

## **Pilon Fractures Treated With Acute Tibiotalar Fusion With Antegrade Nail: A New Approach to a Significant Injury**

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**Purpose:** Pilon fractures are complex, potentially limb-changing injuries. The high-energy nature, comminuted fracture patterns, and associated soft-tissue injuries pose significant challenges to the surgeon treating these injuries. As a result, historically the treatment of pilon fractures has been associated with high rates of complications including wound complications, infection, union delays, and amputation. New techniques are needed to improve patient outcomes and reduce these significant risks.

**Methods:** A retrospective outcome review was completed of all pilon fractures treated with acute tibiotalar fusion with antegrade nail in our UK major trauma center.

**Results:** All pilon fractures treated over a 7-year period were reviewed and a total of 117 identified. 42 patients had Ruedi and Allgower type-3 injuries. Of these 42 patients, 6 patients treated with acute tibiotalar fusion with antegrade nail were identified. There were 5 males and 1 females with an average age of 41.5 years. Five patients have successfully achieved infection-free fusion. One patient is partially fused; however, full fusion cannot be confirmed yet due to the time from surgery.

**Conclusion:** Managing these injuries by acute tibiotalar fusion with antegrade nail has its advantages. The entry point for the nail is outside of the zone of injury, patients can fully weight-bear postoperatively, the incisions within the zone of injury are small, and the necessity for second surgery for complications such as posttraumatic ankle arthritis are removed. In a study of 42 patients with type-3 Ruedi and Allgower pilon fractures treated with classical open reduction and internal fixation techniques, 26 patients developed symptomatic posttraumatic arthritis. This novel, safe, and reproducible technique permits early return to function, has the potential to shorten total treatment time, and therefore we believe it is a key option in managing these complex injuries.