

APOA Foot & Ankle Council Presents..

# Case of the Fortnight

1st February 2023



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**Presented by:**



**Dr. Shui-wah, Man**

Director of Foot & Ankle Service,  
Department of Orthopaedics & Traumatology  
Queen Elizabeth Hospital, Hong Kong SAR, China

## Learning Points:

- ⊙ Treatment of symptomatic ankle arthrodesis is challenging
- ⊙ Conversion total ankle replacement is a good option to regain range of motion of the ankle and for symptomatic relief
- ⊙ Pre-operative navigation with 3D printed cutting guides is extremely helpful for precise bone cutting and subsequent proper implant positioning.

**Title:**

**Conversion total ankle replacement  
-Pre-operative navigation for  
realignment of symptomatic varus  
deformity after ankle fusion**

*Upcoming Case of the Fortnight  
on 15th February 2023*

**Presented by:**

**Dr. Ho Man Kit**

Department of Orthopedics and  
Traumatology, Princess  
Margaret Hospital,  
Hong Kong



**Title:**

**Reconstruction of Traumatic  
Cavovarus Foot**

Want to present a case? Write to...



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## Conversion total ankle replacement -Pre-operative navigation for realignment of symptomatic varus deformity after ankle fusion

### Dr. Shui-wah, Man

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Queen Elizabeth Hospital, Hong Kong SAR, China

### Case history

A patient was a 59-year-old gentleman. He was an aeroplane mechanic when he first presented to the Foot & Ankle Clinic in 2013. He complained of progressive anteromedial right ankle pain for a few years. He had been active in football games, with multiple ankle sprains when he was young. However, there was not a particular episode of ankle trauma which led him to medical attention. He had no other associated symptoms.

### Physical examinations

Physical examinations revealed he had good general condition. The lower limb alignments were grossly normal except varus deformity of right ankle. No swelling nor ankle effusion was found. The active range of motion of the right ankles were, dorsiflexion 10 degrees and plantar flexion 25 degrees. Tenderness was located along anterior ankle joint line, particularly the anteromedial ankle. The right subtalar joint was mildly stiff but non-tender. Power of the foot and ankle was full. There was no associated neurovascular deficit.



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X-rays of the right ankle showed Takakura stage IIIB end stage ankle degeneration. The subtalar joint was also degenerated radiographically though that was not symptomatic at that juncture.



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## Diagnosis

End stage OA ankle with varus deformity.

## Initial management

Mr. So was managed conservatively with prn pain killers, orthosis and physiotherapy. However, his right ankle pain persisted despite of conservative treatment for more than one year. He decided for surgical management for symptomatic the right ankle degeneration.



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Arthroscopic assisted right ankle fusion was performed in 2014. The surgery was uneventful. Solid union was achieved a few months after surgery. The right ankle pain improved a lot with ankle fusion. Mr. So completed a course of post-operative rehabilitation and returned to his duty as an aeroplane mechanic at 6 months' post-operation.



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At around 5 years after right ankle fusion, Mr. So retired from his duty as a mechanic. He was regularly reviewed at the Foot & Ankle Clinic. He complained of residual right hindfoot pain, keratosis under the

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first metatarsal head and lateral aspect of the right heel. He also found the right ankle and hindfoot was very stiff. X-rays of the foot and ankle reviewed progressive degeneration of the right subtalar joint, mild residual hindfoot varus and subtle cavus of right foot.



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The patient attended for second surgery for right foot cavovarus reconstruction in 2019. Surgery of proximal metatarsal closing wedge osteotomy, lateral slide calcaneal osteotomy and Steindler's release was performed. The surgery was again uneventful. The right foot and ankle malalignments were corrected as planned.



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Although the right foot and ankles were well realigned, he had residual symptoms, which include limping for right ankle and hindfoot stiffness, progressive degeneration of right subtalar joint leading to limited range of motion of the joint and mild hindfoot pain, residual keratosis under the first metatarsal head despite of reconstructions. He was treated with orthosis, physiotherapy and prn pain killers. However, symptoms remained similar. He enquired about possible surgical intervention for the symptoms. He finally chose to have conversion total ankle replacement after a detailed discussion about the pros & cons of the surgery. He was also informed that this was the first case of conversion ankle replacement in our locality.

The surgery was initially planned to be performed in 2021. A set of plain cut CT and X-rays of his tibia and fibula, including the right foot and ankle was sent to the Stryker company for assessment. The engineers there sent back the drafted cutting guides based on the imaging according to the Prophecy pre-operative navigation system for an Infinity Total Ankle Replacement. We reviewed the pre-operative preparations and proceed for the 3D printing Prophecy guides after confirmation of the draft. Anyway, the surgery was deferred for the unstable condition of the COVID-19 pandemic.



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## Conversion ankle replacement

The surgery of conversion of right ankle arthrodesis to Infinity total ankle replacement was finally performed in May, 2022. His subtalar joint was revealed to be fused spontaneously already intra-op. The surgery was smooth and without any complications. The patient was put on a short leg cast after surgery and he was instructed for 3 weeks of non-weight bearing walking. The cast was then taken off and full weight bearing walking and range of motion exercise of the ankle were started.



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## Outcome of conversion ankle replacement

The patient was last reviewed at the clinic at 3 months' post-operation. He walked unaided indoor. He regained active range of motion of the right ankle, with 5 degrees of dorsiflexion and 20 degrees of plantarflexion. No more plantar keratosis was found under the right first metatarsal head. Right ankle and hindfoot pain also improved after conversion ankle replacement. Mr. So was satisfied with the surgery now. He will be further monitored for the progress of function recovery.

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