



A Clinical Case Evaluation

PRESSURE REDUCTION EFFECT OF PROSTHETIC LINERS

- Real-world transfemoral amputee case study
- Instrumental pressure analysis during gait
- Comparison of multiple liner technologies
- Evaluating the relationship between comfort, stability, and pressure distribution

CLINICAL BACKGROUND

PATIENT CHALLENGE:

- Very short transfemoral residual limb
- Distal bony prominence causing socket contact
- Significant pain during walking
- Reduced walking comfort and function

Why it matters.

The liner serves as the critical interface between the residual limb and prosthetic socket and directly influences walking quality.



RESIDUAL LIMB CONDITION

CLINICAL OBSERVATION:

- Severe soft tissue atrophy at the distal end
- Distal bony prominence can be clearly observed during limb flexion
- Repeated contact between bone and socket wall during gait

Resulting issue.

Localized pressure concentrations leading to pain with every step.



PAIN RELIEF THROUGH LINER SELECTION

INITIAL CLINICAL FINDINGS:

- Patient reported significant pain reduction when using ALPS gel liners
- No socket modifications required
- No additional padding added
- Improvement achieved through liner selection alone

Clinical insight.

The liner itself can play a critical role in pressure management and patient comfort.



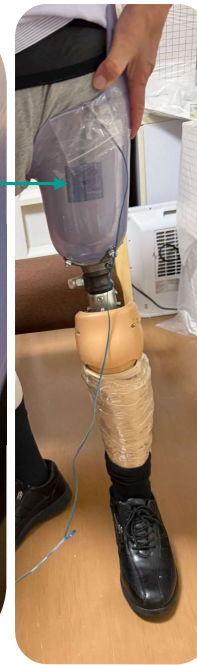
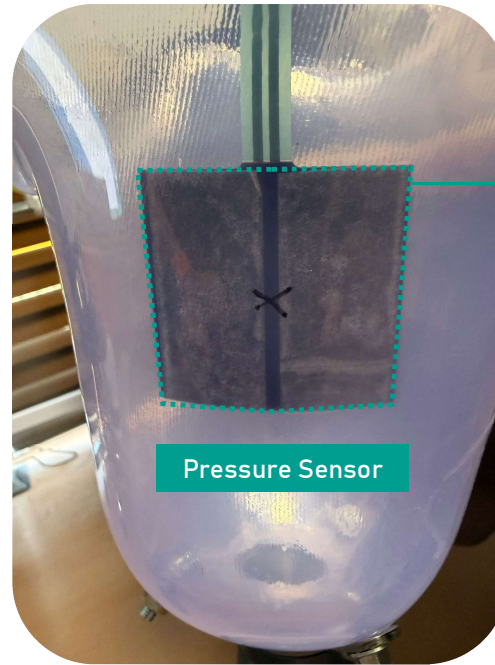
PRESSURE MEASUREMENT METHOD

INITIAL CLINICAL FINDINGS:

- Pressure sensor positioned at the contact area
- Walking trials performed under normal walking conditions (*20 seconds each*)
- Evaluated an EasyGel, OptiGel, and commercially available silicone liner
- Pressure data recorded and compared throughout gait cycle

Goal.

Quantify the pressure experienced at the painful distal region during walking.



Clinical Case Evaluation

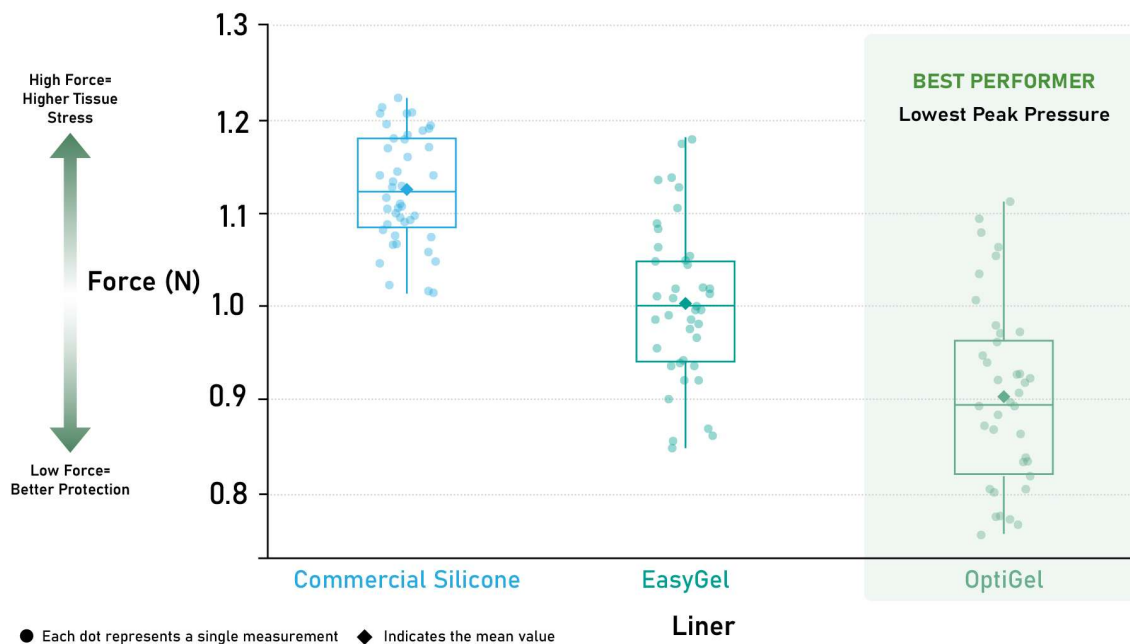
STUDY RESULTS

- **OptiGel produced the lowest pressure values during walking** (Refer to Graph 1)
- EasyGel reduced pressure compared to the silicone liner
- Instrumental measurements confirmed the patient's clinical feedback
- Walking performance improved without socket changes

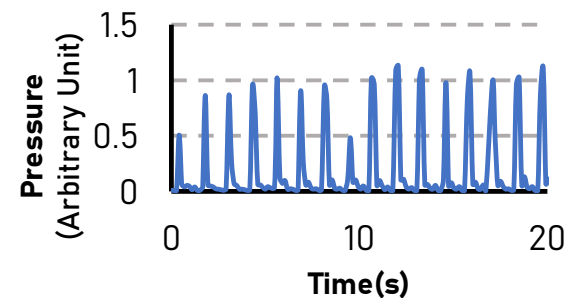
Key finding.

Lower pressure levels corresponded with improved comfort and reduced pain during gait.

Graph 1. Comparison of pressure values among different liners



Graph 2. Pressure data during walking with EasyLiner shows pressure peaks repeatedly with each step



STABILITY AND COMFORT WITHOUT COMPROMISE

PERFORMANCE FINDING:

- While OptiGel maintains a firm, stable feel similar to silicone liners, it delivered superior pressure distribution during gait cycle
- Hand feel alone does not define liner performance

Clinical Takeaway.

Tactile perception alone does not necessarily translate to better dynamic pressure management.



CLINICAL IMPLICATIONS

OPTIGEL HELPS BALANCE:



Stability and control



Pressure Distribution



Patient Comfort



Walking Performance



OptiGel reduces the force transmitted to the residual limb compared to other liner materials

↓ 12%

Lower mean force
vs EasyGel

↓ 23%

Lower mean force
vs Silicone

Conclusion.

OptiGel demonstrated the ability to reduce localized pressure while maintaining the secure, stable feel clinicians and users expect.