CLINICAL USE OF ADJUSTABLE STYLE SOCKETS: MULTI CASE STUDY

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DISCLOSURE INFORMATION

I have no financial relationships to disclose.
Introduction

• Volume Fluctuation
  • Initial and Daily size change
• Problems with Volume change
• How to accommodate daily change
  • Socks
  • Take prosthesis off
**Volume Gain**

**Possible Causes**
- Overall body weight gain
- Heat
- Blood pressure
- Fluid retention
- Medication changes
- Decreased activity/Increased appetite
- Decrease in wearing time of prosthesis and/or shrinker
- Dermatitis

**Potential Problems**
- Leg feels too tight with sock(s)
- Improper fitting socket
- Pressure resulting in discomfort in new areas
- Pinching
- Leg seems taller
- Back pain
- Discomfort

**Solutions**
- Decrease sock ply for volume gain
- See your prosthettist

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**Volume Loss**

**Possible Causes**
- Diuretics (such as blood pressure medication)
- Cold
- Increased activity
- Longer wearing time
- Overall body weight loss

**Potential Problems**
- Leg feels loose
- Pistoning (slipping of socket while walking)
- Greater pressure on bony areas
- Leg seems shorter
- Back pain
- Discomfort

**Solutions**
- Increase sock ply for volume loss
- See your prosthettist

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https://www.orthoticsprostheticsnow.com/home/prosthetics/amputee-guide
Current Adjustable Systems

- INFINITE SOCKET
- CJ Socket
- Martin Bionics
Purpose

• To demonstrate various user-adjustable socket designs fabricated for specific indications.
Case #1

- 67-year-old male
- Left transtibial amputation
- Secondary to vascular disease

<table>
<thead>
<tr>
<th>Outcome Measures</th>
<th>Old Socket</th>
<th>New Socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPUS HQoL</td>
<td>52.15</td>
<td>57.6</td>
</tr>
<tr>
<td>ABC</td>
<td>48.8%</td>
<td>83.1%</td>
</tr>
<tr>
<td>PLUS M</td>
<td>45.8 (33.7%)</td>
<td>59.6 (83.2%)</td>
</tr>
</tbody>
</table>
Case #2

- 34-year-old male
- Left transtibial amputation
- Secondary to burns
Case #3

- 44-year-old male
- Left Transtibial amputation
- Secondary to Buerger’s Disease
Case #4

- 72-year-old male
- Left transfemoral amputation
- Secondary to trauma
Case #5

- 61-year-old female
- Right transfemoral amputation
- Secondary to cancer
Case #6

- 37-year-old female
- Right transfemoral amputation
- Secondary to cancer

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<tr>
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<td>45.2</td>
<td>61.6</td>
</tr>
<tr>
<td>ABC</td>
<td>38.1</td>
<td>83.5</td>
</tr>
<tr>
<td>PLUS M</td>
<td>34.1 (5.5%)</td>
<td>47.1 (38.5%)</td>
</tr>
</tbody>
</table>
Case #7

- 61-year-old male
- Left transfemoral amputation
- Secondary to trauma
Case #8

- 62-year-old female
- Right hemipelvectomy amputation
- Secondary to cancer
Summary

• Purpose was to show clinical adjustable socket designs we have found successful
• Create an enhanced 3-point pressure system to increase control of the limb in the socket during ambulation
• Allow volume fluctuation to happen and be controlled without taking the prosthesis off
• Continue to collect data with each type of socket design to better understand outcomes
References


• Brzostowski, JT. Et al. Adjustable sockets may improve residual limb fluid volume retention in transtibial prosthesis users. Pros Orth Int. 2019(43): 250-256

Thank you