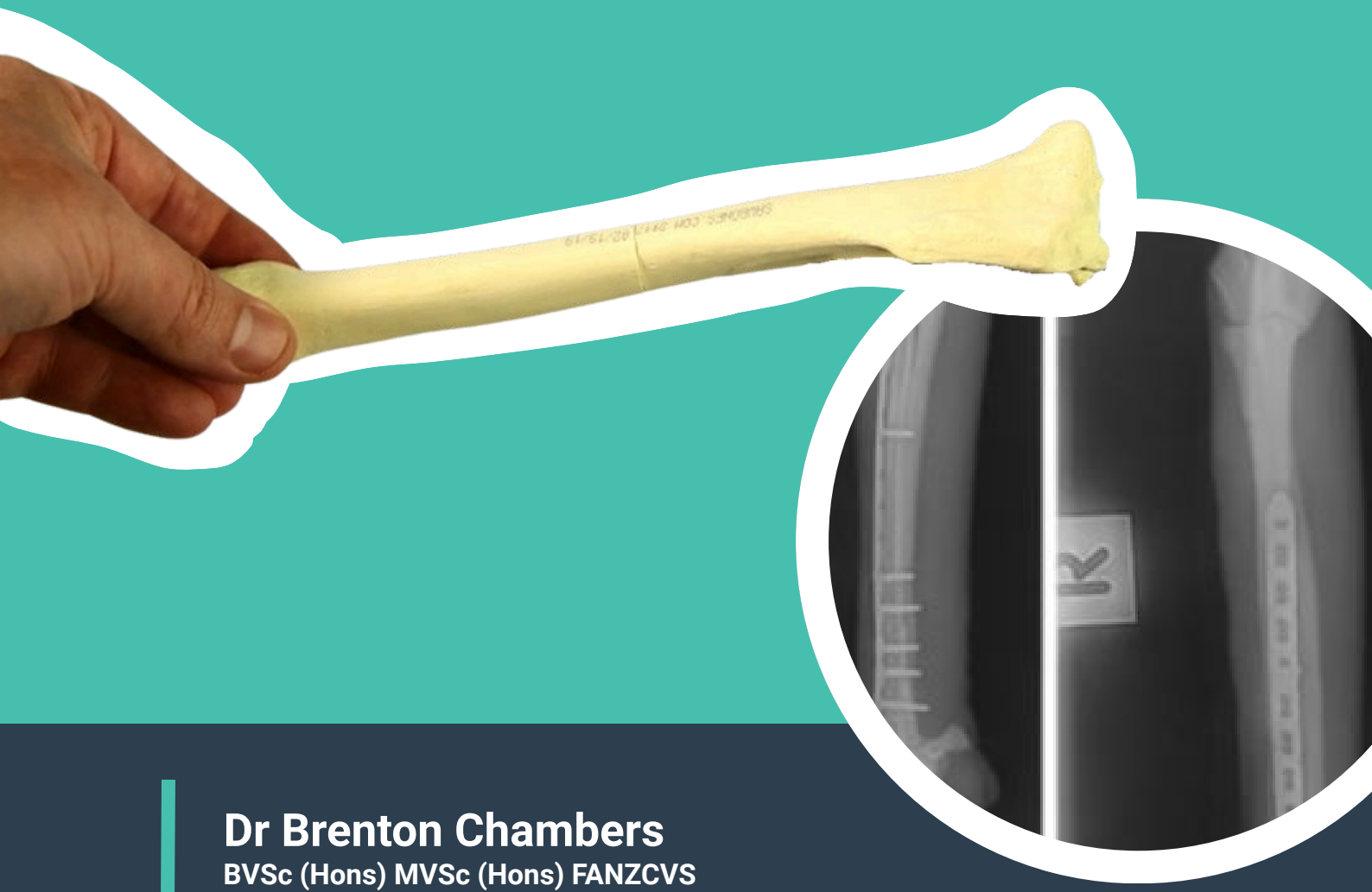
Transverse Radial Fracture Compression Plating: step by step guide



Dr Brenton Chambers
BVSc (Hons) MVSc (Hons) FANZCVS

* In this guide a tibia bone is shown, however the same principles can be applied to a radial fracture

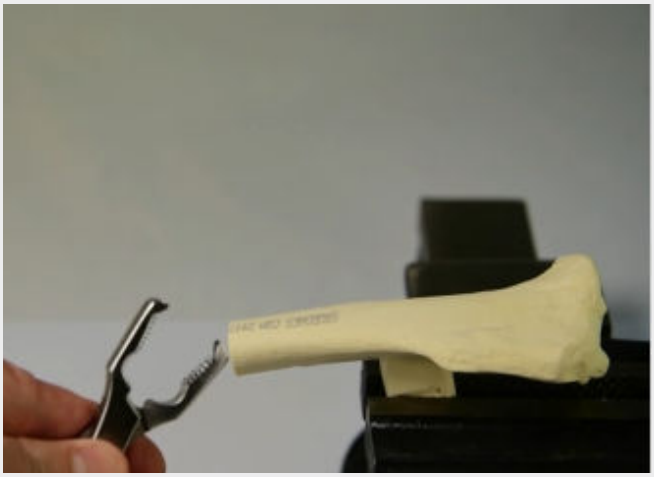
Step 1

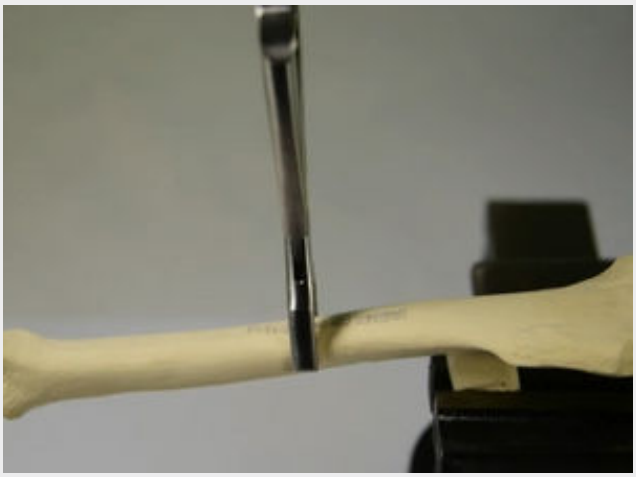
Equipment required:

- Series of bone and plate reduction forceps
- Two drill bits - 2.5mm diameter (cortical screw) and 2.8mm (locking screw)
- Locking guide
- Universal drill guide
- Screwdriver with T-15 star drive bit
- Depth gauge
- Plate bending irons
- Appropriately sized 3.5mm Locking Compression Plate (LCP)

Step 2

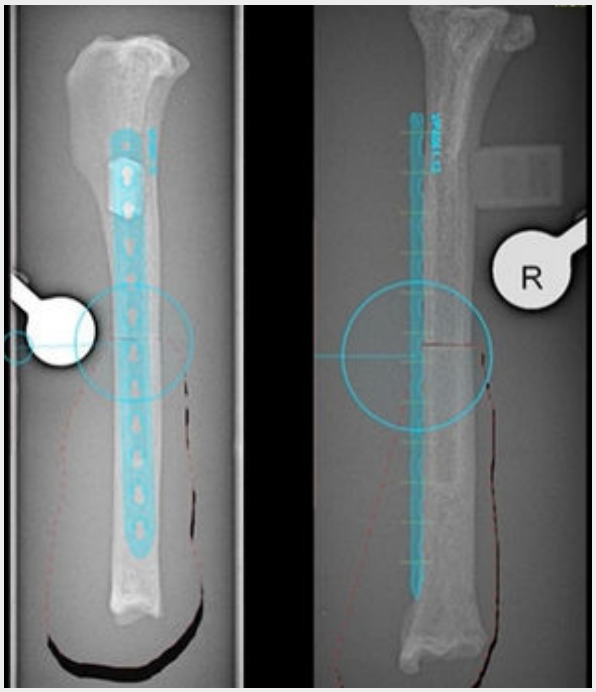
Transverse fractures can be difficult to stabilise in reduction using pointed bone reduction forceps because there is no useful bone to counteract shear forces.





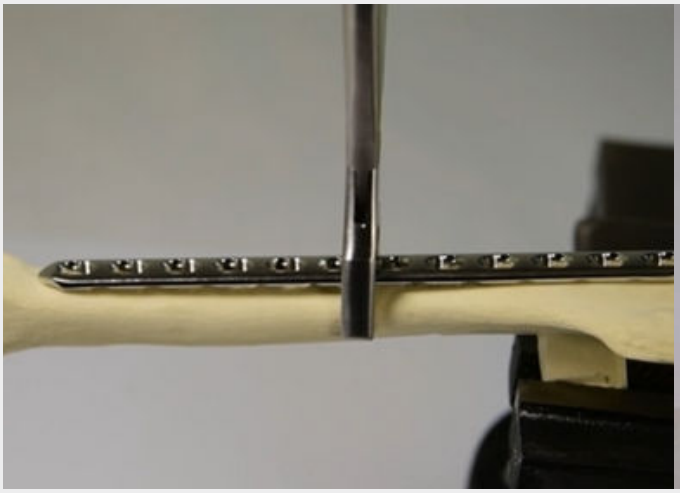
- In some cases, Kern bone holding forceps (which have more than one point) can be used to stabilise these fractures.

Step 3 VPOP PRO - Virtual Preoperative Orthopaedic Planning Tool



- Utilise VPOP Pro in the planning stage
- Select an appropriate locking compression plate to stabilise the fracture

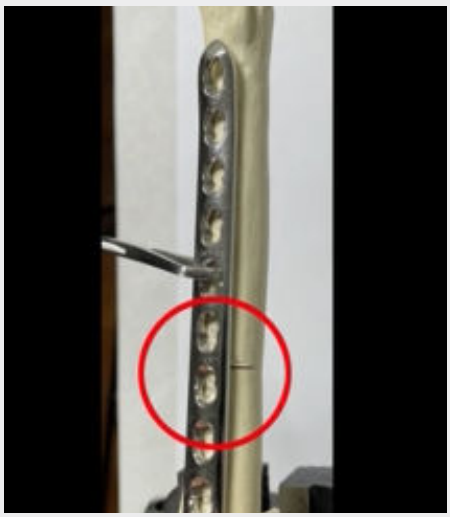
Step 4



- Apply small amount of pre-stress to the plate immediately over the fracture site to compress trans cortex. This will establish a load sharing construct between the bone and the plate - maximising its longevity.
- Contour plate with plate bending irons to establish load sharing construct between the bone and the plate

Step 5

** The Kern bone holding forceps have been removed for the purpose of the demonstration

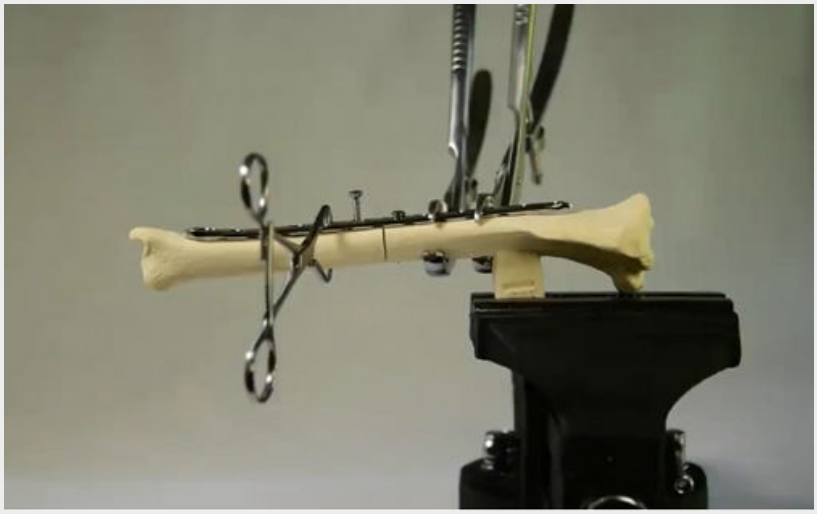


- Drill first screw hole immediately adjacent to the fracture line.
- The plate should be positioned so that there is a screw positioned either side of the fracture line, and no empty hole over the fracture.
- Drill hole in a neutral or load position through first and second cortex
- Check depth with depth gauge through the hole and select appropriate sized screws.

Step 6

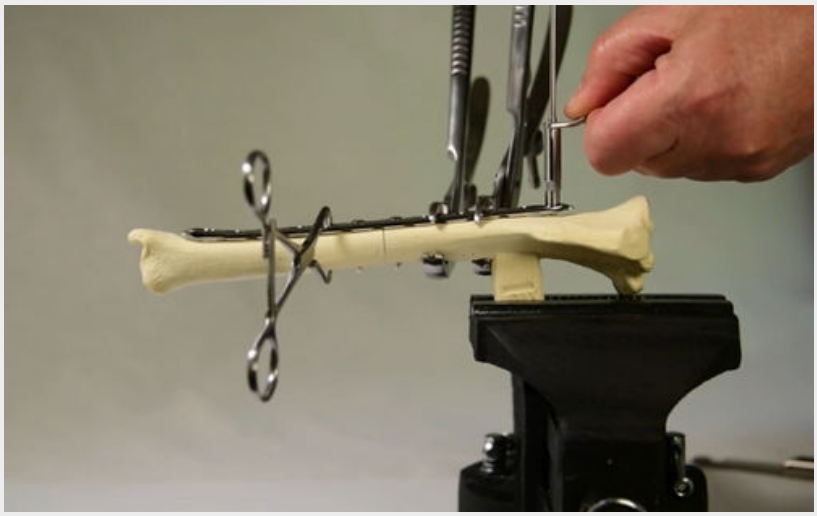
- Apply gentle pressure and encourage the cutting flutes to engage the bone
- Advance the screw just until the spherical screwhead engages the surface of the plate.

Step 7



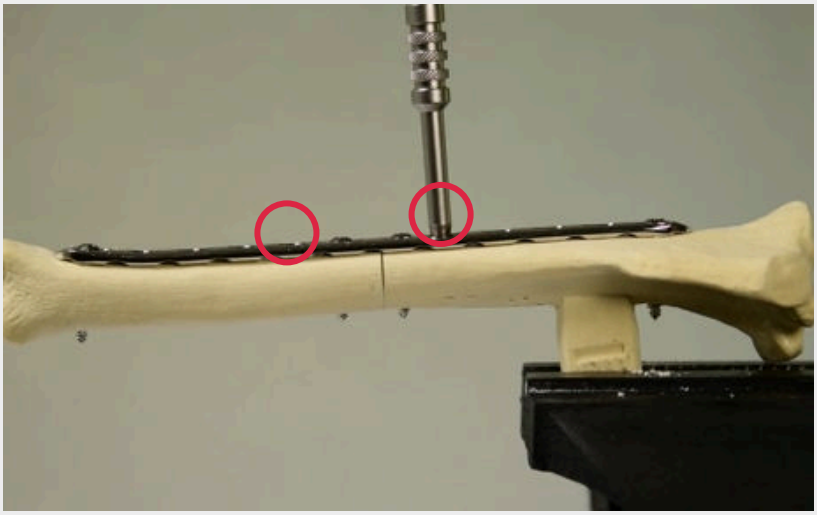
- Repeat steps 5 and 6 and place the second screw away from the fracture site using the universal drill guide. Place screw in a load position, and tighten.
- Observe what happens at the fracture gap. We should have a compressed fracture and a load sharing construct start to become established.

Step 8



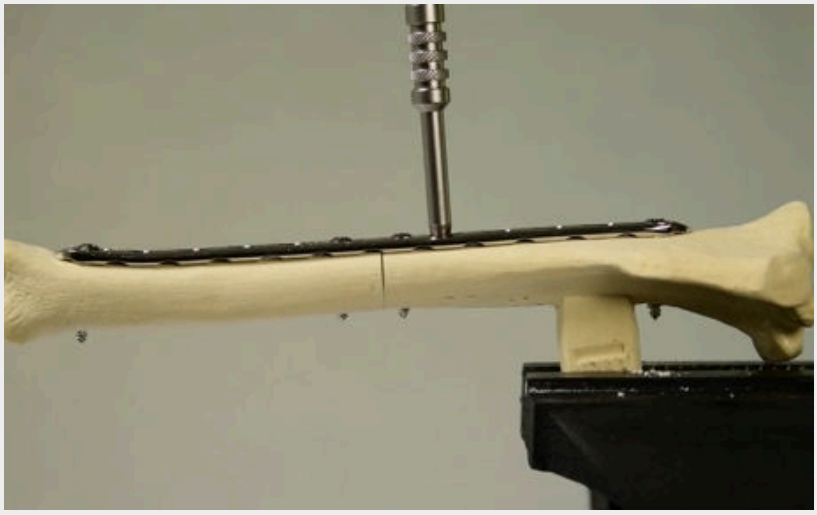
- Place the most proximal and most distal screws in the plate in a neutral position, as further compression is no longer required.
- Use universal guide and drill through 2 cortices approximately.
- Check depth with depth gauge through the hole & select appropriate sized cortical screws. Advance screws.

Step 9



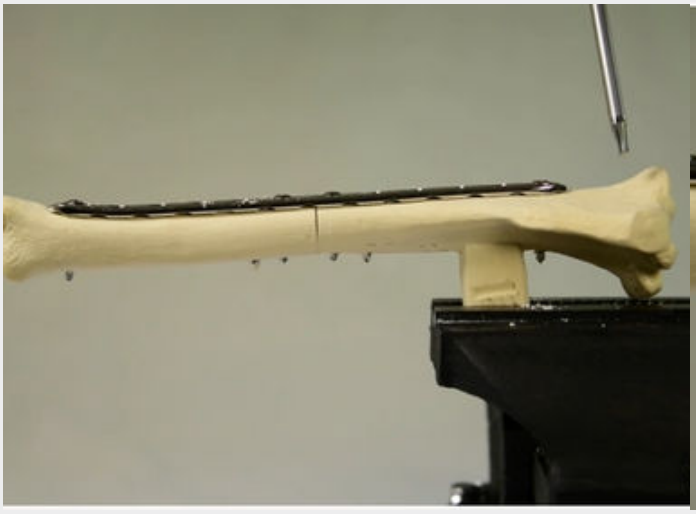
- Clamps can now be removed as the plate is securely fastened to the bone with two cortical screws in each fragment.
- Insert a locking screw in either fragment both proximally and distally as shown.
- Change to 2.8mm drill bit. Secure locking guide to the plate and drill both holes through the first and second cortexes.

Step 10



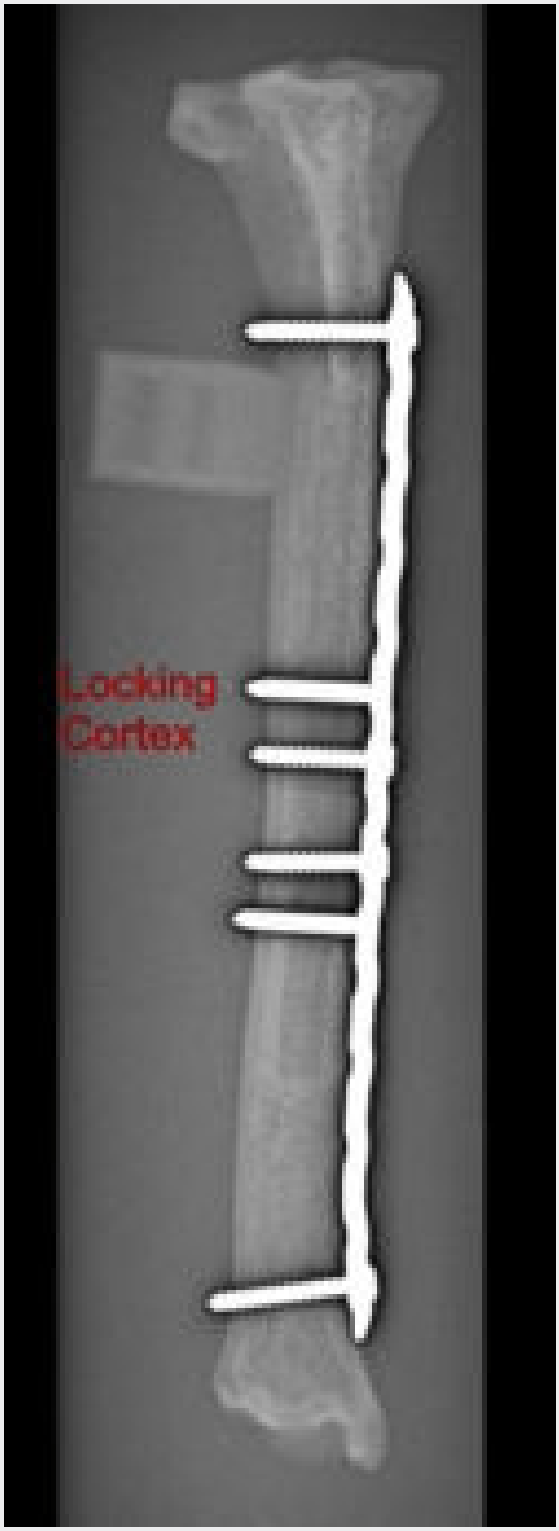
- Remove locking guide and measure both holes created
- Place locking screws and tighten

Step 11



- Fracture fixation is now complete using four cortical screws and two locking screws.
- These screws protrude further past the cortex and trans cortex by 2mm to allow complete thread engagement.

Final Result



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