

# **The Use of Osseointegrated Titanium Implants to Treat Bilateral Amputees**

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## **What was the question?**

Current socket prostheses remain problematic, resulting in more than 90% of patients with bilateral above-knee amputations being confined to a wheelchair due to the difficulty of mobilizing with prosthetics on both lower limbs. Osseointegration has been regarded as a novel approach to overcome persistent socket prosthetic issues, using a transcutaneous implant directly attached to the residual bone. A number of bilateral amputees have been treated with osseointegration in our centre since July 2012. Aim of this study is to report the early clinical outcomes in this particular group of patients, including the results of functional and quality of life assessments, and safety of the osseointegration procedure.

## **How did you answer the question?**

Our osseointegration registry was retrospectively reviewed to identify 35 bilateral osseointegration patients, consisting of 30 males and 5 females, aged 22–66 (mean 36) years at surgery, with minimum two-year follow-up. Selection criteria were age over 18 years, bilateral amputees who had socket-related problems or were wheelchair-bound with short stumps and non-reconstructable limb pathology. Principle outcome measures included the Questionnaire for persons with a Trans-Femoral Amputation (Q-TFA), Short Form Health Survey 36 (SF-36), Six Minute Walk Test (6MWT), Timed Up and Go (TUG), and K-levels. Adverse events were recorded including infection, revision surgery, fractures, and implant failures.

## **What are the results?**

Comparisons were made using differences between the mean pre-operative and mean post-operative values for each outcome measure. Significant improvements in all validated outcome measures were observed. The occurrence levels of adverse events, including the infection rate and revision rate, were similar to other established trans-femoral osseointegration studies.

## **What are your conclusions?**

These preliminary results indicate that osseointegration surgery is a safe and effective alternative treatment for bilateral amputees experiencing socket-related discomfort. Compared to the suboptimal outcomes of socket prostheses, osseointegration currently provides one of the best chances for any bilateral amputee to walk again and regain the ability to perform daily activities.