

Effect of Six Week Interdisciplinary Approach in a Toddler with Idiopathic Facial Nerve Palsy- A Case Report

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ABSTRACT

Background: Bell's palsy is an idiopathic, abrupt, unilateral facial paralysis of the lower motor neurons. Despite being frequently observed in adults, it is exceptionally rare in infants and toddlers, which presents difficulties for pediatric patients in terms of diagnosis and further interventions.

Case Presentation: A 2.5-year-old boy presented with sudden facial asymmetry, mouth deviation to the unaffected side, and difficulty to close the eye on one side. there was No known history of systemic sickness, infection, or trauma . A clinical examination revealed characteristic features of facial nerve palsy caused by a unilateral lower motor neuron. The diagnosis of idiopathic Bell's palsy was made in light of clinical findings. the administration of oral corticosteroids was administered in conjunct to the physiotherapeutic reference.

Intervention: A Multidisciplinary interventions were adopted which included administration of corticosteroid in conjunction with physiotherapy. physiotherapy interventions included parent education and counselling, eye care and protection strategies, facial massage emphasizing lymphatic drainage, Kabat therapy (proprioceptive neuromuscular facilitation techniques for facial muscles), oromotor exercises, and mirror feedback exercises to enhance voluntary control and symmetry.

Outcome: Progressive improvement in facial symmetry, eye closure, and voluntary muscle activity was observed post intervention and it was assessed through House Brackmann Facial Paralysis Scale.

Results: The score assessed on House Brackmann scale suggests that there was marked improvement in the toddler post medical and physiotherapy intervention.

Conclusion: Early corticosteroid medication combined with multimodal physiotherapy, involving caregiver engagement and specialist facial rehabilitation approaches, produced positive results. This instance emphasizes the significance of prompt interdisciplinary management in pediatric Bell's palsy.

INTRODUCTION

Bell's palsy is an acute, idiopathic, unilateral lower motor neuron facial nerve paralysis characterized by weakness of the upper and lower facial musculature on the affected side^[1]. Although this condition is more prevalent in adults, the pediatric incidence for the same is reported to range between 2.7 and 10 per 100,000 children annually, with the majority of cases resolving spontaneously within weeks to months^[2]. Despite of favorable prognosis in children, Bell's palsy can cause significant functional impairments, including incomplete eye closure, impaired oral competence, drooling, and difficulty with speech and mastication^[3]. Additionally, the sudden change in facial appearance may lead to psychosocial distress for both the child and family^[3].

The mainstay of the treatment for bells palsy being pharmacological management with corticosteroids in adjunct to the physiotherapy provides near normal function.^[4] If administered within 72 hours, it has shown marked recovery rates^[4]. Methylprednisolone is commonly used in pediatric practice to reduce intra-neural edema and inflammation, thereby decreasing ischemic compression of the facial nerve within the fallopian canal (facial Canal).^[4]

After the administration of methylprednisolone , physiotherapy was introduced to address the neuromuscular and functional deficits associated with Bell's palsy. While corticosteroids target the underlying inflammatory process, but they do not restore facial muscle strength, coordination,

or symmetry. As, prolonged facial muscle inactivity may lead to secondary complications, including contractures, muscle atrophy, and maladaptive motor patterns such as synkinesis, which can persist even after nerve regeneration.

In pediatric patients, early physiotherapeutic intervention is of importance due to heightened neuroplasticity, which enhances the capacity for cortical and subcortical reorganization in response to targeted sensory-motor stimulation. Structured, repetitive, and task-specific exercises facilitate voluntary muscle activation, improve proprioceptive feedback, and promote symmetrical movement patterns. Adjunctive techniques, such as soft tissue mobilization and lymphatic drainage, help maintain muscle elasticity, optimize the circulatory environment for nerve healing, and reduce post-inflammatory swelling. Eye protection measures including eyelid taping, lubrication, are critical to prevent exposure keratopathy resulting from lagophthalmos.

Caregiver involvement in a supervised home exercise program further ensures continuity of stimulation beyond the clinic, maximizes functional gains, and enhances adherence. When initiated promptly alongside pharmacological therapy, physiotherapy can accelerate restoration of facial function, reduce the risk of long-term complications, and improve the overall quality of life for pediatric patients.

This case report describes the management of a 2.5-year-old male with acute Bell's palsy, emphasizing the role of early, targeted physiotherapy in conjunction with corticosteroid therapy to achieve rapid and complete recovery.



Figure 1: Course and branches of facial nerve

Patient Information

Here we report a case of 2.5-year-old male child, previously healthy and developmentally appropriate for age, presented with sudden onset of left sided facial weakness characterized by incomplete eye closure, drooping of the angle of the mouth. Parents, self reported to the pediatric outpatient department of Dr. D.Y. Patil Medical College and Hospital & Research centre, with classical presentation of asymmetry during crying and smiling. After appropriate initiation of medical management, patient was referred to physiotherapy unit for further follow-up.

On initial evaluation by the paediatrician, the mother described additional concerns such as mild drooling of saliva from the left corner of the mouth and spilling of liquids while the child attempted to drink. No history of trauma, fever, ear discharge, upper respiratory tract infection, or tick bite was reported. The antenatal, perinatal, and developmental history was uneventful. Immunizations were up-to-date, and there was no family history of neurological or autoimmune illness.

Clinical Findings

On examination, the child was alert, playful, and cooperative with examination to the extent possible for age. Vital signs were within normal limits (Pulse rate: 108/min, Respiratory rate: 22/min, Blood pressure: 92/60 mmHg, Temperature: afebrile, SpO₂: 98% on room air). Growth parameters were appropriate for age, and there was no dysmorphic face, skin lesions, or lymphadenopathy were observed

A focused neurological assessment revealed isolated involvement of the left facial nerve (Cranial Nerve VII), consistent with lower motor neuron palsy. Detailed findings suggested affected Frontalis muscle (inability to raise the left eyebrow and absence of forehead wrinkling on the affected side), orbicularis oculi muscle (incomplete closure of the left eye (lagophthalmos) with evident Bell's phenomenon), zygomaticus, levator anguli oris muscle (flattening of the left nasolabial fold, asymmetry of the mid-face at rest, and drooping of the left oral commissure), orbicularis oris muscle (deviation of the angle of the mouth to the right side while crying or attempting to smile). The child was unable to inflate the left cheek, and mild dribbling of saliva was observed. Taste sensation (chorda tympani branch) of the child Could not be reliably assessed due to age limitations. Other cranial nerves (I–VI, VIII–XII) were Grossly normal for age. Eye movements were full and conjugate; pupils equal and reactive. No dysphonia, dysphagia, or tongue deviation was noted.



Figure 2 : Presentation of subject with deviation of mouth to one side

Diagnostic Assessment-

Routine blood investigations were within normal limits. MRI brain and internal auditory canal were performed to exclude space-occupying lesions or demyelinating pathology, both of which were normal. With no evidence of secondary causes such as trauma, otitis media, or central nervous system pathology, a final diagnosis of idiopathic Bell's palsy was made.

TREATMENT TIMELINE

Events	Date
Facial asymmetry observed by mother	20/6/25
Visited Pediatrician	21/6/25
Referred for Physiotherapy	23/6/25
2 nd session of physiotherapy	24/6/25
3 rd session of physiotherapy	26/6/25
4 th session of physiotherapy	28/6/25
5 th session of physiotherapy	30/6/25
6 th session of physiotherapy	2/7/25
7 th session of physiotherapy	4/7/25
Home program	5/7/25 to 12/7/25
Follow up	14/7/25

Functional recovery achieved	18/7/25
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Medical Management

Drug	Day / week	Dosage
Intra venous methyl prednisolone	Day 1	1mg/kg/day
Syrup kid Pred (2months)	Upto 2 weeks	5ml thrice a day
	3 rd - 4 th week	3ml thrice a day
	5 th week	2ml thrice a day
	6 th - 8 th week	1ml once a day (at night)

Physiotherapy Treatment

Physiotherapeutic Intervention	Physiotherapy Management	Rationale
Parent / caregiver education	<ul style="list-style-type: none"> - All the exercises were demonstrated to the parents - Eye protection methods were taught. - Play-based repetitions of the same exercises were encouraged at home. 	<ul style="list-style-type: none"> - Ensures continuity of therapy as a twice a day protocol. - Parents are key facilitators for daily practice which also reduces anxiety, improves compliance.
Eye care & protection	<ul style="list-style-type: none"> - Eye care involving use of goggles, cleaning of eyelids with cotton, passive closing of eyes at night were taught to the parents. 	<ul style="list-style-type: none"> - As it prevents corneal ulceration and dryness - Maintains eye health as orbicularis oculi is weak
Lymphatic drainage massage (effleurage, stroking, vibration, wringing)	<ul style="list-style-type: none"> - Performed gently over frontalis, orbicularis oculi, orbicularis oris, zygomaticus, levator anguli, buccinator muscles Dosage- 10 repetitions x 2 sets 	<ul style="list-style-type: none"> - It Reduces edema and congestion - Prevents stiffness of facial soft tissues - Improves blood and lymphatic circulation.
Kabat Therapy (PNF techniques)	<ul style="list-style-type: none"> Resistance was applied to the unaffected muscles to strengthen the unaffected side, while assistance was given to the muscles of the affected side for further neuromuscular re-education - Bilateral symmetrical patterns for all facial muscles were incorporated. - All this was done through playful interaction with toys, bubbles, mirrors Dosage- 10 repetitions x 2 sets 	<ul style="list-style-type: none"> - Stimulates weak muscles through irradiation principle of PNF - Promotes symmetrical coordinated facial movements - Prevents compensatory muscle overuse
Oromotor & buccinator activation	<ul style="list-style-type: none"> Parents were instructed for following activities - Drinking water with straw - Blowing bubbles in water - Paper blowing, balloon inflation (as play therapy) - Sucking through straw, whistles, blow toys 	<ul style="list-style-type: none"> - This play based intervention Strengthens orbicularis oris and buccinator - Improves oral competence (sucking, swallowing, speech clarity) - Encourages fun, child-friendly exercises
Mirror biofeedback + Facial expression exercises	<ul style="list-style-type: none"> - Child was asked to imitate faces in mirror (smile, frown, puff cheeks, raise eyebrows) - Parents were asked to make it a "game" (funny faces contest) as a home program. - Visual feedback for correcting asymmetry was provided via mirror. 	<ul style="list-style-type: none"> - Helps regain voluntary motor control - Improves awareness of facial asymmetry. - Prevents abnormal movement patterns and synkinesis.

OUTCOME MEASURE

Outcome measure	Pre Intervention	Post Intervention
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House Brackmann Facial Paralysis Scale	Grade IV Severe dysfunction, obvious facial weakness Eye closure- Incomplete Forehead movement - No movement Mouth movement - Asymmetry with effort Synkinesis -Present	Grade I Normal facial function in all areas. Eye closure- Complete Forehead movement-Normal Mouth movement-Symmetrical Synkinesis-None
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Figure 3: Follow up with progression to grade II from Grade IV on House Brackmann



Figure 4: Home Programme monitoring

RESULT

The infant presented with acute onset of unilateral facial weakness consistent with bells palsy. On initial assessment, the House-Brackmann grading system was used to evaluate facial muscles efficacy, further the patient was Grade IV which means moderate to severe dysfunction. Following physiotherapy sessions which included, Kabat therapy, lymphatic drainage, massage, play therapy, mirror biofeedback the infant demonstrated gradual improvement in facial movements. Reassessment using the House-Brackmann scale

at the end of the treatment period revealed a change to grade I, indicating significant recovery of facial symmetry and functional movements.

No adverse events were reported during the treatment period. The outcome highlights the effectiveness of early physiotherapy intervention in promoting functional recovery in infants with Bells palsy.

DISCUSSION

Bell's palsy is a sudden, idiopathic, unilateral lower motor neuron facial paralysis often causing significant challenges for children both physically and emotionally. While corticosteroids such as methylprednisolone remain the primary treatment to reduce neural inflammation, early, targeted physiotherapy interventions greatly accelerate the process of recovery. Physiotherapy is essential in helping children regain facial muscle strength and coordination, restoring symmetry while also preventing long-term sequelae including contractures, atrophy, and synkinesis. By combining medication with individualized rehabilitation, this approach not only restores facial function, but also boosts self-confidence and emotional well-being, enabling children to return more smoothly to daily life and social interactions. This case report demonstrates that early, structured physiotherapy—comprising techniques such as lymphatic drainage massage, Kabat PNF exercises, oral motor activation, mirror biofeedback, and play-based functional activities—plays a critical role in the rapid and complete recovery of paediatric Bell's palsy.

According to S. Monini et al. individuals with severe Bell palsy who receive Kabat therapy in addition to standard steroid treatment may recover quicker and efficiently than those who receive only medical treatment^[5]. Kabat rehabilitation involves using the global pattern of an entire muscle segment that experiences resistance to help an impaired muscle responds voluntarily^[5]. The majority of facial muscles run diagonally, and because of the cross-FN innervations, the upper facial region is easily irradiated. This makes the approach seem incredibly logical for facial muscles^[5]. Three regional fulcra—the upper, intermediate, and lower fulcrums—were evaluated^[5]. A vertical axis connects the first (eyes and forehead) to the intermediate (nose), and a horizontal axis runs along the lower mimic-chewing-articulatory fulcrum^[5]. Therefore, the other two fulcra are likewise involved in motion on the higher fulcrum^[5]. Stretching, maximal resistance, manual contact, and verbal input are examples of fundamental proprioceptive stimulation that are used in conjunction with contralateral contractions to manipulate these three fulcra^[5]. Ahmed (Heera) S. et al. compared PNF training (Kabat exercises) to alternative interventions and found that the sequential application of global stretching and resistance through PNF, particularly when combined with mirror therapy for biofeedback, significantly improves muscle re-education and functional improvement in the facial profile^[6]. The eyebrows, eyes, nose, and mouth are important face areas for expressiveness, and this method has showed potential in improving them, but it requires additional training to prevent recurrence^[6]. According to Vijay Gupta et al. Neuromuscular Facilitation Training (NMFT) enhances face movements, exercise regimens, and proper movement patterns^[7]. In children with facial palsy, NMFT works better than conventional treatment by using the irradiation concept to stimulate the weaker facial muscles^[7]. The cutaneous muscles that are dispersed over the face are impacted by NMFT, which helps to promote early improvements. NMFT enhances isolated muscle control and places emphasis on facial movement pattern precision^[7]. Exercises that encourage the bulk contraction of muscles linked to several facial expressions are prohibited^[7].

According to Sahar Sedky Faheim et al., mothers' perceptions and awareness of Bell's palsy practices such as pain relief, eye care, doctor follow-up, oral and dental hygiene, muscle tone rehabilitation, and facial palsy yoga exercise improve interaction with their children and their confidence in providing effective care^[8].

CONCLUSION

Early use of corticosteroids with timely intervention of physiotherapy led to full recovery in this child with Bell's palsy. Prompt and sincere follow up of rehabilitation restored facial muscles function, prevented complications, and highlighted the importance of early intervention in paediatric cases.

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