

Osteomyelitis and the “Probe to Bone” test in Persons with Diabetes: Relevant, Reliable, or Relic?

Lawrence A. Lavery,¹ David G. Armstrong² Christopher S. Wendel³ Edgar Peters⁴
Benjamin A. Lipsky⁶

¹Department of Surgery, Scott and White Hospital, Texas A&M University Health Science Center College of Medicine, Temple, Texas ² Dr. William M Scholl College of Podiatric Medicine, Rosalind Franklin University of Medicine and Science, North Chicago, USA, ³Epidemiology and Biostatistics Division, Research Service, Southern Arizona Veterans Affairs Medical Center, Tucson, Arizona, USA ⁴ Department of Medicine University of Washington and the VA Puget Sound Health Care System, Seattle Washington⁶,

Background: “Probing to Bone” (PTB) has long been used as a rapid screening tool to detect osteomyelitis. This has largely been based on data derived from clinical experience and one clinical trial of high-risk hospitalized patients using a variety of diagnostic criteria. The purpose of the current study was to assess the value of PTB to diagnose osteomyelitis compared to bone biopsy-driven diagnoses.

Methods: We enrolled 1666 consecutive persons with diabetes who presented to a large, urban, managed-care diabetes disease management program. The patients underwent a standardized general medical and detailed foot assessment at enrollment and high risk patients had regular foot examinations thereafter. Foot infections (soft tissue and bone) were defined by criteria consistent with International Working Group guidelines. Osteomyelitis was defined as a positive bone culture.

Results: Of the first 1666 persons enrolled, 50.3% were male and the mean age was 69.1±11.1 years. Over a mean of 27.2 months of follow-up 151 people developed 199 foot infections., 19.9% of these infections involved bone. PTB was highly sensitive (86.7%) and specific (90.8%). PTB had a low positive predictive value (56.5%), but high negative predictive value (98.0%).

Conclusions: Foot infection is a frequent complication of foot ulcers, with one in five of these infections involving bone. In a population with a relatively normal prevalence of osteomyelitis, PTB may be insufficient to diagnose osteomyelitis, but a negative test likely excludes the diagnosis.