



## RADIAL AND ULNAR NERVE INJURY – A CASE REPORT

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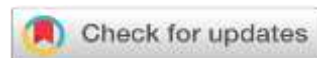
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## ABSTRACT

Nerve injuries result from either acute trauma or repetitive microtrauma and overuse. An acute trauma that results in a fracture or dislocation could potentially damage a nerve, in addition to the bony injury. Even though direct correlation seems to be difficult, on in-depth analysis it is possible to correlate nerve injuries with *vrana*, *marmabhigata*, and *Abhigataja vatavyadhi*. A comprehensive approach to all these concepts can be taken in the diagnosis and management of nerve injuries. A case report of a female aged 49 years who suffered from radial and ulnar nerve injuries which occurred as a complication of supracondylar fracture is discussed along with this.

**Keywords:** Nerve injury, *Vrana*, *Marmabhigata*, *Abhigataja vatavyadhi*, Supracondylar fracture.

## INTRODUCTION

Nerves travel in close proximity to the bones and joints. A fracture or dislocation could thus potentially damage a nerve, in addition to the bony injury. As the fracture or dislocation, itself is a painful and distressing injury, the presence of a nerve injury may not be recognized immediately. A supracondylar fracture in the upper limb may damage the nearby radial, ulnar

and median nerves. The incidence of nerve injuries in supracondylar fractures is 11 – 15%.

### CASE REPORT

A 49-year-old female patient visited Shalyatantra OPD with complaints of inability to lift the left hand, pain in the left elbow which radiates to the hand, and numbness of the forearm and hand.

**History of present illness**

She had a fall on her outstretched left hand one month back. After which she noticed severe pain and swelling on her upper arm and elbow. She was not able to lift her forearm and hand. On orthopaedic consultation, she underwent the necessary investigations and was diagnosed with a displaced supracondylar fracture

with intercondylar extension. Open reduction and internal fixation were done and thus the fragments are aligned proper. After this initial treatment, she was advised to wear wrist support and follow physiotherapy. Even after one month, she was not able to lift her hand and the orthopaedician advised surgery. Thus, she came to Shalyatantra OPD of VPSV Ayurveda college hospital for alternative management.

**Examination**

While examining, there was wrist drop (Fig 1, a). Muscle wasting in the first dorsal web space of her left hand was noted (Fig 1, b).



Fig 1. a. Wrist drop b. Muscle wasting

On palpation, wasting and flabbiness of muscles in the forearm and hand were identified. The sensory deficit on the little finger, dorsum of the forearm, and hand were also noted. On testing for muscle power, grade 3 out of 5 was seen in elbow flexors, forearm supinator, wrist flexors, adductors, and abductors of fingers and thumb. It was grade 0 in extensors of the wrist, MCP joints, and thumb. Card test and Book test for the diagnosis of ulnar nerve injury were positive.

**Investigations**

The nerve conduction study (NCS) revealed the absence of nerve conduction in the motor part of the radial and sensory part of the ulnar nerve in the left upperlimb (Fig 2).

DEPARTMENT OF NEUROLOGY MEDICAL COLLEGE HOSPITAL, KODIANGODE, KERALA SUPER-SPECIALITY BLOCK						
NERVE CONDUCTION STUDY REPORT						
Name:	Sujitha		Age:	44	Sex:	F
Diagnosis:	C6/7		Ref:	Dr. George	Date:	10/10/2022
RUC - UPPER LIMB						
NERVE	DISTAL LATENCY	AMPLITUDE DISTAL	AMPLITUDE PROXIMAL	EMG POINT	NCV	COMMENTS
R. Median	2.8	9.5	7.4	-	60	Normal
L. Median	2.8	9.5	9.4	-	63	Normal
R. Ulnar	2.4	10.2	9.7	-	60	Normal
L. Ulnar	2.6	11.5	11.2	-	61	Normal
R. Radial	2.0	0.2	0.1	-	0	Low amp & low vel
L. Radial	2.0	0.2	0.1	-	0	Low amp & low vel

LUC - UPPER LIMB				
NERVE	VELOCITY	AMPLITUDE	NCV	COMMENTS
R. Median	28	30	60	Normal
L. Median	28	40	63	Normal
R. Ulnar	28	60	70	Normal
L. Ulnar	28	60	70	Normal
R. Radial	18	60	80	Normal
L. Radial	18	5	24	Low amp & low vel

Fig 2. NCS report of right and left upper limbs

## Management

This case was managed in Shalyatantra OPD as shown in Table 1 and Table 2

**Table 01: Internal medicines**

INTERNAL MEDICINES	DURATION	DOSE	TIME
Musthadi marma kashaya	First 1½ month	90ml	6 am, 6 pm
Prasaranyadi kashaya	Next 1½ month	90ml	6 am, 6 pm
Ksheerabala 101 Avarthi	3 months	10 drops	6 am with kashaya

**Table 02: Treatment procedures**

PROCEDURE	MEDICINE
Udwarthana	Kulatha churnam
Pichu and Abhyanga	Dhanwantharam tailam
Snaihika nasya	Ksheerabala 101 Avarthi

- **Wrists drop splint and Range of motion exercises** were advised

## OBSERVATIONS

After 3 months of Ayurvedic treatment, she could easily move her fingers and wrist and she was able to do all kinds of activities with her hand. She regained considerable strength as shown in Table 3.

**Table 03: Muscle power before and after treatment**

MUSCLES	BEFORE TREATMENT	AFTER 3 MONTHS OF TREATMENT
<ul style="list-style-type: none"> <li>• Wrist flexors</li> <li>• Fingers and thumb adductors</li> <li>• Thumb abductor</li> </ul>	3/5	4/5
<ul style="list-style-type: none"> <li>• Elbow flexors</li> </ul>	3/5	5/5
<ul style="list-style-type: none"> <li>• Forearm supinator's</li> </ul>	3/5	5/5
<ul style="list-style-type: none"> <li>• Wrist, MCP joints, and thumb extensors</li> </ul>	0/5	5/5

## DISCUSSION

In this case, the displaced bony fragments injured the nearby radian and ulnar nerves. Since it is a closed fracture, the type of nerve injury that occurred here is axonotemesis.

### Ani marmabhigata

The site of nerve injury, in this case, is the distal 3<sup>rd</sup> of the upper arm. The radial nerve, ulnar nerve, median nerve, and brachial artery are in close relation with the distal end of the humerus in this area. Moreover, this

area is covered by biceps muscle. And the area shows proximity to the elbow joint. Here we can see the *Samagama* of *Mamsa Sira Snayu Sandhi* and *Asthi*, which shows it is the site of *Marma*. This site is very near to the *Ani marma*. The site of *Ani marma* is three *Angula* above *Koorpara*. Its size is half *Angula* and it is a *Snayu marma*. *Abhigata lakshana* of *Ani marma* is *Sthabda bahu*, *Shophathivrdhi*, and it causes *Vaikalya*. All these symptoms indicate a nerve injury in that area.

Acharya Susrutha explained that any injury occurring nearby a *Marma* will produce symptoms similar to that *Marma* (Su. sa. 6/41). Since the injury occurred nearby *Ani marma*, it can be considered as *Ani marmabhogata* or *Ani marmastha vrana*

In this case, *Vrana* happens in *Asthi*, *Sandhi*, *Marma*, *Sira*, *Snayu*, and *Mamsa*. So integrated approach of *Vrana chikitsa*, *Bhagna chikitsa*, and *Marma abhogata chikitsa* along with *Abhogataja vatavyadhi chikitsa* are incorporated here.

- **Musthadi marma kashaya** is chiefly indicated in all types of trauma including fractures, dislocations, and soft tissue injuries.
- **Prasaranyadhi kashaya** is widely used in all neurological conditions of upperlimb and is indicated in *Vatavikara* and *Apabahuka*.

- **Udhwarthana**

According to susrutha, उद्धर्तनं वातहरं कफमेदो विलापनं स्थिरीकरणमङ्गानां त्वक्प्रसादकरं परं (सु. चि. २४)

*Udhwarthana* will provide strength to the paralysed muscles and improve the sensation of the skin. *Srothoshodhana* property of *Udhwarthana* helps to remove the obstructions in the healing process. *Udhwarthana* with *Kulatha churnam* was advised, where *Kulatha* has *Vatahara* property

- **Ksheerala** is exclusively used in all neurological conditions and has the properties like *Vataroganuth*, *Jeevanam*, *Brmhanam*, and *Indriyanam prasadanam*. It is said as *mukyathama rasayana* also
- **Snaihika nasya**. - According to Acharya Jejjata, *Nasya* is very much effective in *Urdwashakha bhagna*
- **Dhanwantha taila** is *Sarva vata vikarajith* and is indicated in *Marma asthi hatha ksheena*.

### **Favourable conditions**

Open Reduction and Internal Fixation were done on the 2<sup>nd</sup> day of injury. So, the bony fragments were

aligned proper. The nerves were not divided. So, there is a scope for conservative management. The duration of the nerve injury was one month. Thus, we were able to start the treatment at the appropriate time. A comprehensive approach comprising orthopaedic surgery and Ayurvedic management along with the use of a wrist splint and exercises helped in the recovery of the case.

### **Limitations**

*Swedana* could not be done as the metal implant was in situ. Thus, we were not able to do any kind of procedures involving the application of heat. Since the patient was managed in OPD, continuous close observations and monitoring were not possible. As the patient was 49 years old, the regeneration expected was slow.

### **CONCLUSION**

Peripheral nerve injuries are commonly associated with trauma. Internal medications which promote neurodegeneration is very limited in modern science. Surgical management is necessary in the case of neurotmesis. Conservative management is useful in neuropraxia and axonotmesis. Also, it may be effective in neurotmesis after suturing of nerves. In such cases, it can be understood that there is ample scope for conservative Ayurvedic treatment. A comprehensive approach integrating *Vrana chikitsa*, *Marmabhogata chikitsa*, *Vatavyadhi chikitsa*, and *Rasayana chikitsa* may assist the neuroregeneration in nerve injuries.

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