

Title: PROSTHETIC MANAGEMENT OF AN INDIVIDUAL WITH
"UNIQUE" MULTI-LEVEL LIMB DEFICIENCIES; A CASE
STUDY

Presenter: JW "Bill" Limehouse, CP, FAAOP

Contact Address: Hanger Prosthetics and Orthotics
Upper Extremity Prosthetic Program
1508 W Elm Hill Circle
Salt Lake City, Utah
84123
USA
Tel: 801 554 2656
Fax: 801 288 2471
Email: blimehouse@hanger.com

Other Authors: Troy Farnsworth, CP, FAAOP

A 23-year old worker presented with multi-level amputations of all extremities following electrical injury, complicated by burns and skin grafts to over 45% of his body. Amputations of both legs with bilateral partial hemipelvectomies were required along with disarticulation of the right upper extremity at the shoulder and amputation of the left index finger.

After wound healing was complete, the patient was fitted with a hinged clamshell prosthetic socket to attain vertical sitting posture that allowed his body weight to be born over his thorax in pressure tolerant areas of his torso. Urethane gel padding was used to line the socket, and a cold water cooling system was designed and incorporated into the prosthetic socket. Next, a removable myoelectric shoulder disarticulation prosthesis was designed with dual attachments for the thoracic socket and the bed frame. This attachment feature removed the weight of the prosthesis from the patient's pressure sensitive areas and enabled the patient to engage in bimanual activities whether upright in his wheelchair or supine in bed. Removable long-term adhesive electrodes were used to obtain control through the pectoralis and infraspinatus muscle groups.

A Boston 3 electronic elbow with 4 motor controls was provided. Control options for the prosthesis are hand (open-close), wrist (supination-pronation), elbow (flexion-extension), and a power locking shoulder joint (flexion). Humeral internal and external rotation will be added in the future. Detachable lower extremity prostheses have been provided to improve the cosmetic appearance. This complex prosthetic system has provided restoration of functional abilities and overall quality of life for this individual.

Specifics as to why certain componentry was used will be discussed.

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