SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Orthopaedic Surgery

Damn Nuisance from brachial Plexus Injury, An Uncommon Indication for Shoulder Disarticulation

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DOI: 10.36347/sasjs.2022.v08i05.011 | **Received:** 26.02.2022 | **Accepted:** 01.04.2022 | **Published:** 13.05.2022

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Abstract **Case Report**

Pan-plexus injuries with persistent pain and flail upper limb present bifocal nuisance to patients and pose serious treatment challenges to orthopaedic surgeons. Limb salvage procedures could be cumbersome, expensive and mostly with poor functional outcomes. The timing and extent of ablation are key predictors to outcome and will depend on the available local expertise and clinical evidence. We present a 42year farmer who walked into the clinic requesting for limb ablation. We also discuss our treatment outcome in light of available literature.

Keywords: Pan-plexus injuries, Limb salvage procedures, Damn Nuisance.

BACKGROUD

The brachial plexus is a network of horn cells, nerve roots and peripheral nerves located in the region between the neck and the axilla, whose terminal nerves supply motor, sensory and autonomic innervation to the neck, shoulder and most part of the upper limb.

Traumatic injuries occur when the head and neck are hyperextended from the rest of the upper limb leading to a range of insults from root avulsions to stretching of peripheral nerves [1]. Upward stretching of the upper limb across the head can also cause injuries to the lower trunk of the plexus [2, 3].

Direct impact from heavy objects, dislocated shoulder and clavicular fractures may cause injuries to a diverse regions of the plexus while root and nerve transections can occur from Stab injuries around the region of the plexus [4].

Birth trauma is a common cause of injury to parts of the plexus, though pan-plexus injuries from birth trauma is not common and poses treatment challenges [5].

Pain and unpleasant appearance of the upper limb are the most common reasons adults with brachial plexus injuries present to the orthopaedic clinic. For more proximal and pan-plexus injuries, the pain could be so severe and unresponsive to routine analgesics and anti-depressants [6]. The bifocal nuisance of severe persistent pain and a poorly-cosmetic appearance of the involved limb can warrant ablative treatment.

We present a case of shoulder disarticulation with neuroma excisions for brachial plexus injury in an adult.

CASE

42yr old male farmer presented to our institution with progressively worsening pain and inability to use the right upper limb of 18yr duration following trauma. 18years ago, while working in his farm, a log of heavy wood fell on his neck and shoulder region.

Pain was constant, excruciating, unrelenting with increasing intensity. Visual analogue score was 8/10 at presentation. Pain was present in the day and at night, affecting his activities of daily living. With chronic use of narcotics, he had developed some addiction with huge financial burden on his already depleted resources.

He also couldn't use the right upper limb for his routine activities due to wasting and weakness. Though right hand dominant, he has over the period of this injuries developed more use of his left hand.

Physical examination revealed a young man, emaciated (BMI-15.2kg/m^2), not pale, not icteric, and in no respiratory distress. The entire right upper limb was a significantly wasted, insensate with no movement at all muscle groups. Observed flickers were only fromthe scapula-thoracic muscles. The left upper limb and the other limbs were essentially normal. The patient himself pleaded for an ablation of his upper limb in view of severe pain in a flail limb.

A clinical diagnosis of Right upper limb monoplegia (damn nuisance) secondary to brachial plexus injury was made.

Neither nerve conduction studies nor magnetic resonance imaging of the affected nerves/site was done due to financial constraints.

He had appropriate discussions on treatment options and outcome expectations. The decision for ablation was mutually reached following exhaustive discussions on its outcome and the need for prosthesis.

He had a right shoulder disarticulation and excision of multiple neuromas around the plexus region. He was discharged home after 7 days on admission. He tolerated mild five-day doseof acetaminophen. Pain relief was remarkable with a reduction in his visual analogue (VAS) from 8/10 to 3/10 on the 7^{th} post—operative day and 1/10 on the 14^{th} post-operative day. Sutures were removed on 14^{th} Post-operative day.

Review on the 14^{th} post-operative day showed a grateful and cheerful man who was willing to cope with the challenges of an amputated upper limb. Subsequent review on the 28^{th} post-operative day showed a young health-looking man with a BMI of 19.7kg/m^2. He was to get prosthetic device for financial reason but had some sessions of psychotherapy and physical rehabilitation.

DISCUSSION

Consents for ablative surgeries are difficult to obtain in developing countries even when the surgical indications are clear enough. This is due to the numerous beliefs on the impact of such procedures on life beyond death.

Our patient requested for an ablative surgery at presentation. This perhaps indicate the extent of nuisance the effected upper limb had become to him. Wilkinson *et al., [7] also reported that 65% of patients in their series (n=13/20) chose elective amputation of their flail and* useless limb. They opined that elective amputation can be performed at the patient's request and may be considered as an element of rehabilitation.

Burdette *et al.,* [8] in their work onearly delayed amputation: a paradigm shift in the limb-salvage time line for patients with major upper-limb injury suggested that limb ablation should not be delayed for repeated, complex and mostly unsuccessful salvage surgeries in patients with pan-plexus injuries. They recommended an early delayed amputation period of 6 months post injury. Our index patient presented 18 years post injury.

There was a clear reduction in pain relief with a marked reduction in VAS score from 8/10 to 2/10 on POD 7 and 1/10 on POD 14. This perhaps validates the need for disarticulation as an effective treatment option.

Both Choong *et al*., [9] and Wilkinson *et al*., [7] reported no reduction in pain for preganglionic injury of the brachial plexus following amputation. It is unclear if both set of authors made deliberate attempts to search for painful neuromas for excision. The procedure described by the former authors was a trans-humeral amputation and not a disarticulation.

We recommend shoulder disarticulation with excision of neuromas for pan-plexus injuries with painful flail upper limb in adults. Though there are clear concerns with rehabilitation following disarticulations, it effectively treats pain and provides better functional prospects.

Though physical and psychological therapy are still ongoing, Prosthetic rehabilitation is yet to commence in our patient for financial constraints. In low and middle income countries, functional prosthesis for the upper limb are expensive and not commonly available.

REFERENCES

1. Midha, R. (1997). Neurosurgery. Epidemiology of Brachial Plexus Injuries in a Multitrauma Congress of Neurological Surgeons, June 1997. Web. 29 Jan. 2013
2. Coene, L. N. J. E. M. (2003). Mechanisms of Brachial Plexus Lesions. ScienceDirect.com. Clinical Neurology and Neurosurgery, 25 Mar. 2003. Web. 29 Jan. 2013.
3. Orthoinfo. Brachial Plexus injuries. Available from: https://orthoinfo.aaos.org/en/diseases--conditions/brachial-plexus-injuries/ (last accessed 12.3.2019)
4. Luo, T. D., & Li, Z. Brachial Plexus Injuries. [Updated 2018 Dec 29]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2019 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK482305/ (last accessed 18.6.2021)
5. Shenaq, S. M., Berzin, E., Lee, R., Laurent, J. P., Nath, R., & Nelson, M. R. (1998). Brachial plexus birth injuries and current management. *Clinics in plastic surgery*, *25*(4), 527-536.
6. Sakellariou, V. I., Badilas, N. K., Stavropoulos, N. A., Mazis, G., Kotoulas, H. K., Kyriakopoulos, S., ... & Sofianos, I. P. (2014). Treatment options for

brachial plexus injuries. *International Scholarly Research Notices*, *2014*.
7. Wilkinson, M. C. P., Birch, R., & Bonney, G. (1993). Brachial plexus injury: when to amputate?. *Injury*, *24*(9), 603-605.
8. Burdette, T. E., Long, S. A., Ho, O., Demas, C., Bell, J. E., & Rosen, J. M. (2009). Early delayed amputation: a paradigm shift in the limb-salvage time line for patients with major upper-limb injury. *Journal of Rehabilitation Research & Development*, *46*(3), 385-394.
9. Choong, C. Y. L., Shalimar, A., & Jamari, S. (2015). Complete Brachial Plexus Injury-An Amputation Dilemma. A Case Report. *Malaysian orthopaedic journal*, *9*(3), 52-54.