

OPERATIVE TECHNIQUE

Fitbone™

Intramedullary Lengthening System

**Fitbone TAA
femur antegrade
removal**



Fitbone™

Intramedullary Lengthening System

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1 Removal step

The principles of the described operative technique and instruments are based on ideas of Professor Rainer Baumgart MD (trauma surgeon and engineer) and his personal experience of more than 2000 implanted FITBONE™ distraction nails.

Orthofix wishes to thank Professor Baumgart for his contribution to the development of this operative technique.

The surgical technique shown is for illustrative purposes only. The technique(s) actually employed in each case will always depend upon the medical judgment of the surgeon exercised before and during surgery as to the best mode of treatment for each patient. Please see the Instructions For Use for the complete list of indications, warnings, precautions, and other important medical information.

REMOVAL STEPS

Patient positioning

Place the patient in supine position and cover the opposite side completely and the foot of the leg to be operated. (Fig. 1)

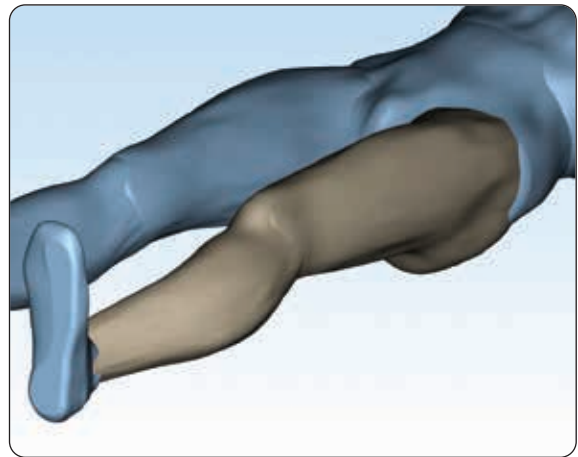


Fig. 1 Patient positioned

Nail Marking

Based on the AP x-rays mark the contour of the FITBONE inside the bone for better orientation during surgery. (Fig. 2)

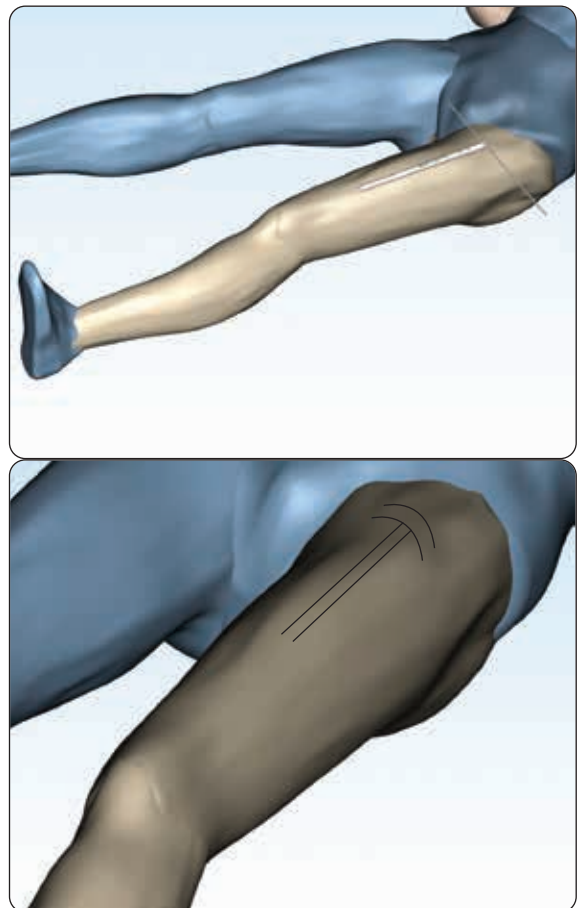


Fig. 2 Nail marking Femur

Distal and blocking screws removal

Locate the distal screw under x-ray and make a skin incision to gain access. If required, use a 5–8mm chisel to remove any bone obstructing access to the screw and remove it. (Fig. 3)

Remove all blocking screws if present.

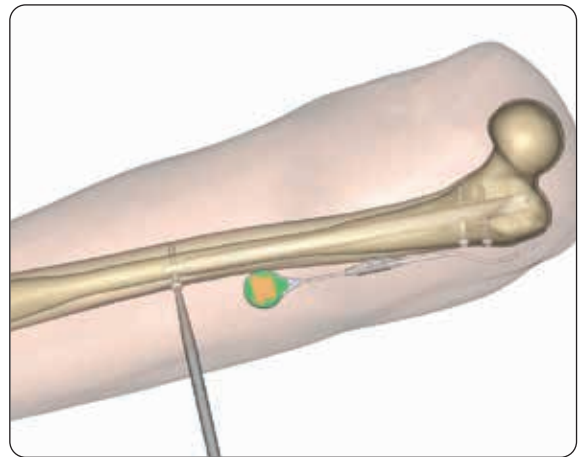


Fig. 3 Distal screw removal

Receiver removal

Make corresponding a 20mm skin incision along the scar (Fig. 4 and 5).

Locate and palpate the receiver under the skin.

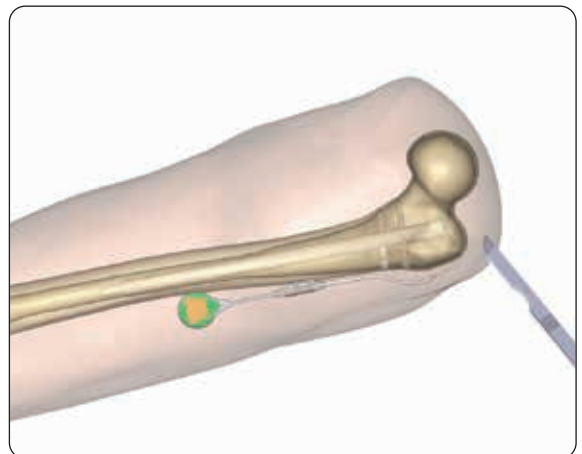


Fig. 4 Lateral cut

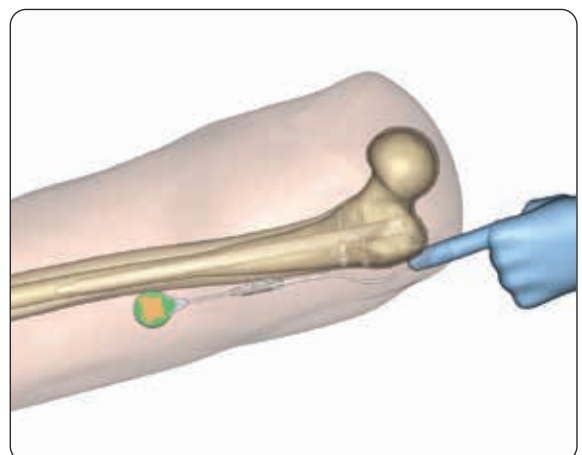


Fig. 5 Receiver extraction

Prepare and mobilize the coupling and pull it out. Use clamp to secure the cable leading to the Fitbone just before entering the bone canal. Cut off the cable after the coupling as close to the clamp as possible (**Fig. 6 and 7**).

Alternatively, cut off the cable on both sides of the coupling.

Remove the coupling and the receiver with a Kocher clamp.

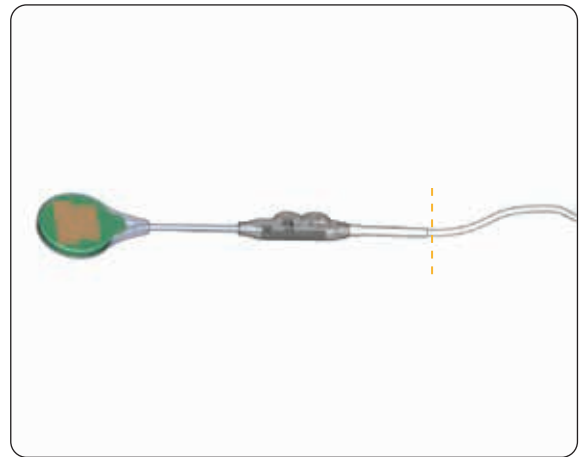


Fig. 6 Cable cut position

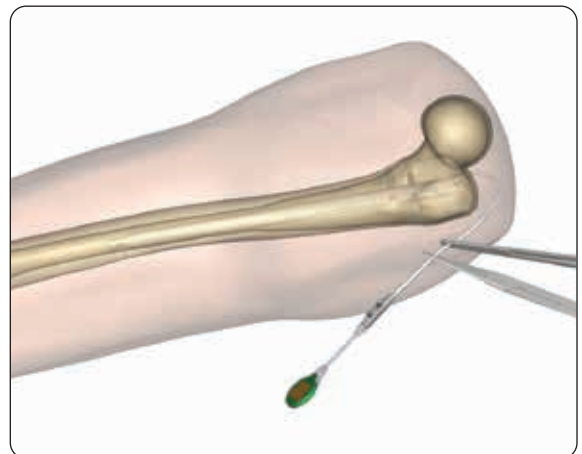


Fig. 7 Cutting the cable

Leave the clamp in place (**Fig.8**)

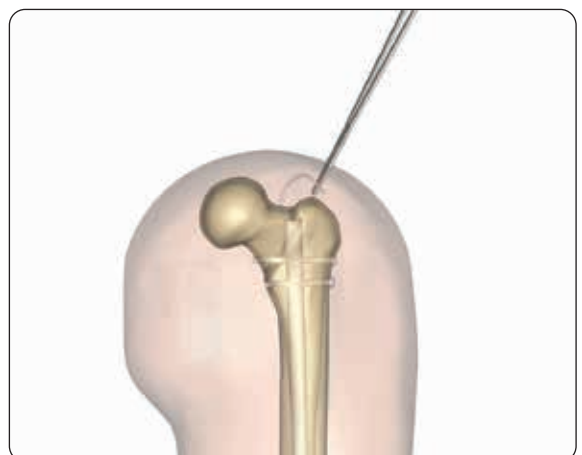


Fig. 8 Fixing the cable with a clamp

Proximal screw removal

Remove one of the proximal screws. (Fig. 9)

Do not remove the clamp from the cable.

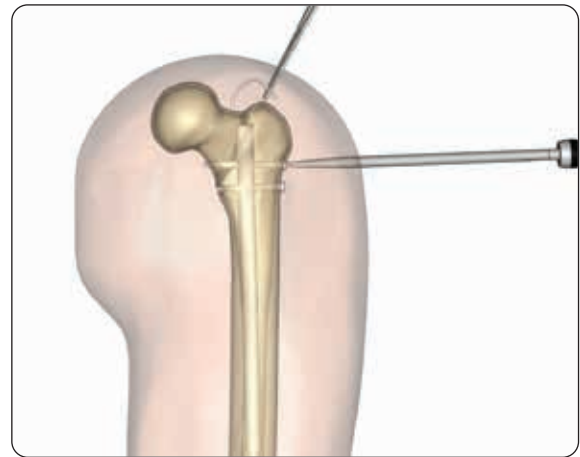


Fig. 9 Removing one of the proximal screws

Do not remove both proximal screws. (Fig. 10)

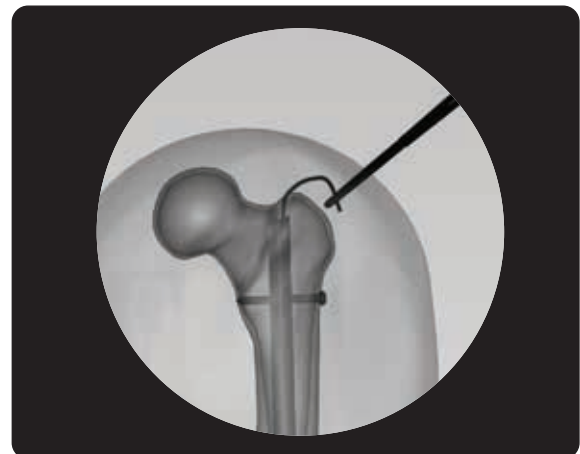


Fig. 10 Cable position after removing the cable connection

Approach

To gain better access to the nail, the leg can be also crossed. (Fig. 11)

Find the position of the nail inside the bone, if necessary under fluoroscopy.

Remove newly formed bone from the entry point with a small chisel.

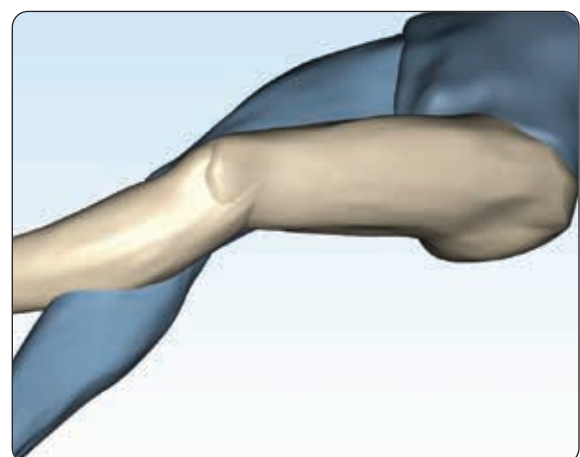


Fig. 11 Leg crossed

Cone placement

Place a 3mm K-wire central to the top of the nail. **(Fig. 12)**

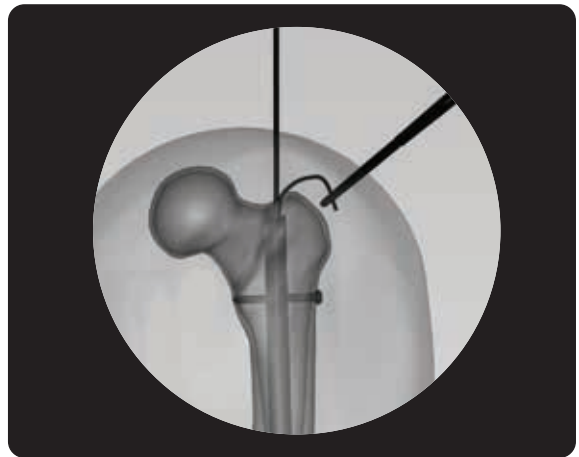


Fig. 12 K-wire position

Introduce the C13 cone over the wire and into the bone. To ensure stability, the teeth of the cone should be within the bone, not touching the Fitbone. **(Fig. 13)**

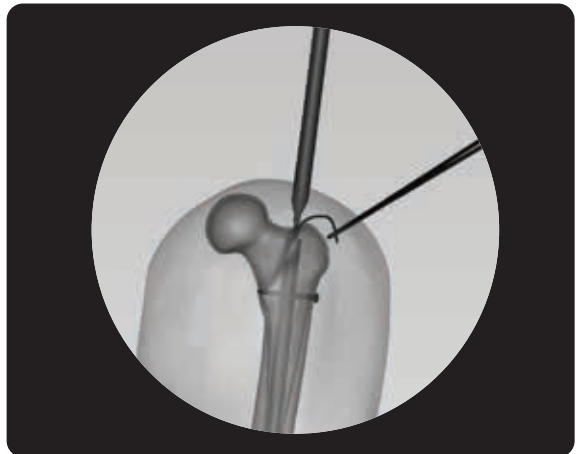


Fig. 13 Cone positioning

Tube placement

Insert the short T14/13-S or M tube with the T13 tube sinker. Insert to a depth of 5-10mm. **(Fig. 14)**

Take care not to cut the cable with the tube and do not touch the FITBONE with either the cone or the tube because that will damage the instruments.

Remove the cone and K-wire.

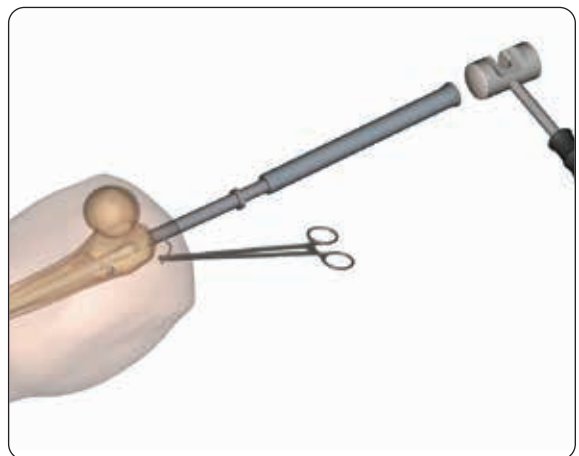


Fig. 14 Working tube insertion

Remove the clamp and use the 12mm sharp reamer to ream up to the cable by hand. **(Fig. 15)**

In some instances the reamer may capture the cable and advance into the tube.

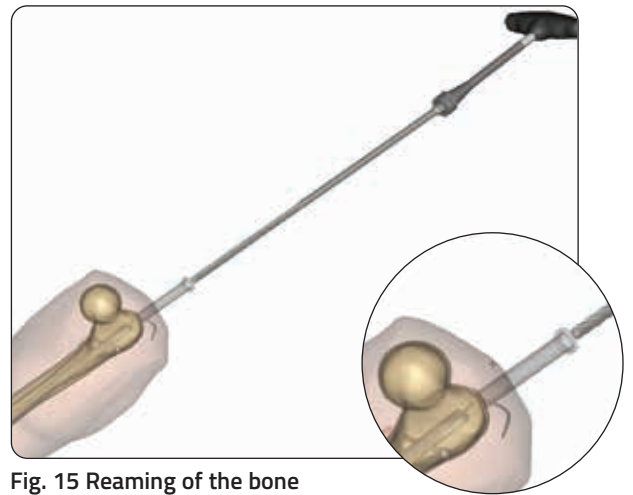


Fig. 15 Reaming of the bone

Otherwise:

Use a meniscal probe or arthroscopic hook to retrieve the cable. **(Fig. 16)**

Use the probe / arthroscopic hook to advance the cable through the tube and secure a suture to the external portion of the cable.

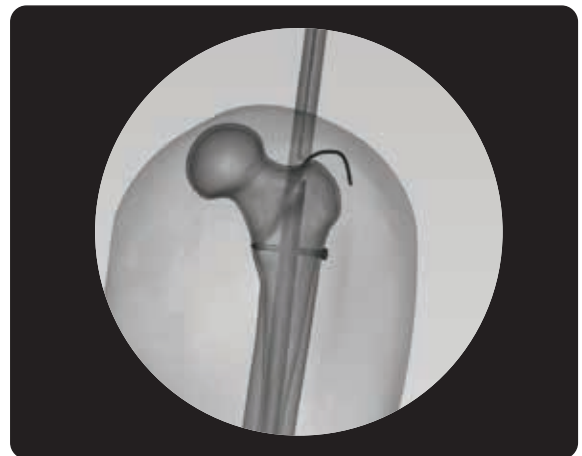


Fig. 16 Catching the cable with the arthroscopic hook

Connecting the nail and connection bolt

Pass the suture through the FITBONE connection bolt. **(Fig. 17)**

An ACL guidewire can be used to aid the passing of the suture.

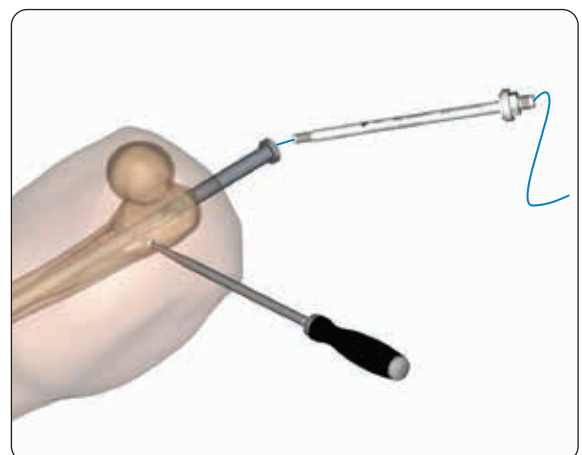


Fig. 17 Passing the cable through the Connection Bolt

Firmly attach the FITBONE connection bolt to the nail, before securing the tapping tool to the connection bolt. **(Fig. 18)**

Check under X-ray if the connection bolt is inserted into the FITBONE longitudinal aligned AP and lateral.

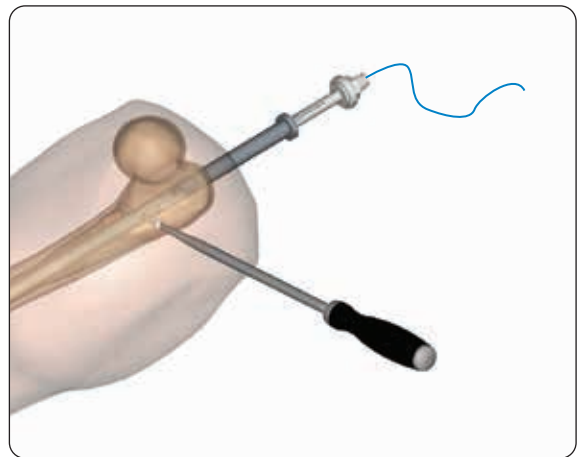


Fig. 18 Fixing the nail with the Connection Bolt

Nail removal

Disengage the final locking screw so the nail can pass upon extraction, but do not remove completely.

Should the connection between the nail and bolt become compromised during extraction, the screw can be re-introduced to secure the nail once more. **(Fig. 19)**

Use the slotted mallet (not a standard hammer) to advance the nail out of the bone. A combination of high repetitions and light to moderate force is advised to avoid damage to the knee joint and tube. **(Fig. 19)**



WARNING: Never use a hammer to drive or remove the Intramedullary Lengthening Nail FITBONE TAA into/ from the medullary cavity as doing so could damage the implant.

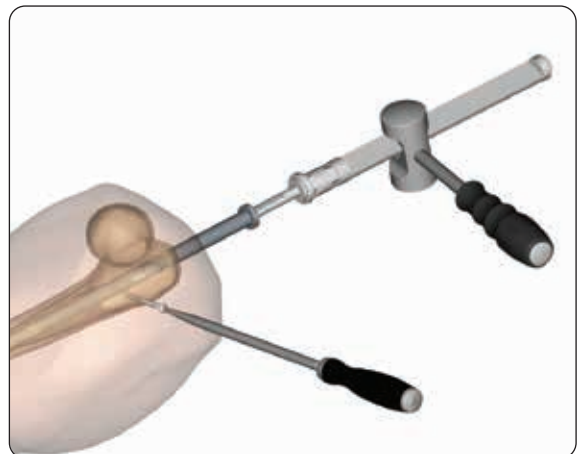


Fig. 19 Disengaging the final screw from the nail

Upon nail extraction, fully remove the final locking screw. **(Fig. 20)**

Flush the wound to remove any debris and confirm under x-ray.

Perform final x-ray control.

Perform a layered closure of the extraction site.

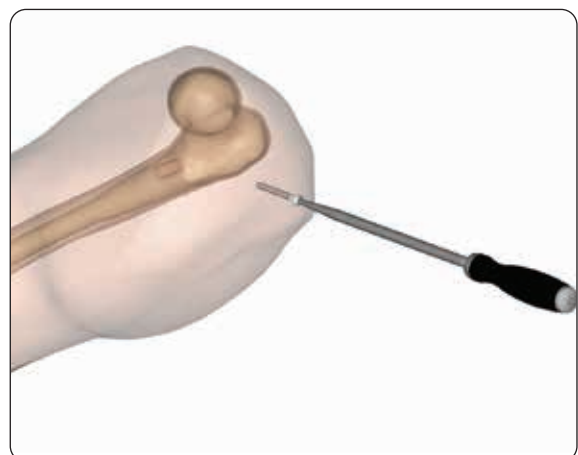
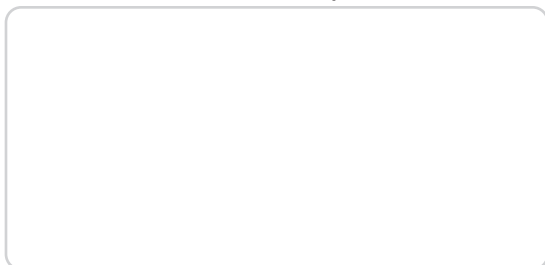


Fig. 20 Removing the screw

Please refer to the "Instructions for Use PQFBC, PQFBP and PQFBR" supplied with the product for specific information on indications for use, contraindications, warnings, precautions, adverse reactions and sterilization.

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Manufacturer info is available on the product labels and relevant IFUs.

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FB-2206-OPT-E0 A 02/23



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