Isolated (Simple) Subtalar Arthrodesis (1-10)
- High union rates reported
- Clinical literature supports either single or multiple screw fixation
- Biomechanical studies suggest multiple screw fixation confers an advantage over single screw fixation and give some guidance to optimal screw position
- Compression screws typically favored
- Biomechanical studies suggest greater compression may confer an advantage

Complex Subtalar Arthrodesis (with major deformity correction) (11-14)
- Subtalar arthrodesis, particularly for calcaneal malunion, may be performed in conjunction with calcaneal realignment osteotomy
- Fixation then must secure both the calcaneal osteotomy and the subtalar joint and screws position and compression must be tailored to the construct

Primary Subtalar Arthrodesis with ORIF Type IV Calcaneus Fracture (13-21)
- Some investigators favor primary subtalar arthrodesis for ORIF of calcaneal fractures that have severe posterior facet comminution.
- In this situation, screw position for the subtalar arthrodesis must take calcaneal fracture fixation into consideration. Positional screws rather than compression screws are favored in order to avoid loss of reduction of the calcaneal fracture

Computer Assisted Surgery for Subtalar Arthrodesis (22)
- Not necessary in subtalar arthrodesis; however, achieving optimal screw position in a single pass may be facilitated using CAS.
**Subtalar Bone Block Distraction Arthrodesis (12-14, 17, 23-25)**
- Compression technique may be used but fully threaded positional screws are recommended by many authors. The interpositional graft is already under compression due to the distraction needed to open the joint and therefore further compression is probably not necessary.
- More time may be required for graft incorporation and healing in subtalar bone block distraction subtalar arthrodesis than routine in-situ subtalar arthrodesis, fully threaded screws with thread fixation in both the talus and calcaneus may confer an advantage.

![Subtalar Bone Block Distraction Arthrodesis Image](image)

**Subtalar Arthrodesis after Ipsilateral Ankle Fusion (5, 26)**
- In my experience, subtalar arthrodesis after prior ipsilateral ankle fusion has a lower fusion rate than isolated subtalar arthrodesis in patients without prior ipsilateral ankle fusion. My recommendation is for multiple screw fixation or even screw and plate fixation in these cases.

![Subtalar Arthrodesis after Ipsilateral Ankle Fusion Images](image)

**Subtalar Arthrodesis with Ipsilateral TAA (27, 28)**
- Potential talar dome vascular compromise and talar component position dictate subtalar screw fixation.
- Caution should be maintained in placing screws through the talar blood supply inferior to the neck of the talus.
- Screws must be placed to not contact the talar component. Working around the talar component may compromise optimal subtalar fixation.

![Subtalar Arthrodesis with Ipsilateral TAA Image](image)

**Subtalar Arthrodesis as part of Diple or Triple Arthrodesis (29-31)**
- Subtalar screw fixation must take into consideration potential interference with talonavicular screw fixation.
Tibiotalocalcaneal arthrodesis (32-45)
- Combined simultaneous tibiotalar and subtalar joint arthrodesis have the potential to lead to one joint fusing and not the other, i.e., ankle joint fusion but subtalar nonunion.
- Biomechanical studies suggest that supplemental screw fixation increases the construct’s stability that may lead to increased fusion rates.
- Several current implant designs and techniques may permit independent tibiotalar and subtalar compression, which may improve fusion rates.

References