Bone Splitting And Filler Insertion In The Treatment Of Hourglass Shaped Bone

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INTRODUCTION:
A complication during distraction osteogenesis is the formation of hourglass shaped bone. We show a technique we used to increase the diameter of the bone.

CASE PRESENTATION:
22 years old lady, sustained an open fracture of the shaft of the left femur after a motor-vehicle accident. Initially treated with a locking compression plate. She developed infective non-union of the fracture site. Removal of the locking plate, acute resection and docking of the left femur with gradual lengthening using monorail external fixator was done. Patient was able to obey our instructions well and diligently performed her distraction of the fracture. During follow up serial radiographs showed good osteogenesis. However, the newly formed bone was smaller in diameter in both view and had an hourglass appearance as per figure 1.

We proceeded with bone splitting and filler insertion. Through a standard lateral approach, a slit in the periosteum was made and the femur was split into 4 at the 12 o’clock, 3 o’clock, 6 o’clock and 9 o’clock position as per figure 3. The gap was then filled with demineralized bone matrix.

RESULTS:
Post-op there was an increase in the diameter of the femur as compared to previous. (Figure 2) Next step is to wait for bony consolidation.

DISCUSSIONS:
Hourglass appearance of the bone is a complication of distraction osteogenesis. Some has attributed the lack of extension of the periosteum as a cause for this whilst others say that an increased rate of lengthening produces an hourglass bone. This shape is less sturdy and is vulnerable to fracture once loaded. To increase the diameter of the bone, we attempted a novel technique of bone splitting as in Figure 3. The bone was split into 4 segments as shown and the medurally cavity filled with a filler, in this instance we used demineralized bone matrix. Post operatively patient achieved and increase in diameter in the proximal femur and is currently awaiting consolidation.

CONCLUSION:
Bone splitting and filler insertion can be used to increase the diameter of hourglass bone post lengthening.

REFERENCES:
2. Ru Li: Radiographic Classification of Osteogenesis during Bone Distraction