Simultaneous Bilateral Surgery for Accessory Naviculars does not Have a Negative Effect on Postoperative Outcomes

Miyu Inagawa MD[1], Yasuyuki Jujo, MD[2],Yoshiharu Shimozono MD[3],

Kosui Iwashita, MD[2], and Masato Takao MD, PhD[2]

[1]Department of Sports Orthopedic Surgery, Kanto Rosai Hospital, Kanagawa, Japan

[2]Clinical and Research Institute for Foot and Ankle Surgery, Jujo Hospital, Chiba, Japan

[2] Kyoto University Graduate School of Medicine Faculty of Medicine, Orthopaedic Surgery ,Kyoto, Japan

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Faculty Disclosure Information

- Nothing to disclosure

Introduction

Accessory navicular(AN) first reported by Bauhin (1605).

Incidence:
12%

Symptoms:
Most are asymptomatic
Medial foot pain

Treatment:
Conservative first;
30% require surgery

Incidence: Unilateral < Bilateral

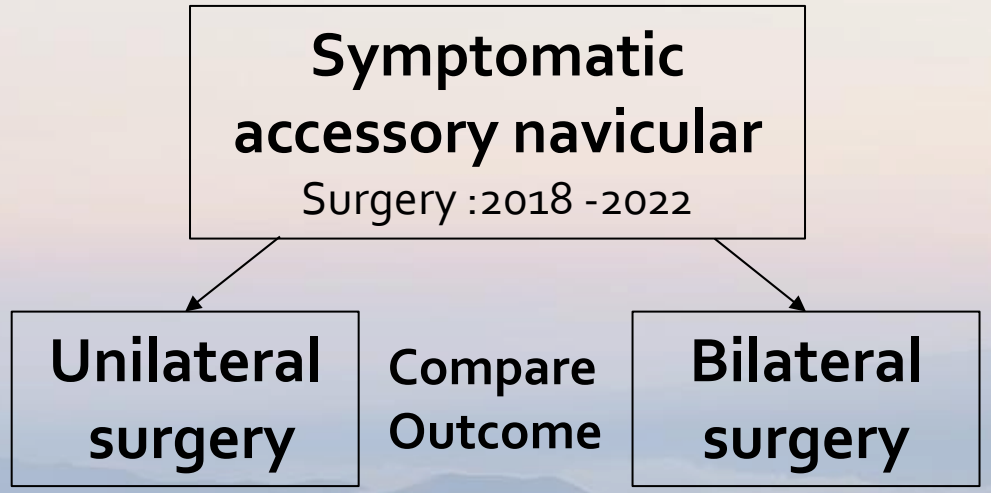
BUT

Surgery : Unilateral >Bilateral

What should we do if both sides have symptoms?

- **Purpose: Compare outcomes between unilateral & bilateral surgery.**

Patients & Methods (1) – Participants



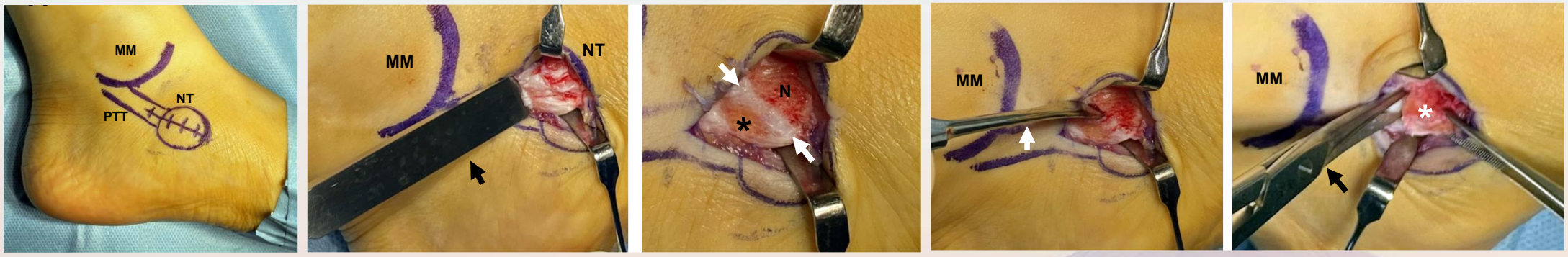
- ■Diagnosis:
- Clinical history & tenderness on navicular tubercle
- Radiographic views: AP, lateral, 45-degree eversion oblique

- ■Inclusion Criteria:
  - Type-II symptomatic accessory navicular
  - Failed conservative treatment
  - ≥12 months follow-up
- ■Exclusion Criteria:
  - History of foot/ankle surgery
  - Other foot/ankle lesions requiring treatment

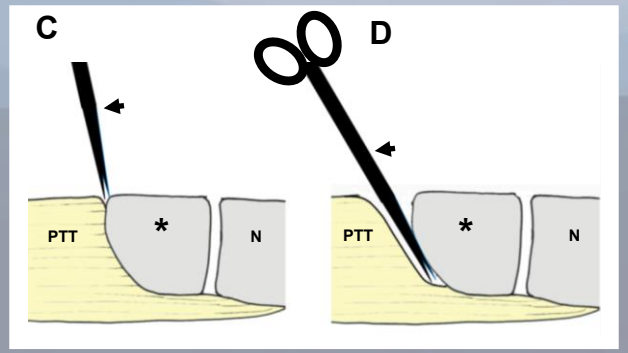
■Outcome Measures:

- SAFE-Q scores (pain, function, social, shoe-related, general well-being)
- Time to recovery (walking, jogging, full sports return)

Patients & Methods (2) – Surgical Technique(1)

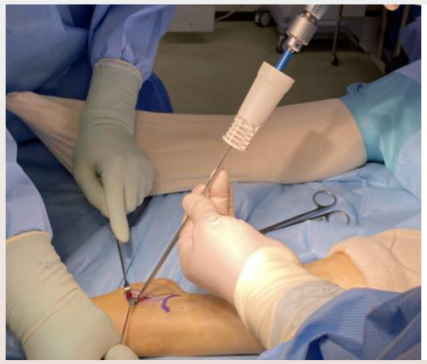
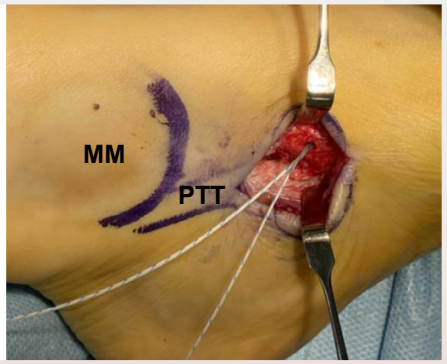


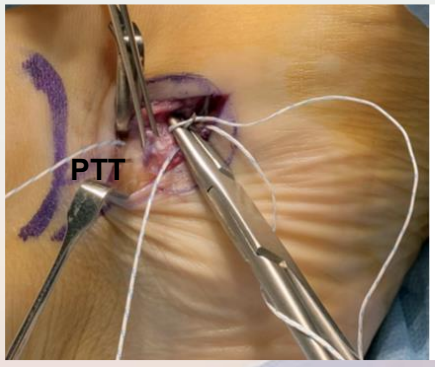
- 20 mm incision
- The bony prominence was excised proximally to distally with a chisel.
- A stripper was used to separate the AN from the navicular.
- The enucleation technique was used to detach the AN from the PTT.
- The PTT was carefully cut to preserve tendon fibers.

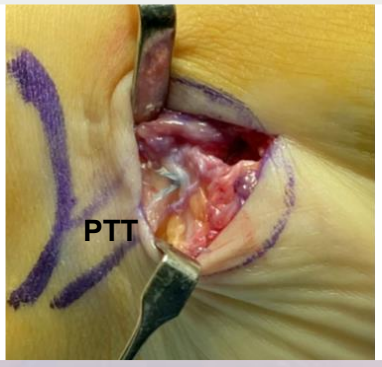


enucleation technique

Patients & Methods (3) – Surgical Technique(2)





- The navicular tubercle was rounded with bone rongeur forceps.
- A pilot hole was drilled into the navicular stump for a suture anchor.
- A Q-FIX MINI™ suture anchor was inserted.
- The suture anchor threads were passed through the split PTT and sutured to the navicular tubercle.

Patients & Methods (4) – Post-Operative Management

- Day 1 : Active ROM & PTB brace for walking
- Week 4 : FWB without brace
- Week 6-8 : Jogging, proprioceptive training, sports training
- Week 12 : RTP (depends on recovery)

Results(1)

- **Total Patients**: **26 (42 feet)**
  - **Unilateral Surgery** (Group Uni): 10 patients
  - **Bilateral Surgery** (Group Bi): 16 patients
- **Mean Age**:
  - **Group Uni:** 26.7 years **Group Bi**: 13.6 years
- **Recovery Time** (Mean Days):
  - **Walking**: 27.0 (range 12–38)
  - **Jogging**: 49.5 (range 18–83)
  - **Full Sports Return**: 75.5 (range 46–102)

Mean SAFE-Q score in all cases (N=26)

	Preoperative	12 Months	*P* value
Pain & pain related (range)	59.2±23.3 (21.9-100)	97.2±6.9 (75-100)	<0.05*
Physical functioning & daily living (range)	72.3±27.4 (22.5-100)	99.4±2.3 (91.3-100)	<0.05*
Social functioning (range)	69.7±26.7 (8.3-100)	100 (100)	<0.05*
Shoe-related (range)	62.4±27.8 (8.3-100)	99.0±3.5 (83.3-100)	<0.05*
General health & well-being (range)	64.9±24.9 (10-100)	97.6±6.0 (75-100)	<0.05*
Sports activity (range)	44.8±30.0 (2.8-97.2)	97.6±7.9 (61.1-100)	<0.05*

* $P < 0.05$

All SAFE-Q subscales improved significantly 12months after surgery.

Results (2) Compare group Uni and Bi

	Group Uni (N=10)	Group Bi (N=16)	*P* value
Age (years)	26.7±14.3	13.6±4.7	<0.05*
Female (N, %)	6, 60%	13,81%	0.37
Time to free gait (days)	28±0.7	26.4±5.4	0.27
Time to jog (days)	53.4±10.4	47.1±14.5	0.21
Time to full activity (days)	84.4±17.6	70±16.1	0.051

. Group Uni and Bi
* *P* < 0.05. N: sample size.

	Group Uni	Group Bi	*P* value
Pain & pain related (range)	95.5±8.9 (78.9-100)	96.5±7.7 (75-100)	0.34
Physical functioning & daily living (range)	99.1±2.7 (91.8-100)	99.4±2.2 (91.3-100)	0.39
Social functioning (range)	100 (100)	100 (100)	0.99
Shoe-related (range)	99.1±2.8 (91.7-100)	98.3±4.7 (83.3-100)	0.15
General health & well-being (range)	98.7±4.0 (88.1-100)	96.7±7.5 (75-100)	0.22
Sports activity (range)	98.6±3.2 (90.6-100)	96.0±10.5 (61.1-100)	0.15

Mean SAFE-Q score at 1 year after surgery in group Uni and group Bi

Age: Group Bi is younger

Recovery time: No significant

SAFE-Q Scores: No significant

Results (3) Compare group Uni and Bi without age

Group Bi was significantly younger than Group Uni, so a stratified analysis was conducted (≤16 vs. >16 years).

（Cox proportional hazard model)

Time to full activity

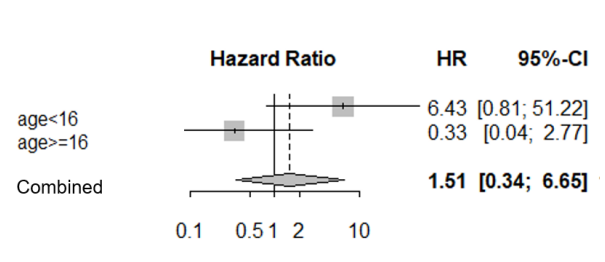
	Unilateral (N=10)		Bilateral (N=16)			
	HR		HR	95% CI		*P* value
Univariate analysis	1	(reference)	1.93	0.84	4.45	0.122
Adjusted by age <16/≦16	1	(reference)	1.68	0.69	4.06	0.251
Stratified by age <16/≧16						
Age<16	1	(reference)	6.43	0.81	51.22	
Age≧16	1	(reference)	0.33	0.04	2.77	
Combined*	1	(reference)	1.51	0.34	6.65	0.59

CI= confidence interval; HR=hazard ratio; N=sample size

*Fixed-effect model by inverse variance method

HR>1 means "earlier recover to full activity"

In The combined HR was 1.51,
with no significant difference;
similar results were found
in t-tests and sensitivity analyses.



Recovery time

≤16 :Group Bi showed faster

>16: slower

Discussion(1)

Accessory navicular(AN)

- **Genetic Factors**: Highly heritable, especially Type 2. Cheong et al. 2017.
- **Bilateral Occurrence**: More common than unilateral cases. Matthew B. Dobbs et al. 2004
- **Conservative Treatment Outcomes**: Cheong et al. 2017.
  - 28% achieved complete pain relief.
  - 41% had partial pain relief without surgery. Shands et al. 1953
  - 30% required surgery. Wynn M et al. 1983
- Symptoms in young athletes are more resistant to conservative treatment.

These factors may explain:

1. The high number of bilateral cases that did not respond to conservative treatment.
2. The younger age of bilateral cases compared to unilateral cases, with an overall average patient age of 18.

Discussion(2)

Key Finding of this study:

No difference in postoperative outcomes between unilateral & bilateral surgery

- Advantages of Simultaneous Bilateral Surgery:
  - Shorter total treatment duration
  - Early rehabilitation possible
  - PTB brace use facilitates early weight-bearing

Limitations &Conclusion

Limitations:

- Retrospective design, Short follow-up (1 year),Small sample size

Conclusion:

- Simultaneous bilateral surgery for accessory navicular is safe and effective.
- No significant delay in recovery compared to unilateral surgery.
- Surgeons should consider bilateral surgery to shorten treatment time.