Breakthrough research from SAWC Spring/WHS: Outcomes between ray and TMA patients with forefoot pathology

MedStar Georgetown study finds 98% overall limb salvage rate for both procedures, with similar functional and quality of life scores.

GRAPEVINE, TX, UNITED STATES, May 3, 2025 /EINPresswire.com/ -- A retrospective cohort study by MedStar Georgetown University Hospital saw groundbreaking results comparing the functional and quality of life (QoL) outcomes between patients undergoing ray or transmetatarsal amputations (TMA) for forefoot pathology.

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>
> *Ali Qadri, DPM*

Key Findings:
- High overall limb salvage rate of 98% for both procedures.
- Complication and Return to Operating Room (ROR) rates: Overall complication rate of 68% was reported and similar ROR rates for both groups: 35.6% (Ray) vs. 38% (TMA).
- Similar functional scores reported: Lower Extremity Functional Scale (LEFS): 42.9 (Ray) vs. 45.3 (TMA).
- Similar Quality of Life (QoL) SF-12 scores reported: 29.4 (Ray) vs. 301. (TMA).
- Patients with ray amputations reported significantly better mental health outcomes compared to those with TMA.

The breakthrough research was presented today at the 2025 Symposium on Advanced Wound Care (SAWC) Spring/Wound Healing Society (WHS), challenging traditional surgical preferences and suggesting that ray amputations can provide similar patient-centered benefits when compared to TMA.

The study, led by Ali Qadri, DPM, Foot and Ankle Surgery Fellow at MedStar Georgetown, analyzed 95 ambulatory adult patients who underwent amputation procedures between June 2021 and June 2023. It compared 50 patients who underwent TMA to 45 patients who received ray amputations. Primary clinical outcomes included complications, limb salvage, and mortality. Additionally, each patient completed a functional assessment measured by the Lower Extremity

Functional Scale (LEFS) a quality of life (QoL) assessment using the SF-12 Health Survey, and a mental health assessment using the SRQ-20 Survey.

Complication rates were high overall (68.4%), and both groups required similar rates of return to the operating room (ROR) for surgical revisions (TMA: 38%, Ray: 35.6%). Overall limb salvage rates were also high (97.9%). The results revealed no statistically significant differences in functional scores (LEFS: 45.3 vs. 42.9) or QoL (SF-12: 30.1 vs. 29.4) between the two groups. However, a significant decrease in psychological distress measured by SRQ-20 scores was reported in the Ray amputation group compared to the TMA group.

“We hope our findings will encourage a more nuanced approach to surgical planning for patients with forefoot pathology/infections, particularly in cases where both TMA and ray amputations are viable options,” said Qadri. “Rather than defaulting to more proximal amputations out of habit or perceived simplicity, our results suggest that with careful patient selection, ray amputations can provide comparable or even superior functional outcomes in select cases.”

The study challenges conventional surgical preferences, particularly for clinicians who lean toward TMA.

“To clinicians who traditionally favor TMA, we understand the instinct to choose what seems most definitive or ‘clean,’ especially in complex or high-risk cases,” said Qadri. “However, we encourage a reexamination of that default. Our study doesn’t suggest ray amputations are always better—rather, it highlights that they can be a viable, limb-preserving option in the right clinical context.”

Qadri emphasized that the findings could empower patients and encourage more collaborative surgical planning.

“For patients, especially those facing difficult decisions around limb preservation, our findings offer valuable context,” Qadri said. “Knowing that ray amputation may preserve more foot function and possibly reduce energy expenditure during ambulation can be incredibly empowering. It enables patients to ask informed questions, weigh trade-offs more meaningfully, and actively participate in selecting the surgical option that aligns with their lifestyle, goals, and values.”

This research highlights that ray amputations can offer effective clinical outcomes with minimal differences in QoL while providing a more individualized and biomechanics-preserving approach to forefoot amputation, particularly in diabetic foot ulcers, osteomyelitis, and pressure injuries. As foot and wound care evolves, this study provides critical evidence to guide more nuanced and patient-centered surgical planning.

About these procedures:

A ray amputation is a surgical procedure that removes a toe along with the corresponding metacarpal or metatarsal bone, whereas with a TMA the entire forefoot along with all the metatarsal bones are removed.

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