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Title	A Single-Case study: Biomechanical evaluation of a modified clamshell prosthesis in the chopart amputee
Author	Tin Cho Aye (Sirindhorn School of Prosthetics and Orthotics & Mahidol University, Thailand); Manunchaya Samala and Gary Guerra (Sirindhorn School of Prosthetics and Orthotics, Thailand)
Email	tin.aye@student.mahidol.edu

Abstract

Objectives: This research aimed to compare function and comfort of a chopart amputee and to evaluate gait when wearing a standard clamshell prosthesis and novel modified clamshell prosthesis.

Materials and Methods: The subject was a 75-year -old female who got amputation on her left limb as a result of a motor vehicle accident. She was provided two partial foot prosthesis designs; a modified clamshell prosthesis and a standard clamshell prosthesis. The participant performed outcome measures that evaluated center of pressure (COP) in anterior-posterior direction (velocity, displacement), ground reaction force (GRF), Socket Comfort Score (SCS), Timed-Up and Go Test (TUG), cadence, walking velocity, and stride length.

Results: Improvement in spatial-temporal parameters (cadence, stride length and walking velocity) were seen using the modified clamshell prosthesis. The resulted of horizontal and vertical ground reaction force walking with the modified clamshell prosthesis was smoother and more like normal patterns. Furthermore, the displacement and velocity of the COP in the anterior-posterior direction using modified clamshell prosthesis resulted were lower range in affected limbs compared to the standard clamshell prosthesis. The socket comfort score was the same, and (TUG) results was longer in the modified clamshell prosthesis 10.61 seconds and 10.1 seconds respectively.

Conclusion: A modified clamshell prosthesis improved function in gait over a standard clamshell prosthesis. Walking with the modified clamshell prosthesis saw more normal gait and force measurements. The use of a modified clamshell prosthesis may provide an alternative and functional design for the partial foot amputee.

Keywords- Chopart amputee, modified clamshell prosthesis, clamshell prosthesis, biomechanics of gait parameter, and pressure distribution