

Technique Tip: **Screw Length Selection in Distal Metaphyseal Fibula Fixation**

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TECHNIQUE

After reducing the unstable fracture, secure the one-third tubular plate in the desired position, and place the bicortical screws in the diaphysis of the fibula in the usual fashion. In the distal metaphyseal region, drill the lateral cortex just enough to "open" the cortical bone, while ensuring the starting point is at the most lateral aspect of the fibula. Next, instead of using the depth gauge, place 4.0mm x 16mm fully threaded cancellous screws (Figure 1.)

DISCUSSION

In the operative fixation of an unstable ankle fracture, ensuring the correct length of the cancellous screws in the distal fibula metaphyseal area presents a minor challenge to the orthopaedic surgeon. This is mainly due to the difficulty in engaging the medial fibula cortex with the depth gauge at the level of the tibial plafond.

Distal to the plafond level, the screw drill holes need to be unicortical because drilling bicortically would violate the talo-fibula articulation. We have been empirically using 16mm length screws based on the senior surgeon's (MJB) experience.

To support our contention, we have reviewed 30 CT scans of the ankle to delineate the diameter of the fibula at these levels. These studies were ordered for unrelated causes. For the males, average diameter of the fibula at the syndesmosis level was 17.19mm (range 15.05-23.0), and the average diameter of the fibula 1 cm distal to the plafond level was 20.07mm (range 17.82-23.27). For the females, average diameter of the

fibula at the syndesmosis level was 14.78mm (12.13-19.62), and the average diameter of fibula 1 cm distal to the plafond level was 17.37mm (15.94-19.82). Accounting for the thickness of the one-third tubular plate, using a 16mm screw will leave 14-15mm of bony purchase.



Fig. 1. Post operative AP radiograph demonstrating two 16mm length cancellous screws used in distal fibula metaphyseal fixation.

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Our CT review of anatomy at the level of syndesmosis supports our clinical practice of using 16mm screws in all male patients, and in most (87%) of female patients. At 1cm distal to the plafond level, a 16mm screw would work in all of the male and the female patients in our CT series. Theoretically, in 13% of the females, a 16mm screw placed at the syndesmosis level maybe a bit too long, although we have not encountered this to be a problem in our experience.

As is the usual practice with most orthopaedic sur-

geons, intraoperative radiographs are recommended to ensure anatomic reduction, and optimal hardware placement prior to leaving the operating suite.

DISCLAIMER

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