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**Title**

Safety of osseointegrated implants for Transtibial amputees

**Coauthors**

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**Summary**

Osseointegration is a potential treatment option for transfemoral amputees experiencing socket related problems. Up to this date, there is little data assessing the feasibility and advantages of osseointegration in individuals with transtibial amputations.

**Introduction/ basics**

Osseointegration is a potential treatment option for transfemoral amputees experiencing socket related problems. Up to this date, there is little data assessing the feasibility and advantages of osseointegration in individuals with transtibial amputations.

**Material method; implementation/ process**

We prospectively followed 91 patients undergoing transtibial osseointegration from 2014-2018 who either 1) reported pain or mobility dissatisfaction with their transtibial socket prosthesis (TSP); 2) had an intact limb with incapacitating pain, complex deformity, or profound distal weakness, whose functional capacity was considered improvable by amputation; or 3) were recent amputees preferring osseointegration to TSP rehabilitation. Patient were followed up post-operatively for a minimum of 24 months. Adverse events were monitored including infection, periprosthetic fracture, implant breakage, aseptic loosening, need for revision surgery/ additional amputation and death. Functional outcomes were measured using the Questionnaire of persons with a Trans-femoral amputation (Q-TFA) and mobility level was assessed using the Six Minute Walking Test (6MWT) and Timed Up and Go (TUG).

**Results**

102 procedures were performed for 91 patients. There was a significant increase in the Q-TFA global score, the 6MWT and the K-levels during follow-up. At one year following Osseointegration surgery, all patients were pain-free, the 11 patients who were wheelchair-

bound prior to surgery were ambulatory, and the other 27 patient unable to walk prior to surgery, demonstrated improved mobility. There were 7 cases of implant removals due to pain and loosening and 10 cases of revisions within an average of 1.8 years, of which 1 was aseptic loosening, 6 due to infection, 1 failure to integrate and 2 implant fractures. Twenty-three patients required washouts for infection management. Unplanned refashioning and nerve reinnervation occurred in 8 patients each. No periprosthetic bone fractures occurred. Four patients died due to non-osseointegration related underlying medical conditions.

### **Discussion/ conclusion; conclusion for the practice**

Transtibial osseointegration results in improved functional outcomes after amputation.

Complications are manageable and should decrease with surgical and implant improvements.

### **References**

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