Precision in practice: a case report on nail wedge resection for onychocryptosis in a South African diabetic patient

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Summary

Onychocryptosis presents unique challenges in diabetic populations, necessitating specialised interventions. Onychocryptosis, is a painful condition, often causing toe pain, discharge, and swelling of the nail fold. Treatments include nail wedge resection and matricectomy. Nail wedge resection is a surgical procedure that removes the affected portion of the nail plate following the natural strictures of the nail whilst a wedge-shaped section of the nail matrix is removed to correct deformities, relieve pain, or treat underlying nail pathologies. This minimally invasive procedure offers a short recovery time and is popular for treating conditions like ingrown nails, pincer nails, nail deformities, and chronic infections. Postoperative care is crucial for optimal healing and patient satisfaction. This case report explores the application of nail wedge resection in the South African context and highlights the crucial role of surgical techniques.

Keywords: onychocryptosis, nail wedge resection, diabetic patient, surgical technique, precision, wound healing

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Introduction

Onychocryptosis, characterised by the nail plate encroaching into periungual tissues, is a prevalent podiatric ailment. Its management in diabetic individuals is particularly intricate due to the compromised vascular supply and a diminished immune response. Clinically, it presents with considerable toe pain, discharge, and swelling of the nail fold.[1] When treated poorly, onychocryptosis can frequently recur and lead to postoperative problems. Greater knowledge of nail anatomy has allowed for therapies with improved success rates that target both the nail matrix and the nail plate.[2]

Onychocryptosis is frequently treated with a nail wedge resection and matricectomy. Nail wedge resection is a surgical procedure commonly performed to address a variety of nail conditions. This technique involves the removal of a wedge-shaped section of the nail plate and matrix to correct deformities, relieve pain, or treat underlying nail pathologies. By excising the affected area, the procedure aims to alleviate pain, improve nail aesthetics, and prevent recurrent infections. It offers a minimally invasive solution with a relatively short recovery time, making it a popular choice among patients and clinicians.

Postoperative care and management are crucial for optimal healing, especially given the patient's diabetic status. The case study below will elaborate on the wound care protocols, pain management strategies, and follow-up evaluations used. It will also highlight potential complications and their management, emphasising the importance of patient education and adherence to postoperative instructions.

Case report

A 51-year-old male patient presented to a private podiatry practice in the Gauteng province with an infected onychocryptosis on the medial aspect of the nail border of the right hallux. He complained of pain in that area for the past two weeks. He had a medical history of diabetes mellitus and was using 500 mg of Glucophage once daily as treatment. His glycated haemoglobin was done two weeks before consultation and was 6% according to the received lab report.

On examination, there was tenderness over the medial aspect of the great toe. Upon probing the nail border with a Blacks file, pus was apparent in the erythematous hallux (Figure 1 shows the right hallux preoperatively). There was no fever or lymphadenopathy. All pedal pulses were palpable and strong, capillary refill time was three seconds, and ankle-brachial pressure index was 1.3 on both legs. He reported recurring episodes of onychocryptosis to the nail border over the last three years. The patient was diagnosed with an ingrown toenail on the right hallux. The patient reported no known allergies. Conservative management, including soaking the foot in warm water and Epsom salt

Figure 1: Right hallux preoperatively; swollen and erythematous with an infected and inflamed nail bed as well as pus that became visible upon probing

and applying a topical antibiotic (Bactroban®, GlaxoSmithKline, South Africa) along with the application of a gutter splint did not provide any relief. Therefore, a nail wedge resection was planned.

The patient was informed about the surgical procedure's benefits, risks, and potential nail abnormalities. Informed consent was obtained before proceeding with the nail wedge resection.

Procedure

The nail wedge resection with phenolisation was performed under local anaesthesia. After cleansing the operative site vigorously with betadine, sterile drapes were applied. A tourniquet was applied to ensure a blood-free surgical field. A dry field reduces the risk of introducing pathogens or creating an environment conducive to bacterial growth, especially in diabetic patients who are at higher risk of developing postoperative infections. The overgrown lateral nail fold was separated from the superior surface of the nail plate, followed by the separation of the inferior surface of the nail plate from the nail bed using a Blacks file (Figure 2 shows the preoperatively prepared instruments). The affected portion of the nail plate was then cut following the natural strictures of the nail using a Thwaites nail splitter and proceeded to excise and remove the longitudinal section of the nail plate and a wedge-shaped section of the nail matrix from the corresponding lateral nail grove using a surgical mosquito forceps.

Three 30-second applications of a saturated phenol solution using a wisp of cotton on an applicator stick were applied to the remaining nail matrix to ensure no nail regrowth. Finally, it was flushed and neutralised with a saline solution after tourniquet release (Figure 3 shows the right hallux after wedge removal). The area was then dressed with an activated charcoal dressing (ACTISORB™ Silver 220, 3M, South Africa) and covered with a toe crepe bandage.

Outcome

The procedure was uncomplicated. The patient was advised to rest and avoid any strenuous activity for a few days. Postoperatively, the patient received appropriate wound care instructions, including the application of sterile dressings and elevation of the affected toe to reduce swelling. He was prescribed an oral antibiotic, Augmentin (Augmentin®, Aspen Pharmacare, South Africa) 1 000 mg tablets twice daily, to treat the residual infection as well as an oral analgesic, Ibugesic Plus (Ibugesic^{PTY}, Cipla Medpro, South Africa) 250 mg capsules as needed, to manage postoperative pain. Two follow-up visits were scheduled to monitor wound healing, assess for signs of infection, and evaluate the patient's postoperative progress (Figure 4 shows the right hallux three days postoperatively).

On follow-up after a week, the wound was healing well and there was no evidence of further infection. The patient reported minimal pain and swelling. At the two-week follow-up, the wound had healed well, the patient reported no pain and there was no sign of infection. The patient reported an improved quality of life and expressed satisfaction with the surgical outcome. Upon examination, no regrowth abnormalities were observed, and the surgical site remained healthy.

Figure 3: Right hallux after wedge removal; localised redness and minimal bleeding with moderate swelling around the nail due to surgical manipulation

Figure 2: Instruments prepared preoperatively; from left to right: Thwaites nail splitter, mosquito forceps, nail chisel, Blacks file, mosquito forceps, and dental syringe

Figure 4: Right hallux three days postoperatively; signs of wound healing along the edges as well as reduced swelling and redness

Discussion

One of the most frequent podiatric disorders encountered in the clinic is nail border onychocryptosis, therefore, having a solid grasp of the technique is essential for successful surgery.[3] To achieve the best cosmetic outcome, efforts should be made to keep the treatment easy.[4] For the best surgical outcome, it is important to take into account the following factors: (1) removing the offending nail in mild cases, (2) removing granulation tissue from the nail border in more severe cases, (3) determining whether the onycholysis is caused by a local infection, (4) the general condition and health of the nail plate, (5) preventing traumatic onycholysis of healthy nails during the procedure, and (6) receiving appropriate postoperative care and treatment.[5] The exclusion of bone pathology and nail borders should be additional therapy considerations.[6]

Consideration should be given to the associated onychocryptosis of amelanotic melanoma, squamous cell carcinoma, and other tissue disorders. Excluding bone diseases such as osteochondroma and direct extension osteomyelitis is also crucial. If the nail sustains a severe injury, nail avulsion and adequate subungual haematoma drainage or nail bed and/or matrix healing are advised.[7]

There are certain circumstances in which leaving the matrix alone is preferable. If the issue is non-recurrent or any cosmetic considerations in cases where the appearance of the nail is the primary concern, leaving the matrix intact can preserve the natural look of the nail, and the patient can go back for a further matricectomy to stop recurrence.[8]

As part of the onychocryptosis treatment, the problematic nail border should be removed, any pus should be drained, and a permanent surgery should be performed to prevent recurrence. The viability and structure of the nail plate must be carefully considered while choosing these therapeutic options. The greatest cosmetic outcome for the patient will be obtained by performing a permanent matricectomy in the absence of onycholysis and extensive infection.[9] This case vignette emphasises the pivotal role of precision in surgical techniques, especially within the context of diabetic patients.

Significance in the South African context

This is the first documented case write-up on onychocryptosis in South Africa. It offers historical relevance and contributes to the decolonisation of education by challenging the reliance on international literature. It encourages the integration of indigenous knowledge into South African podiatry education, fostering a more inclusive and contextually sensitive approach to patient care.

Conclusion

The outcomes of this case provide evidence for the effectiveness of the procedure, which can inform future clinical management of similar cases. A holistic approach to diabetic care, including podiatric expertise, wound management, and patient empowerment is crucial for preventing recurrent episodes. The nail wedge resection procedure was well-tolerated, resulting in minimal pain as well as patient satisfaction, providing valuable insights for academic and healthcare providers.

Conflict of interest

The author declares no conflict of interest.

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