European Journal of Case Reports and Clinical Images

DOI: http://dx.doi.org/10.51521/EJCRCI.2026.e21.111

Case Series

Silver Nitrate Chemical Matrix Cauterization After Partial Lateral Nail Avulsion: A Case Series

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Received Date: 10-February-2026
Revised Date: 22-February-2026
Accepted Date: 24-February-2026
Published Date: 27-February-2026

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Citation:
Health center, Oman (2026). Silver Nitrate Chemical Matrix Cauterization After Partial Lateral Nail Avulsion: A Case Series. Euro J Case Rep Clin Imag. 2026; February, e21,1-4.

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Abstract:

Background: Ingrown toenail [onychocryptosis] is a common condition encountered in primary care and minor surgical practice and most frequently affects the great toe [1,6]. Several surgical and chemical matricectomy techniques have been described to reduce recurrence, particularly in moderate to severe or recurrent cases [1,3]. This study presents a case series evaluating a modified technique using silver nitrate chemical matrix cauterization following partial lateral nail avulsion.

Methods: This descriptive case series included patients with clinically diagnosed ingrown toenail treated at Shinas Health Complex. The standardized procedure consisted of partial lateral nail avulsion followed by chemical cauterization of the nail matrix using silver nitrate. Patients were followed to assess healing time, complications, and recurrence. Informed consent was obtained from all patients prior to the procedure.

Results: Complete wound healing was achieved within two weeks in all patients. One patient with diabetes mellitus developed a localized postoperative infection, which resolved completely within 10 days with conservative management. Deposition of silver nitrate material beneath the nail plate was observed in one case without long-term complications. The overall success rate [non-recurrence] was approximately 95%.

Conclusion: Silver nitrate chemical matrix cauterization after partial lateral nail avulsion appears to be a safe, effective, and practical technique for the management of ingrown toenail, with favorable healing time and a low recurrence rate.

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Introduction:

Ingrown toenail is a frequent nail disorder caused by penetration of the lateral edge of the nail plate into the periungual soft tissue, leading to pain, inflammation, and possible infection [5]. It is one of the most common nail conditions encountered in family medicine and surgical clinics [1].

Conservative management is effective in mild cases; however, moderate to severe or recurrent ingrown toenails usually require surgical intervention [1,3]. Partial lateral nail avulsion combined with chemical matricectomy has been shown to significantly reduce recurrence when compared with nail avulsion alone [1,4]. Phenol is the most commonly used chemical agent; however, alternative agents such as silver nitrate have been explored as effective options with potentially favorable safety profiles [2].

Methods:

This study is a descriptive case series conducted at Shinas Health Center, Oman. Patients with clinically diagnosed ingrown toenail were treated using a standardized protocol.

After partial lateral nail avulsion, the exposed nail matrix was chemically cauterized using silver nitrate. Petroleum jelly was applied to the surrounding skin to protect adjacent tissues. Silver nitrate was applied for 30–60 seconds, followed by irrigation with normal saline to terminate the chemical reaction. Standard post-procedure wound care instructions were provided to all patients.

Informed consent was obtained from all patients prior to the procedure. Patient data were anonymized for analysis.

Results:

All treated patients achieved complete epithelialization within two weeks. A localized postoperative infection occurred in one patient with diabetes mellitus; the infection was mild, limited to the surgical site, and resolved completely within 10 days with local care.

In one case, deposition of silver nitrate material beneath the nail plate was observed. This did not result in persistent symptoms or long-term complications. No severe complications were recorded. The recurrence rate was low, with an overall success [non-recurrence] rate of approximately 95%.

Discussion:

Previous studies have demonstrated that chemical matricectomy following partial nail avulsion is associated with lower recurrence rates than surgical treatment alone [1,3,4]. Phenol

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matricectomy has been extensively studied; however, it may be associated with prolonged drainage and delayed healing in some patients [1].

Recent studies have suggested that silver nitrate may be an effective alternative chemical agent for matricectomy, with satisfactory outcomes and acceptable safety [2]. The findings of this case series support these observations, demonstrating rapid healing, minimal complications, and a low recurrence rate.

The occurrence of a localized infection in a diabetic patient emphasizes the importance of careful postoperative monitoring in high-risk populations. Based on our experience, partial lateral nail avulsion appears to be a particularly safe approach in such patient.

Discussion:

Previous studies have demonstrated that chemical matricectomy following partial nail avulsion is associated with lower recurrence rates than surgical treatment alone [1,3,4]. Phenol matricectomy has been extensively studied; however, it may be associated with prolonged drainage and delayed healing in some patients [1].

Our technique is based on and consistent with the findings reported in a Spanish study by Delgado-Miguel et al., which demonstrated the safety and efficacy of silver nitrate chemical matricectomy following partial nail avulsion [2].

The findings of the present case series support these observations, demonstrating rapid healing, minimal complications, and a low recurrence rate.

The occurrence of a localized infection in a diabetic patient emphasizes the importance of careful postoperative monitoring in high-risk populations. Based on our experience, partial lateral nail avulsion appears to be a particularly safe approach in such patients.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: No new data were created or analyzed in this study. Data sharing is not applicable to this article.

Acknowledgments: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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