



Acutrak 2® Headless Compression Screw System Lower Extremity

Key Publications

Lateral Fixation of AO Type-B2 Ankle Fractures: the Acutrak Plus Compression Screw Technique

Publication Excerpt

“Lateral fixation of AO type-B2 ankle fractures by the APCS (Acutrak Plus compression screw) is a safe and effective technique. It offers several advantages including stable fixation, a small surgical wound, less dissection of soft tissue, a headless device without palpable hardware, and easy applications with a short operating time.”

Journal Abstract

The Acutrak plus compression screw (APCS) (Acumed Inc., Beaverton, OR, USA) is an intramedullary implant which can achieve stable fixation with minimum soft tissue dissection. The characteristics of the APCS include fully-threaded length, headless, cannulated, and variable thread pitch. Twenty-three patients with AO type- B2 ankle fractures treated with lateral fixation by an APCS were retrospectively reviewed. Evaluation of postoperative roentgenograms for adequacy of reduction revealed a good reduction in 22 of 23 (95.7%) patients. The average wound incision was 4.1 cm. The operative time was 25.3 minutes. All the ankle fractures showed radiographic evidence of healing within four months. At the final follow-up, the ankle scores of the patients were evaluated for functional outcomes. Good to excellent results were obtained in 21 (91.3%) patients. No patient complained of symptomatic hardware. In conclusion, lateral fixation of AO type-B2 ankle fractures by APCS offers several advantages including stable fixation, a small surgical wound, less dissection of soft tissue, no palpable hardware, and easy application with a short operating time.

Reference

Chen SH, Huang CR, Hsu TL, Lee YS. Lateral fixation of AO type-B2 ankle fractures: the Acutrak Plus compression screw technique. *Int Orthop*. 2010;34(6):903-907.

Headless Compression Screw Fixation Prevents Symptomatic Metalwork in Arthroscopic Ankle Arthrodesis

Publication Excerpt

“Using a headless screw fixation for arthroscopic ankle arthrodesis prevents symptomatic metalwork prominence and the requirement for removal.”

Journal Abstract

Background

Arthroscopic ankle arthrodesis (AAA) is a recognized salvage procedure for end-stage arthritis. Its reported disadvantages include a high rate of re-operation for symptomatic prominence of metalwork. We propose that the use of a headless screw would reduce this re-operation rate.

Methods

We reviewed 32 AAAs, using the Acutrak 6/7 mm headless screw fixation system, to determine peri-operative parameters and complication rates.

Results

At an average of 22 months follow-up, 28 (88%) had united radiologically. There were 2 stable fibrous nonunions not requiring further intervention. Of the other 2, one was successfully revised using an open technique, and the other patient died of unrelated causes. There were no other complications in this series, with no cases of metalwork removal for prominence or pain.

Conclusions

Using a headless screw fixation for arthroscopic ankle arthrodesis prevents symptomatic metalwork prominence and the requirement for removal.

Reference

Odutola A, Sheridan B, Kelly AJ. Headless compression screw fixation prevents symptomatic metalwork in arthroscopic ankle arthrodesis. *Foot Ankle Surg.* 2012;18(2):111-113.

Torsional Stiffness After Subtalar Arthrodesis Using Second Generation Headless Compression Screws: Biomechanical Comparison of 2-Screw and 3-Screw Fixation

Publication Excerpt

“Performance of the tapered, fully threaded, variable pitch screws exceeded that of conventional lag screws regardless of whether two or three screws were used. Additional resistance to internal rotation afforded by a third screw placed anteriorly may offer some advantage in patients at risk for nonunion.”

Journal Abstract

Background

Subtalar joint arthrodesis is a common operative treatment for symptomatic subtalar arthrosis. Because excessive relative motion between the talus and calcaneus can delay or prohibit fusion, fixation should be optimized, particularly in patients at risk for subtalar arthrodesis nonunion. Tapered, fully-threaded, variable pitch screws are gaining popularity for this application, but the mechanical properties of joints fixed with these screws have not been characterized completely. We quantified the torsion resistance of 2-screw and 3-screw subtalar joint fixation using this type of screw.

Methods

Ten pairs of cadaveric subtalar joints were prepared for arthrodesis and fixed using Acutrak 2–7.5 screws. One specimen from each pair was fixed with two diverging posterior screws, and the contralateral joint was fixed using two posterior screws and a third screw directed through the anterior calcaneus into the talar neck. Internal and external torsional loads were applied and joint rotation and torsional stiffness were measured at two torque levels.

Findings

Internal rotation was significantly less in specimens fixed with three screws. No difference was detectable between 2-screw and 3-screw fixation in external rotation or torsional stiffness in either rotation direction. Both 2-screw and 3-screw fixation exhibited torsion resistance surpassing that reported previously for subtalar joints fixed with two diverging conventional lag screws.

Interpretation

Performance of the tapered, fully threaded, variable pitch screws exceeded that of conventional lag screws regardless of whether two or three screws were used. Additional resistance to internal rotation afforded by a third screw placed anteriorly may offer some advantage in patients at risk for nonunion.

Reference

Riedl M, Glisson RR, Matsumoto T, Hofstaetter SG, Easley ME. Torsional stiffness after subtalar arthrodesis using second generation headless compression screws: Biomechanical comparison of 2-screw and 3-screw fixation. *Clin Biomech*. 2017;45:32–37.



Acumed Headquarters
5885 NE Cornelius Pass Road
Hillsboro, OR 97124
Office: +1.888.627.9957
Office: +1.503.627.9957
Fax: +1.503.520.9618
www.acumed.net

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