Original article

doi:10.5633/amm.2026.0401

Clinical and onychoscopic features of onychopapilloma

Andrija Jović[1,2], Danijela Popović[1,2], Slađana Cekić[1], Zorana Zlatanović[1], Emilija Stefanović[1], Anita Mehmedović[1], Aleksandar Popović[3], Milica Mihajlović[1,3], Danica Tiodorović[1,2]

[1]University Clinical Center Niš, Clinic of Dermatovenerology, Niš, Serbia

[2]University of Niš, Faculty of Medicine, Niš, Serbia

[3]University Clinical Center Niš, Clinic of Oncology, Niš, Serbia

Contact: Andrija Jović

48 dr Zorana Djindjića Blvd., 18000 Niš, Serbia

Email: andrijajovic@rocketmail.com

Onychopapilloma (OP) is a rare benign nail tumor arising from the nail bed and distal matrix. Its variable presentation may mimic benign and malignant nail lesions, as well as inflammatory conditions, creating diagnostic uncertainty. This study aimed to evaluate the clinical and onychoscopic features of OP. A retrospective study was conducted including 26 patients clinically diagnosed with OP. Clinical and onychoscopic data were reviewed and analyzed from medical records. A female predominance was observed (16 [61.5%] vs. 10 [38.5%]), with a mean age at diagnosis of 41.1 ± 16.3 years. Clinically,

OP most commonly presented as longitudinal erythronychia (18, 69.2%), followed by longitudinal leukonychia (6, 23.0%), longitudinal melanonychia (1, 3.9%), and longitudinal xanthonychia (1, 3.9%). The most frequent onychoscopic feature was distal subungual hyperkeratosis (24, 92.3%), followed by onycholysis (17, 65.4%) and splinter haemorrhage (16, 61.5%). A notch in the lunula was observed in 7 cases (26.9%), while macrolunula was identified in one patient. All lesions exhibited more than one onychoscopic feature. These findings confirm that OP most commonly presents as longitudinal erythronychia associated with distal subungual hyperkeratosis. Increased awareness of its clinical and onychoscopic features may facilitate earlier recognition and appropriate management.

Key words: nail dermoscopy, nail tumor, nail matrix, nail plate, nails

Originalni rad

doi:10.5633/amm.2026.0401

Kliničke i onihoskopske odlike onihopapiloma

Andrija Jović[1,2,], Danijela Popović [1,2], Slađana Cekić [1], Zorana Zlatanović [1], Emilija Stefanović [1], Anita Mehmedović [1], Alekasndar Popović [3], Milica Mihajlović [1,3], Danica Tiodorović [1,2]

1. Univerzitetski klinički centar Niš, Klinika za dermatovenerologiju, Niš, Srbija
2. Univerzitet u Nišu, Medicinski fakultet, Niš, Srbija
3. Univerzitetski klinički centar Niš, Klinika za onkologiju, Niš, Srbija

Kontakt: Andrija Jović

Bulevar dr Zorana Đinđića 48, 18000 Niš, Srbija

Email: andrijajovic@rocketmail.com

Onihopapilom (OP) predstavlja redak benigni tumor nokta koji potiče iz ležišta nokta i distalnog matriksa. Zbog varijabilne kliničke prezentacije, OP može imitirati kako benigne, tako i maligne lezije nokta, kao i inflamatorna oboljenja, što može otežati postavljanje dijagnoze. Cilj ove studije bio je da se procene kliničke i onihoskopske karakteristike OP. Sprovedena je retrospektivna studija koja je obuhvatila 26 pacijenata sa klinički dijagnostikovanim OP. Klinički i onihoskopski podaci su prikupljeni i analizirani iz medicinske dokumentacije. Uočena je predominacija žena (16 [61,5%] prema 10 [38,5%]), sa prosečnom starošću u trenutku postavljanja dijagnoze od 41,1 ± 16,3 godine. Klinički, OP se najčešće manifestovao kao longitudinalna eritronihija (18, 69,2%), zatim longitudinalna leukonihija (6, 23,0%), longitudinalna melanonihija (1, 3,9%) i longitudinalna ksantonihija (1, 3,9%). Najčešći onihoskopski nalaz bilo je distalna subungvalna hiperkeratoza (24, 92,3%), zatim oniholiza (17, 65,4%) i splinter hemoragije (16, 61,5%). Zarez u lunuli uočen je kod 7 pacijenata (26,9%), dok je makrolunula

registrovana kod jednog pacijenta. Sve lezije su pokazivale više od jedne onihoskopske odlike. Ovi nalazi potvrđuju da se OP najčešće manifestuje kao longitudinalna eritronihija udružena sa distalnom subungvalnom hiperkeratozom. Povećana svest o kliničkim i onihoskopskim karakteristikama može doprineti ranijem prepoznavanju i adekvatnom lečenju ove benigne lezije.

Ključne reči: dermoskopija nokta, tumor nokta, matriks nokta, noktana ploča, nokat

Introduction

Onychopapilloma (OP) is a rare benign nail tumor originating from the nail bed and distal matrix, most commonly seen in adults. Initially described by Baran and Perrin[1] in 1995 as "localized distal subungual keratosis with multinucleate cells," this entity was later termed "onychopapilloma" by the same authors in 2000, following additional clinicopathological evaluation (2). The pathogenesis of OP remains incompletely defined; however, three main hypotheses have been proposed by Kim et al.[3], including neoplastic proliferation of the nail bed epithelium, reactive hyperplasia induced by chronic irritation or trauma, and secondary changes occurring in association with other inflammatory nail disorders.

Given its variable presentation, OP may mimic other benign and malignant nail lesions, as well as inflammatory conditions, thereby creating diagnostic uncertainty (4-7). Recognition of its clinical and onychoscopic features is therefore crucial to ensure appropriate management, minimize unnecessary invasive procedures, and reduce patient anxiety.

Despite growing recognition, the number of reported cases remains limited, and it's clinical and onychoscopic manifestations have not yet been completely defined. This study aimed to evaluate the clinical and onychoscopic features of OP.

Patients and methods

This retrospective study comprised patients clinically diagnosed with OP at the Clinic of Dermatovenerology, University Clinical Center of Niš, Serbia, between January 2017 and January 2025. Following approval by the Ethics Committee of University Clinical Center of Niš, the clinical and onychoscopic features of patients with OP were reviewed and analyzed using medical records. All patients included in our study underwent follow-up for a minimum of one year after the initial clinical diagnosis of OP. Surgical excision was obtained in cases of changes in onychoscopic findings, presence of symptoms affecting quality of life, or cosmetic concern.

Demographic and clinical characteristics evaluated included age at onset, gender, anatomic site, symptoms related to lesion, and clinical phenotype of the lesion. Onychoscopic features analyzed for

each lesion were based on previously reported findings in the relevant literature on OP, including distal subungual hyperkeratosis, splinter hemorrhage (long/short), onycholysis, distal fissuring, notch in lunula, trailing lunula, and macrolunula (5-7). Onychoscopic examination was performed using a DermLite DL4 dermoscope (3Gen Inc., USA). Owing to the limited sample size, results were summarized using descriptive statistics, reporting the absolute and relative frequencies of clinical and onychoscopic findings, while quantitative variables were expressed as mean ± standard deviation.

Results

A total of 26 patients with OP were included in the study, with women being more frequently affected than men [16 (61.5%) vs. 10 (38.5%)]. The mean age when diagnosis of OP was made was 41.1±16.3, while the youngest patient reported in our study was 23-year-old female. Regarding clinical presentation, OP was more frequently presented as longitudinal erythronychia 18 (69.2%), followed by longitudinal leukonychia 6 (23.0%) longitudinal melanonychia 1 (3.9%), longitudinal xanthonychia (3.9%). In terms of symptoms, six patients reported spontaneous pain or functional discomfort, whereas the majority (20, 76.9%) was asymptomatic. Four patients were referred for surgical excision due to pain associated with the lesion. With regard to nail plate localization, the central portion of the nail plate was most commonly involved (14, 53.8%). All lesions were located on the fingernails, with predominance on the right hand. The mean width of the lesions was 2.3 ± 0.7 mm. The most frequent onychoscopic feature observed was distal subungual hyperkeratosis, present in 24 cases (92.3%), followed by onycholysis in 17 cases (65.4%) and splinter haemorrhage in 16 cases (61.5%), respectively. Among lunula abnormalities, a notch in the lunula was identified in seven cases (26.9%), while macrolunula was observed in one patient. All lesions demonstrated more than one onychoscopic feature. Representative clinical and onychoscopic findings are shown in Figure 1. All data were summarized in Table 1.

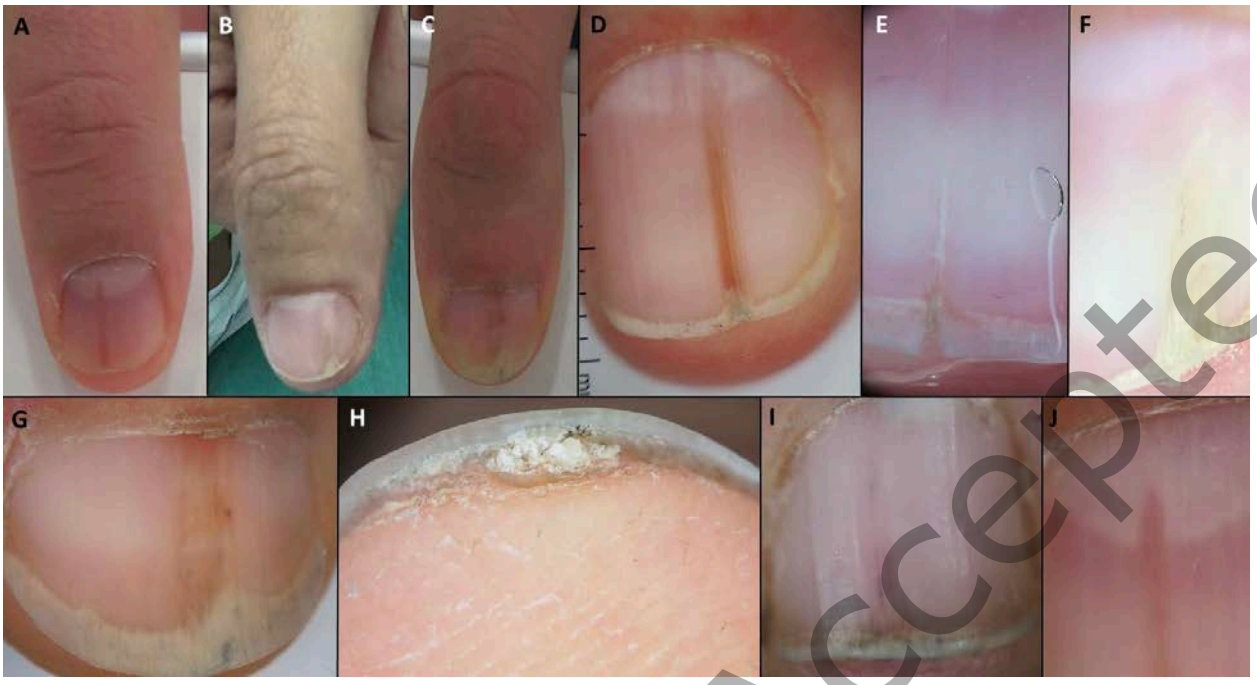

Figure 1. Clinical and onychoscopic features of OP. (A) Longitudinal erythronychia; (B) Longitudinal leukonichia; (C) Longitudinal xanthonychia; (D) Longitudinal melanonychia; (E) Distal fissuring; (F) Onycholysis; (G) Macrolunula; (H) Distal subungual hyperkeratosis; (I) Splinter haemorrhage; (J) Notch in lunula.

Table 1. Demographic, clinical, and onychoscopic features of patients with OP.

	***Total number* (n=26; 100%)**
Demographic	
Male	10 (38.5)
Female	16 (61.5)
Age at diagnosis	41.1±16.3
Clinical features	
Longitudinal erythronychia	18 (69.2)
Longitudinal leukonychia	6 (23.0)
Longitudinal melanonychia	1 (3.9)
Longitudinal xanthonychia	1 (3.9)
Splinter hemorrhage without any longitudinal bend	0 (0)
Symptoms related to lesion	
Tenderness and/or functional discomfort	6 (23.1)
No symptoms	20 (76.9)
Localisation related to nail plate	
Central	14 (53.8)
Peripheral	12 (46.2)

Width (mm)	2.3±0.7
Distribution of lesions	
Hand	26 (100)
Foot	0 (0)
Onychoscopic features	
Distal subungual hyperkeratosis	24 (92.3)
Splinter haemorrhage	16 (61.5)
Onycholysis	17 (65.4)
Distal fissuring	7 (26.9)
Notch in lunula	7 (26.9)
Trailing lunula	0 (0)
Macrolunula	1 (3.8)
Two or more dermoscopic features	26 (100)

Discussion

The increasing use of onychoscopy in routine clinical practice has significantly improved the recognition and diagnostic accuracy of various nail disorders (4-9). Although previously considered uncommon, OP is now recognized as an important cause of longitudinal nail discoloration; therefore, onychoscopy may provide additional diagnostic clues alongside clinical features in establishing the diagnosis. In the present study, we analyzed the clinical and onychoscopic characteristics of 26 patients with OP diagnosed at a single tertiary dermatology center over an eight-year period, further characterizing the spectrum of findings associated with this benign lesion.

According to previous studies, OP more frequently affects women (5,6, 8-11), which is consistent with the findings of our study ; however, this trend was not observed in the study by Kim et al.[7], which reported a male predominance. The underlying factors responsible for the female predominance of OP remain unclear. Given that chronic irritation or trauma has been proposed as a potential pathogenetic mechanism, this finding may be partly explained by more frequent exposure to cosmetic nail procedures, which could contribute to repeated microtrauma of the nail unit. Additionally, this may reflect a higher likelihood among women to consult a dermatologist due to increased awareness of nail alterations.

OP is predominantly a tumor of adults and is rarely observed in the pediatric population (5-11). In our study, the mean age at diagnosis was 41.1 years, which is slightly younger than that reported in several

studies, where OP most commonly occurs in middle-aged adults. To the best of our knowledge, only three cases of pediatric OP have been reported, including two children aged 9 and 10 years in a study by Delvaux et al.[6], and a 15-year-old boy reported by Beggs et al [12]. In most cases, as demonstrated in our study, OP lesions tent to be asymptomatic and only rarely associated with pain or functional impairment (6,7), which may contribute to the underreporting of OP in clinical practice.

A monodactylous presentation with predominant involvement of the fingers is typical for OP, whereas involvement of the toes is uncommon, being reported in 1.5–11.7% of cases (6-9). Among the fingers, the thumb, followed by the index finger, is most commonly affected based on previous studies (5-9). Although polydactylous involvement of OP is rarely observed, this rare clinical presentation is of particular importance, as it may represent a cutaneous manifestation of *BAP1* tumor predisposition syndrome, a condition associated with multiple cutaneous and internal malignancies (13,14).

Regarding clinical presentation, longitudinal erythronychia was the most common manifestation in our study, observed in 61.5% of patients. This finding is consistent with previous reports indicating that longitudinal erythronychia represents the most characteristic clinical sign of OP (5-9). Jellinek et al.[15] analyzed 65 patients with longitudinal erythronychia and reported OP in 41 cases (63%), followed by lichenoid dermatoses in 5 cases (8%), glomus tumor in 4 cases (6%), and wart in 3 cases (5%). Interestingly, in their study, two cases of subungual squamous cell carcinoma in situ and one invasive melanoma were observed, suggesting that longitudinal erythronychia may, albeit rarely, indicate underlying malignancy (15). Moreover, in their study, neither clinical nor onychoscopic features reliably predicted malignancy, underscoring the importance of biopsy in all suspicious cases, an approach we also adopted during the clinical follow-up of our patients. In our study, four patients underwent surgical excision due to functional discomfort, and all cases were pathohistologically confirmed as OP.

Longitudinal leukonychia represents a less common clinical manifestation of OP, observed in 6 cases (25%) in our study, which is in accordance with previous studies (5-9). Namely, Delvaux et al.[6] reported 7 cases in a cohort of 68 patients, and Kim et al.[7] 10 cases among 39 patients, confirming that longitudinal leukonychia is the second most frequent clinical presentation of OP. The whitish discoloration observed in longitudinal leukonychia can be explained by altered light refraction due to metaplasia of the nail bed epithelium (7). Longitudinal melanonychia and longitudinal xanthonychia were

each observed in 1 patient (3.9%) in our cohort, with a lower frequency compared to that reported in studies (6-9). Resulting from melanocyte reactivation, longitudinal melanonychia may be found not only in patients with Fitzpatrick skin phototypes IV–VI but also in those with lighter skin (16). Other clinical presentations of OP, including longitudinal or short splinter hemorrhage in the absence of a longitudinal band, were not identified in our study, possibly reflecting that patients with such subtle nail plate alterations are unlikely to present for medical evaluation. Notably, in the study by Tosti et al.[5], this clinical presentation of OP was observed in 11 patients (23.4%), representing the second most common clinical presentation.

The onychoscopic features of OP have been documented in several previous studies (5-9). In the first larger study of OP by Tosti et al.[5], distal subungual hyperkeratosis was identified as a hallmark onychoscopic feature of onychopapilloma, being present in all patients analyzed. These findings were further confirmed by the study of Kim et al.[7], in which distal subungual hyperkeratosis was identified in all 39 patients. A slightly lower prevalence (82.3%) was reported by Delvaux et al.[6], although it remained the most common onychoscopic feature in their cohort of 68 patients. Finally, our study further supports existing evidence, indicating that distal subungual hyperkeratosis is the most frequent onychoscopic feature of OP, observed in 92.3% of cases. In the context of longitudinal melanonychia, this onychoscopic feature represents an important diagnostic clue for OP. Onycholysis, distal fissuring, and splinter haemorrhage were observed in 17 (65.4%), 7 (26.9%), and 16 (61.5%) cases, respectively, demonstrating a distribution comparable to that reported in previously published studies (5-9). Lunula abnormalities were observed in a minority of patients, with 7 (26.9%) showing a notch in the lunula and 1 (3.8%) exhibiting macrolunula, a recently described onychoscopic feature by Kim et al.[7] Importantly, all lesions demonstrated more than one onychoscopic feature, highlighting the diagnostic value of combining multiple onychoscopic signs when evaluating suspected OP.

This study has several limitations, including its retrospective design, the relatively small sample size, and the lack of histopathological confirmation in all cases, which precluded dermoscopic–histopathological correlation. In addition, incomplete anamnestic data regarding lesion duration limited the assessment of its potential impact on onychoscopic and clinical features.

Conclusion

Onychopapilloma encompasses a broad spectrum of clinical and onychoscopic features, most commonly manifesting as longitudinal erythronychia associated with distal subungual hyperkeratosis. Our findings further underscore the diagnostic value of onychoscopy as a complementary tool to clinical examination. Increased awareness of both typical and less common presentations may facilitate earlier recognition and appropriate management of this benign lesion.

References

1. Baran R, Perrin C. Localized multinucleate distal subungual keratosis. Br J Dermatol. 1995;133(1):77-82.

2. Baran R, Perrin C. Longitudinal erythronychia with distal subungual keratosis: onychopapilloma of the nail bed and Bowen's disease. Br J Dermatol. 2000;143(1):132-135.

3. Kim M, Sun EY, Jung HY, Cho BK, Park HJ. Onychopapilloma: A Report of Three Cases Presenting with Various Longitudinal Chromonychia. Ann Dermatol. 2016;28(5):655-657.

4. Ito T, Uchi H, Yamada Y, Oda Y, Furue M. Onychopapilloma manifesting longitudinal melanonychia: A mimic of subungual malignancy. J Dermatol. 2015;42(12):1199-1201.

5. Tosti A, Schneider SL, Ramirez-Quizon MN, Zaiac M, Miteva M. Clinical, dermoscopic, and pathologic features of onychopapilloma: A review of 47 cases. J Am Acad Dermatol. 2016;74(3):521-526.

6. Delvaux C, Richert B, Lecerf P, André J. Onychopapillomas: a 68-case series to determine best surgical procedure and histologic sectioning. J Eur Acad Dermatol Venereol. 2018;32(11):2025-2030.

7. Kim TR, Bae KN, Son JH, et al. Onychopapilloma: its clinical, dermoscopic and pathologic features. J Eur Acad Dermatol Venereol. 2022;36(11):2235-2240.

8. Starace M, Alessandrini A, Ferrari T, Wong V, Baraldi C, Piraccini BM. Clinical and onychoscopic features of histopathologically proven onychopapillomas and literature update. J Cutan Pathol. 2022;49(2):147-152.

9. Yun JSW, Howard A, Prakash S, Kern JS. Clinical and histopathological features of onychopapilloma in an Australian setting: A case series of 50 patients. Australas J Dermatol. 2022;63(4):e350-e355.

10. Lai PT, Chang YW, Lin SH. Onychopapilloma: a single medical center experience in Southern Taiwan. J Dermatolog Treat. 2024;35(1):2318353.

11. Canella C, Nakamura R, Leverone A, de Almeida CÁ, Iorizzo M, Yamada AF. Ultrasound imaging of onychopapilloma: Evaluation of 43 cases. Eur J Radiol. 2024;170:111236.

12. Beggs S, Butala N, Heymann WR, Rubin AI. Onychopapilloma Presenting as Longitudinal Erythronychia in an Adolescent. Pediatr Dermatol. 2015;32(4):e173-e174.

13. Lebensohn A, Ghafoor A, Bloomquist L, Royer M, K Castelo-Soccio L, Karacki K, et al. Multiple Onychopapillomas and BAP1 Tumor Predisposition Syndrome. JAMA Dermatol. 2024;160(8):838-845.

14. Waigand SJ, Bertlich I, Linse KP. Multiple primary melanomas with numerous pink-to-tan papules and polydactylous onychopapillomas. JAAD Case Rep. 2026;70:167-171.

15. Jellinek NJ, Lipner SR. Longitudinal Erythronychia: Retrospective Single-Center Study Evaluating Differential Diagnosis and the Likelihood of Malignancy. Dermatol Surg. 2016;42(3):310-319. doi:10.1097/DSS.0000000000000059

16. Starace M, Ferrari T, Pezzetta S, Savoia F, C Zengarini C, Piraccini BM, et al. Pigmented onychopapilloma in Caucasians: a case series of six patients. Int J Dermatol. 2021;60(5):e192-e194.