2017 myRESEARCH™
Science Internship Program: 
Applied Medicine

Civic Education
Office of Government and 
Community Relations
A Five Year Retrospective Review of the Mortality of the Transmetatarsal Amputation

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Abstract

- Transmetatarsal amputation (TMA) vs. transtibial amputation (TTA) mortality rate
- TMA patients at CCF in 2009-2012
- Evaluate: mortality status, age, co-morbidities
- Comparable mortality rates
Background

- **TMA**: resection of all toes and part of metatarsals
- Typical for diabetic foot complications- chronic ulcer that leads to ischemia or infection
- TMA resolves open wounds, allowing a functional amputation level
- Major amputations associated with high mortality
Problem/Purpose

• Examined long-term results of TMA and compared mortality rates vs. the reported high rates of the TTA
• Identified correlation of mortality after TMA and history of co-morbidities and other factors
Hypothesis

• TMA surgery would result in a lower five year mortality rate compared to below knee amputations
• Positive smoking status would increase mortality
• Most deaths would occur soon after surgery
Methodology

• 193 patients were evaluated for:
  – Mortality
  – Comorbidities:
    • Diabetes
    • Neuropathy
    • Hypertension
    • ABI
    • CAD
    • CVA
    • Renal Disease
    • Smoking history
    • PAD
    • Previous amputation
    • Secondary amputation
    • HbA1C
    • Ambulatory status
Results/Outcomes

- Average ankle brachial index (ABI) on amputated side of deceased: 1.18
- Average HbA1C for diabetic patients: 9.78
- Average time between TMA and additional TTA: 1.06 years
Results/Outcomes

Patient's Comorbidities

- Diabetes
- Neuropathy
- HTN
- PAD
- CAD
- CVA
- Renal Disease
- Smoking
- Previous Amputation
- Additional Amputation

Number of Patients

Alive	Deceased
<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Numbers of expired patients (Mortality rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>23 (11%)</td>
</tr>
<tr>
<td>1-3 years</td>
<td>22 (37%)</td>
</tr>
<tr>
<td>3-5 years</td>
<td>26 (35%)</td>
</tr>
</tbody>
</table>
Results/Outcomes

Survival Plot

Percentage of Living Patients

Years Post-Surgery
Conclusions

- 39% 5-year mortality rate for TMA
- 40-82% 5-year mortality rate for TTA
- TMA does not significantly lessen 5-year mortality rate compared to TTA surgery
- More patients passed away within 12-36 months
- Higher mortality associated with history of renal disease and previous lower extremity amputation
Recommendations

• Larger population size
  – TMAs before 2009
  – TMAs performed at other locations
• Examine pre- and post-operative function and mobility
• Infection in surgical site
• Mortality rates of co-morbidities with TMA vs. TTA
References

Special Thanks

- Georgeanne Botek, DPM
- Tammy Owings, DEng
- Fernando Cruz, DPM
- Office of Government and Community Relations’ Civic Education Department
- Nedra Starling, MA, MPH, DrPH/ABD
- Bryan Pflaum, MFA