

FROM TRAUMA TO TRIUMPH: A COMPREHENSIVE TREATMENT APPROACH FOR TRAUMATIC BRAIN INJURY AND BRACHIAL PLEXUS INJURY

¹Cheong J, ¹Shamsul SA, ²Hamzah N, ³Adlan AS

¹ Department of Orthopaedic Surgery, NOCERAL, Faculty of Medicine, Universiti Malaya, 50603 Kuala Lumpur.

² Department of Rehabilitation Medicine, Faculty of Medicine, Universiti Malaya, 50603 Kuala Lumpur.

³ Department of Obstetric and Gynaecology, Faculty of Medicine, Universiti Malaya, 50603 Kuala Lumpur.

INTRODUCTION:

Traumatic brachial plexus injury (BPI) when combined with brain injury is disabling and leads to significant morbidity. This case report explores the multimodal approach to a patient, involving Orthopaedic, Rehabilitation Medicine, and Gynaecology disciplines, enhancing her return to work.

REPORT:

We present a 29-year-old lady who sustained severe traumatic brain injury with hormone dysfunction and traumatic right-sided complete BPI with partial recovery of the upper trunk (shoulder abduction M3, elbow flexion M3) six years ago. In June 2022, she underwent right wrist fusion with extensor carpi radialis longus (ECRL) transfer to flexor digitorum profundus (FDP) to improve her right hand function. She had no active flexion or extension of the digits pre-operatively. Her left upper limb function was normal.

Following the surgery, she underwent intensive rehabilitation programme supervised by a rehabilitation physician. She was also referred to the Gynaecologist by the physician to address issues with her hormonal imbalance (diagnosed via blood investigations) – stabilized with combined oral contraceptive pill, Diane-35.

Her programme consisted of exoskeleton therapy with Armeo spring, Functional Electrical Stimulation (FES), and ArmMotus robotics technology. Currently, she is back to work at her family's business where she has an active role with food preparation in the kitchen. She is also fully independent – has started hiking – and noticed a significant improvement in both upper limb function as well as mood.

Videos of the patient undergoing therapy and her function can be found in this link: <https://bit.ly/3m1X6yH>



Kindly scan this QR code for direct access to the videos.



Figure 1: Image of the patient undergoing FES therapy, achieving 90° flexion of the index till little finger distal interphalangeal joints.



Figure 2: ArmMotus Rehabilitation Robotics Training Module in progress.

CONCLUSION:

Multidisciplinary team approach to the management of a patient with polytrauma will enhance the overall functional recovery of the patient.

REFERENCES:

1. Barnes MP. Principles of neurological rehabilitation. *Journal of Neurology, Neurosurgery & Psychiatry* 2003;74:iv3-iv7.