ORIGINAL RESEARCH

Efficacy of 88% phenol and 10% sodium hydroxide for chemical matricectomy in the management of ingrown toenails- A comparative study

Dr. Avnish Goel

Assistant Professor, Department of Dermatology, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India

Corresponding Author
Dr. Avnish Goel
Assistant Professor, Department of Dermatology, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India

Received: 14 June, 2014 Accepted: 17 July, 2014

ABSTRACT

Background: When a toenail's edge or corner grows into the surrounding skin rather than over it, it's known as an ingrown toenail. The present study compared efficacy of 88% phenol and 10% sodium hydroxide for chemical matricectomy in the management of ingrown toenails. **Materials & Methods:** 80 patients of matricectomy of both genderswere divided into 2 groups of 40 each. Group I patients received 88% phenol and group II received 10% NaOH chemical matricectomy.Recoded were the length of complaints, the degree of ingrown toenails, the length of postoperative pain, the length of postoperative discharge, and the amount of time needed for tissue normalization. **Results:** Out of 80 patients, 47 were males and 33 were females. The mean duration of complaints was 13.2 months and 9.5 months, the duration of postoperative pain was 7.3 days and 16.1 days, the duration of postoperative discharge was 15.4 days and 18.3 days, time taken for tissue normalization was 7.2 days and 15.4 days in group I and group II respectively. The difference was significant (P< 0.05). The severity of ingrown toenail in group I and group II was stage 1 in 15 and 16, stage 2 in 8 and 10 and stage 3 in 17 and 14 patients respectively. The difference was significant (P< 0.05). **Conclusion:** For ingrown toenails, 10% sodium hydroxide therapy is just as effective as 88% phenol chemical matricectomy. Its adverse impact profile is marginally superior.

Keywords: toenail, sodium hydroxide, matricectomy

INTRODUCTION

When a toenail's edge or corner grows into the surrounding skin rather than over it, it's known as an ingrown toenail.[1] Pain, swelling, redness, and occasionally infection can be symptoms of this frequent illness. Although they can happen on any toe, ingrown toenails most frequently affect the big toe.[2] Ingrown toenails can be encouraged by rounding the edges or cutting them excessively short. Excessively tight shoes can squeeze the toes and push the nails into the flesh. An ingrown toenail can occasionally result from trauma to the toe, such as a stub. A genetic susceptibility to ingrown toenails may exist in certain individuals.[3]

Lateral matricectomy, or the removal of the matrix's lateral horns, is an essential component of treating ingrown toenails.[4] Either surgery or, more commonly, chemical matricectomy—the destruction of the lateral matrix—can be used to achieve this.[5] Phenol (88% solution) has been one of the most widely used and successful agents for decades; yet, even with cautious application, it may cause prolonged postoperative drainage and delayed recovery. Examining alternate drugs to lower postoperative morbidity is standard procedure. Although there are few long-term efficacy studies, sodium hydroxide (NaOH; 10% solution) has been shown to be a safe, effective substitute that also reduces postoperative drainage.[6,7]The present study compared efficacy of 88% phenol and 10% sodium hydroxide for chemical matricectomy in the management of ingrown toenails.

MATERIALS & METHODS

The present study consisted of 80 patients of matricectomy of 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 40 each. Group

I patients received 88% phenol and group II received 10% NaOH chemical matricectomy.Recoded were the length of complaints, the degree of ingrown toenails, the length of postoperative pain, the length of postoperative discharge, and the amount of time needed for tissue normalization. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 80		
Gender	**Male**	**Female**
Number	47	33

Table I shows that out of 80 patients, 47 were males and 33 were females.

Table II Assessment of parameters

Parameters	Group I	Group II	P value
Duration of complaints (months)	13.2	9.5	0.01
duration of postoperative pain (days)	7.3	16.1	0.02
duration of postoperative discharge (days)	15.4	18.3	0.04
time taken for tissue normalization (days)	7.2	15.4	0.01

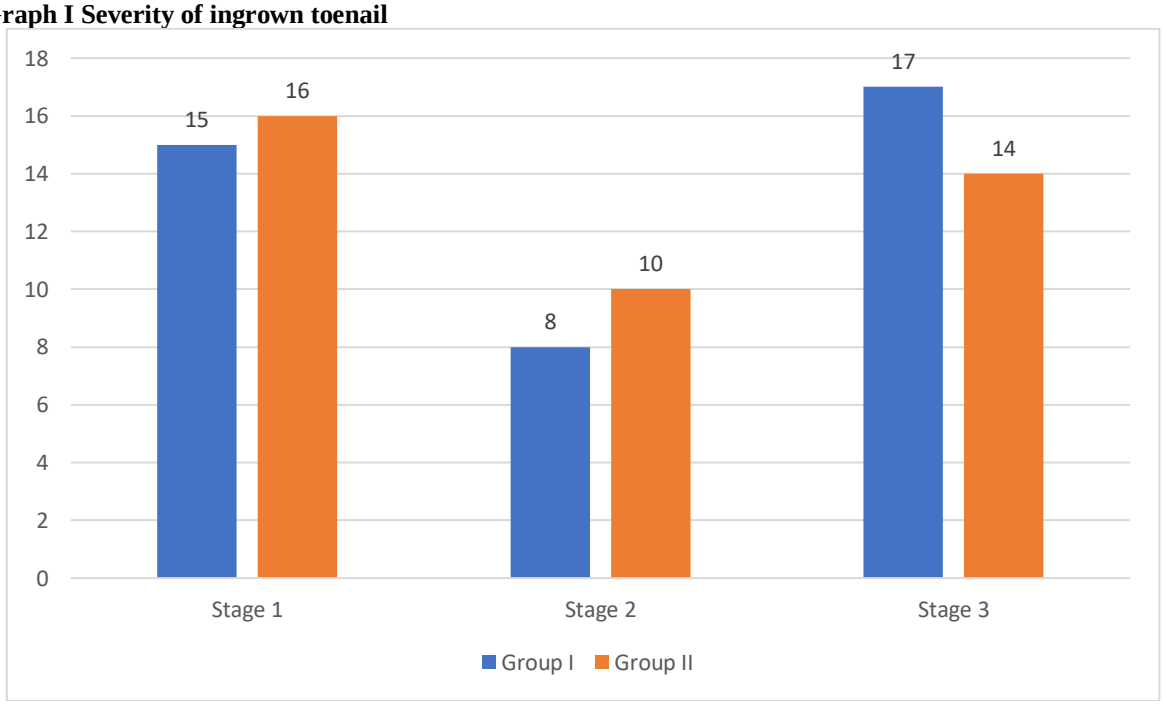
Table II shows that the mean duration of complaints was 13.2months and 9.5months, the duration of postoperative pain was 7.3days and 16.1days, the duration of postoperative discharge was 15.4days and 18.3days, time taken for tissue normalization was 7.2days and 15.4 days in group I and group II respectively. The difference was significant (P< 0.05).

Table III Severity of ingrown toenail

Stage	Group I	Group II	P value
Stage 1	15	16	0.05
Stage 2	8	10	
Stage 3	17	14	

Table III, graph I shows that the severity of ingrown toenail in group I and group II was stage 1 in 15 and 16, stage 2 in 8 and 10 and stage 3in 17 and 14 patients respectively. The difference was significant (P< 0.05).

Graph I Severity of ingrown toenail



DISCUSSION

One of the most frequent painful nail disorders that patients bring to a dermatologist's attention is ingrown toenails.[8] A chain reaction of inflammation, infection, and the healing process is caused when the lateral edge of the nail plate becomes lodged in the nail fold, acting as a foreign body. Young individuals are primarily affected by the condition, which most frequently affects the great toes.[9]

We found that out of 80 patients, 47 were males and 33 were females.Kocyigit et al[10] assessed the best time to apply sodium hydroxide, which resulted in excellent success rates and low postoperative morbidity. Three groups of sixty-six patients with 225 ingrown nail edges were treated with sodium hydroxide treatments lasting thirty seconds, one minute, and two minutes. After surgery, each patient was examined for tissue injury, discomfort, and drainage. 14 months was the median length of the long-term follow-up. In the first group, the therapy's success rate was 70.9%; in the second group, it was 92.7%; and in the third group, it was 94.4%. Within 48 hours after the procedure, almost half of the patients in all groups reported having little pain; however, only 20% of the patients in the third group reported having little pain for at least a week. All groups saw little to no tissue injury or drainage, which went away in the first and second groups after three weeks, but took six weeks in the third.

We found that the mean duration of complaints was 13.2months and 9.5 months, the duration of postoperative pain was 7.3 days and 16.1 days, the duration of postoperative discharge was 15.4 days and 18.3 days, time taken for tissue normalization was 7.2 days and 15.4 days in group I and group II respectively. We found that the severity of ingrown toenail in group I and group II was stage 1 in 15 and 16, stage 2 in 8 and 10 and stage 3 in 17 and 14 patients respectively. In their study, Ozdemir et al[11] separated 60 patients into two groups and performed 156 partial chemical matricectomy surgeries using 10% sodium hydroxide. While the second group (76 nail sides) received a combination of curettage of the lateral matrix area and a 1-minute application of sodium hydroxide, the first group (80 nail sides) received a 2-minute application of sodium hydroxide. Two days following the procedure and at three further visits spaced one week apart, postoperative discomfort, drainage, and tissue damage were assessed. In both groups, partial matricectomy using 10% sodium hydroxide was 100% successful ($P>0.05$). The vast majority of patients had either no postoperative discomfort or very little tissue damage, and there was no statistically significant difference between the two groups ($P>0.05$). More patients in the first group than those in the second group had mild drainage on the second day ($P=0.001$), but this difference vanished over the subsequent control visits. The limitation of the study is the small sample size.

CONCLUSION

Authors found that for ingrown toenails, 10% sodium hydroxide therapy is just as effective as 88% phenol chemical matricectomy. Its adverse impact profile is marginally superior.

REFERENCES

1. Bostanci S, Kocyigit P, Gürgey E. Comparison of phenol and sodium hydroxide chemical matricectomies for the treatment of ingrowing toenails. Dermatol Surg 2007;33:680-5.
2. 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 Venereol 2001;81:181-3.
3. Travers GR, Ammon RG. The sodium hydroxide chemical matricectomy procedure. J Am Podiatry Assoc 1980;70:476-8.
4. 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 Surg 2002;28:419-21.
5. 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 Orthop Traumatol Turc 2009;43:298-302.
6. Byrne DS, Caldwell D. Phenol cauterization for ingrowing toenails: A review of five years' experience. Br J Surg 1989;76:598-9.
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 Surg 2010;36:534-7
10. 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 Surg 2005;31:744-7.
11. Ozdemir E, Bostanci S, Ekmekci P, Gurgey E. Chemical matricectomy with 10% sodium hydroxide for the treatment of ingrowing toenails. Dermatol Surg 2004;30:26-31.