

# Outcome of Partial Nail Plate and Matrix Removal (Winograd Technique) for Ingrown Toe Nail

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## ABSTRACT

**INTRODUCTION:** Ingrown toe nails are one of the common and painful condition of foot. The most common presentation is distal lateral ingrowing. When the conservative treatment fails, problem is recurrent or if the lesion is more severe, surgical treatment is advised. Surgical treatment consists of partial or complete nail excision in combination or without partial matricectomy. This study highlights the results of surgical intervention with Winograd technique.

**MATERIAL AND METHODS:** The study was conducted at Liaquat university hospital and a private practice setup between January 2010 and July 2011. The inclusion criteria was adult patients of either sex with ingrown toe nail in stage two and three involving big toe. A total of 70 patients were enrolled in the study. Sixty five patients with 65 toes were finally registered for follow up. Winograd surgical technique was used for excising lateral 20% to 25% of the ingrown nail with matrix removal. Primary outcome measures were, well healed wound, pain free toe, and no recurrence. Secondary outcome measures were post operative infection and recurrence within one year after surgery.

**RESULTS:** Thirty (46.15%) patients were male and 35(53.85%) female. Their mean age was 27.30 years (range 20 to 45 years). The mean follow up period was 9.46 Months. Twenty five patients (38.46%) were in stage II and 40(61.54%) were in stage III. Fifty eight patients (89.23%) recovered uneventfully with no postoperative complications. Their mean recovery time was, 13.62 days. Early postoperative complications were seen in seven (10.76%) patients. Two had swelling and 5 patients (7.69%) develop postoperative infection. These seven patients with infection and swelling recovered in the mean time of 20.71 days, whereas all recovered in the mean time of 14.38 days. Recurrence was seen in 4.61% within a mean period of 5 months. With chi square test only 3 cases had recurrence and 62 behave satisfactory with p value of  $P < 0.0001$ . All the Ten patients (15.38%) who develop complications belong to Heifetz stage III at the time of surgery. Sixty two out of 65 patients (92.30%) were satisfied with the treatment.

**CONCLUSION:** The Winograd technique of partial nail plate and matrix removal is inexpensive, effective, safe and easy to perform. The procedure has low recurrence rate. The postoperative complications are more common in patients presenting with Heifetz stage III disease.

**KEY WORDS:** Ingrown, toenail, wingograd technique.

## INTRODUCTION

Ingrown toe nails are one of the common and painful conditions of foot. There is no agreement on the etiology of the condition. The usually blamed factors are congenital predisposition, tight shoes, trauma, rounded trimming of nail, and hyperhidrosis and hypertrophy of nail folds.<sup>1,2</sup>

The most common presentation is distal lateral ingrowing involving big toe. The nail plate appears curved, the distal lateral corners are found cut obliquely, which leaves a tiny spicule digging into the lateral nail groove, and later on it pierces the epidermis when nail grows forward. A foreign body reaction develops resulting into inflammation, granulation tissue formation and secondary bacterial colonization and infection.<sup>3</sup>

Some authors believe that in patients with ingrowing

toe nail the soft tissue is defective so they advise to remove the soft tissue.<sup>4</sup> While others believe that the nail is wide and the nail bed is narrow, hence they suggest narrowing of the nail plate.<sup>5</sup>

According to Heifetz staging, Ingrown toe nail can have three stages. In Stage 1, there is erythema and swelling at the lateral nail fold. In stage 2, there is pain, signs of bacterial infection and discharge, and stage 3, is characterized by formation of hypertrophic granulation tissue at the lateral wall, indicating chronic inflammation.<sup>6</sup>

Mostly conservative treatment is advised to patients having ingrown toe nail in stage 1. When the conservative treatment fails, problem is recurrent or if the lesion is more severe, surgical treatment is advised.<sup>7</sup>

Surgical treatment, mostly indicated in stage II and III, consists of partial or complete nail excision in

combination or without partial matricectomy.<sup>8</sup>

The nail bed is made of two parts, the sterile matrix and germinal matrix. The nail growth occurs from the germinal matrix, which lies under the nail root and the lanula.<sup>9</sup>

For the treatment of ingrown toenail, it is recommended that the germinal matrix should be either resected or chemical ablation of the same should be done. The cure rates of up to 90% are reported for chemical ablation.<sup>10</sup> It has also been reported that success rate of chemical ablation are not good in patients with recurrent ingrown toe nail.<sup>11</sup>

The alternative methods for the management of ingrown toe nail are partial matricectomy by electrocautery, radiofrequency, and carbon dioxide. These methods give advantage of reduced bleeding, immediate sterilization of infected tissue, and less pain. The disadvantages are prolonged healing time, and expensive equipment.<sup>12,13.</sup>

The Winograd surgical technique for the ingrown toe nail is easy. It requires no special equipment. It can be performed in outpatient department and in clinic, and very limited assistance is required.

The purpose of this study was to evaluate the results of surgical intervention (Winograd technique)<sup>14</sup> in the treatment of ingrown toe nail.

## **MATERIAL AND METHODS**

The study was conducted at Liaquat university hospital and a private practice setup between January 2010 and July 2011. The patients included were adult patients of either sex with ingrown toe nail in Heifetz stage two and three involving big toe. The patients with diabetes mellitus, peripheral vascular disease, and those refusing surgery under local anesthesia, were excluded. A total of 70 patients were enrolled in the study. Five patients were lost to follow up.

Informed consent was taken for the surgery. The patients were placed supine on the operating table with the affected leg hanging off the end of the table. All patients were operated under local anesthesia and digital tourniquet. The preoperative sterile preparations were made, and digital nerve block was given with 2% lidocain without adrenaline.

The lateral 20% to 25% of the ingrown nail was identified as a site for partial nail plate and matrix removal as described by Winograd.<sup>14</sup> Starting 5-6 mm proximal to lunula, a longitudinal incision was made in the eponychium extending distally, scoring but not penetrating the nail plate until its distal edge is reached. The eponychial flap was lifted by sharp dissection to reveal the nail root overlying the lateral margin of the germinal matrix. The remainder of the eponychium was left undisturbed.

Using small hemostat the lateral border of the nail was

lifted out of the nail fold. The nail margin was incised along the previously scored mark until proximal edge of the nail plate was reached. The nail segment was removed, exposing the underlying matrix. The exposed matrix was then removed by scalpel. The lateral nail fold was exposed and the lateral margin of the matrix, the sterile and germinal portions, and also the proximal portion of the matrix was removed to prevent the recurrence. The periosteum of the phalanx was also removed along with matrix. All the hypertrophied tissue was removed. Distal phalanx was cleaned up by curette. The proximal eponychial flap was replaced to its original location. The non adherent dressing was applied.

Oral analgesics and antibiotics were prescribed for 3 days postoperatively. First post operative dressing was changed after 48 hours and then repeated every 48 hours till the wound healed. Thereafter all the patients were called for follow up at one monthly interval. Primary outcome measures were, well healed wound, pain free toe, and no recurrence. Secondary outcome measures were post operative infection and recurrence within one year after surgery.

## **RESULTS**

Out of 65 patients enrolled with complete follow up, 30 (46.15%) were male and 35(53.85%) female. The mean age was 27.30 years (range 20 to 45 years) with mean follow up period was 9.46 Months. (Range 8-12 months).

Regarding the habit of shoe wear, 45/65 (69.23%) use to wear shoes for a minimum of 8 hours per day. The remaining 20/65 (30.7%) patients wear open footwear with straps, most of the time.

Twenty five patients (38.46%) were in stage II and 40 (61.54%) were in stage III.

Twenty two had previous surgery on same toe (16 complete nail plate removal without removal of matrix and 6 partial nail plate removal without removal of matrix.) and develop recurrence. The 58 (89.23%) recovered uneventfully with no postoperative complications. Their mean recovery time was, 13.62 days. (Range 12-15 days).

Seven (10.76%) patients develop complications. Two had swelling in operated digit postoperatively which subsided in one week time with restricted activity and elevation of limb during sleep. The other 5 patients (7.69%) had postoperative infection. They were treated with oral antibiotics (ciprofloxacin 500 mg BD) for 6 days. These seven patients with infection and swelling recovered in the mean time of 20.71 days. (Range 18-25 days).

All 65 patients recovered in the mean time of 14.38 days. (range 12 to 25 days) whereas the late recurrence was seen in 3 out of 65 patients (4.61%) within

a mean period of 5 months (range 4-6 months). Only 3 had recurrence and in 62 cases results were satisfactory with p value of  $P < 0.0001$ . These patients with recurrence were offered surgery again.

All the Ten patients (15.38%) who develop complications belong to Heifetz stage III at the time of surgery. There were no neurovascular complications or deep infection. Five female patients show some concern that the operated nail appears a bit narrow but at the same time they were satisfied with the treatment. Sixty two out of 65 patients (92.30%) were satisfied with the treatment.

## DISCUSSION

Our patients were pre dominantly female and younger age group. Majority have to wear shoes more than eight hours per day in mostly hot climate in this region. This may suggest that tight shoes along with perspiration may predispose for developing this condition.

Twenty two of our patients had previous history of complete and partial nail plate removal without removal of matrix. Winograd operation was successful in all of these patients. Although Winograd found unnecessary to excise the hypertrophic folds, We find it quiet useful to remove and curette the folds along with hypertrophic granulation. Recurrence was seen in 3 (4.61%) digits, in the mean period of 5 months (range 4-6 months). the reason could well be inadequate removal of germinal matrix.

Kose O et,al reported 13.2% recurrence. The mean time to recurrence in their study was 6.7 months (range 2-12monhs).<sup>15</sup> This is little higher than our study. Kayalar M et al reported 9.8% recurrence.. Herold N et al reported 5.5% recurrence rate after wedge matrix resection. . Recurrence rate in our patients was far less than that reported in the literature.<sup>15,16,17</sup>

In Two patients with postoperative swelling and five with postoperative infection, the reason was inadequate debridement of infected granulation tissue during surgery. These seven patients recovered very well by conservative means although there recovery was delayed. All the complications were seen in patients reporting with Heifetz stage III, indicating the relationship of complication with late presentation.

Post operative infection rate in our patients was 7.69% (5 digits). Peyvandi H et, al, reported, 6% Postoperative infection.<sup>18</sup> In our study the postoperative infection rate was higher as compared to another study.

We removed 20% to 25% of nail plate. This gives somewhat narrow nail plate after complete recovery. We noticed that this cosmetic appearance was acceptable to most of our patients. Only five female patients show some concern but they were satisfied with

the results. Overall patient satisfaction rate in our study was 92.30%.

## CONCLUSION

The Winograd technique of partial nail plate and matrix removal in inexpensive, effective safe and easy to perform. The procedure has low recurrence rate. The postoperative complications are more common in patients presenting with Heifetz stage III disease. Narrowing of nail plate is the only disadvantage. Patients should be informed about this before surgery.

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