

Ayurvedic Management of Traumatic Brachial plexus injury -A case report

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ABSTRACT

The brachial plexus is a network of nerves originate from the spinal cord(C5-T1) in the neck and branches out to innervate the upper arm, forearm, and hand. A brachial plexus injury occurs when these nerves are stretched, squeezed together, torn, or avulsed. This typically happens due to trauma, tumors, or inflammation. A brachial plexus injury represents a complex clinical entity with significant impairment in the motor, sensory, and functional outcomes of the affected limbs. In Ayurveda terms, this can be correlated with *Amsa marma abighatha*. A 35-year-old male patient presented with severe pain, loss of sensation and weakness in the right upper limb for one month following a road traffic accident. On clinical examination, there was sensory deficits, impaired range of motion and wasting in right upper limb. MRI revealed discontinuity in C6-C7 nerve root on right side with pseudomeningocele. The patient was managed with Ayurveda treatment modalities such as *Udwarthanam*(Therapeutic powder massage), *Abhyanga ushma sweda*(Therapeutic massage and sudation), *Ksheera dhuma nasya* (Therapeutic smoking with medication through nasal rout), *Pizhinju thadaval*(local oil application), Bandage, *Prishtha vasti*(oil retention therapy at upper back) and *shashtika pinda swedam*(sudation by application of poultice). After the treatment patient experienced a considerable reduction in pain, with improvement in both motor and sensory function of the right upper limb. This case highlights that Ayurveda treatment can offers a better results in brachial plexus injury.

Keywords- Brachial plexus injury, *Amsa marma abighatha*, Ayurveda management, *Panchakarma*, case report

I. Introduction

The brachial plexus is a collection of nerves that arises from the spinal cord, travels through the armpit, and extends into the forearm and hand. It is composed of the nerve roots from cervical nerves C5

to C8 and the first thoracic nerve (T1). The nerves created by the brachial plexus supply both sensory and motor functions to the upper limb, including the shoulder, arm, forearm, and hand.(1)Injuries to the brachial plexus can result from factors such as compression, transection, ischemia, inflammation, metabolic issues, tumors, and radiation therapy. Among these, the most prevalent cause is traumatic traction.(2)

Brachial plexus injuries can be categorized into two types: pre-ganglionic, where the nerve roots are damaged at the spinal cord above the dorsal root ganglion, and post-ganglionic, which occurs below the dorsal root ganglion.(3)

A brachial plexus injury significantly hampers the use of one, and occasionally both, upper limbs, leading to a considerable reduction in functionality and the ability to carry out everyday activities. This disability may affect a person's work life, potentially resulting in job loss, emotional difficulties like depression, and financial strain.(4)The symptoms of a brachial plexus injury may differ based on how severe the injury is and where it occurs. Common signs include pain, numbness, and weakness in the upper limb (2)

Surgical intervention is typically recommended when natural healing is inadequate or does not regain vital function in the hand and arm. It is important to understand that, based on the extent of the injury, surgery may not completely restore the hand or arm to its original level of ability before the injury occurred.(5)

In Ayurveda, this type of nerve injuries can be correlated with *Amsa Marma Abhighatha* which leading to vata dosha (regulatory function factors of body) derangement.This results in *Bahukriyahara* (loss of function of upper limb)(6). Thus treatment was planned with Ayurvedic treatment principles of *Marma abhighatha chikitsa* and vata vyadi chikitsa .This case report discusse the potential role of Ayurvedic treatment modalities in brachial plexus injury.

Case history

35 year old male patient who was driver by profession came to our OPD with complaints of severe pain, loss of sensation, and weakness in the right upper limb for one month .He had a RTA on 17/9/2024 (bike ver bike) .After that patient was unconscious for 3days. When consciousness regained patient noticed he was unable to move right upper limb and loss of sensation of the same along with shocking type of pain over forearm and palm. Gradually he feel improvement in movement of fingers and wrist joint. He was admitted in medical college for 14 days and Adviced surgery for same complaints. As he was unwilling for surgery he came to our hospital .

- Seizure since childhood – occasionally
- RTA - In 2010 : Left clavicular fracture

DRUG HISTORY

Phenytoin(0-0-2) After food

PERSONAL HISTORY

Diet : Mixed
 Appetite : Reduced
 Bowel : Regular
 Micturition : Day – (3-4 times)

Sleep : Reduced due to pain (daily 1-2 hrs)

Addiction : Nothing relevant

History of past illness

PHYSICAL EXAMINATION

General survey

Attitude : Right arm is adducted and internally rotated
 Fore arm extended and pronated
 Hand flexed

LOCO MOTOR SYSTEM

Joints (Right)	Inspection	Palpation	Range of movements
Shoulder	Waisting of deltoid and Supraspinatus, trapezius muscle	No tenderness	All movements unable to perform
Elbow	Waisting of extensor carpi radialis	No tenderness	All movements unable to perform
Wrist	Roughness of parm	No tenderness	All movements unable to perform

Muscle bulk

Domain	Right	Left
Mid arm circumference	36cm	38cm
Mid forearm circumference	25cm	26cm

Muscle power

Joints movements	Right	Left
Shoulder flexion	0	5

Shoulder extension	0	5
Shoulder adduction	0	5
Shoulder abduction	0	5
Internal and external rotation of shoulder	0	5
Flexion of elbow	0	5
Extension of elbow	0	5
Flexion of wrist	3	5
Extension of wrist	3	5
MCP joint flexion and extension	4	5
Interphalangeal joint flexion and extension	4	5
Finger adduction and abduction	4	5
Elevation of shoulder	3	5

Sensory system

Touch (Crude and soft) : C5-C7 show paresthesia
 : C8- T1 – Intact

Pain (superficial and deep) : C5-C7 show paresthesia
 : C8- T1 – Intact

Temperature :C5-C7 show paresthesia
 :C8-T1 Intact

INVESTIGATION(MRI cervical spine with right brachial plexus 27/11/2024)

- Straightening of cervical spine
- C6-C7 nerve root not well visualised on right side with pseudomeningocele formation at this level, preganglionic injury ?
- Postganglionic injury in right brachial plexus with thickened and hyperintense trunks, division and cord.

Intervention and progress

S.No	Date	Treatment	No.of days	Change noted
1	29/12/24	<i>Udwarthanam</i> with <i>kolakulathathi choornam</i> (mild)	5days	Temperature sensation regained at C5-C7
2	3/1/2025	<i>Abhyangam</i> and <i>ooshma. Sweda</i> with	7days	No changes noted

3	10/1/2025	<i>Ksheera dhooma nasya (ksheera bala 41A)</i>	7days	<ul style="list-style-type: none"> • Pain reduced • superficial sensation over c5-C7 and deep sensation over C5-C6 regained
4	17/1/2025	<i>Pizhinu thadaval with murivena and bala tailam</i>	7days	<ul style="list-style-type: none"> • Muscle power of interphalageal joint,MCP joint and wrist become 5/5 • Roughness over parm reduced
5	18/1/2025	<i>Virechanam with Gandharva Erandam 20ml</i>	1day	
6	25/1/2025	Bandage with <i>shashtika tailam + Rasa tailam</i>	7days	<ul style="list-style-type: none"> • Pain reduced
7	2/2/2020	<i>Prishta vasti (murivenna + bala tailam)</i>	7days	<ul style="list-style-type: none"> • Muscle power of shoulder become 2/5
8	9/2/2025	<i>Shashtika pinda swedam with bala tailam</i>	7days	<ul style="list-style-type: none"> • Flexion and extension of elbow become 4/5 • Deep Sensation regained at C7

Internal medicine

S.No	Medicine	Date	Dose	Time
1	<i>Gandharvahasthadi kashayam</i>	29/12/24-12/1/2025	90ml	Twice daily before food
2	<i>Dhanwantharam kashayam</i>	12/1/2020-9/2/2025	90ml	Twice daily before food
3	<i>Balarishtam</i>	12/1/2020-9/2/2025	30ml	Twice daily after food

Outcome and follow up

After 41 days of treatment dermatom C5-C7 become normal. Muscle power of interphalageal joint,wrist,metacarpophalangeal become 5/5 ,muscle power of elbow become 4/5 and shoulder become 2/5. On discharge patient was prescribed shashtika tailam for external application,Indukantham ghritham 1 tsp twice daily .After 1 month of follow

up patient mentioned he can do all his daily activities and started to go for job.

II. Discussion

Nerves injury are classified in to three based on the presence of demyelination and the extent of damage to the axons and the connective tissue of the

nerve. The mildest form of injury is neurapraxia, in this focal demyelination without damage to the axons or the connective tissues. Neurapraxia second most typically occurs from mild compression or traction of the nerve and results in a decrease in conduction velocity. The next level is axonotmesis, it involves direct damage to the axons in addition to focal demyelination while maintaining continuity of the nerve's connective tissues. The most severe form of injury is neurotmesis, in which full transection of the axons and connective tissue layers where in complete discontinuity of the nerve is observed (7). Case was pre ganglionic avulsion injury of brachial plexus, it usually have poor prognosis in contemporary science even after surgery.

Here management principal of *Marma abhigatha* and *vata vyadi* adopted, which may help for neuroplasticity. *Udwarthana* facilitate normal *gati* of *vata*, *kolakulathadi choornam* having *kadu*, *Thiktha*, *kashayam rasa*, *Laghu*, *Ushna guna* help to remove obstruction in *Rasa dhatu* and *Swedavaha srotas*. *Abhyanga* directly influence *vata dosha* when performed with *bala tailam*, as it boosts *vatahara* effect and provides the necessary *brihmana* in the current situation. *ksheera dhooma* includes *ksheera* and *bala moola* which having *Snigdha* and *guru guna* which may help for neuroplasticity (8). *Prishta vasti* with *vatahara tailam* does both *snehana* and *swedana* help to pacify *vata* and further reduce pain and improve muscle power. *Veshtana* is one of the specific treatment of *vata dosa* it help to reduce pain by its *ushna*, *sthira* and *guru guna* (9). *Virechana* help to eliminate *dosha* from *pakwashaya* and improve the action of other treatment (10). *Dhanwantharam kashayam* was the main internal medication given thoughtout therapy. It is *Balya*, *Vata-kapha* hara and *Snayugata vatahara* formulation.

III. Conclusion

Treatment outcome suggest that Ayurvedic treatment modalities can be a valuable adjuvant in managing nerve injury. Ayurveda treatment can support recovery and improve quality of life for patient with brachial plexus injury.

Limitation

This is a single case study, Thus, results cannot be generalized. No post MRI or nerve conduction study was taken. But the consistent clinical improvement in muscle tone, sensory function and pain relief provides valuable qualitative evidence supporting the integrative role Ayurveda in Brachial plexus injury.

Patient Perspective

The patient reported that after the injury, there was severe pain which make him sleepless night and difficult to do all daily activities. After the treatment including internal medication and external therapy, the patient experienced gradual reduction in pain and movements of the effected limb improved significantly. The patient expressed satisfaction with the treatment outcome.

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