

Hindfoot Endoscopic Excision of Ankle Posterior Impingement Including Elderly Patients

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Abstract

Objective: To discuss the endoscopic findings of endoscopic surgery and the results of surgery implemented for posterior ankle bony impingement, including cases of elderly patients.

Methods: The patients consisted of 5 males and 12 females. The mean age at surgery was 27.2 years old, and the mean duration of follow-up was 35.2 months. They included 5 ballet dancers, 3 baseball players, 2 badminton players, 1 soccer player and 1 lacrosse player. Four cases of elderly patients were posttraumatic.

Results: The lesions of inflammatory hyperplasia of the articular capsule, synovitis, and tenosynovitis of FHL endoscopically were found in all ankles. The average AOFAS ankle-hindfoot score was improved from 56.6 points preoperatively to 96.0 points postoperatively, respectively. All patients obtained relief of the hindfoot pain and could return to their sports activities. The mean time from surgery to return sports activity was 6.1 weeks.

Conclusion: This surgical technique is thus considered to be a suitable application even in cases involving elderly patients, when posterior ankle impingement syndrome is diagnosed before surgery and conservative therapy is not affected.

Keywords: Hindfoot endoscopy; Ankle posture; Hallucis longus; Ankle impingement syndrome

Introduction

Posterior ankle bony impingement has been reported as a cause of hindfoot pain in the ankle joint [1]. Painful os trigonum is known to be in the group of diseases that cause hindfoot pain in the ankle joint, after correction of repeated or convulsive plantar flexion. With respect to treatment, Williams and Ferkel first reported on arthroscopic excision in 1998 [2], and since van Dijk reported on the hindfoot endoscopic technique in 2000 [3], reports on endoscopic surgery have increased. Conventionally, it has been implemented for classical ballet dancers and athletes, such as soccer players and basketball players [4-7]. However, there has been no report of excision using hindfoot endoscopy for posterior ankle bony impingement in elderly patients for whom continuous posttraumatic hindfoot was the major complaint. Our hypothesis is that the endoscopic excision for posterior ankle bony impingement is effective for not only athlete but also elderly patients. The purpose of this report is to discuss the endoscopic findings of endoscopic surgery and the results of surgery implemented for posterior ankle bony impingement, including cases of elderly patients.

Methods

Seventeen cases involving 22 ankles (5 male cases and 13 female cases) who had endoscopic surgery for posterior ankle bony

impingement, in our institute since 2009, were chosen as subjects (Table 1). The mean age at the time of surgery was 27.2 years (10 to 74 years), and the mean duration of follow-up was 35.1 months (24 to 48 months). They included 5 ballet dancers, 3 baseball players, 2 badminton players, 1 soccer player and 1 lacrosse player. Four cases involving 5 ankles (elderly group: mean age at the time of surgery was 66.6 years (57 to 74 years) were not sports-related, but the patients experienced continuous hindfoot pain in the ankle joint resulting from an inverted sprain in the ankle joint. These cases were included as following conditions; their hindfoot pain was caused by plantarflexion of ankle, tenderness was observed in the medial side of the posterior ankle in the physical findings. In addition, the hindfoot pain disappeared after injection of lidocaine around the FHL.

An image diagnosis was performed using X-ray, CT and MRI. Os trigonum was observed in all cases with X-ray and CT, while os trigonum and edema around FHL were observed in all MR images of the cases.

With respect to the method, the presence of inflammatory hyperplasia of the articular capsule, hyperplasia of the synovium, tenosynovitis, longitudinal split of tendon of flexor hallucis longus (FHL) and the low-lying muscle belly of FHL were investigated as endoscopic findings. The ankle/hindfoot scale of the Japanese Society for Surgery of the Foot (JSSF scale) [8,9] was used as the clinical rating system for examining the treatment results, while the time to return to preoperative sports activities was investigated in the sports cases.

Case	Age	Sex	Side	Procedure	JSSF score Preoperative/ Postoperative	Sport	Time to return to sport, wk
1	16	F	Lt	Removal of os trigonum, FHL tenosynovitis debridement	73/100	Ballet	4
			Rt	Removal of os trigonum, FHL tenosynovitis debridement	73/100		
2	16	F	Lt	Removal of os trigonum, FHL tenosynovitis debridement	87/100	Ballet	6
			Rt	Removal of os trigonum, FHL tenosynovitis debridement	87/100		
3	70	F	Lt	Removal of os trigonum, FHL tenosynovitis debridement	65/97	N/A	N/A
			Rt	Removal of os trigonum, FHL tenosynovitis debridement	65/90		
4	17	F	Lt	Removal of os trigonum, FHL tenosynovitis debridement	73/100	Ballet	8
			Rt	Removal of os trigonum, FHL tenosynovitis debridement	73/100		
5	61	F	Rt	Removal of os trigonum, FHL tenosynovitis debridement	65/100	N/A	N/A
6	13	F	Lt	Removal of os trigonum, FHL tenosynovitis debridement	73/100	Ballet	4
7	13	F	Lt	Removal of os trigonum, FHL tenosynovitis debridement	73/100	Ballet	4
8	57	F	Rt	Removal of os trigonum, FHL tenosynovitis debridement	65/100	N/A	N/A
9	19	M	Rt	Removal of os trigonum, FHL tenosynovitis debridement	73/90	lacrosse	4
10	16	F	Rt	Removal of os trigonum, FHL tenosynovitis debridement	44/100	badminton	6
11	16	F	Rt	Removal of os trigonum, FHL tenosynovitis debridement	75/100	badminton	6
12	27	M	Rt	Removal of os trigonum, FHL tenosynovitis debridement		N/A	N/A
13	74	F	Lt	Removal of os trigonum, FHL tenosynovitis debridement	65/90	N/A	N/A
14	16	F	Rt	Removal of os trigonum, FHL tenosynovitis debridement	77/100	Baseball	5
			Lt	Removal of os trigonum, FHL tenosynovitis debridement	77/100		
15	16	M	Rt	Removal of os trigonum, FHL tenosynovitis debridement	77/100	Baseball	4
16	22	M	Rt	Removal of Stieda process, FHL tenosynovitis debridement	77/90	Soccer	8
17	10	M	Rt	Removal of os trigonum, FHL tenosynovitis debridement	74/100	Baseball	4

Table 1: Patients demographics and postoperative outcomes Results

Inflammatory hyperplasia of the articular capsule, hyperplasia of the synovium, and tenosynovitis of FHL were found in all ankles in the endoscopic findings. A longitudinal split of tendon of FHL was found in 6 ankles, while bony stenosis was found in 1 ankle, and the low-lying muscle belly of FHL was found in 1 ankle. Pain was relieved in all ankles, and they returned to their sports activities before the surgery. The time from surgery to the return to sports activities before surgery was 5.3 ± 1.5 weeks. The JSSF scale score improved from an average of 56.6 ± 11.5 points before surgery, to an average of 97.1 ± 4.5 points after surgery (Figure 1). For the elderly patients group, the average of 56.6 ± 8.8 points after surgery improved to an average of 96.0 ± 4.2 points.

Discussion

Various pathological conditions related to PAIS were observed in the talocrural joint, subtalar joint and FHL, centered around os

trigonum disorder, and tenosynovitis/longitudinal split of FHL, ligament injury in the posterior talocrural joint, osteochondral fracture talus, have also been reported [10]. It is believed that these are caused mainly by sports that require repeated jumps or plantar flexion, and especially they occur frequently in practicing classical ballet, soccer, running, volleyball, basketball [4-7]. In 13 cases out of 17 cases in this study, there were also injuries caused by sports, classical ballet, baseball, badminton and soccer. However, all the elderly cases showed continuous walking problems due to hindfoot pain in the ankle joint resulting from a sprain in the ankle joint, and in particular, hindfoot pain in the ankle joint when going up and down the steps was a major complaint.

Not only X-ray images, but also CT as well as MR images were taken, for every case in the treatment group at this time. Os trigonum was observed in all cases with simple X-ray and CT. Also, MR images showed that edema around FHL was observed in all cases. Based on the MR image findings, it was believed that for posterior ankle bony impingement, the hindfoot pain in the posterior ankle joint was caused not simply by impingement attributed to os trigonum, but also

by repeated plantar flexion or injuries by sports, resulting in tenosynovitis in the FHL, causing pain as a result

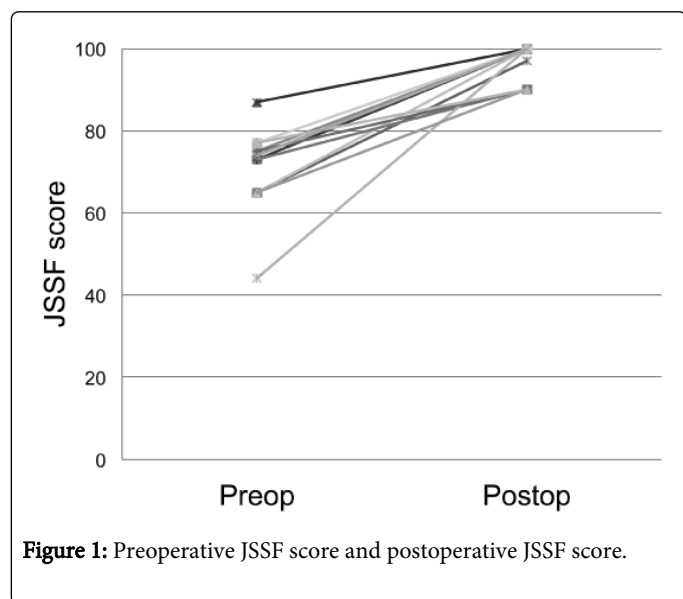


Figure 1: Preoperative JSSF score and postoperative JSSF score.

Although the first choice for treatment was conservative therapy such as rest, administration of antiphlogistic analgesic, or injections of steroid or regional anesthetic, it was reported that 40% of the cases showed resistance to these [1]. For those cases in which symptoms did not improve with conservative therapy, surgical therapy was chosen. The open surgery has been reported for some time, since Williams and Ferkel [2] first reported on the arthroscopic excision for os trigonum disorder in 1994, and van Dijk et al. [3] reported on the posterior 2-portal arthroscopic technique, and favorable results have been reported from various surgeons [2,3,10-12]. Guo et al. [13] reported that there were no significant differences in AOFAS scores, when endoscopic surgery was compared to open surgery, but significant differences were shown in the return to the sports activity level before surgery, reaching the conclusion that endoscopic surgery was less invasive. While the time to return to sports with open surgery was 3 to 12 months on average [5,10], it was reported that it took 2 to 3 months on average with endoscopic surgery [10,11]. The average of 6.5 weeks was observed even in our cases, demonstrating that early return to sports was possible, compared to direct-vision surgery. It is believed that it is less invasive compared to open surgery.

One of the advantages of endoscopic surgery is that hindfoot disorders, such as those associated with the flexor hallucis longus muscle tendon as the major disorder, can be observed in detail. Hamilton [3] has mentioned that the cause of the pain in painful os trigonum disorder is flexor pollicis longus muscle tendinitis. Jerosch et al. [14] reported that complications of FHL disorder were found in 7 out of 10 cases, while Scholten et al. [10] reported that it was observed in 63% of cases. Ogut et al. [12] implemented endoscopic surgery for patients involving 60 ankles of hindfoot pain, and noted that tenosynovitis of FHL was observed in all cases. Tenosynovitis of FHL was also observed in all cases, and longitudinal split of FHL was observed in 2 ankles. Favorable performance was obtained, similar to reports from other surgeons, not only by the excision of os trigonum, but also by an additional tendon sheath incision. Edema around FHL and luminosity changes should be confirmed before surgery with MR images, and surgery should be implemented with FHL disorder in mind.

In four cases involving elderly patients, the patients received lidocaine tests before surgery, the results being the disappearance of hindfoot pain in all cases. Os trigonum was observed in a simple X-ray, while edema around FHL was observed with MRI. The hindfoot pain disappeared after surgery in all cases, with good progress. The JSSF scale score of the elderly patients improved to a mean score of 96. Although the patients were elderly and these were not sports-related cases, it was shown that endoscopic excision of os trigonum is effective for elderly patients, because the cases demonstrated that (1) hindfoot pain was caused by ankle plantar flexion, (2) tenderness was observed in the interior of the posterior ankle in the physical findings, (3) in the lidocaine tests the disappearance of hindfoot pain was noted, (4) os trigonum was observed in an X-ray, and (5) edema around FHL was confirmed with MRI. It is believed that if the above conditions from (1) to (5) are met, this technique is effective for hindfoot pain in elderly patients for whom the conservative therapy does not result in an improvement in symptoms.

In our case series, there were several limitations. There is little number of patients. The pain in hindfoot does not much number of patients after elderly people. The patients who it applies to the condition that mentioned above in that, and can be operated on think that little. Therefore, we think this condition setting that we submit is very useful.

Conclusion

This surgical technique is thus considered to be a suitable application even in cases involving elderly patients, when posterior ankle impingement syndrome is diagnosed before surgery and conservative therapy is not affected.

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