<text direction="ltr" height="8.135986328125" lengthadjust="spacingAndGlyphs" textlength="445.596069335938" x="72.4559936523438" y="-758.859985351562" datatest="textbox" id="highlight-tooltip-target">The Effect Of Myoelectric Prosthetic Fitting On Activity Performance In Patients With </text><text direction="ltr" height="8.135986328125" lengthadjust="spacingAndGlyphs" textlength="180.840026855469" x="72.4559936523438" y="-745.059997558594" data-test="textbox">Traumatic Brachial Plexus Injuries</text>

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INTRODUCTION: Despite advancements in traumatic brachial plexus injury (BPI) management, reconstructive surgical techniques are not feasible for all patients, leading to amputation. Recently, myoelectric prosthetic capabilities have greatly enhanced terminal prosthetic grasp and release, leading to improved skillfulness of prosthetic use. The aim of this study was to evaluate the function and activity performance of prosthetic fitting with myoelectric controls for upper extremity amputees after BPI.

METHODS: A retrospective analysis of adult patients with amputation after BPI at a single clinic was performed. Patients that underwent myoelectric prosthesis (MEP) fitting after amputation were included. Demographics, mechanisms of injury, amputation characteristics and outcomes were collected from medical records. The Disabilities of the Arm, Shoulder and Hand (DASH)outcome measure, to evaluate the impact of impairment, Visual Analog Scale (VAS) to evaluate pain, and the Activities Measure for Upper Limb Amputees (AMULA) to evaluate activity performance were collected.Prosthesis usage, satisfaction and signal transducers were also recorded.Paired t-tests were used to compare outcomes

RESULTS: Sixty patients with BPI between 2000-2023 were identified. Of these, fifteen patients (90% male, average age of 37 years at time of BPI) were fitted with MEPs with electromyographic signal control from muscles not normally associated with the intended function (nonintuitive control) after elective amputation. Among these, 10 patients underwent trans-radial amputation and 5 patients underwent trans-humeral amputations. Amputations occurred to the dominant limb in 30%. Reasoning for amputation included lack of function or desiring more function.Linear transducers were used in 60% to fit MEPs and in 40%, traditional electrodes were disability were not significantly decreased post-amputation used. Average pain scores and (p=0.55and 0.78, respectively). AMULA scores, however, denoted a significant improvement in activity performance after use of prosthesis (p=0.007). All patients demonstrated functional terminal grasp and release with an average use of 6 hours per day. Hundred percent of patients found their fitted MEP useful during daily activities and were satisfied after an average of 4months follow-up.

DISCUSSION AND CONCLUSION: Amputation and MEPs using nonintuitive control is a potential solution to obtaining functional grasp after traumatic BPI injuries. Neuropathic pain is chronic after BPI and cannot be altered after prosthetic use. Patients with amputation and MEPs used their prosthetics around 6 hours per day with a hundred percent satisfaction rate and functional terminal grasp and release. Validated AMULA scores found that activity performance using MEPs improved significantly and can be used to accurately and objectively measure activity performance of MEPs after amputation