

Prosthetic Provision for Transtibial Amputees Improves Function and Quality of Life

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Purpose: Traumatic events requiring amputation are a major source of disability in lower middle-income countries (LMIC). Despite this, most amputees do not have access to prostheses, exacerbating their disability. Prior research in transfemoral amputations has demonstrated that prosthetic provision can provide patients with major improvements in functional outcomes and quality of life. However, research regarding the impact of prosthetic provision to transtibial amputees in LMICs is limited.

Methods: This study identified transtibial amputees fitted for prostheses from January 2022 to September 2023. This was a double-arm study that enrolled patients at two major orthopaedic trauma centers in a low-resource area. Prosthesis usage, function, return-to-work, and quality-of-life data (as measured by EQ5D, PLUS-M™, and AMPPRO questionnaires) were collected.

Results: Of 23 patients fitted with a prosthesis, 18 (78%) completed 1-year follow up. The indications for amputation included 12 (68%) trauma, 4 (22%) diabetes, 1 (6%) tumor, and 1 (6%) congenital. The average age was 45.3 years (SD = 16.8). Over the course of 1 year of wear, a total of three feet and three sockets were repaired or replaced. At the time of 1-year follow up, an additional three feet were recommended for replacement. At 1-year follow up, 15 of 18 (83%) patients were actively using their prosthesis. The reason for abandonment in all three patients was a result of need for repair. EQ5D and Plus-M scores were significantly higher in those patients actively using their prosthesis at 1 year compared to those not using their prosthesis ($p = 0.05$, $p < 0.01$, respectively). Overall, the EQ5D score improved from 0.76 immediately postamputation to 0.93 at 1 year ($p < 0.01$). The Plus M score improved from 39.4 at amputation to 52.9 at 1 year ($p < 0.01$). The AMPPRO score improved from 32.7 prior to prosthetic to 39.3 at 1 year ($p < 0.001$).

Conclusion: At 1-year follow up, low-cost prosthetic provision for transtibial amputees demonstrates positive impacts on return-to-work and overall quality of life. The impact was significantly greater for those who continued use over time, placing a strong emphasis on the importance of repair or replacement. The findings of this work demonstrate that low-cost prostheses in transtibial amputees offer sustained positive impacts at 1-year follow up.