Channel-Assisted Minimally Invasive Repair of Acute Achilles Tendon Rupture

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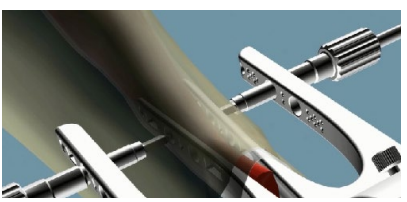
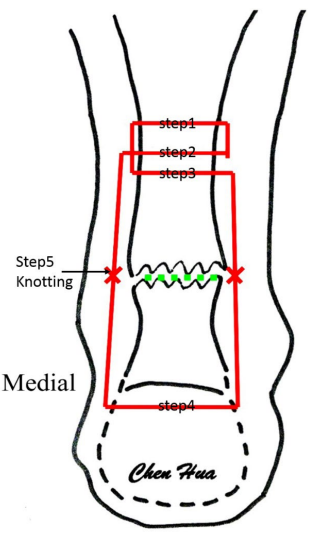
Purpose: Percutaneous (minimally invasive) suturing is a promising option for Achilles tendon (AT) repair with low rerupture and infection rates. Sural nerve lesions are the major problem to avoid with the technique. A new device was therefore designed for suturing the AT, resulting in channel-assisted minimally invasive repair (CAMIR). The purpose of this study was to compare the clinical and functional outcomes of CAMIR with traditional open techniques.

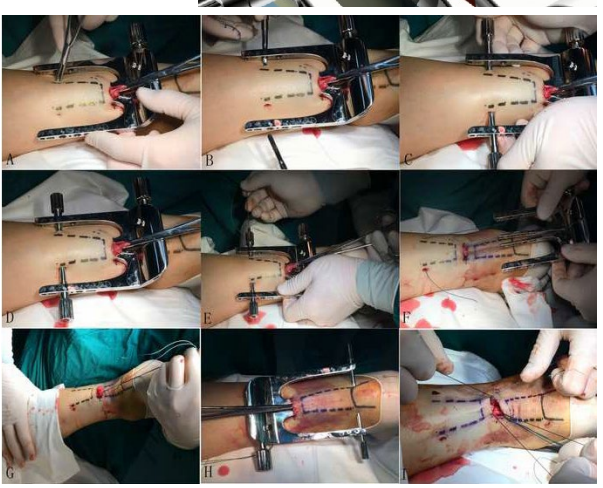
Methods: Altogether, 82 patients with AT rupture were included: 41 for CAMIR, 41 for open repair. All patients followed a standardized rehabilitation protocol. Follow-ups were at 12 and 24 months after surgery. Functional evaluation was based on the clinical American Orthopaedic Foot & Ankle Society score associated with neurologic deficit (sural nerve), calf circumference, range of motion (ROM), and isometric testing.

Results: There was no difference between groups regarding plantar flexor strength, ankle ROM, or calf circumference. CAMIR significantly decreased the operative time compared to open repair (17 vs 56 minutes, P <0.0001). Mean scar length was greater in the open repair group (10 vs 2 cm, P <0.0001). There were no wound complications in the CAMIR group but 4 in the open repair group (P <0.0001). No deep vein thrombosis, rerupture, or sural nerve injury occurred.

Conclusion: CAMIR and open repair yielded essentially identical clinical and functional outcomes. Sural nerve injuries can be minimized using CAMIR by carefully placing the suture channel with a stab incision and special trocar based on a modified Bunnell suture technique.







See pages 401 - 442 for financial disclosure information.