

Simple Surgical Technique for Ingrown Toenail Surgery

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Abstract

Background: Ingrown toenails are a common condition which, when recurrent and painful, are often treated surgically. This study proposes a new simple surgical technique for ingrown toenails with good results.

Method: We selected 150 patients with 185 affected toes who were surgically treated by our techniques carried out from April 1995 to March 2004. This technique consisted of marginal nail elevation combined with surgical excision of the granulation tissue. To fix the nail margin on the toe, we have done one bite suture by Nylon 3-0 and remove it after 3 weeks.

Results: Recurrence occurred only in 1.08% (2 of 185 toenails), and only one toe required further surgical treatment. Failure of technique in overall is 1.7% and successful surgical treatment is over 98%.

Conclusions: This study shows higher cure rate, shorter postoperative pain, lower risk of postoperative infection, and remarkable cosmetic result without any deformity because we excise the granulation tissue and elevate margin of nail over the skin with this simple technique. Therefore, this technique could be considered as an alternative method of ingrown toenail treatment. (*Iran J Dermatol 2009;12: 86-89*)

Keywords: ingrown nail, surgical technique, granulation tissue, nail elevation

Introduction

Ingrown nails, or onychocryptosis, are a common problem encountered in primary care practice^{1,2,3} which, when recurrent and painful, are often treated surgically. The disorder generally occurs in the great toes (Figure 1), although rarely, fingernails are involved after trauma². Patients with an ingrown toenail are often in their second or third decade of life. Initially, most patients complain of pain; later, drainage and infection develop, and the patient may have difficulty in walking^{2,4}. In the early 20th century, treatment was guided by this philosophy, the more radical the surgery, the greater the success³. Recently, the value of more conservative approaches has been recognized, especially in patients with stage 1 disease^{3,5,6,7,8}. Many treatment modalities of ingrown toenail are reported in the literature, often associated with unacceptably high recurrence rate⁹. Soaking the toe in warm water for 15 minutes can reduce inflammation⁶. Today, the most popular conservative therapies include warm water soaks, topical or oral antibiotic therapy, proper nail

trimming and elevation of the nail corner with a cotton wick^{6,8}.

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The numerous methods used for treating ingrowing toe-nails are testimony to the lack of a generally acceptable procedure with a low failure rate. Herein, a simple procedure with nail preservation is described, and the results of treatment assessed.

Patients and Methods

One hundred and fifty patients underwent 185 operations (thirty five had bilateral procedures), over a 9-year period between April 1995 and March 2004. In addition to patient demographics and presenting symptoms, pre-operative investigations were recorded. All patients had normal arterial pulses and toe radiographs and laboratory test for blood glucose performed prior to surgery.

Table 1. Stages of ingrown nails

Stage	Signs and symptoms	Patients	Affected toes
1	Erythema, slight edema and pain when pressure is applied to the lateral nail fold	10 (6/6%)	22 (12%)
2	Increased stage 1 symptoms, drainage and infection	38 (25/4%)	51 (28%)
3	Magnified stage 1 symptoms, presence of granulation tissue and lateral wall hypertrophy	102 (68%)	112 (60%)

Marginal nail elevation combined with surgical excision of the granulation tissue was performed. This study had a minimum follow-up period of six months and aimed not to damage the nail permanently.

Surgical Technique

A new simple surgical technique for ingrown toenails is described consisting of resection a slice of soft tissue at the fold of the paronychia where the toenail corner enters the soft tissue (Figure 1).

The procedure consists of making a transposition flap of the nail wall after preliminary excision or curettage of the granulation tissue in the nail groove.

Anesthesia can be provided by local injection or standard digital block. The local method may decrease the risk of neurovascular compromise and requires the use of less anesthetic¹⁰. Bilateral injection and waiting long enough for the anesthetic to have an effect are necessary for successful anesthesia with either technique (Figure 2). We use a tourniquet to provide adequate hemostasis immediately before surgery.

Surgery of the toenail should preserve normal tissue as much as possible. When cutting through the slice of soft tissue at the fold of the paronychia, the cutting instrument should not damage the overlying proximal nail fold. We prefer to bluntly separate and elevate the nail margin from the gutter using a simple nail margin elevator. After excision of the lateral granulation tissue, a flattened or crater-shaped wound may remain on the side of the toe. Adequate hemostasis should be ensured before the procedure is terminated. The lateral nail plate is lifted with caution to reduce trauma to the nail bed. To fix the nail margin on the toe, we have done one bite suture by Nylon 3-0 and removed it after three weeks (Figure 3).

Antibiotic ointment should be applied to the area several times a day to promote healing and to prevent infection of the burned tissues. Patients can be sent home wearing a disposable surgical slipper

Results

Related to three stages of ingrown toenail (Table 1), we have 10 patients in stage one with 22 affected toes, 38 patients with 51 affected toes in stage two and 102 patients with 112 affected toes in stage three. Recurrence occurred in only 1.08% (2 of 185 toenails), and only one toe required further surgical treatment. After six months follow-up, all patients satisfy and toenails were normal. The failure rate is 1.7% with this method and successful surgical treatment rate is more than 98%.

Discussion

Many causes of ingrown toenail have been proposed. Two main causes are tight shoes and an incorrect nail-trimming technique^{2,5}. Shoes that fit properly may reduce the pressure between the nail and the lateral nail fold⁶. Proper trimming technique allows the corner of the nail to project beyond the edge of the skin². Patients should be discouraged from tearing off the ends of the toenails, which can have the same effect as an improper trimming technique.

While antibiotics reduce bacterial infection, their value remains unproved in the treatment of ingrown toenails⁵. Partial avulsion with matricectomy may cause the nail width reduction after healing. Removal of the lateral nail without matricectomy results in recurrence of ingrown nail in 70% of patients^{3,11,12}. The entire nail plate should not be removed unless necessary¹⁰, to avoid the resulting large area of tender, exposed nail bed.

The major contraindication to matricectomy is digital ischemia from disorders such as diabetes, or peripheral or collagen vascular disease⁶.

In children, conservative treatments with antimicrobial ointments, gutter treatment, and in selected cases systemic antibiotics, are more promising than in adults. If these efforts remain unsuccessful, we could perform this described technique or radical wedge resection¹³. Currently, there are various surgical treatment modalities for ingrowing nail. None of these procedures are



Figure 1. Ingrown nail stage 2



Figure 2. Local anesthesia was done.



Figure 3. Elevated lateral edge of nail from bed and fixed over the lateral fold of toe with one suture.

perfect to achieve aesthetic results with low cost, recurrence, and complication rates¹⁴.

Some physicians advocate surgical excision of the matrix^{3,6,12}. However, extensive surgeries such as the Winograd, Zadik or Syme procedures are time-consuming and require the placement and removal of sutures^{3,6}. Periosteal and lateral nail bed elevation procedures yield good results and maintain nail width¹⁵, but their use is limited because of the complex surgical technique required.

When treating a patient with a stage 3 ingrown toenail, some surgeons prefer also surgically remove or ablate the lateral wall hypertrophy and granulation tissue^{3,7}. Simple partial nail technique for ingrown toenails consisting of resection of a slice of soft tissue at the fold of the paronychia where the toenail corner enters the soft tissue without matricectomy, or permanent destruction of the nail-forming tissue has been advocated for stage 2 ingrown toenails (Figures 3, 4). Excision of a slice of soft tissue at the fold of the paronychia, combined with lateral nail margin elevation, sutured and fixed nail, produces excellent cure rates in patients with stage 2 and 3 disease. These techniques minimize the trauma and removal of normal tissue. This simple technique, when performed correctly, in future repositions the lateral nail groove against the cut edge of the nail.

Our technique is effective, cosmetically favoured, and less painful than other treatments and should be considered as an alternative treatment for all type of ingrowing toenails.

Warm water soaks and antibiotics are common office approaches to calm the inflammatory response of ingrowing nails, but these approaches are often ineffective. The nail splinting technique is a method of therapy but it is limited to uncomplicated ingrowing toenails¹⁶.

In surgical matricectomy, the wedge of the affected side of the nail is lifted so the matrix (growing part of nail) may be seen and surgically removed. This technique is more invasive with poor cosmetic results¹⁷.

In chemical matricectomy, first the wedge is removed. Then, a cotton bud that has been soaked in phenol is applied on the matrix and kept there for almost 30 seconds. The wound is then cleaned thoroughly with saline and a dressing is applied on to it. People whose nailbeds were treated with phenol were more likely to have infections than those whose nailbeds were untreated after the surgery.

In laser matricectomy, the matrix is destroyed by cauterizing it with Carbon Dioxide or a YAG Laser. It is quick, minimal pain is experienced and the recovery period is shorter compared to other techniques.

However, current conventional surgical treatments are sometimes unsatisfactory because ingrown nails have a high recurrence rate^{18,19,20}. Local infection seems to be a predisposing factor for recurrence after surgery²⁰.

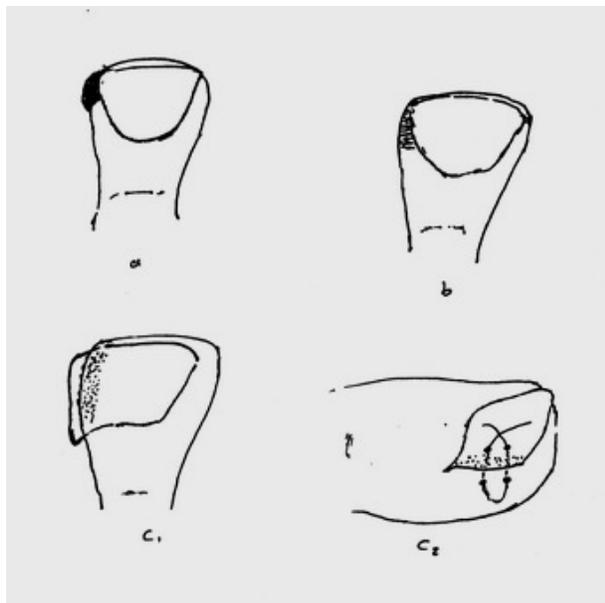


Figure 4. A – ingrown nail, B- excision of the granulation tissue, C- elevated lateral edge of nail from bed and fixed over the lateral fold of toe with one suture.

In this study, we used the described simple technique for all cases of stage 2 and 3 ingrown nails after patients' approval. Major advantages of the method revealed by our study were that the surgical procedure is easy to be performed in all stages with very good cosmetic results, the recurrence rate is very low, and postoperative pain and limitation of daily functioning is minimal. In addition to the high cure rate, short postoperative pain duration and morbidity as well as low risk of postoperative infection, the remarkable aesthetic results achievable with this method are indicated. Regarding more definitive surgery, simple surgical technique for ingrown toenails consisting of a resection a slice of soft tissue at the fold of the paronychia was found to give promising results. Sepsis at the time of operation neither increased the recurrence rate nor caused severe postoperative sepsis. The treatment is effective, well tolerated, not technically difficult, and should be considered as an alternative to current methods of treatment.

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