

Case Report

Kidner procedure on symptomatic accessory navicular: a case report

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ABSTRACT

Accessory navicular bone (ANB) is present in 4-20% of the general population. It can cause of midfoot pain and consequently may lead to flat foot. The patient usually presents with pain and swelling on the medial aspect of the foot with difficulty on walking. Diagnosis is often delayed. We report a case of symptomatic accessory navicular on a 30 years old female patient who complained of pain in the medial area of left foot for 2 years, and the pain getting worse in the last 2 weeks. Accessory navicular bone treatment may be non-surgical or surgical treatment in order to improve the symptoms. The following may be used: immobilisation by plaster splint, use of boots when walking, which allow the affected area to rest and reduce inflammation, use of an ice bag covered with a thin towel applied on the affected area in order to reduce swelling, oral non-steroidal anti-inflammatory drugs (NSAID). Surgical treatment of this condition involves removing the accessory bone (this additional bone is not necessary for normal foot function), remodeling the area, and repairing the posterior tibial tendon to improve its function. The most commonly used procedure to treat the symptomatic accessory navicular is Kidner procedure. The accessory navicular is a commonly occurring deformity that, because of its significant accompanying pathomechanical considerations, is closely associated with the pathologic flexible flatfoot. By recognizing and treating this progressive, debilitating deformity, both conservatively and surgically, the astute practitioner will be able to resolve discomfort, improve dysfunction, and restore quality of life.

Keywords: Accessory naviculare, Kidner procedure, Symptomatic case

INTRODUCTION

Accessory navicular bone (ANB) (os navicularum or os tibiale externum) results from developmental variation resulting in secondary ossification centers adjacent to the primary navicular bone. ANB is considered a normal variant and is reported to be present in 4-20% of the general population.¹ This accessory ossicle may appear not worth mentioning, however, due to its unique anatomical position in the foot and the biomechanics of gait it can cause significant pain, morbidity and even deformity leading to flat foot. It is inappropriately diagnosed when evaluating foot pain and often confused with an ankle sprain. Tibialis posterior is a large muscle that assists in plantar flexion of the foot and ankle and locks the tarsal bones during gait. Tibialis posterior

tendon has multiple insertions in the foot with the most significant on the medial navicular bone.² In advanced cases of symptomatic ANB, damage to the tibialis posterior tendon can occur.

There are three types of ANB: type I is a small round ossicle embedded in the tibialis posterior tendon; type II is a relatively large ossification center which is triangular in shape and connected to the navicular by synchondrosis and type III ANB is the enlarged medial horn of the navicular bone.³ It is rarely observed and of the 3 distinct types of ANB, type III, also known as the cornuate navicular, is an exceptional morphological entity.⁴

Not all the individuals with this accessory bone have symptoms.⁵ The symptoms appear when the accessory

navicular bone is too large or when a traumatism causes an injury in the fibrous tissue between the navicular and accessory navicular bones, leading to a phenomenon similar to a fracture considered to be the cause of the pain.⁶ As the posterior tibial tendon attaches to the accessory navicular, it is constantly stretching the bone, causing with every step a greater displacement between fragments.

Trauma that triggers the pain may be an ankle sprain or irritation from shoes by rubbing. Many patients with accessory navicular syndrome also have flat feet that will put more pressure on the posterior tibial tendon, which can produce inflammation or irritation of the accessory navicular. Signs and symptoms of accessory navicular may appear during adolescence, when the bones are maturing and the growth cartilage is developing into bone. However, sometimes symptoms do not occur until adulthood.

Signs and symptoms of accessory navicular syndrome include: a visible bony prominence on the inner side of the foot, local hyperaemia, swelling, and vague bone pain, usually occurring during or after activity periods. Diagnosis is commonly suggested by medical history and painful sensitivity within the area of the head of the navicular bone. Radiological examination is needed to allow the surgeon to visualise the accessory navicular. No other tests are generally required, but MRI or CT can be useful in order to establish the relationship between accessory navicular and posterior tibial tendon.⁷⁻⁹

The treatment may be non-surgical in order to improve the symptoms. The following may be used: immobilisation by plaster splint, use of boots when walking, which allow the affected area to rest and reduce inflammation, use of an ice bag covered with a thin towel applied on the affected area in order to reduce swelling, oral non-steroidal anti-inflammatory drugs (NSAID), such as ibuprofen, may be prescribed. Orthotically, devices that fit into the shoe and provide support for the plantar arch may be used, and these may play an important role in the prevention of symptoms in the future. Even after a successful treatment, the symptoms of accessory navicular syndrome sometimes reappear. When this happens, nonsurgical approaches are usually repeated, often followed by surgical intervention when it seems that all non-surgical approaches failed to control the issue and the pain becomes unbearable.

Surgical treatment of this condition involves removing the accessory bone (this additional bone is not necessary for normal foot function), remodelling the area, and repairing the posterior tibial tendon to improve its function. The most commonly used procedure to treat the symptomatic accessory navicular is Kidner procedure, in 1929 and L933, Kidner described a relationship of the accessory navicular bone to a pes planus deformity. In addition, he described a surgical technique which consisted of removal of the ossicle with a complete

transection of the tibialis posterior tendon and reattachment of the tendon to the plantar surface of the navicular bone. The procedure was designed to eliminate pain while simultaneously increasing the height of the medial arch. A small incision is made on the area in which the accessory navicular is palpated; the bone is then detached from the posterior tibial tendon and excised.⁹ Posterior tibial tendon is re-inserted on the remaining normal navicular. Skin incision is closed with threads; bandage and immobilisation by plaster splint are applied. Use of crutches for several days is recommended after surgery and the suture threads are removed within 10 to 14 days.

CASE REPORT

A female patient came with a complaint of pain in the medial area of foot for 2 years, the pain getting worse in the last 2 weeks. She felt the pain every time she walk, even wearing shoes didn't help her reduce the pain. Before she come to orthopaedic, she was undergoing treatment for her pain with a corticosteroid injection for every 6 months. After taking the injection three times and there was no sign of improvement, even the pain was getting worse in this last 2 weeks, then she decided to come to orthopaedic.



Figure 1: X-ray on left pedis AP view showing type III accessory navicular bone.

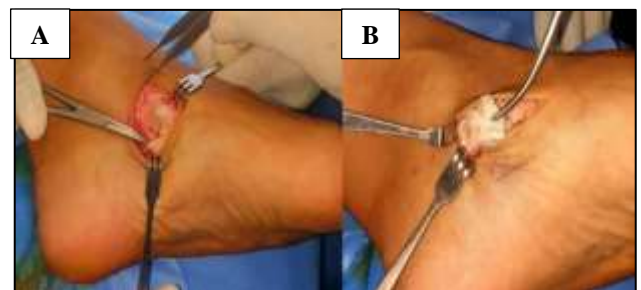


Figure 2: (A and B) During operation, excision on accessory navicular bone.

Clinical evaluation reveals a 170 cm female who was 60 kg. We spot bony prominence on the inner side of the left

foot with tenderness when we touch it. Plantar flexion and dorso flexion is normal. No sign of flat foot. The x-ray reveals type-III accessory navicular. After explaining the condition to the patient, patient agreed to be operated.

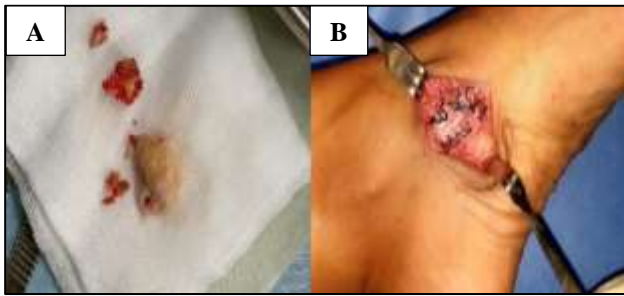


Figure 3: (A) During operation, navicular bone has been removed; (B) advancement tibialis posterior tendon to true navicular bone using anchor screw.

The procedure was performed under general anaesthetic. The patient was placed supine on the operating table. A tourniquet was applied to the thigh, the leg exsanguinated, and the cuff inflated to 250 mmHg. Next mark was made between medial malleolus and 1st meta tarsal phalangeal. The incision started from 1 cm around distal of malleolus medial to 1st meta tarsal phalangeal joint through accessory navicular. Dissection performed in the retinaculum medial. After the accessory navicular exposed, excision was performed. After the excision, osteotomy (reshaping) was performed in the true navicular. After that, advancement tibialis posterior tendon was performed to the true navicular by 2 anchor screw (Ø 2, 7).

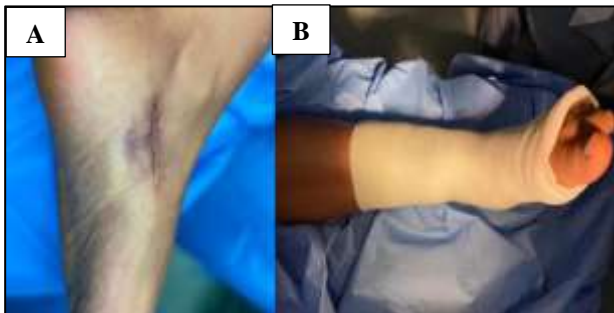


Figure 4: (A) Closing the wound by subcutaneous suture, (B) below knee cast was applied to maintain the position with ankle positioned at a 90 degree angle to make the tibialis posterior muscle relaxed.

The operation wound was closed in layers with 2-0 vicryl (Ethicon, Edinburgh, UK) for the subcutaneous fat, subcuticular undyed 3-0 vicryl (Ethicon, Edinburgh, UK), and sterile stripes (3M, Loughborough, UK). Dressing swab, dressing, and below knee cast was applied to maintain the position with ankle positioned at a 90 degree angle to make the tibialis posterior muscle relaxed. Non-Weight-bearing start from the day after the operation. The cast was removed three weeks after the operation,

continued with orthopedic boot. Rrehabilitation was started 6 weeks after operation. Gradual return to activities and the sport was allowed over the course of three to four months postoperatively.

DISCUSSION

Although most accessory navicular are asymptomatic, they can cause pain and functional limitation, especially in young active patients.¹⁰ Initial treatment usually is nonoperative, involving activity and shoe-wear modifications, casting, and use of nonsteroidal anti-inflammatory drugs. Operative treatment is indicated if conservative treatment fails to relieve symptoms. Operative treatment usually involves excision of the AN with or without advancement of the PT tendon. Advancement of the tendon to a more plantar position was advocated by Kidner, which suggested that the abnormal insertion of the PT tendon on the AN produced weakness of the longitudinal arch and a resultant painful flatfoot deformity.¹¹ Several more recent studies have found equally good results with excision of the AN and repair of the split tendon.¹²

CONCLUSION

The accessory navicular is a commonly occurring deformity that, because of its significant accompanying pathomechanical considerations, is closely associated with the pathologic flexible flatfoot. By recognizing and treating this progressive, debilitating deformity, both conservatively and surgically, the astute practitioner will be able to resolve discomfort, improve dysfunction, and restore quality of life.

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