RESEARCH PAPER

Siddha-based Rehabilitation in Paediatric Obstetric Brachial Plexus Injury (Erb's Palsy): Case Report

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ABSTRACT

Background: Obstetric brachial plexus injury (OBPI) is a peripheral nerve injury occurring during childbirth, most commonly involving the upper trunk (C5–C6) and presenting as Erb's palsy. Although early physiotherapy is the standard management, persistent motor deficits may remain in some children.

Case Presentation: Two children with right-sided Erb's palsy following forceps-assisted delivery presented with reduced shoulder abduction, elbow flexion, and sensory deficits over the lateral arm. Baseline muscle power ranged from Medical Research Council (MRC) grade 2/5 to 3/5.

Intervention: Both children received integrative Siddha-based rehabilitation including Siddha regimen along with external therapies such as Varmam stimulation, Thokkanam, and Navarakizhi over a structured treatment period.

Outcome: At 3-month follow-up, muscle strength improved to MRC grade 4/5 in affected muscle groups, with restoration of sensation and enhanced functional limb use. No adverse events were observed during treatment.

Conclusion: These cases suggest that integrative Siddha-based rehabilitation may contribute to functional recovery in paediatric Erb's palsy. Larger controlled studies are warranted to establish efficacy.

Keywords: Obstetric brachial plexus injury, Erb's palsy, Siddha medicine, Paediatric rehabilitation, Varmam therapy

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Introduction:

Obstetric brachial plexus injury (OBPI) is a peripheral nerve injury occurring during childbirth due to traction or compression of the brachial plexus. It remains one of the most important causes of upper-limb neurological deficit in neonates and children. The reported incidence ranges from approximately 0.9 to 1.7 per 1000 live births globally, though rates vary across populations and obstetric practices (1,2). Despite advances in obstetric care, shoulder dystocia, instrumental delivery, macrosomia, and perinatal complications continue to be significant risk factors associated with this condition (2,3).

Erb's palsy is the most common form of OBPI and involves injury to the upper trunk of the brachial plexus (C5–C6 roots). Clinically, it presents with the characteristic "waiter's tip" posture—shoulder adduction, elbow extension, forearm pronation, and wrist flexion—along with weakness in shoulder abduction, elbow flexion, and external rotation (4). Sensory deficits over the lateral aspect of the arm may also be present depending on the extent of nerve involvement. Although many infants experience spontaneous recovery within the first few months, approximately 20–30% may develop persistent functional deficits, contractures, or limb deformities that affect long-term quality of life (1,4). In some cases, surgical interventions such as nerve repair, tendon transfer, or arthroscopic correction may be required when conservative therapy fails to achieve adequate recovery (7). However, the majority of mild to moderate cases can achieve meaningful functional improvement through early and sustained rehabilitation programs (5).

Complementary and integrative therapeutic approaches are increasingly being explored in paediatric neuromuscular rehabilitation to enhance nerve recovery, muscle activation, and functional restoration. Traditional manual stimulation techniques and external therapies may support neuromuscular re-education and circulation, thereby contributing to improved motor outcomes when used alongside conventional rehabilitation (5,6). However, evidence regarding such integrative approaches remains limited and requires further clinical documentation. This case report describes the clinical course and functional recovery of a child with Erb's palsy managed using an integrative Siddha-based rehabilitation approach.

Patient Information:

Case 1:

A 3-year-old female child presented with right upper limb Erb's palsy. She was born full term to third-degree consanguineous parents with a birth weight of 3.4 kg. The delivery was assisted by forceps and was complicated by a cord around the neck and birth asphyxia. The child did not cry immediately after birth and required neonatal resuscitation (NRP). Direct breastfeeding was initiated 12 hours after birth and was continued up to 2 years of age.

Clinical Presentation:

Before treatment, the child presented with the right upper limb hanging by the side in a typical "waiter's tip" posture, characterized by an extended elbow, pronated forearm, and palm facing backward. Only a few moderate finger movements were noted and weakness and sensory loss of the right upper limb had been present since birth. On clinical examination, muscle tone was increased (hypertonia). Muscle power, assessed using the Medical Research Council (MRC) grading scale, was 2/5 for shoulder abduction, elbow flexion, shoulder external rotation, and forearm supination. Sensory examination revealed no response to touch, pain, or temperature over the entire lateral aspect of the right upper limb.

Case 2:

A 2-year-old male child was diagnosed with right upper limb Erb's palsy. He was born full term to non-consanguineous parents through a forceps-assisted delivery and cried immediately after birth. There was no history of trauma after birth. Since birth, the child had weakness of the right upper limb with difficulty in lifting the arm, bending the elbow, and using the right hand normally. The right upper limb was noted to hang by the side with limited active movements at the shoulder and elbow.

Clinical Presentation

Before treatment, the clinical examination muscle tone was mildly decreased (hypotonia). Muscle power assessed using the MRC grading scale was 3/5 for shoulder abduction, shoulder external rotation, elbow flexion, and forearm supination. Sensory examination revealed reduced sensation over the lateral aspect of the right arm.

Diagnostic Assessment:

The diagnosis was made clinically based on the detailed birth history, the characteristic posture of the affected upper limb, and the pattern of motor weakness corresponding to the C5–C6 nerve root distribution. Sensory findings over the lateral aspect of the upper limb further supported the clinical impression of Erb's palsy. Electrophysiological studies were not performed due to financial constraints.

Intervention:

Internal medicines:

MEDICINE	DOSAGE	ADJUVANT	DURATION
Tab.Amukkara chooranam	One tablet Twice a day, After food	Milk	60 Days
Muthu parpam	100 mg Twice a day, After food	Milk	60 Days
Chittramutti madaku thylam	5 drops Twice a day, After food	Milk	60 Days
Sagalanoi chooranam	1 gm Twice a day, After food	Milk	60 Days

External therapies:

1st Sitting:

Thokkanam	Varmam	NavaraKizhi Otradam

with Laguvishamusti thylam for 7 days Then interval for 1 day	1.Pidari Kalam 2.Kaakatai Kalam 3.Vilangu Varmam 4.Kochu Varmam 5.Kai Kouli Varmam 6.Manibhandha Varmam 7.Piradharai Varmam For 30 days	Downward stroke for 30 Minutes For 21 days

2nd Sitting:

The same external therapies as administered during the first sitting were repeated.

Outcome:

Case 1:

Parameter	Before Treatment	After Treatment First admission	After Treatment Second admission
Muscle Tone	Hypertonia in right upper limb	Improved towards near-normal tone	Maintained normal tone
Shoulder Abduction (MRC)	2/5	4/5	4/5 (sustained)
Elbow Flexion (MRC)	2/5	4/5	4/5
Shoulder External Rotation (MRC)	2/5	4/5	4/5
Forearm Supination (MRC)	2/5	4/5	4/5
Sensation (Lateral Arm)	Absent (touch, pain, temperature)	Gradual return of sensation	Fully present
Functional Ability	Unable to lift arm; limited finger movements	Able to flex elbow, supinate forearm	Independent limb use in daily activities
Activities of Daily Living (ADL)	Dependent	Partially independent	Independent feeding and object handling

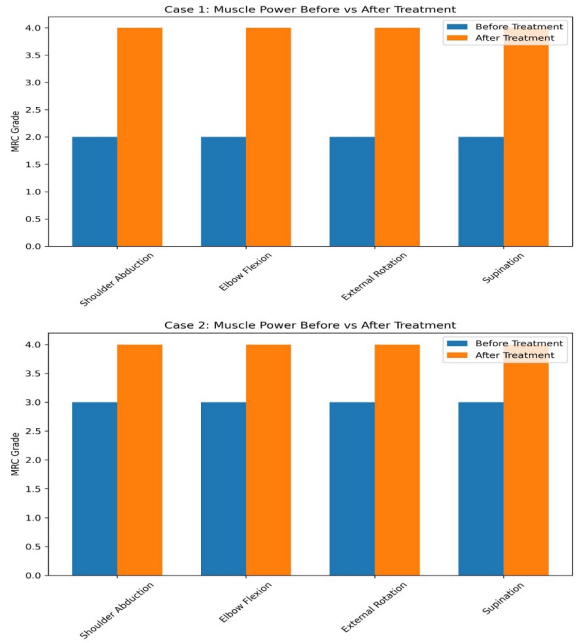
Case 2:

Parameter	Before Treatment	After Treatment First admission	After Treatment Second admission
Muscle Tone	Mild hypotonia	Improved towards normal	Maintained
Shoulder Abduction (MRC)	3/5	4/5 (near full against resistance)	4/5
Elbow Flexion (MRC)	3/5	4/5	4/5
Shoulder External Rotation (MRC)	3/5	Improved to near 4/5	4/5
Forearm Supination (MRC)	3/5	Improved	4/5
Sensation	Reduced over lateral arm	Improved sensory response	Near-normal
Functional Ability	Difficulty lifting arm	Able to lift to shoulder level	Age-appropriate functional use
ADL Performance	Limited use of right hand	Improved voluntary control	Functional participation in play

Combined Summary Table:

Case	Shoulder Abduction	Elbow Flexion	External Rotation	Supination	Sensory Status	Functional Outcome
Case 1	2/5 → 4/5	2/5 → 4/5	2/5 → 4/5	2/5 → 4/5	Absent → Restored	Independent feeding
Case 2	3/5 → 4/5	3/5 → 4/5	3/5 → 4/5	3/5 → 4/5	Reduced →	Age-appropriate

					Improved	limb use



Patient Perspective:

Parents of both children reported significant functional improvement. They expressed satisfaction with enhanced limb use in daily activities such as feeding, holding objects, and playing.

Discussion:

Erb's palsy results from injury to the upper trunk (C5–C6) of the brachial plexus and typically presents with the classical "waiter's tip" posture due to paralysis of the deltoid, biceps, brachialis, and infraspinatus muscles. Conservative management including physiotherapy remains the first-line treatment for mild to moderate obstetric brachial plexus injury. A systematic review has demonstrated that structured physical therapy interventions significantly improve muscle strength, joint mobility, and functional limb use in affected children (8,9). Early and sustained rehabilitation also reduces the risk of secondary complications such as contractures and joint stiffness (10). In cases where conservative therapy fails, surgical intervention such as nerve grafting or nerve transfer may be indicated, particularly in severe or non-recovering injuries (11). However, many children continue to experience residual weakness despite standard therapy. From a Siddha perspective, neuromuscular dysfunction is attributed to derangement of Vatha humour, which governs motor activity and nerve conduction. The internal medicines administered were selected based on their traditional indications in Vatha-related neuromuscular disorders and emerging pharmacological evidence. Withania somnifera (Amukkara) has demonstrated neuroprotective and axonal regenerative properties in experimental models of peripheral nerve injury (12,13). Muthu Parpam has shown antioxidant and acetylcholinesterase inhibitory activity, and its high calcium content may support synaptic transmission and neuromuscular function (14,15). Lipid-based preparations such as Chitramutti Madakku Thylam may enhance membrane stabilization and facilitate axonal repair (16,17). Polyherbal formulations like Sagalanoi Chooranam may exert supportive effects through antioxidant and anti-inflammatory mechanisms implicated in nerve recovery (18). Although direct clinical evidence in Erb's palsy is limited, these mechanistic findings provide biological plausibility for their adjunctive role in neuromuscular rehabilitation.

External therapies such as Varmam stimulation and Thokkanam may enhance neuromuscular activation through mechanical stimulation of specific points, potentially improving local circulation and neural responsiveness. The combined internal and external therapeutic approach used in these cases was associated with improvement from MRC grade 2/5–3/5 to 4/5, along with restoration of sensory function and improved functional independence at 3-month follow-up.

Conclusion:

These two cases demonstrate potential benefits of integrative Siddha-based rehabilitation in paediatric Erb's palsy. Early intervention may enhance motor recovery and functional independence. Larger controlled trials are recommended to validate these findings.

Informed Consent:

Written informed consent was obtained from the parents of both patients for publication of this case report.

Conflict of Interest:

The authors declare no conflict of interest.

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