### **Original Research Article**

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# Results of Winograd technique (wedge resection of the toenail and nail bed) in ingrown toe nail

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#### **ABSTRACT**

**Background:** Ingrown toe nail is a very common condition affecting toes which causes significant morbidity. Most common reasons are improper nail trimming or a tight show wear. Early stages can be managed conservatively by warm soaks, antibiotics and analgesics, however late stages need surgical intervention. Numerous surgical techniques have been described for this condition.

**Methods:** A prospective study was carried out in District hospital Doda from November 2015 to November 2017. Wedge resection of the toe nail and nail bed (Winograd technique) was used. Recurrence rates, complications and patient satisfaction was noted at the end of follow up at one year.

**Results:** We operated 29 toes in 23 patients. We had 3 (10.34%) recurrences out of 29 toes operated, 2 (6.89%) patients got secondarily infected. The overall satisfaction rate in our series was 69.56%.

**Conclusions:** Winograd technique is an easy and safe procedure, however chances of recurrence and cosmetic disfigurement should be explained to the patient during consent.

Keywords: Ingrown toe nail, Winograd technique

#### INTRODUCTION

called Onvchocryptosis Ingrown toenail also (Greek onyx nail and kryptos hidden) is a very common condition affecting toe nails. It is a painful condition and untreated can get infected secondarily leading to discharge, foul smelling feet and difficulty in wearing foot wear. Predominantly great toe is involved. Mostly adolescents and young adults are affected. The risk factors for development of ingrown toenail are improper trimming of nails, tight toe-box of footwear, excessive sweating of feet, or nail abnormalities. 2,3 Diagnosis is clinical, and treatment modality range from conservative a spectrum of surgical approaches. Various classifications systems have been used to stage the ingrown toenails. Commonest ones are Heifetz, Frost. 4,5 Which are shown in Table 1.

Treatment modality depends on symptoms and the stage of the disease. Heifetz stage 1 and early stage 2 can be treated conservatively while as stage 3 with purulent discharge and severe pain need a surgical intervention. Conservative management includes modifying shoewear with a wide toebox or open toe. Trimming nails in a square shape and avoid cutting in curved manner back to lateral margin. Washing toes in warm soap water or using hydrogen peroxide and iodine for cleaning also gives relief. Diabetic patients need to be specially identified and proper care taught to them. Once the nail has embedded in the lateral grove, techniques to lift if off by either a gutter splint, cotton wick or a dental floss can be used<sup>7,8</sup>. There are various surgical treatment options for ingrown toenails, although none of the techniques have been able to establish themselves as the technique of choice. The available techniques for treatment of stages 2

and3 ingrown nails are total removal of the nail, partial or total excision of the germinal matrix, partial or total chemical matricectomy, Winograd method, Bartlett method, knot technique and partial resection of the nail bed and matrix. Simple nail avulsion alone leads to high

recurrence rates, up to 70%. Winograd technique is the most common technique used.

The aim of this study is to determine the efficacy, satisfaction rate and complications of the Winograd technique.

Table 1: Classification of ingrown toenail.

Heifetz classification		Frost classification	
Stage I	Slight erythema and swelling of the nail grooves in the nail bed.	Stage I	Nails have spur formation in the lateral nail fold that occurs due to irregular nail growth in a normal nail bed.
Stage II	Presence of acute infection and suppuration.	Stage II	Nails have inwards folding of the lateral border of the nail bed (concave nail).
Stage III	Chronic infection, the formation of granulation tissue surrounding the nail groove and hypertrophy of the surrounding tissues.	Stage III	Nails have a normal nail bed accompanied by soft tissue hypertrophy in the lateral border, hypertrophy of the surrounding tissues.

#### **METHODS**

This prospective study was done in District Hospital Doda over a period of two years from November 2015 to November 2017. All patients presenting to Hospital for ingrown toe nail were staged according to Heifetz classification, only stage 2 and stage 3 were included in the study, patients with diabetes or insensate foot, peripheral vascular disease or recurrence after Winograd procedure were excluded from the study. All patients underwent mandatory lab investigations for bleeding time, clotting time, screening for retrovirus and hepatitis B and C, and blood sugar levels.

Patients were followed up to a period of minimum one year. Recurrence rate of the procedure in over series was calculated at end of follow up of all patients included. Patients were asked to rate procedure satisfactory or unsatisfactory at the last follow up. All complications were noted.

#### Surgical technique

Foot was prepared by chlorhexidine and sterile drapped. 5ml 2% Xylocaine was infiltrated on medial side of first MTP joint and into first web space to numb the toe. A single dose of injection ceftriaxone was used for prophylaxis. A sterile glove tourniquet was used. A wedge containing the nail portion upto germinal matrix and the hypertrophied soft tissue upto level of bone were excised. The remaining soft tissue was stitched to the nail as shown in figure. A sterile dressing was placed with compression bandaging. Patient was discharged same day with advice to elevate foot for 24 hours and few doses of oral analgesics. First dressing change was done at 48 hours. Stitched were removed at 2 weeks. Patients were followed monthly till 6 months and then every three months till one year.

#### **RESULTS**

We included 29 toes in 23 patients. We had only 2 (8.69%) females out of 23 patients. The age ranged from 15 years to 54 years with average age of 31.6 years. We had 6 (26.08%) patients with bilateral involvement, 11 (47.82%) with right great toe involvement and 6 (26.08%) left toe involvement. 18 (62.06%) toes had stage 2 and 11 (37.93%) toes had stage 3 disease.

As shown in Table 2, we had 3 (10.34%) recurrences which needed another procedure. Secondary infection occurred in 2 patients (6.89%), one of which later showed changed of chronic osteomyelitis, which settled only after excision of part of terminal phallnx. We had one wound dehiscence which settled after regular dressings.

**Table 2: Complications.** 

Complications	No of patients
	N (%)
Recurrence	3 (10.34)
Secondary infection	2 (6.89)
Wound dehisence	1 (3.45)

Table 3: Final results.

Patients (n=23)	Satisfied	Unsatisfied
1 attents (H-23)	N (%)	N (%)
Male (20)	15 (75)	5 (25)
Female (3)	1 (33)	2 (66)
<b>Total (23)</b>	16 (69.56)	7 (30.43)

At the end of follow up, 16 (69.56%) patients were satisfied with the procedure, while 7 (30.43%) patients were not satisfied. Two out of seven patients (both females) were not satisfied due to cosmetic appearance of the nail (Table 3).

#### **DISCUSSION**

The ingrown toenail is a common source of morbidity worldwide and affects the quality of life of an individual. In patients with a mild to moderate ingrown toenail conservative therapy is a reasonable approach. It provides a cost-effective approach which reduces the need for a surgical procedure and it has short-term disability and pain, however their value in the management of ingrown toe nail remain unproved. <sup>10</sup>

Muhammad et al pointed that ingrowing toe nail may be prevented by careful cutting of the nails especially at the corners, avoidance of tight shoes, keeping the foot dry and clean. Kuru et al also made the similar observations.

There are many surgical procedures which have been used by the surgeons. The number of surgical methods for the treatment of ingrown nails is so large that its hardly possible that anyone knows them all. New methods continue to be published. Many of them are just minor variations of old surgical techniques. <sup>13</sup>

The recurrence rates with the Winograd technique show great variation among different studies. Gerritsma-Bleeker et al reported 21% recurrence rate after partial matrix excision. Aydin et al reported 6.5% recurrence in their series. However, their mean follow-up duration was short, 4.2 months (range=4-7 months). Azkan Kose et al had 13.2% recurrence rate in patients who were followed up. However, 24 patients who were lost to follow-up had recurrence rate as high as 34.6%. Our series had a recurrence rate of 10.34% despite the fact we had a follow up of one year.

The satisfaction rate in our series was 69.56%, the dissatisfaction was not only due to complications or recurrences but also due to the cosmetic appearance of the toe. Female patients were particularly dis-satisfied with the appearance of the nail, which was narrower than the other toe nail. Kose et al also had same observations, his study showed female gender was more prone to dissatisfaction over cosmetic appearance.<sup>16</sup>

Complications are frequent in all the series, wound infection is the most common complication after recurrence, even reports of fungal septicaemia after the procedure have been reported. Tour series had a secondary infection rate of 6.89% which is comparable to the literature.

#### CONCLUSION

Winograd technique is an easy and safe procedure, with acceptable recurrence rates and complications. HoweverAll patients should be informed about the

possibility of recurrence and cosmetic disfigurement in their toenails, particularly female patients.

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