

Tarsal Tunnel Release: Medium-term Outcomes and Complications

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Disclosure

The authors have no conflicts to disclose.

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Introduction

- Tarsal tunnel release is a standard surgical treatment for patients who have tarsal tunnel syndrome and failure of conservative treatment.¹⁻⁴
- However, there remains little evidence demonstrating the medium-term of functional outcomes and complications of tarsal tunnel release.¹⁻³
- The purpose of this study was to report functional outcomes and complications of tarsal tunnel release.



Materials and methods

- **Retrospective chart review** with prospectively collected data of 79 consecutive patients with 87 feet (primary surgery = 74/80 and revision surgery = 5/5) who were diagnosed with tarsal tunnel syndrome and underwent tarsal tunnel release between 2008 and 2014.

Diagnosis bases on history and physical examination.

All patients were failure of conservative treatment at least 6 weeks and the minimum follow up to be included in the study was 12 months (mean, 32.2 months; range, 12 to 80 months).

Materials and methods

- **The primary outcome** included
 - Visual Analogue Scale (VAS),
 - Foot Function Index (FFI, pain, disability, activity limitations, and total scores),
 - Short Form-36 (SF-36, PCS and MCS)
- **The secondary outcomes** included
 - Operative time
 - Time to return to daily activities, works, and sports.
 - Complications.

- **Statistic Analysis**

- Mann-Whitney U-test was used to compare non-parametric data and Wilcoxon signed ranks test was used to compare parametric data.

Table 1 Demographic characteristics of patients who underwent tarsal tunnel release.

Parameters	Tarsal tunnel release
Number of patients / feet	79 / 87
Age of time at surgery (years) (range)	46.2 ± 14.9 (18-75)
Male : Female ratio (no. of patients)	19 : 58
BMI(Kg/m²) (range)	30.7 ± 8.0 (18.3-48.6)
Duration of symptom before surgery (range, months)	20.6 ± 23.1 (2-120)
Duration of follow up (months) (range, months)	32.2 ± 18.4 (12-80)
Side (Left/Right)	41 / 46
Operative time (minutes) (primary) (n=82)	36.1 ± 15.6 (19-60)
Operative time (minutes) (revision) (n=5)	54.8 ± 15.6 (50-74)
Average time to return to activity of daily living (weeks)	8.1 ± 2.8 (6-12)
Average time to release to work (weeks)	9.5 ± 5.0 (6-20)

TABLE 2 Comparison between pre- and post-operative functional outcomes in patients with tarsal tunnel release.

Functional Outcomes	Tarsal tunnel release (N = 87 feet)
*Pre / Post-operative Visual Analog Scale (range) (no.)	7.6 ± 2.0 / 2.0 ± 2.2 (n=84) (p = 0.001)**
*SF-36 Score: at final follow up (points)	
PCS: pre / post-operative (no.)	33.2 ± 9.7 / 40.2 ± 8.8 (n=52) (p = 0.001)**
MCS: pre / post-operative (no.)	47.7 ± 11.8 / 49.7 ± 14.0 (n=52) (p = 0.005)**
*Foot Function Index (FFI): pre / post-operative at final follow up	
Pain: pre / post-operative (no.)	63.0 ± 12.8 / 36.0 ± 9.4 (n=44) (p=0.001)**
Disability: pre / post-operative (no.)	61.9 ± 8.5 / 35.0 ± 6.1 (n=45) (p=0.001)**
Activity limitation: pre / post-operative (no.)	72.5 ± 10.7 / 34.9 ± 12.4 (n=44) (p=0.001)**
Total score: pre / post-operative (no.)	65.8 ± 6.9 / 35.3 ± 6.4 (n=44) (p=0.001)**

*Wilcoxon signed-ranks test was used to compare all pre and post-operative functional results (VAS, SF-36 (PCS and MCS), and FFI (Pain, Disability, Activity limitation, and Total score)) and it is statistically significant difference with p-value less than 0.05(**)

TABLE 3 Comparisons in patients with tarsal tunnel release.

Complications	Tarsal tunnel release (total = 87 feet)
Superficial wound infection	6 (6.9%)
Deep wound infection	0 (0.0%)
Painful scar	13 (14.9%)
CRPS 2/87 feet (2.3%)	2 (2.3%)
Paresthesia on the foot	18 (20.7%).
Tinel sign positive	9 (10.3%)

Discussion

The tarsal tunnel release can significantly improve functional outcome and pain relief in patients with tarsal tunnel syndrome; however, some of patients have some degrees of persistent pain after the surgery.

The patient required counseling for the complications before the surgery and the common complications include painful scar, numbness on the plantar and medial side of the foot, and sensitive on the skin at the incision ; however, these complications were improved over the time.

Discussion

▪ Limitations

- Retrospective design with no randomization was used in the methods.
- Some patients were lost to follow-up and some did not respond to the questionnaires, resulting in approximately fifty percent of patients available to be analyzed at final follow-up.

▪ Strengths

- Consecutive case collection.
- Systematically collected outcome data using validated assessment methods.
- All surgeries were performed by the same group of fellowship-trained orthopaedic foot and ankle surgeons.

Conclusion

- Tarsal tunnel release demonstrated significant improvement of functional outcomes and pain relief in medium-term follow-up as measured with SF-36, FFI, and VAS.
- Revision surgery demonstrated less favorable outcomes while pre-operative Tinel test and duration of symptom more than 12 months did not affect the outcome.
- This procedure was effective and feasible for tarsal tunnel syndrome with minor complications.

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Thank You for your attention!