may be painful, may decrease the penetration of topical medicaments and may be ugly.

The nail plate abrasion, performed with dermabrader device or sandpaper, has application in patients suffering from onychomycosis, psoriasis, subnail infections and haematomas. The technique facilitates the collection of scales for mycological examination, decreases treatment time (of topical monotherapy) for onychomycosis and provides greater comfort for the patient by reducing nail plate thickness. It can also be useful for the partial removal of the nail plate in cases of haematomas and subnail infections.

Nail abrasion is an effective and inexpensive method, easily applied in either nail pathologies with hyperkeratosis of the nail plate or in those requiring partial removal of the plate.

Keywords: haematomas, mycotic examination, nail abrasion, nail avulsion, nail infections, onychomycosis, transverse overcurvature of the nail

Introduction

Some nail diseases increase the thickness of the nail plate or alter other structures of the ungual apparatus, causing patients morphological and functional disturbances. The debridement of the nail plate aims at reducing the nail plate thickness, which results to more comfort for the patient and an easier penetration of topical medicines.¹ It can also facilitate the treatment of haematomas.²

There are several methods of debridement. Nail abrasion, however, presents the best results. The experience gained through many years dealing with this technique has revealed the best indications for the application of this method.

Nail abrasion involves the sanding of the nail plate in order to reduce its thickness or destroy it completely. This technique, not widely spread among dermatologists, is frequently used by podiatrists.

Materials and methods

The material needed is basically sandpaper number 150 or 180 to fit the degree of intensity required for the abrasion. The sandpaper is connected to the dermabrader device whose speed must be appropriately controlled (Fig. 1).

The patient can be lying or sitting, and his foot or hand must be firmly held in position. The doctor must stand in a comfortable position, and must be wearing an apron, a mask and eyeglasses to protect him from the powder produced during the procedure. The sanding does not require anaesthesia and must be done on the nail edges. The sandpaper should be moved in vertical, horizontal, and diagonal directions. This sanding is not supposed to cause any periungual pain or lesion. Dentist's drills may be used to make small holes on the nail plate thus allowing for a better penetration of the topical medication. One should exercise caution during this procedure so as to prevent any damage to the nail bed.

Indications for the nail abrasion

In addition to its aesthetic value, nail abrasion is indicated in the nail hyperkeratosis caused by onychomycosis, in the

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Figure 1 Dermabrader and sandpaper fraises.

inflammatory processes of the nail bed, and in the transverse overcurvature of the nail. In these pathological conditions, there is an increase in the nail plate thickness, which is the source of patients' complaints of discomfort and pain. Nail abrasion is also indicated in cases that require total or partial nail avulsion, in haematomas, and in subungual infections. It is also used as a means to collect scales and debris for mycotic examinations.

Scale collection for mycological examination

At present, the treatment of onychomycosis demands a thorough knowledge of the genus and species of fungi that cause the illness. The manual collection of scales to be used in the direct microscopy and in the culture is not a simple task as it usually results from lesions of the nail bed. When this is the case, the main advantage of nail abrasion is that it permits a good view of the areas where the nail plate is more friable. Consequently, there is the possibility of collecting scales without any pain for the patient. When the nail plate is very thick, it becomes very difficult to make the scales collector reach the proximal part of the nail, the point where the fungi are frequently seen. The outcome may be lesions on the nail bed or even some bleeding, which affects the doctor–patient or technician–patient relationship. Once again, the treatment of choice is nail abrasion because it rubs off the nail plate to the point where some longitudinal white friable stripes appear. This is the area where a large concentration of fungi can be found. The method described makes the scales collection easier. The patient will also benefit from the thinning of the nail plate, both on the pain relief and the aesthetic outcome (Figs 2, 3 and 4).



Figure 2 Hallux nail before abrasion.



Figure 3 Collecting scales after abrasion.

Onychomycosis

The treatment of onychomycosis remains a challenge to medical work. Although new systemic drugs such as terbinafine, fluconazole, and itraconazole, as well as antifungal nail lacquer have appeared, the rates of clinical and mycologic cure are still disappointing.^{3,4} The current view of this issue considers that the problem would not be a matter of efficacy or nonefficacy of the drugs used, but rather it would refer to treatment strategy, namely, the observation of several coadjutant factors involved in the therapeutic success.⁴ Effendy, Kolczac and Friederich observed 96 patients affected by onychomycosis who underwent topical treatment and nail abrasion.⁵ Korting and Schaefer-Korting believe that this additional procedure might improve the therapeutics.⁴ Nail abrasion is considered very useful because it helps in the thinning of the nail plate and decreases the critical fungal mass. At the same time, this procedure also facilitates the action of the antifungal nail lacquer. Experience shows



Figure 4 Hallux nail at the end of the abrasion procedure.

that this procedure pleases the patient because it provides aesthetic benefits, which improve the social interaction and minimizes self-esteem problems so often observed.

Nail avulsion

Nail avulsion is still in widespread use, in spite of its unpleasant consequences known as onycholysis and permanent dystrophies. Baran and Dawber consider nail avulsion to be a traumatic procedure for the nail apparatus.⁶ This procedure is performed in cases of nail trauma, detachment of the plate, and following haematomas or subungual infections. Once more, nail abrasion is the best treatment. The possibility of having the partial or total removal of the nail without affecting the nail bed prevents all the undesirable effects caused by the nail avulsion.

Transverse overcurvature of the nail

The transverse overcurvature of the nail frequently shows a substantial thickening of the nail plate, which would be another indication for the nail abrasion, with all the advantages already described. Another aid would come from the placement of nail orthesis for the benefit of patients whose clinical conditions do not allow definitive surgical procedures.

Haematomas

Acute subungual haematomas may occur usually after trauma. In these cases the blood accumulated can cause pressure and pain. Sometimes if the pressure is on the nail matrix, necrosis can occur.² Nail abrasion can be useful for draining the haematomas. Drainage can be achieved either by making small holes on the nail plate with dentist's drills, or by sanding the nail up to the point where the haematoma is.

Subungual infections

In cases of bacterial infection or subungual fungal infection, in which the penetration of topical medications becomes difficult, it is possible to use dentist's drills to make small holes on the nail plate to facilitate the penetration of these drugs. During the growth of the nail plate the holes are eliminated by the free edge, without any permanent damage to the nail plate.

Comparison with other methods

Compared with other methods, nail abrasion is better than urea paste, which requires protection of the lateral folds with self-adhesive tape; the occlusion remains for several days, macerating all the skin involved. Another negative aspect is the smell brought about by the medication. During treatment the smell grows stronger, interfering with the patient's life. It has also been observed that the destruction of the nail plate is not always uniform, nor is it selective. In contrast with nail abrasion, the point to suffer a smaller or greater degree of destruction cannot be chosen.

It should be borne in mind that although the patient is instructed to sand the nail plate, it does not mean that he will follow the instructions correctly. In fact, most of the time he would rather have a nail abrasion at medical offices or even go to see a podiatrist.

Conclusion

Nail abrasion is considered a practical method, inexpensive, and stimulating for both the doctor and the patient. It can be performed at dermatological offices, which facilitates all the treatments described.

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