

A STUDY ON THE SURGICAL TREATMENT OF INGROWING TOE NAIL WITH NAIL EXCISION WITH CHEMICAL MATRICECTOMY VERSUS NAIL EXCISION ALONE

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Abstract

An in growing toenail develops when the proper fit of the nail plate in the lateral nail groove is altered. We selected 30 patients of ingrowing toe nail for the study. The patients were divided into two groups of 15 patients each. In group I patients, nail avulsion with chemical matricectomy with 88%phenol was done. In group II only nail avulsion was done. In group I patients the surgical success rate was 98% and in group II, the surgical success rate was 86.6%. No patient complained about the cosmetic appearance of toe nail after the operation.

Key words: ingrowing; toe nail; matricectomy; excision; phenol

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Introduction

Ingrowing toenail is a common problem affecting mainly adolescents and young adults, with a male predominance of 3:1 [1,2]. The disorder generally occurs in big toes. It is painful, often chronic and affects work and social activities. Most patients initially complain of pain later drainage, infection and difficulty in walking occur [3].

Several factors contribute to the occurrence and worsening of ingrowing toenails:

incorrect cutting of nails; hyperhidrosis; poor foot hygiene; excess external pressure, including poor stance and gait, ill-fitting footwear and excess trauma; excess internal pressure caused by over curvature of the nail plate; arthritis; subungual neoplasm a; skeletal abnormalities and inflammatory processes; associated systemic diseases, including diabetes; obesity; and nail changes in the elderly [4,5]. Congenital misalignment is another cause, especially in infants.

Aims

The aim of our study was to compare the treatment of ingrowing toe nail with nail excision with chemical matricectomy versus nail excision alone.

Material and Methods

We selected 30 patients of ingrowing toe nail for the study. The patients were divided into two groups of 15

patients each. In group I patients, nail avulsion with chemical matricectomy with 88% phenol was done. In group II only nail avulsion was done. Prior approval of the hospital ethical committee was taken and informed consent was taken from all the patients before starting the study. The routine investigations including complete haemogram and fasting blood sugar were done in all the patients. Each patient was reviewed weekly until full wound healing was achieved and the postoperative healing period ranged from two to four weeks. The patients were followed for 18 months to see for any recurrences and complications. Patients with vascular disease were excluded. If infection was present before the operation, it was treated initially by topical and oral antibiotics and daily warm soaks with dilute povidine iodine (Betadine) solution. Surgical treatment was instituted as soon as the nail and skin fold became dry.

The toe was firstly cleaned with povidine iodine solution. Anesthesia was obtained with a standard digital block employing 2% xylocaine without epinephrine. The toe was exsanguinated by rubber operating glove tourniquet (the cut end of a rubber finger being rolled back towards the big toe base). A dry field is important for the optimum cauterizing effect of phenolization. A 2-3 mm lateral nail segment was cut free along the length of the lateral fold and removed with a straight hemostat, taking care to ensure nail removal lower than the basal lateral matrix.

Hypertrophied granulation tissue was curetted. The phenol was applied with partially stripped cotton applicators, saturated with 88% liquefied phenol (distilled water was used as solvent), by vigorously massaging it into the matrix area. Care was taken to prevent spillage of phenol onto the surrounding skin. The cotton applicator was changed twice during a total application time of 3 min. After completion of this procedure, the area was lavaged with 70% isopropyl alcohol to neutralize the residual phenol. The tourniquet was removed and the wound was dressed with an antibiotic ointment, followed by longitudinal and circumferential gauze wrapping. The dressing was then secured with adhesive tape. After the operation pain killer was given for pain control. The patient was allowed to walk immediately after the operation and directed to elevate the affected foot whenever possible. Most patients returned to normal ambulation and activity as early as one day after the operation. It was not necessary to admit the patient to the hospital. The dressing was removed

after 48 h in the clinic. Following this, antiseptic soaks with dilute povidine iodine solution for 15 min once a day, followed by the application of an antibiotic ointment were started and continued usually for a period of approximately 2-4 weeks, until the drainage ceased. Patients were reviewed in the clinic weekly until full wound healing was achieved. All the patients were followed for a period of 18 months. Recurrence was defined as evidence of ingrowth of the nail edge or spicule formation. A total of 42 phenol ablations were performed on 30 patients with stage II and III disease. Each patient was reviewed weekly until full wound healing was achieved and afterwards, to assess the long-term efficacy of the treatment, they were followed up for a mean period of 18 months. The healing period after the operation ranged from 2 to 4 weeks.

Results (Tabl. 1-3)

The data was tabulated and results were analysed.

Sr No	Groups	Postoperative Complications		
		Postoperative necrosis	Nail spicules	Superficial chemical burns
1	I	1 (6.6%)	2 (13.3%)	1 (6.6%)
2	II	1 (6.6%)	1 (6.6%)	-

Table I. Postoperative complications

Sr No	Groups	Recurrence	
1	Group I	1	6.6%
2	Group II	3	20%

Table II. Recurrence in both the groups

Sr No	Groups	Success
1	Group I	98%
2	Group II	86.6%

Table III. Success rate after treatment

Discussion

In our study the mean age of the patient was 28 yrs. Males outnumbered females and male: female ratio was 2:1. A total of 42 nail ablations were done in 30 patients. The healing period ranged from 2-4 weeks. In group I, recurrence was seen in one patient, whereas in Group II patients, recurrences were seen in 3 patients. These patients were treated again using phenol matricectomy. In group I patients the surgical success rate was 98% and in group II, the surgical success rate was 86.6%. No patient complained about the cosmetic appearance of toe nail after the operation. Regarding the post operative complications, post operative necrosis was seen in 6.6% patients, in both the groups, nail spicules were seen in 13.3% patients in group I and 6.6% patients in group II. Superficial chemical burns were seen only in one patient in phenol ablation group (Group I).

There are various stages of ingrowing toe nail. In stage 1, there is erythema, slight edema and pain, particularly with pressure. In stage 2 (Fig. 1), there is an increase in the severity of symptoms, the wound becomes locally infected and starts to drain. In stage 3, all of signs and symptoms are amplified and there is associated formation of granulation tissue and lateral wall hypertrophy. There are many options for the treatment of ingrowing toenail, ranging from simple conservative approaches to relatively extensive surgical procedures requiring considerable surgical experience [6-8]. Conservative approaches include soaking the foot in

warm water; use of topical or oral antibiotics; silver nitrate cauterization of the granulation tissue proper nail-trimming technique; elevation of the corner of the nail with a small wisp of gauze or a plastic gutter; improvement of foot hygiene; and clipping a notch into the centre and requires patience from both doctor and patient. Because is time-consuming, demands a high level of patient cooperation third of thick nails [9-12]. This form of management is time-consuming, demands a high level of patient cooperation and requires patience from both doctor and patient. Because of the intensive support necessary, it is not a cheap method of treatment. However, the treatment of stage I disease is conservative management. Stage 2 disease can be managed conservatively but recurrences are frequently seen. Stage 2 and 3 ingrowing toenails are best treated surgically [13-16]. A chemo surgical technique for permanent matricectomy is ideal for the ingrowing toe nail (Fig. 2). Long-term follow-up is needed because symptoms may recur 1-2 years after the operation.

Segmental matrix cauterization with liquefied phenol has been shown to be highly successful in permanently destroying the lateral matrix [17,18]. Phenol (C₆H₅OH) is a colorless crystal derived from coal tar. Liquefied phenol (carbolic acid) has antibacterial, anesthetic and in its concentrated form, escharotic properties. For matricectomies, liquefied phenol is used at a saturated concentration of 88%.



Figure 1. Stage II ingrowing toe nail

The acid mediates its injury via denaturation of the matrix as well as any other soft tissue proteins with which it comes into contact [19].

We believe that the results of the studies with long-term follow-up periods are more important for evaluating the success of this procedure as recurrence may occur even 1 or 2 years later. Surgical techniques are an important factor in the success of this method. To avoid recurrence after phenol cauterization sufficient width of nail must be removed (a full quarter). Care must be taken not to leave nail spicules in the sulcus or under the eponychium. Phenol must be applied using sterile cotton-tipped applicators by vigorously massaging it in to the matrix area for a sufficient time (application for < 3 min results in high recurrence rates) [20,21] and absolute hemostasis must be obtained as blood partly neutralizes the cauterizing effect of phenol. Newer methods of segmental nail bed ablation, including electrodesiccation, sodium hydroxide treatment, negative galvanic current therapy and carbon dioxide laser treatment need further evaluation. In all the patients, the procedure was done on the hallux. The healing period ranged from 2-4 weeks.

Conclusions

The technique is easy to perform and is associated with little morbidity and has a success rate of 98%. Today, phenol cauterization is the treatment of choice for most podiatrists and physicians. We conclude that phenol cauterization is an excellent surgical method for the treatment of ingrowing toe nail because of its simplicity, low morbidity and high success rate. We conclude that phenol cauterization for the treatment of ingrowing toe nail is excellent because of its simplicity, low morbidity and high success rate. It can easily be done as an out patient procedure. Phenol cauterization is the treatment of choice in our institution. Long term follow up is needed because symptoms may recur 1-2 years after the operation.

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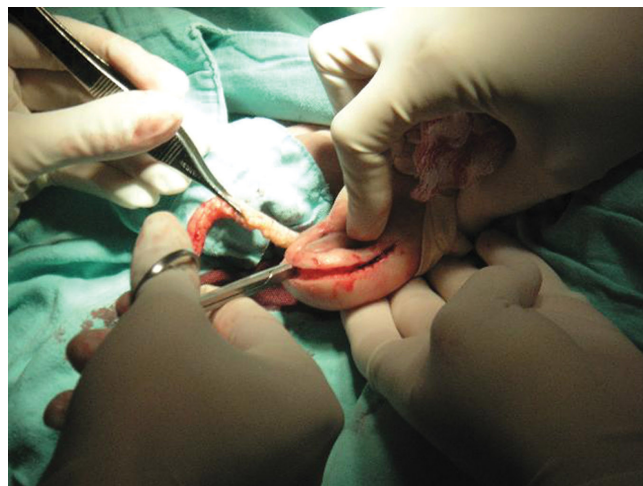


Figure 2. Intraoperative picture of ingrowing toe nail removal

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