Life After Amputation

Nicola Storer
Graham Bowen
Stephen Baxter

University Hospital Southampton
NHS Foundation Trust

Wessex Vascular Network

Diabetes Professional Care - DPC
Foot & Wound Clinic

NHS

Solent NHS Trust
Learning Outcomes

• When do you perform an amputation.
• Factors that determine level of amputation.
• Functional changes related to the amputation.
• Advantages of planning an amputation.
What Do We Mean by Amputation?

Media

Medical
Why are Amputations Performed?

Control Patients’ Symptom
- Mechanical
- Neurological
- Psychological

Control Pathology
- Infection
- Ischaemia
- Tumour
Classification of Amputation.

**MINOR** - Below Ankle
- Phalangeal
- Metatarsal
- Tarsal

**Orthotics**

**MAJOR** - Above Ankle
- Transtibial
- Genicular
- Transfemoral
- Disarticulation

**Prosthetics**
Common Factors

• Transecting Nerves
• Tissue Dead Space
• Predicting Wound Healing
• Predicting Bacterial Load
Amputation Pathway

- Urgent
- MDT Discussion
  - Not Fit for Surgery
    - Palliative Care team
  - Fit for Surgery
    - Medical Optimisation
      - Level of Amputation determined by Vascular Supply and Therapy advice
    - Rehabilitation Physiotherapy/OT Social Service requirements
- Elective
Phalangeal Amputations

- Medial
- Lateral
- 1st & 5th – retain proximal head
- Best procedure for the future outcome function.
- Retain cartilage?
Biomechanical Changes from Losing a Toe.

Affecting factors

• Impact of neuropathy.

• Changes from infection/surgery.
Metatarsal Amputations

- Ray Amputation
- Transmetatarsal
Biomechanical Changes from Disrupting the Forefoot.

- Decrease power generation across ankle.
- Diabetes has greater effect on gait kinematics.
- Orthotics have little impact on gait restoration.
Tarsal Amputations

• Lisfranc
• Chopart

Need to be combined with a procedure to reduce power from plantar-flexors.
Biomechanical changes of midfoot Amputations

- Unopposed Plantarflexion.
- Minimal mobility requirements.
- Cognitive impairment.
General Facts about Major Amputations

- Using a prosthesis is hard work.
- Motivation/practise.
- Significant Impact on QoL.

<table>
<thead>
<tr>
<th>DEMOGRAPHIC</th>
<th>USERS (N=94)</th>
<th>NONUSERS (N=41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male gender</td>
<td>79%</td>
<td>71%</td>
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<tr>
<td>Age in years (mean)</td>
<td>55.1</td>
<td>58.3</td>
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<tr>
<td>Type 2 diabetes</td>
<td>37%</td>
<td>45%</td>
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<tr>
<td>Peripheral arterial disease</td>
<td>47%</td>
<td>61%</td>
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<tr>
<td>Atraumatic amputation etiology</td>
<td>69%</td>
<td>88%</td>
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<tr>
<td>Traumatic amputation etiology</td>
<td>31%</td>
<td>22%</td>
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<tr>
<td>Transtibial-level amputation</td>
<td>83%</td>
<td>61%</td>
</tr>
<tr>
<td>Transfemoral-level amputation</td>
<td>21%</td>
<td>68%</td>
</tr>
<tr>
<td>Bilateral lower-limb amputations</td>
<td>9%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Key demographic findings of users and nonusers of lower-limb prostheses. Data from Reffnan et al.7
Transtibial Amputations

- Blood supply
- Background mobility/ flexibility
- Preparation for prosthetic interface
Effects of Trans-tibial Amputation.

- Increase effort 40-80%
- Higher risk of breakdown
- Patella Tendon Bearing
Through-Knee Amputation

• End Bearing (Mostly)
• Similar Functionality to TFA.
• Shorter socket
• Cosmetic issues
Considerations when going through the Knee

- Skin cover in from below the knee.
- The joint surface is cartilaginous.
- End bearing surface must have good quality skin.
Transfemoral Amputation

- Ischial weight bearing
- Decrease adductor/extensor function.
- Increase effort 100-150%
- Socket retention/volume changes.
Impact of losing femoral length.

- Femoral (lap) Length
- ↓ Hip extension.
- Limb Volume
- Arterial perfusion
- Comorbidities
What Does the Future Hold?

Impending Health Burden on the NHS
You Only Get Out What You Put In!

ACSIS (Amputee and Carers Support in Southampton)
Every Amputation has a Significant Impact.

Optimised Healthcare Management can Improve the Patients’ Outcome.