

## **The Long-Term Impact of Prostheses for Transfemoral Amputees in Tanzania**

**Francisco Gomez Alvarado, BA; Babapelumi Adejuyigbe, BS; Michael J. Flores, MD; Alexander Hetherington; Saam Morshed, MD; David Shearer, MD, MPH**

**Purpose:** Amputations are prevalent in low- and middle-income countries due to a growing burden of both trauma and diabetes. Many above- knee amputees in these settings do not have access to prosthetic devices, which exacerbates their disability. This study aimed to assess the long-term functional outcome and prosthesis survivorship for patients provided with a low-cost prosthesis in Tanzania.

**Methods:** This study identified transfemoral amputees fitted for prostheses between June 2017 and July 2018 with long-term follow-up data collected from August to December 2021. Quality of life as measured by the EuroQol 5 Dimensions (EQ5D), Prosthetic Limb Users Survey of Mobility (PLUS-M), prosthesis usage, and resource utilization was collected via in-person or telephone visits. A Kaplan-Meier survivorship analysis was performed to estimate the rate of prosthesis usage and replacement over time.

**Results:** Of 47 patients fitted with a prosthesis, 34 (72%) completed a long-term follow-up an average of 3.5 years post-amputation. Over the follow-up period, 1 socket, 5 entire prostheses, and 3 other parts were replaced. There were an additional 6 sockets, 6 knees, and 6 feet that were recommended to have adjustment or replacement at long-term follow-up. Kaplan-Meier estimate at the final follow-up showed a 40.4% survivorship (95% confidence interval [CI]: 21.9%-58.2%). For patients using a prosthesis at long-term follow-up, the mean EQ5D was 0.977 (95% CI: 0.955-0.999) compared to 0.668 (95% CI: 0.571-0.765) immediately post- amputation. The mean EQ5D at long-term follow-up for prosthesis non-users was 0.708 (95% CI: 0.564-0.852). The mean PLUS-M at long-term follow-up was 47.2 (95% CI: 38.4-56.0) compared to 31.4 (95% CI: 24.1-38.7) immediately post-amputation. At long-term follow-up, the mean PLUS-M for prosthesis non-users was 44.6 (95% CI: 34.0-55.1).

**Conclusion:** This long-term study on prosthetic use among transfemoral amputees in Tanzania demonstrates sustained prosthesis utilization with high function and quality of life after nearly 4 years. However, prosthesis replacement and repair are commonly needed to maintain prosthesis utilization. These findings support prior work showing that the provision of a prosthesis is cost-effective, but also highlight the need for sustained support for prosthesis repair and replacement.