

APOA Foot & Ankle Council Presents..

Case of the Month

1st September 2023



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Presented by:



Dr. Sora Tonsuthanluck
Rajavithi Hospital, Bangkok
Thailand

Learning Points:

- ⊙ Minimally invasive fixation is good to perform in particular types of calcaneus fracture.
- ⊙ Sinus tarsi approach is less soft tissue trauma than conventional lateral extensile approach. The operation can be done even if fracture occurs in couple days.
- ⊙ Joint congruity, calcaneal height and width are still important parameters to restore in calcaneal fixation.

Title:

Less invasive surgery for calcaneus fracture fixation using modified sinus tarsi approach

*Upcoming Case
on 1st October 2023*

Presented by:

Dr. Shui-wah, Man

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Title:

A case report and literature review of an uncommon 'tumour' around the Foot and Ankle

Want to present a case? Write to...



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Less invasive surgery for calcaneus fracture fixation using modified sinus tarsi approach

Dr. Sora Tonsuthanluck

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Case

A 45-year-old man came to hospital with left heel pain. 6 hours ago, he fell from stairs. His left foot was twisted and crushed down to the floor. He suffered from left heel pain. His left foot was swollen and could not weight [1]bearing on the floor. He came to the hospital and was diagnosed with a left calcaneal fracture, tongue-type classification with hindfoot varus (**figure 1,2**) and treated with well [1]padded posterior splint. 1 week later, his left foot swelling subsided. He was set to have an operation for open reduction and plate fixation left calcaneus.



(Fig. 1)



(Fig. 2)

The patient underwent surgery with open reduction with plate and screws fixation by sinus tarsi approach. In an operation theater, the patient had a spinal anesthesia. Position was set in right lateral decubitus. After sterile technique was done. Calcaneus contour and subtalar joint were identified by fluoroscope. Skin was



(Fig. 3)



(Fig. 4)



(Fig. 5)

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incised 6 cm at lateral side below tip of distal fibula longitudinally through sinus tarsi. Skin was retracted, subtalar joint was identified via sinus tarsi. Intraarticular fracture with subtalar joint stepping was revealed. Shanz pin 2.5 was inserted at calcaneal tuberosity with stab wound become a joystick at lateral side. While pin was used for retracting tuberosity fragment. Periosteal elevator was used to pick the lowered fragment up until subtalar joint was good congruence. The calcaneus was restored with height, width and heel valgus



(Fig. 6)



(Fig. 7)



(Fig. 8)

via Bohler angle, Gissane angle in lateral view and heel valgus in hindfoot alignment view. Multiple K-wires were applied for temporary fixation. The 7.0 and 4.0 cannulated screws were inserted from posterior to keep posterior and anterior fragments respectively. At this point, the calcaneal fragment was stable moderately. The LCP sinus tarsi calcaneal plate (A-tech company) was inserted via sinus tarsi incision. Rafting screws were inserted. Stab incision was done for inserting screw at calcaneal tuberosity fragment. Eventually, tongue fragment was reduced by periosteal elevator and fixed with cannulated screw 4.0. Radivac drain was inserted. Skin was closed with vicryl 3-0 and Nylon 3-0. Well-padded posterior splint was applied for respect soft tissue. The radivac drain was removed after operation 48 hours. The sutures were stitched off 2 weeks after operation without any skin complication. Posterior splint was removed at this time to promote early range of motion. The patient received postoperative protocol by non-weight bearing with crutches 6 week then start gradually weight bearing until full weight at 12 weeks. The patient could stand and walk with plantigrade, stable and painless. The surgical scar was healed very well.

Discussion

The sinus tarsi approach is one of minimal invasive techniques for calcaneal fracture operation. Compared with conventional lateral extensile approach, the sinus tarsi approach has lower skin complication, good radiological and clinical outcome [1,2]. With special design of instrument, A LCP plate should inserted via skin incision. Another tool for reduction in Shanz pin. We used Shanz pin as joystick to manipulate and retract

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tuberosity fragment for reduction and keep in valgus alignment. A screw at tuberosity fragment is inserted with stab incision via fluoroscope. Cannulated screw could be added from posterior to anterior or lateral to medial side. However, Subtalar joint, calcaneal width and height should be restored to normal parameter to gain good radiographic and clinical outcome and prevent malunion fracture and complication.

Reference

1. Alajmi T, Sharif AF, Majoun MA, Alshehri FS, Albaqami AM, Alshouli M. Minimally Invasive Sinus Tarsi Approach for Open Reduction and Internal Fixation of Calcaneal Fractures: Complications, Risk Factors, and Outcome Predictors. *Cureus* 2022.
2. Meng Q, Wang Q, Wu X, Peng A, Yan J. Clinical application of the sinus tarsi approach in the treatment of intra-articular calcaneal fracture. *Medicine* 2018;97:e0175.

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