ORIGINAL RESEARCH

Efficacy of 88% phenol versus 10% sodium hydroxide for chemical matricectomy in the management of ingrown toenails

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ABSTRACT

Background: An ingrown toenail occurs when the edge or corner of a toenail grows into the surrounding skin instead of over it. The present study was conducted to assess the efficacy of 88% phenol versus 10% sodium hydroxide for chemical mastoidectomy in the management of ingrown toenails. **Materials & Methods:**56 cases of matricectomyof both genders were divided into 2 groups of 28 each. Group I patients received 88% phenol and group II received 10% NaOH chemical matricectomy. Duration of complaints, the severity of ingrown toenails, duration of postoperative pain, duration of postoperative discharge, and time taken for tissue normalization were recoded. **Results:** Out of 56 patients, males were 30 and females were 26. The mean duration of complaints was 14.2months and 8.3months, the duration of postoperative pain was 7.6days and 16.2days, the duration of postoperative discharge was 15.1days and 18.5days, time taken for tissue normalization was 7.6days and 15.1 days in group I and group II respectively. The difference was significant (P< 0.05). **Conclusion:** Ingrown toenail treatment with 10% sodium hydroxide is just as effective as chemical matricectomy with 88% phenol.It provides a marginally improved adverse impact profile.

Keywords:toenail, matricectomy, sodium hydroxide

INTRODUCTION

An ingrown toenail occurs when the edge or corner of a toenail grows into the surrounding skin instead of over it. This condition is common and can cause pain, swelling, redness, and, in some cases, infection. Ingrown toenails often affect the big toe, but they can occur on any toe.[1,2]Cutting toenails too short or rounding the edges can encourage ingrown toenails.Wearing shoes that are too tight can compress the toes and force the nails to grow into the skin.Stubbing your toe or other trauma to the toe can sometimes lead to an ingrown toenail.Some people may have a genetic predisposition to ingrown toenails.[3]

A crucial part of treating ingrown toenails is lateral matricectomy or the destruction of the matrix's lateral horns. This can be accomplished surgically or, more frequently, by chemically destroying the lateral matrix (a process known as chemical matricectomy).One of the most often used and effective agents for decades has been phenol (88% solution); however, even when applied carefully, it might result in protracted postoperative drainage and delayed recovery.[4] It is common practice to examine alternative medications to reduce postoperative morbidity.An alternative that has been demonstrated to be safe, effective, and to cause less postoperative drainage is sodium hydroxide (NaOH; 10% solution); however, long-term efficacy data are limited.[5]The present study was conducted to assess the efficacy of 88% phenol versus 10% sodium hydroxide for chemical matricectomyin the management of ingrown toenails.

MATERIALS & Methods

The present study consisted of 56 cases of matricectomyof both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 28 each. Group I patients received 88% phenol and group II received 10% NaOH chemical matricectomy.Duration of complaints, the severity of ingrown toenails, duration of postoperative pain, duration of postoperative discharge, time taken for tissue normalization were

recoded.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 56		
Gender	**Male**	**Female**
Number	30	26

Table I shows that out of 56 patients, males were 30 and females were 26.

Table II Assessment of parameters

Parameters	Group I	Group II	P value
Duration of complaints (months)	14.2	8.3	0.01
duration of postoperative pain (days)	7.6	16.2	0.01
duration of postoperative discharge(days)	15.1	18.5	0.05
time taken for tissue normalization(days)	7.6	15.1	0.01

Table II, graph I shows that the mean duration of complaints was 14.2monthsand 8.3months, the duration of postoperative pain was 7.6daysand 16.2days, the duration of postoperative discharge was 15.1daysand 18.5days, time taken for tissue normalization was 7.6daysand 15.1 days in group I and group II respectively. The difference was significant (P< 0.05).

Graph I Assessment of parameters

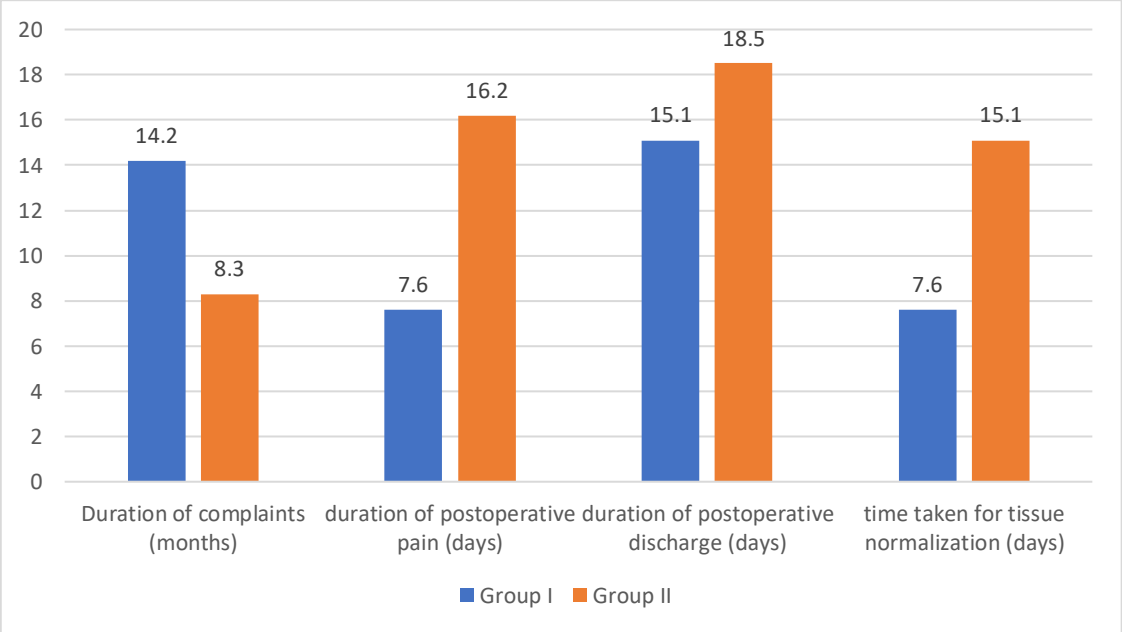

Table III Comparison of severity of ingrown toenail

Stage	Group I	Group II	P value
Stage 1	10	7	0.05
Stage 2	6	10	
Stage 3	12	11	

Table III shows that the severity of ingrown toenailin group I and group II was stage 1 in 10 and 7, stage 2 in 6 and 10 and stage 3 in 12 and 11 patients respectively. The difference was significant (P< 0.05).

DISCUSSION

Ingrown toenail is one of the most common painful nail conditions presenting to a dermatologist.[6] It is a result of the lateral edge of the nail plate getting embedded in the nail fold (where it acts as a foreign body) resulting in a cascade of inflammation, infection and the reparative process.[7] The condition most commonly involves the great toes and mainly affects young adults.[8,9]The present study was conducted to assess the efficacy of 88% phenol versus 10% sodium hydroxide for chemical matricectomy in the management of ingrown toenails.

We found that out of 56 patients, males were 30 and females were 26.Grover et al[10]in their study patients with ingrown toenails were alternately allocated into two treatment groups in the order of their joining the

study, to receive either 88% phenol (Group 1, n = 26) or 10% NaOH (Group 0, n = 23) chemical matricectomy. Both the groups responded well to treatment with the median duration of postoperative pain being 7.92 days in Group 0 and 16.25 days in Group 1 (P < 0.202). Postoperative discharge continued for a median period of 15.42 days (Group 0) and 18.13 days (Group 1) (P < 0.203). The tissue condition normalized in 7.50 days (Group 0) and 15.63 days (Group 1) (P < 0.007).

We found that the mean duration of complaints was 14.2months and 8.3months, the duration of postoperative pain was 7.6days and 16.2days, the duration of postoperative discharge was 15.1days and 18.5days, the time taken for tissue normalization was 7.6days and 15.1 days in group I and group II respectively. Ozdemir et al[11] in their study a total of 156 partial chemical matricectomy procedures were performed with 10% sodium hydroxide in 60 patients divided into two groups. The first group (80 nail sides) received a 2-minute application of sodium hydroxide, whereas the second group (76 nail sides) received a combination of curettage of the lateral matrix area and a 1-minute application of sodium hydroxide. Postoperative pain, drainage, and tissue damage were evaluated 2 days after the operation and at three more visits with weekly intervals. Partial matricectomy with 10% sodium hydroxide was found to be 100% successful in both of the groups (P>0.05). Postoperative pain and tissue damage were either absent or minimal in the great majority of the patients with no statistical difference between the two groups (P>0.05). On the 2nd day, more patients in the first group experienced mild drainage than the patients in the second group (P=0.001), but in the following control visits, this difference disappeared.

Kocyigit et al[12]evaluated the optimal sodium hydroxide application period providing high success rates with minimal postoperative morbidity.Sixty-six patients with 225 ingrown nail edges were treated in three groups receiving 30-second, 1-minute, and 2-minute applications of sodium hydroxide. Each patient was reviewed postoperatively for pain, drainage, and tissue damage. The median long-term follow-up period was 14 months.The success rate of the therapy was 70.9% in the first group, 92.7% in the second group, and 94.4% in the third group. In all groups, about half of the patients experienced minimal pain within 48 hours following the operation, but only in the third group, 20% of the patients had minimal pain, which continued about 1 week. Drainage and tissue damage were minimal or mild in all groups and disappeared within 3 weeks in the first and second groups but were prolonged to 6 weeks in the third group.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that ingrown toenail treatment with 10% sodium hydroxide is just as effective as chemical matricectomy with 88% phenol. It provides a marginally improved adverse impact profile.

REFERENCES

1. Tatlican S, Yamangöktürk B, Eren C, Eskioğlu F, Adiyaman S. Comparison of phenol applications of different durations for the cauterization of the germinal matrix: An efficacy and safety study. Acta OrthopTraumatolTurc2009;43:298-302.
2. Byrne DS, Caldwell D. Phenol cauterization for ingrowing toenails: A review of five years' experience. Br J Surg1989;76:598-9.
3. Bostanci S, Kocyigit P, Gürgey E. Comparison of phenol and sodium hydroxide chemical matricectomies for the treatment of ingrowing toenails. Dermatol Surg2007;33:680-5.
4. Bostanci S, Ekmekçi P, Gürgey E. Chemical matricectomy with phenol for the treatment of ingrowing toenail: A review of the literature and follow-up of 172 treated patients. Acta Derm Venereol2001;81:181-3.
5. Travers GR, Ammon RG. The sodium hydroxide chemical matricectomy procedure. J Am Podiatry Assoc 1980;70:476-8.
6. Yang KC, Li YT. Treatment of recurrent ingrown great toenail associated with granulation tissue by partial nail avulsion followed by matricectomy with a Sharpulse carbon dioxide laser. Dermatol Surg2002;28:419-21.
7. Espensen EH, Nixon BP, Armstrong DG. Chemical matricectomy for ingrown toenails: Is there an evidence basis to guide therapy? J Am Podiatr Med Assoc 2002;92:287-95.
8. Baran R, Haneke E. Matricectomy and nail ablation. Hand Clin 2002;18:693-7. 16. Siegle RJ, Stewart R. Recalcitrant ingrowing nails: Surgical approaches. J Dermatol Surg Oncol 1992;18:744-52.
9. Chiacchio ND, Belda W Jr, Chiacchio NG, Kezam Gabriel FV, de Farias DC. Nail matrix phenolization for treatment of ingrowing nail: Technique report and recurrence rate of 267 surgeries. Dermatol Surg2010;36:534-7
10. Grover C, Khurana A, Bhattacharya SN, Sharma A. Controlled trial comparing the efficacy of 88% phenolversus 10% sodium hydroxide for chemical matricectomy in the management of ingrown toenail. Indian J Dermatol VenereolLeprol2015;81:472-7.
11. Ozdemir E, Bostanci S, Ekmekci P, Gurgey E. Chemical matricectomy with 10% sodium hydroxide for the treatment of ingrowing toenails. Dermatol Surg2004;30:26-31.
12. Kocyigit P, Bostanci S, Ozdemir E, Gürgey E. Sodium hydroxide chemical matricectomy for the treatment of ingrown toenails: Comparison of three different application periods. Dermatol Surg2005;31:744-7.