Figure 2 Insertion of the intraosseous suture

gentle, axial pressure to the jaws of the needle holder. This enables the correct required force with simultaneous control to minimise any micromovement of the needle, which can lead to bending or fracture. Once the needle has advanced, the needle holder is moved a couple of millimetres further back and the manoeuvre is repeated as the needle progresses through the bone (Fig 2).

DISCUSSION

We present this novel and time efficient technique that uses inexpensive materials and applies basic orthopaedic surgical principles to achieve optimal repair. This can enable early aggressive rehabilitation while reducing the risk of repair breakdown.⁴

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Using a surgical spoon for safe thoracotomy closure in minimally invasive direct coronary artery bypass surgery

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Minimally invasive direct coronary artery bypass involves anastomosis of the left internal mammary artery to the left anterior descending artery via a small left anterior thoracotomy. This incision is closed by reapproximation of the ribs with interrupted pericostal sutures. We place a stainless steel surgical spoon (Figure 1, top), under the costal surfaces of the opened intercostal space, such that the curve of the needle follows the concave spoon surface as the tissue 'bite' is taken (Figure 1, bottom). This prevents inadvertent injury to the heart and lungs underneath and additionally facilitates needle manipulation within the limited confines of a mini-thoracotomy.

Figure 1 (top) Stainless steel surgical spoon used to facilitate thoracotomy closure after minimally invasive direct coronary artery bypass surgery; (bottom) intraoperative photograph showing a surgical spoon (arrow) placed under the superior rib of the opened intercostal space following minimally invasive direct coronary artery bypass. The needle is passed just over the superior aspect of the rib and over the surface of the surgical spoon underneath, preventing injury to underlying structures.