Publisher
Maharshi Charaka Ayurveda
www.maharshicharaka.in

Journal of Ayurveda and Integrated Medical Sciences

2025 Volume 10 Number 3 MARCH

E-ISSN:2456-3110

Case Report

Prasavakaleena Abhigataja Vyadhi

Ayurvedic management of Neonatal Brachial Plexus Palsy : A Case Study w.r.t. Ekangavata (Prasavakaleena Abhigataja Vyadhi)

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DOI:10.21760/jaims.10.3.58

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Background: Neonatal brachial plexus palsy (NBPP) occurs secondary to traumatic injury to the brachial plexus in the perinatal period. It is a commonly encountered problem on the postnatal wards with the potential for significant morbidity. Congenital brachial plexus palsy (CBPP) results in a flaccid paresis of the upper limb at birth with a greater passive range of limb movement than active. It is usually unilateral but can be bilateral. Significant risk factors include shoulder dystocia, macrosomia, instrumental delivery and prolonged second stage of labour. Prognosis is variable and dependent on the type and level of nerve injury with total plexus palsies having the worst prognosis.

Case Presentation: A 13-year-old female patient with the diagnosis of brachial plexopathy reported to OPD with complaints of weakness of right upper limb since birth associated with stiffness of right shoulder joint and difficulty in Range of Movements. The patient was treated with Ayurvedic therapeutic interventions such as Sweda along with Vatakaphahara and Vatahara Shamanoushadhis, Sthanika Seka, Sarvanga Abhyanga and Sarvanga Shashtika Shaali Pindasweda, Sthanika Annalepa, Veshtana, in the form of Upanaha & Nasya Karma, were prescribed.

Conclusion: After 10 days of treatment, there was marked relief in the symptoms in the form of reduced weakness and stiffness of right upper limb and in Range of movements. The above treatment protocol along with oral medications has shown significant result clinically in the present study.

Keywords: Neonatal brachial plexus palsy, Nasya, Annalepa, Shashtikashali Pinda Sweda

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How to Cite this Article

Surendran A, Seetharamu MS, Ashvini Kumar M, Sahana S, Ayurvedic management of Neonatal Brachial Plexus Palsy : A Case Study w.r.t. Ekangavata (Prasavakaleena Abhigataja Vyadhi). J Ayu Int Med Sci. 2025;10(3):383-388.
Available From
https://jaims.in/jaims/article/view/4108/

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2025-02-10	2025-02-25	2025-03-05	2025-03-15	2025-03-25

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
None	Nil	Not required	11.65	

Introduction

During the perinatal stage, the brachial plexus nerves (C5 to T1) stretch, resulting in arm weakness or paralysis and restrictions in active range of motion (AROM). NBPP is a common after effect of challenging childbirth that affects how well the brachial plexus functions in babies. Macrosomia, breech/pelvic birth, diabetes during pregnancy, shoulder dystocia, small stature/cephalopelvic disproportion, primiparity, or an prolonged expulsion phase are the factors linked to NBPP.**[1]**

Based on anatomical features, specifically nerve complex controlling afflicted finger, hand, arm, and shoulder muscles, the clinical classification of NBPP is determined. Accordingly, lesions of brachial plexus are categorised as "severing of lower trunk" when they impact C8 and T1, "severing of middle trunk" when they affect C7, and "severing of upper trunk" when they affect C5 and C6. When impacting C5–T1 nerves, full severance is finally taken into consideration.**[2]** In addition to being categorised based on afflicted nerve roots, NBPP is also categorised based on function of injured limb and extent of nerve lesion. Preganglionic and postganglionic avulsion injuries depend on degree of nerve lesion. It is also necessary to take into account neuroma lesions, which indicate interference from scar tissue from an injured neuron that, upon healing, prevents nerve impulse from reaching muscle. Upper brachial plexus palsy (C5–C6), also known as Duchenne-Erb syndrome, is characterised by maintained hand function but compromised shoulder abduction, external rotation, and elbow flexion. Lower brachial plexus palsy (C7–T1) is another name for Dejerine-Klumpke syndrome, which affects function of hands and wrists. When there is a total brachial plexus palsy (C5–T1), arm's function is compromised. Patient may appear with visual impairment in addition to a completely flaccid, non-sensitive arm. Horner's Syndr. is name given to this set of symptoms.**[3]**

Prognosis and results with NBPP are based on the severity of the damage. The kind of injury and regeneration shown by the injured limb's spontaneous recovery determine the therapy alternatives. A conservative approach to rehabilitation for neonatal brachial plexus palsy involves passive movements, sensory stimulation, and guidance to the child's relatives.

This approach is taken rather than surgical treatment, which involves surgical techniques and is only carried out once child has recovered on its own, usually by time child is three months old. As it is *Karmahani* and *Balahani* of one part of body *Vata Vyadhi* called *Ekangavata* occurs when an organ develops *Karma, Kshaya,* and *Shoola* as a result of *Sira* and *Snayu Shosha.***[4]** We can compare monoplegia to modern times. It is a single-limb paralysis, usually affecting upper limb. Affected limb symptoms include discomfort, weakness, numbness, and paralysis. *Vatahara Chikits*a, which comprises *Shodhan* procedures like *Snehana, Swedana, Vasti Karma, Nasya,* and *Brumhana, Rasayana,* and *Vatahara* medicines together with *Pathyas* and *Apathyas*, is treatment for this condition. In contrast to contemporary therapeutic methods, *Ayurvedic Chikitsa* plays a major part in full recovery of illness.

Objective of the study

Here effort is made to assess efficacy of Panchakarma treatment in Neonatal Brachial Plexus Palsy.

Case Report

A 13 year old female patient consulted in the outpatient department of Sri Dharmasthala Manjunatheswara College of Ayurveda Hospital, Hassan with complaints of weakness and restricted movements of Right hands since Birth.

History of present illness

A well built full-term child born as the second child of a non-consanguineous married couple normal vaginal delivery with no other significant pre-natal, natal & post-natal birth history noted, the female baby cried at the time of birth. There was no prior record of extraction at the time of delivery. However, the patient's mother informed that the delivery was prolonged due to inexperienced attendant. Complaints of weakness of right upperlimb since the third day of delivery. When they made situation under notice of physician, they informed it will get improved as age progresses. The patient is experiencing trouble lifting her right upper limb to comb hair, as well as trouble writing, reaching up high, and throwing items away. Restricted movements at elbow joint because of which she is not able to take her hands to her mouth. She can hold a spoon, Pen etc.

She found no difficulty in using any other limbs and no any developmental delay was noticed. They went to numerous hospitals in between, but were told that they would get better as the age progresses. When she was nine years old, she went to a renowned children's hospital in Bangalore, where she was advised to have an MRI and given medication to support the management of her nerve health. Noticing no alterations, they came to our hospital for additional care.

Birth History

Antenatal: Nothing specific, Mother underwent MTP after 1st child due to less spacing between two childs.

Natal: Full Term Normal Vaginal Delivery, Birth Weight 2.8 kg

Post natal: History of Immunisation: Immunized as per schedule

Examinations

General Examinations

Well buiit, Weight, No signs of Pickle

Central Nervous System Examination

Examination showed no abnormality in cranial nerves; higher mental functions were intact.

Sensory Examination

Pain: Pinprick test: Confused in C5-C6 Dermatomes

Motor Examination

Shoulder Asymmetry was noted (Depressed in Right side)

Muscle Tone & Power

Table 1: Muscle Tone and Power of Right upper limb Upper limb Before Treatment, After Treatment & Follow up

	Muscles of Upper limb (Right Side)	Before Treatment	After Treatment	Follow Up (After 30 days)
Muscle tone	-	Normal	Normal	Normal
Muscle Power	Biceps	2/5	3/5	4/5
	Triceps	3/5	5/5	5/5
	Brachioradialis	5/5	5/5	5/5
	Flexors of wrist	5/5	5/5	5/5
	Extensor of wrist	5/5	5/5	5/5

Muscle Bulk: Muscle Consistency & Girth

Table 2: Muscle Consistency & Girth of Upper limb Before Treatment, After Treatment & Follow-up

Muscle Bulk		Before Treatment		After Treatment		Follow-up (After 30 days)	
		RT	LT	RT	LT	RT	LT
Muscle Consistency	-	Normal	Normal	Normal	Normal	Normal	Normal
Muscle Girth	Total arm length	71 cm	74 cm	71 cm	74 cm	71 cm	74 cm
	Mid Upper arm	23.5 cm	25 cm	23.5cm	25 cm	24 cm	25 cm
	Mid forearm	18 cm	19 cm	18 cm	19 cm	18.5cm	19 cm
	Shoulder	34 cm	34 cm	34 cm	34 cm	36 cm	34 cm
	Elbow	21 cm	22.5cm	21 cm	22.5cm	21 cm	22.5cm

Range of Movements

Table 3: Range of movements of different joints Before treatment, After treatment & Follow-up

Range of Movements		Before Treatment	After Treatment	Follow-Up (After 30 days)
Shoulder	Abduction	Restricted (55)	Improved (90)	Improved (110)
	Adduction	Possible	Possible	Possible
	Flexion	Restricted (120) (180: Possible with support of left hand)	Improved (160) (180: Possible with support of left hand)	Improved (180) (180: Possible without support of left hand)
	Circumduction	Restricted	Restricted	Restricted
	Extension	Restricted	Possible	Possible
	Internal rotation	Possible	Possible	Possible
	External rotation	Restricted	Restricted	Possible
Elbow	Extension	Possible	Possible	Possible
	Flexion	Restricted	Possible (with little support of other hand)	Possible (with little support of other hand)
	Supination	Possible	Possible	Possible
	Pronation	Possible	Possible	Possible

These examinations for Left upper limb was Normal

Investigations

MRI of Right Brachial Plexus

Small CSF intensity lesion is noted in right C6-C7 neural foramina measures 4 x 3 mm in size.

Respected nerve root is not well appreciated. MRI 1/s/o perineural avulsion cysts and sos f/u MRI

MRI of Brain

No significant intra parenchymal abnormality seen. No findings s/o acute intracranial hemorrhage / SOL.

NCS/EP'S/EMG Report

Right median and ulnar, radial and musculocutaneous motor and sensory shows normal distal latency, amp and velocity. Right axillary motor study is normal.' F' wave study is normal.

Impression: Nerve conduction studies are normal.

Management and outcome

Table 4: Treatment details

Date	Treatment	Details
7/5/24 - 9/5/24	Sarvanga Udvarthana + Sarvanga Parisheka	Udvarthana Choorna & Dasamoola Qwatha + Erandamooladi Qwatha
8/5/24 -9/5/24	Agni Chikitsa Lepa	Tulasi, Agnimantha, Nirgundi, Shigru, Maricha, Lashuna, Sarshapa, Lavanga, Haridra
10/5/24 -12/5/24	Sarvanga Abhyanga + Sarvanga Jambeera Pinda Sweda	Mahamasha Taila
13/5/24 -16/5/24	Sarvanga Abhyanga + Sarvanga Shastika Shali Pindasweda	Mahamasha Taila
9/5/24	Koshta Shodhana	Nimbamruthadi Eranda Taila (20ml) + Milk
10/5/24 -16/5/24	Marsha Nasya	Brihath Chagallyadi Gritha
10/5/24 -16/5/24	Annalepa as Upanaha	Shashtika Shali, Mustha, Ashwagandha, Manjishta, Bala, Panchatikthaka Guggulu Gritha, Anna & Milk
10/5/24 -16/5/24	Shiropichu	Ksheerabala Taila + Bala Choorna
11/5/24 -16/5/24	Sthanika Veshtana	Mahamasha Taila

Table 5: The details and dosage of oral medications during treatment.

Oral Medications	Dosage
Brihat Chagallyadi Gritha	5 ml - 0 - 5 ml B/F
Anuloma DS	0 - 0 - 2 B/F
Chitrakasava	10 ml - 0 - 10 ml A/F

Table 6: The details and dosage of medicines advised on discharge.

1.	Sthanika Lepa to right shoulder with Annalepa	
2.	Brihath Chagallyadi Gritha	5ml - 0 - 5ml B/F
3.	Ekanga Veera Rasa	1 - 0 - 1 A/F
4.	Ksheerabala DS	1 - 0 - 1 A/F
5.	Dhanadhanayanadi Kashaya	10ml - 0 - 10ml A/F
6.	Ksheerabala Taila	External Application

Results

In this study the patient were examined before and after the treatment which measured by range of movements and anthropometry. Comparing the Range of movements of shoulder Abduction before treatment improved by 35 degrees after treatment and 55 degrees during follow up time. The Forward flexion was restricted actively (possible with support) before treatment improved to possible without support. And Extension and External rotation also improved after treatment. Range of Movements of Elbow joint Flexion was possible with little support after treatment (Was able to take food by Right hand with support). The muscle strength increased by 1 point in Biceps and 2 points in Triceps. Due to the effect of the treatment like *Nasya, Annalepa* etc. provides good amount of strength up to the *Uttamanga* and also the shoulder region. *Rookshana, Swedana* and *Brimhana Chikitsa* combinedly effected the patient to have *Vatakaphahara* lines of treatment leading to the improvement in the range of movement and Strength in a certain amount of time.

Discussion

Traction of the brachial plexus during birth results in Neonatal Brachial Plexus Palsy (NBPP), which can impair the affected arm's function in various ways. The power of the upper limb's muscle groups significantly improved, according to the study. The condition manifested as *Karmahaani* and *Balahaani*, which are the functions attributed to *Vata Dosha*. It was treated in accordance with *Vatasyopakrama* since there was morbidity of the *Vata Dosha* along with *Kapha* with regard to upperlimb movement.

Treatment: while a patient is in the *Sama* stage, their strength should be taken into consideration while designing a treatment plan that calms the *Vata* and treats the *Ama* both locally and systemically *Rookshana* therapies will help in this.

From very beginning, *Udwarthana* was involved in treating this disease, which resulted in *Gouravahara* and *Sthireekarana* of *Angas*, with goal of performing *Rukshanakarma* to alleviate *Kapha* and address *Amatwa* without provoking *Vata. Udwarthana Choorna* drugs are having *Katu,Tikta,Kashaya Rasa Dravyas* having *Laghu,Teekshna* and *Ushna Veerya* they help to remove obstruction in *Rasa Dhatu* and *Swedavaha Srotas*.**[5]** And *Parisheka* is best for *Vata* or *Vata* associated with kapha, helps to reduce stiffness and heaviness in bony joints. Following *Sthanika Valuka Sweda* was done in evening to ensure good amount of freeness and to reduce *Amatwa*. 2 days *Agnichikitsa Lepa* was performed to clear *Avarana* of *Dosha* to particular part. Once *Niramaja Lakshnas* were found *Sarvanga Abhyanga* followed by *Jambeera Pinda Sweda* is done.

The treatment *Abhyanga* is having direct action on *Vata Dosha* performing with *Mahamasha Taila* as it will enhance the action of *Vatahara* along with *Brimhana* which is necessary in present condition. *Jambeera Pinda Sweda* is a type of *Snigdha Rooksha Sweda* which is good in treating condition where *Vatakapha* predominance is there henceforth this therapy yield a very good result in increasing Range of movements and strength. *Sthanika Annalepa* is a procedure of applying paste of *Shashtika Shali* cooked with milk and then added *Balamoola Kwatha* along with *Manjishta, Bala, Ashwagandha* and *Panchatikthaka Guggulu Gritha* applied and tied by immobilising upper limb with a Bamboo stick and kept for 5-6 hour which carried out in form *Upanaha*. Which provided good results in this condition bec. of *Brimhaneeya Dravyas* used in it.

Rd On 3 day before performing *Nasya Shodhana* has been performed for *Koshtashodhana* purpose. It is important for therapies such as *Nasya, Basti*, and *Snehapana,* etc. *Koshtha Shodhana* acts as a booster for other *Panchakarma* treatments. From *Amashaya* and *Pakwashaya, Koshtha Shodhana* eliminates *Malavarodh* and *Doshas.Nimbamritadi Taila* along with milk was advised. From 4th day onwards, *Marsha Nasya* has been planned with *Brihat Chagallyadi Gritha* which is having *Brimhana* action. As this *Gritha* possesses *'Balyam Mamsakaram Vrushyam Agnisandeepanam Param'* In this circumstance, it's a choice of medication. It was done for 7 days which started with started with 6 drops in each nostril, then 10, 15,20,20,25, up to maximum of 30 drops following days.

After *Rookshana* line of approach *Sthanika Veshtana* has been kept throughout night for *Snehana* effect as it was in *Greeshma Ritu* because of *Vata Sanchaya.* To avoid this *Veshtana* has been done which continued throughout course. *Shiropichu* has been done to provide good amount of sleep, nouris. and *Snehana* to *Shirobhaga* which is *Uttamanga.*

Conclusion

The chosen therapy approach here is solely intended to balance morbid *Vata Dosha*. The symptoms were significantly relieved by *Nasya Karma, Annalepa*, and application of *Sneha* in form of *Veshtana.* The results of study suggest that continuing topical treatment and adding oral medicine may accelerate illness's regression and result in total remission. This case study thus makes it possible to carry out additional research in this area regarding inclusion of oral medicine, maintenance of topical medication, and repetition of *Shodhana* treatment. When combined with oral medications, Ayurvedic treatment methods proved helpful in improving symptoms of Neonatal Brachial Plexopathy. The outcomes of this treatment indicate that this treatment str. can serve as basis for future study on Ayurvedic care of congenital brachial plexopathy.

Figure 1: The Range of movement of Shoulder Joint Before treatment

Figure 2: The Range of movement of Shoulder Joint After treatment

Figure 3: The Range of movement of Shoulder Joint After Follow Up

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