Rehabilitation of a Chinese Hemicorporectomy Amputee from a Prosthetist’s View

Yang Ping, Cao Xuejun
Institute of Rehabilitation Engineering, Capital Medical University School of Rehabilitation Medicine
China Rehabilitation Research Center

Abstract: Few patients can survive after severe crushing pelvic traumas which is an indication of hemicorporectomy (HCP, also called translumbar amputation). Prosthesis is essential for such patient to regain standing and walking ability. This article aimed to describe the rehabilitation of a Chinese HCP amputee and evaluate his mobility devices from a prosthetist’s view. Case study method was used. A 46-year-old male patient came to our hospital 3 years after accidental emergency amputation from pelvis. Team workers included orthopaedists, prosthetists, physiotherapists, engineers and social workers. It took over 5 months for the patient to attain most of activities of daily living independent. Four mobility devices were designed and provided to him: a self-suspending socket, a modified wheelchair, a custom cart and a reciprocating gait prosthesis. Socket/stump interface pressure tests showed that the main weight bearing area was at the lower thorax. Pulmonary function tests revealed that the sockets limited thoracic movements so that vital capacity was reduced by 7%～13%. Energy expenditure tests indicated that walking with prosthesis consumed more oxygen than hand walking with socket, followed by wheelchair and custom cart which cost the least. All the results suggest that thorax can bear human weight. Although sockets limited the patient’s thoracic movement, it is the basis to help him stand up and use other three mobility devices.

Key words: hemicorporectomy, translumbar amputation, rehabilitation engineering, socket, reciprocating gait prosthesis.