

CASE REPORT

Early neuro-physiotherapy in severe Bell's palsy: a case report

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One of the most common acute peripheral facial nerve palsy is Bell's palsy. The majority of patients recover spontaneously, but a significant number develop incomplete recovery or synkinesis. Early and structured physiotherapy can improve the function. A 68-year-old male came to our clinic with acute left-sided Bell's palsy. His baseline Sunnybrook Facial Grading System (SFGS) score was 13/100. He underwent an intensive neuro-physiotherapy program including neuromuscular retraining, soft tissue mobilization, and targeted facial exercises within 6 weeks of onset. At the 6-week follow-up, his SFGS improved to 100/100, with the return of near-normal facial symmetry and function. This case illustrates the potential of early evidence-based neuro-rehabilitation in bringing about rapid and complete functional recovery in severe Bell's palsy. Timely physiotherapy should be considered a cornerstone of management.

Keywords: Bell's palsy, facial neuromuscular retraining, physiotherapy, facial muscle strengthening, electrical stimulation

Introduction

Bell's palsy, an idiopathic acute peripheral facial nerve paralysis involving cranial nerve VII, remains the most frequent cause of acute unilateral facial paralysis to date. The incidence is estimated to be 20–30 cases per 100,000 people each year (1). Most cases resolve spontaneously; however, up to 30% of people may present with incomplete resolution of the paralysis, asymmetry of the face, or synkinesis (2, 3).

Standard medical management often includes early corticosteroid therapy. However, even with optimal medical treatment, a significant subset of patients—particularly those with severe initial paralysis—continue to have residual deficits (4). In this context, physiotherapy, including neuromuscular retraining, facial exercises, soft-tissue mobilization, mirror-feedback training, and nerve/muscle stimulation, has emerged as potentially valuable adjuncts to improve recovery, enhance symmetry, and reduce maladaptive movement patterns (5–7).

A recent systematic review and meta-analysis showed that physical therapy in peripheral facial palsy may decrease the chance of non-recovery and also lead to a moderate improvement in facial grading scores on SFGS compared to no therapy, although the quality of evidence remains low (7). Nonetheless, starting therapy earlier before the onset of synkinesis seems much more effective in optimizing the outcomes (6).

Here, we present a case of severe Bell's palsy with very poor initial facial function that achieved near-normal facial symmetry and function within 6 weeks after early neuro-rehabilitation in our center. The report is written in accordance with CARE guidelines for case reports (8).

Patient information

- A 68-year-old male patient with no comorbidities, no history of trauma, infection, or systemic illness.

- Presentation: Suddenly experienced left-sided facial weakness, difficult speech, eating, eye closure, angle of the mouth, and facial expression asymmetry.
- Onset to presentation: Therapy initiated within 3 days of onset is considered early/sub-acute phase, before synkinesis development.

Clinical findings

On examination

- Marked asymmetry at rest, left facial droop.
- Incomplete eye closure.
- Weakness of orbicularis oculi, zygomaticus, buccinator, and orbicularis oris muscles.
- Oral incompetence, speech articulation affected.

A detailed neurological examination was performed. The patient demonstrated features of isolated lower motor neuron facial nerve palsy with no involvement of other cranial nerves. There was no history of trauma, infection, or any other clinical feature suggestive of Lyme disease or any intracranial pathology. There were no upper motor neuron signs such as limb weakness or altered consciousness to suggest stroke. Ear pain was not present, which rules out there's no Ramsay Hunt syndrome. Otologic examination was normal.

On the basis of the isolated unilateral facial nerve being involved and considering other exclusions, Bell's palsy was diagnosed.

Outcome Measure: Baseline SFGS score = 13/100 [indicates severe facial nerve dysfunction].

Intervention

The rehabilitation plan was carried out for 1.5 h/day for 6 days/week.

1. **Facial exercises with mirror feedback:** Active assisted exercises - [20 times each, 5 s hold]

Eyebrows raise, frown, eyes narrow and wider, eyes close, flare nostrils, cheek lift, puff cheeks, mouth open and close, show your teeth, smile, pout.

2. **Electrical stimulation:**

Parameters:

1. Pulse width - 180
2. Frequency - 30 Hz
3. Ramp - 4
4. ON period - 20 s

5. OFF period - 2 s

6. Time - 30 min.

Surface electrodes were placed over motor points of affected facial muscles across temporal, zygomatic, and buccal nerve distributions.

Waveform: surged faradic

Rationale: These parameters were used to produce visible muscle contraction of weak facial muscles for neuromuscular reeducation, while minimizing fatigue and discomfort.

3. **Infrared radiation (IRR) (9):** To improve local blood flow, reduce soft tissue stiffness, and prepare muscles for neuromuscular retraining.

Type: IRR (780–1400 nm)

Distance: 40–50 cm

4. **Myofascial release (MFR):** Gentle massage and fascia release over the perioral, periorbital, and cheek to reduce stiffness and promote soft tissue glide.

5. **Eye protection regimen:** Eye closure/ blink exercises, lubrication advice

Progression

1. **Facial neuromuscular retraining (NMR) (6):** Guided, graded activation of affected muscles individually
2. **Advance facial muscle strengthening (10):** Resistance using fingertips

The program was adjusted weekly based on progress and tolerance. **Figure 1** shows facial exercises with mirror feedback; **Figure 2** shows facial muscle strengthening (A) resisted eye closure and (B) resisted cheek puffing; **Figure 3** shows expressions training (A) shock, (B) frown, (C) smile, and (D) pout.



FIGURE 1 | Facial NMR with mirror feedback (A) for eyebrow raise (B) for cheek lift.

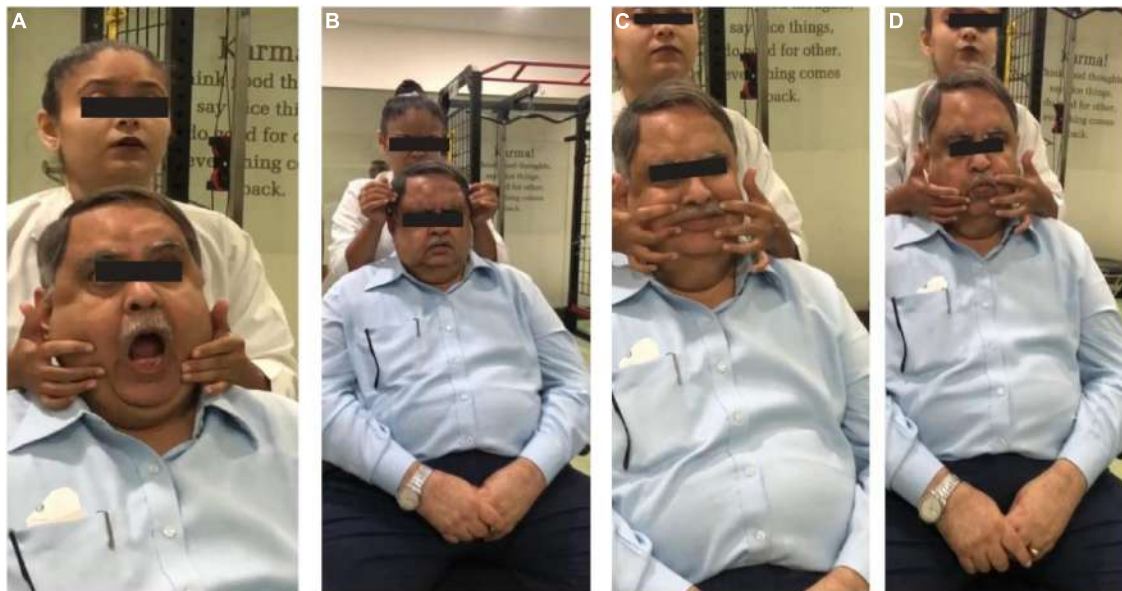


FIGURE 2 | (A) eyebrows raise (B) frown (C) smile and (D) pout.



FIGURE 3 | Facial muscle strengthening (A) resisted eye closure (B) resisted cheek puffing.

Follow-up and outcomes

Table 1 shows follow-up of outcome measures. By 6 weeks, the patient had regained normal facial symmetry, full voluntary control of facial muscles, and the ability to smile, close eyes, speak, and eat normally and was satisfied with the cosmetic and functional outcome.

He was advised to continue home-based exercises for a further 4–6 weeks.

Discussion

The patient came to the clinic presenting with the typical symptomatology of Bell's palsy, characterized by the sudden

onset of unilateral lower motor neuron facial paralysis and impaired facial expressions. Early rehabilitation of the patient is a significant factor associated with a successful outcome and the absence of synkinesis.

The recovery timeline observed in this case can be compared with existing literature on severe Bell's palsy. Previous studies have reported that patients with severe initial paralysis often require several months for substantial recovery, and a proportion may develop incomplete recovery or synkinesis. The positive change observed in the treated individual, from a Sunnybrook score of 13 (severe dysfunction) to a score of 100 (normal function), correlates with previous findings confirming the efficacy of facial neuromuscular retraining with mirror feedback therapy techniques that promote selective control and cortical reorganization (6). It has been suggested that while mild cases may recover within 3–6 weeks, severe cases frequently show a slower and less complete recovery trajectory. Systematic exercises with accurate consideration of correct principles of motor relearning, such as controlled repetition at a slower rate with mirror feedback, have been known to decrease compensation and favor symmetry (11).

The use of electrical stimulation has long been a subject of debate for the treatment of Bell's palsy; however, low-intensity stimulation can be very useful for muscle activation in the treatment of severe paresis (12). In the current case, the treatment was combined wisely along with task-related training for the face and resulted in voluntary movements without encouraging synkinesis.

The near-complete recovery achieved in the above case stresses the need for early assessment and care as well as continuity of care. This further supports the most recent evidence pointing to the essential part played by intensive therapist-supervised neurological rehabilitation

TABLE 1 | Follow-up of outcome measures.

Timeline	SFGS score	Subscores			Interpretation
		Resting symmetry	Symmetry of voluntary movement	Synkinesis	
Baseline (pre-treatment)	13 / 100	15 (3*5)	28 (7*4)	0	Severe facial asymmetry and functional impairment
4 weeks post-initiation	90/100	5 (1*5)	96 (24*4)	1	Near-normal resting symmetry; voluntary facial movement restored; eye closure complete; no synkinesis
6th week	100/100	0 (0*5)	100 (25*4)	0	Full recovery of facial function

in preventing long-term deficits and contributing to the improvement of the patients' quality of life.

Potential limitations: It is a case study, and spontaneous recovery in Bell's paralysis often occurs, which makes it impossible to definitively credit any improvement to treatment. Baseline severity (SFGS 13) makes it unlikely to occur spontaneously in 6 weeks.

It is also necessary to conduct more intensive prospective studies in order to clearly define the optimal time, intensity, and components of the physiotherapy process in cases of Bell's palsy.

Conclusion

With intensive neuro-physiotherapy techniques in the initial stages, including neuromuscular retraining procedures, soft tissue mobilization techniques, retraining of movements with feedback, and exercise programs to be done at home, it can result in a substantial improvement in severe cases of Bell's palsy. This case emphasizes the importance of physiotherapy in the treatment process.

Patient perspective

Patient was very much satisfied with the outcome of the treatment. He felt significant improvement in daily functional activities, like the ability to eat without food spillage, improved clarity in speech, and complete eye closure without discomfort. He was able to smile properly, and performing facial expressions felt natural, which positively affected his social interactions. The improvement in facial symmetry and function also enhanced his confidence in public and interpersonal communication. He expressed appreciation for the physiotherapy program and reported adherence to the prescribed home exercise regimen.

Ethics statement

No.

Presentations or Awards at a meeting

No.

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Consent to participate

Yes.

Patients' consent form

Yes.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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