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(RESEARCH ARTICLE)

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Clinical and dermoscopic alterations of the nails after using semi-permanent varnish

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Abstract

Background: The rising popularity of semi-permanent nail varnishes has transformed nail cosmetology into a significant global industry. However, the use of these products is increasingly linked to various nail disorders and adverse effects. This study aims to systematically evaluate the clinical and dermoscopic changes in nails following the application of semi-permanent varnish.

Methods: We conducted a retrospective descriptive study involving 72 women who had used semi-permanent varnish at least once. The study was conducted over six months, from December 2023 to May 2024, focusing on the clinical and dermoscopic features of nail alterations.

Results: A substantial 94.5% of participants reported deterioration in nail quality, with 33% categorizing the changes as severe. Clinically observed abnormalities included 48% erythronychia, 95% onychatrophy, and 73% onychoschizia. Dermoscopy revealed previously underestimated lesions, such as nail fissures (detected in 65% of cases) and dilated capillaries (23% exclusively). Only 7% developed onychomycosis, while allergic reactions were infrequent.

Discussion: Our findings underscore the predominance of mechanical damage associated with semi-permanent varnish use, contrasting with prior studies that reported higher rates of allergic reactions. Key risk factors identified include early initiation of varnish use and frequent exposure to UV lamps.

Conclusion: While semi-permanent nail products offer aesthetic enhancements, they pose significant risks for adverse effects. Dermatologists must maintain comprehensive knowledge of these products and their potential complications to improve patient care for those experiencing cosmetic nail procedure-related disorders.

Keywords: Nail disorders; Semi-permanent varnish; Traumatic nails; Nail dermoscopy; Secondary nail damage; Nail cosmetology

1. Introduction

Nail cosmetology is a multi-billion-dollar industry with large options worldwide. Regular varnish consists of the application of substances that harden after evaporation of solvents, while semi-permanent varnishes, acrylic nails, and prosthetic gels only harden after polymerization.[1]

Nail system alterations related to these practices are emerging, frequent, and underdiagnosed, requiring more scientific studies to be objectified.

In this study, we describe the different clinical and dermoscopic alterations of the nails after the use of this practice.

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2. Materials and methods

A retrospective descriptive study of the clinical and dermoscopic aspects of the nails after using semi-permanent varnish was carried out, including women who had used this practice at least once in their lives.

The study was conducted over 6 months, between December 2023 and Mai 2024.

3. Results

72 participants have been included.

94.5% of women reported that the quality of their nails had changed pejoratively, with 33% judging the alteration as severe and 22% considering it catastrophic. Only 5.5% (4 women) reported that the quality of their nails remained intact with the use of semi-permanent varnish. 83% of participants used semi-permanent varnish for more than 2 years, and 55% used it more than 6 times a year.

72% of women continue to use semi-permanent varnish despite the damage, while only 28% have decided to stop using it. 91.4% of women complained of brittle nails, and 80% complained of nail pain during daily activities (handling objects) after removing semi-permanent varnish.

3.1. Clinically

Color abnormalities of the nail plate were observed, with 48% erythronychia, 15% leukonychia, 9% xanthonychia, and 4% chloronychia (Figure 1).

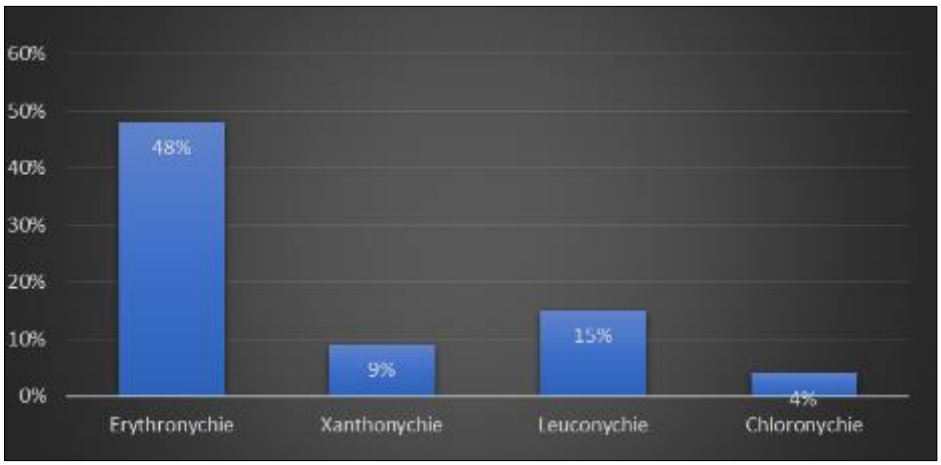

Figure 1 Colour abnormalities observed clinically

Surface abnormalities were also observed: 95% onychatrophy, 73% onychoschizia, 56.9% nail fissures, 30% striated nails, 10% thimble-like surface appearance, and 36% beau's lines.

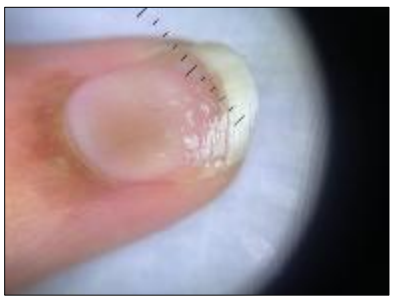

Figure 2 Onychoschizia

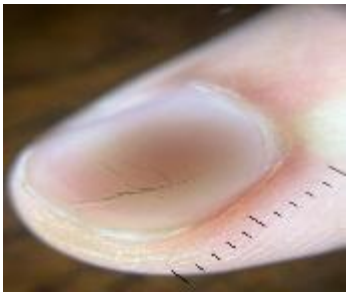

Figure 3 Nail Fissures

53% of participants had onycholysis, and 9% had clinically visible flame hemorrhages.

Figure 4 Diffuse onycholisis

2.77% (two participants) reported total and partial traumatic avulsion of the nail, respectively.

7% (five participants) developed onychomycosis confirmed by mycological sampling, and 4% (three women) presented with whitlow.

Only 2.77% (two cases) of allergic skin reactions were identified, and 35% of women had dry cuticles.

None of our participants had pre-tumoral or skin tumor signs in periungual skin at the time of examination

3.2. Dermoscopically

Dermoscopy helped visualize better the color abnormalities of the nails observed clinically, such as erythronychia, xanthonychia, leuconychia, and chloronychia, as well as the surface abnormalities, including onychoschizia, nail fissures, onycholysis, thimble-like nails.

On the other hand, dermoscopy uncovered previously underestimated lesions, such as nail fissures, which were detected in 65% of cases dermoscopically compared to 56.9% clinically, and flame-shaped hemorrhages, observed in 15% of cases dermoscopically versus 9% clinically (Table 1).

Additionally, dilated capillaries were only identified dermoscopically in 23% of cases.

4. Discussion

«Semi-permanent varnishes are hybrid products between gel and conventional varnish. Their texture is liquid, but they dry by catalyzation under a UV or LED lamp to polymerize the (meth)acrylates» [2]

The widespread adoption of this emerging technique for nail enhancement among women has led to the prevalence of various nail disorders.

The use of a mechanical abrasion-based removal method by nail salons, in most cases instead of the recommended acetone method to save time, could explain many mechanical lesions. Thus, when overly aggressive, mechanical manipulation with trimmers or V-shaped clippers causes abrasion and inflammation of the nail folds. Wooden or metal

spatulas that push back the true cuticle disrupt its protective seal. Similarly, electric drills used on the natural nail surface can damage the true cuticle and lead to abrasion of the nail folds upon contact [4].

For the year 2022, a synthesis of the side effects induced by semi-permanent nail polishes in 88 users, according to the National Academy of Medicine in France, showed that the use of semi-permanent varnishes had induced allergic skin reactions in 70.5% of cases among users, and mechanical damage to the nails in 26.1% of cases. In these 88 users, squamous cell carcinoma was reported in 3 cases [3].

The discordance between this study and ours was outstanding; as described in the results above, more than 90% of lesions were mechanical, only 3.33% of patients presented allergic skin reactions, and none of our patients exhibited any signs of malignant skin lesions.

Skin cancer in the periungual area associated with the use of UV lamps appears to be linked to three factors: initiating semi-permanent nail polish use at a young age (around 20 years on average), frequent exposure (typically five to six times a year or more, especially with the proliferation of home lamps), and prolonged exposure over several years. The cumulative impact of UVA exposure is the primary risk factor, which can be exacerbated by individual factors such as light skin tone or immunosuppression [3].

Atopic cutaneous dermatitis and distant dermatitis could be induced by Acrylate-based nail products [5].

According to Reinecke, JK et al., symptoms of allergic reactions to nail products include itchy, eczematous dermatitis on the fingers, hands, and wrists. However, in some cases, up to 10% of patients may experience dermatitis localized only to the face or neck [5].

Dystrophic nails are exposed to onychomycosis due to their fragility, which facilitates fungal penetration. Additionally, fungi can enter the nail through contact with contaminated objects, such as nail grooming tools [6]. Only 7% of our participants developed onychomycosis confirmed by mycological sampling.

Other adverse effects include increased susceptibility to onychomycosis and paronychia.

In our study, dermoscopy proved highly effective in enhancing the visualization of clinical lesions, including those that are often underestimated, such as nail fissures. Notably, some lesions, such as dilated nail capillaries, were exclusively detectable through dermoscopic examination, highlighting the significance of dermoscopy in the diagnostic evaluation of nail disorders broadly, and specifically in assessing nail changes resulting from cosmetic procedures.

There are few articles in the literature describing the clinical aspects of nail lesions after using semi-permanent varnish. To the best of our knowledge, no article in literature describes the dermoscopic aspects of nail damage due to this practice

5. Conclusion

Although nail cosmetic practices are advantageous for “beautifying” or hiding various nail disorders, the undesirable effects remain significant.

As dermatologists, a complete knowledge of the various products used in these practices, as well as application protocols and potential adverse effects, allows better care for patients seeking help and suffering from nail disorders due to cosmetic nail procedures, specifically after using semi-permanent varnish

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

All the procedures were carried out after the agreement of all individual participants included in the study.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] R. Baran, S. Goettmann, J. André. *Ungual cosmetics*, *Annales de Dermatologie et de Vénéréologie*, **Volume 143**, Issue 5, 2016, pp. 389–396. ISSN 0151-9638. https://doi.org/10.1016/j.annder.2016.01.005

[2] Chloé Serrero. Cosmetic nail polishes: Hazardous substances for health and alternative formulations. Life Sciences [q-bio], 2023. ffdumas-04159913f

[3] "Shiny" nails, but not without risk! – National Academy of Medicine | An institution of its time [Internet]. [cited May 28, 2023]. Available from: https://www.academie-medecine.fr/des-ongles-brillants-mais-pas-sans-risque/

[4] Dahdah MJ, Scher RK. Nail diseases related to nail cosmetics. Dermatol Clin. 2006 Apr;24(2):233-9, vii. doi: 10.1016/j.det.2006.01.005. PMID: 16677969.

[5] Reinecke JK, Hinshaw MA. Nail health in women. Int J Womens Dermatol. 2020 Feb 5;6(2):73-79. doi: 10.1016/j.ijwd.2020.01.006. PMID: 32258335; PMCID: PMC7105659.

[6] orizzo M, Piraccini BM, Tosti A. Nail cosmetics in nail disorders. J Cosmet Dermatol. 2007 Mar;6(1):53-8. doi: 10.1111/j.1473-2165.2007.00290.x. PMID: 17348997