

How To Diagnose and Treat Infection in Total Ankle Arthroplasty

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KEYWORDS

- Total ankle arthroplasty • Infected total ankle arthroplasty
- Periprosthetic ankle infection • Diagnosis of total ankle arthroplasty infection
- Treatment of total ankle arthroplasty infection

KEY POINTS

- Periprosthetic infection after total ankle arthroplasty (TAA) is a serious complication, often requiring revision surgery, including revision arthroplasty, conversion to ankle arthrodesis, or even amputation.
- Risk factors for periprosthetic ankle infection include prior surgery at the site of infection, low functional preoperative score, diabetes, and wound healing problems more than 14 days postoperatively.
- The clinical presentation of patients with periprosthetic ankle joint infection can be variable and dependent on the infection manifestation: acute versus chronic.
- The initial evaluation in patients with suspected periprosthetic joint infections should include blood tests: C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR).
- Joint aspiration and synovial fluid analysis can help confirm suspected periprosthetic ankle infection.

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INTRODUCTION

Periprosthetic infection after TAA is a serious complication, often requiring revision surgery, including revision arthroplasty, conversion to ankle arthrodesis, or even amputation. There are few studies addressing wound complications and periprosthetic infections in patients who have undergone TAA.

Early diagnosis and treatment of TAA infection is crucial to improving the probability of salvaging the prosthesis. An exact and complete history; careful clinical assessment; standard radiographic assessment including conventional radiographs and possibly advanced imaging (eg, computed tomography [CT]); laboratory work; joint aspiration, and microbiological work-up are necessary for appropriate planning of the therapy. A periprosthetic infection may occur early or later after prosthesis implantation. Patients may present with acute infection or low-grade infection without clinical symptoms.

The primary aims of treatment of infected TAA are eradication of infection; prevention of further complications including avoiding wound issues; and limb salvage. Salvage of the prosthesis is secondary. Data on treatment algorithms for infected TAA are scarce. This article describes diagnostic and treatment algorithms in patients with periprosthetic ankle infections.

EPIDEMIOLOGY AND RISK FACTORS

Unlike for patients with hip or knee arthroplasties, data on periprosthetic ankle infections are limited. Myerson and colleagues¹ performed a retrospective study to describe the demographics and their treatment protocol in patients with periprosthetic ankle infections. In total, 19 patients with infections were described: 14 of 433 cases (3.2%) with the Agility prosthesis (DePuy, Warsaw, IN), 1 of 139 cases (0.7%) with the Salto Talaris prosthesis (Tornier, Saint-Ismier, France), and 4 cases from other institutions. These 19 cases included 15 late chronic infections, 3 early postoperative infections, and 1 acute hematogenous infection.¹ In 2010, Gougoulis and colleagues² performed a systematic literature review including 13 level IV studies, with a total of 1105 ankle arthroplasties. Wound healing problems including superficial infections, delayed wound healing, and local skin necrosis, were observed in 66 of 827 cases (8.0%), with a range between 0% and 14.7% in the individual studies. Deep infections were reported in 7 of 827 arthroplasties (0.8%), ranging from 0% to 4.6% in the individual studies.² More recently, Zaidi and colleagues³ performed a systematic review and meta-analysis including 58 clinical publications and 7942 ankle arthroplasties. Postoperative complications were analyzed in 41 articles, with 5579 ankle arthroplasties. Superficial infections were seen in 2.4% of all cases (95% CI, 1.3–3.8). Deep infections occurred in 1.1% of all arthroplasties (95% CI, 0.7–1.7).³

Due to the common limitation in the literature addressing TAA — a low number of patients — it is often difficult to draw any clinically meaningful and statistically significant conclusions.⁴ Kessler and colleagues⁵ performed a matched case-control study that included 26 patients with periprosthetic ankle joint infections and 2 control groups to identify possible risk factors. In this study, the prevalence of periprosthetic joint infection was 4.7%, with the majority of infections (85%) having an exogenous origin. The following statistically significant risk factors were identified: prior surgery at the site of infection (odds ratio [OR] 4.56 in comparison with the age/gender-matched group and OR 4.78 in comparison with the date of surgery-matched group) and low American Orthopaedic Foot and Ankle Society hindfoot score (35.8 vs 49.8 in the age/gender-matched group and 47.6 in the date of surgery-matched group). The mean initial TAA surgical time was significantly longer in the infection group: 119 minutes vs 84 minutes in the age/gender-matched group and 93 minutes in the date

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