

Facial Exercise Therapy as a Rehabilitation Strategy for Bell's Palsy: A Case Report

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Abstract

Background: Bell's palsy (BP) is the most common cause of acute peripheral facial nerve paralysis, characterized by a rapid onset of unilateral lower motor neuron facial weakness of idiopathic origin. It accounts for nearly 60–75% of all cases of facial paralysis and has an annual incidence ranging from 13 to 107 per 100,000 persons. Although the prognosis is often favorable with medical management, a significant proportion of patients experience persistent facial weakness, synkinesis, or psychosocial distress. Facial exercise therapy has been increasingly recognized as a valuable adjunct in rehabilitation, aiming to restore symmetry, strength, and neuromuscular control while minimizing long-term complications.

Case Presentation: A 62-year-old male, retired advocate, with a history of hypertension presented with sudden-onset

right-sided facial paralysis consistent with Bell's palsy (House-Brackmann Grade IV). The patient reported difficulty in eye closure, mastication, and speech, along with psychological distress due to facial asymmetry and social withdrawal. Clinical findings included drooping of the right forehead, eyebrow, and mouth corner, impaired eyelid closure, drooling, tinnitus, and difficulty in eating and drinking.

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Intervention: A six-week rehabilitation protocol was designed, consisting of five sessions per week, 45 minutes per session. The phased intervention included facial massage, superficial heat, electrical muscle stimulation (interrupted galvanic and faradic modes), mirror therapy, and progressive facial exercise therapy (including active, resisted, and stretching exercises). Exercises emphasized controlled, repetitive movements such as smiling, puckering, nasal flaring, eye closure, and vowel articulation, performed with mirror feedback to enhance neuromuscular control.

Outcomes: At re-evaluation, the patient demonstrated significant improvements across validated outcome measures. The House-Brackmann grade improved from IV to II, the Facial Nerve Grading System 2.0 (FNGS 2.0) score improved from 15–19 to 5–9, and the Sunnybrook Facial Grading System (SFGS) score increased from 25 to 65. Functionally, the patient regained the ability to close the eye, perform symmetric facial expressions, and eat and drink with greater ease. Psychologically, the patient reported enhanced confidence, improved participation in social activities, and relief from distress related to facial aesthetics.

Conclusion: Facial exercise therapy is a safe, low-cost, and effective intervention for the rehabilitation of Bell's palsy, producing significant improvements in facial function and quality of life. This case underscores the need for early physiotherapy referral and supports further research through randomized controlled trials to establish standardized rehabilitation protocols.

Introduction

Bell's Palsy (BP) is described as an idiopathic, rapid-onset facial nerve paralysis. It is the most prevalent cause of facial paralysis, and it is defined by the sudden development of lower motor neuron weakening in the facial nerve with no apparent explanation (1). The patient with Bell's palsy experiences sudden unilateral (rarely bilateral) flaccid paralysis of muscles that control facial expression (2). The occurrence of symptoms is sudden, and the severity reaches a peak within 48 to 72 hours and ranges from mild fatigue to severe paralysis of facial muscles of the ipsilateral side. Symptoms of Bell's palsy include the inability to blink or close the eye, ruck up the lips or raise the mouth corner and shows features like drooping of half of the face, ipsilateral sagging of the eyebrow, nasolabial fold flattening, ipsilateral pain around the ear or hearing impairment, dry eye or dry mouth (3). The patient is unable to perform facial movements on the affected side, and facial asymmetry is clearly shown with attempted facial movement (1). It is the most common cause of peripheral facial paralysis, accounting for 60%–75% of such cases and therefore the majority of facial palsy cases are "of unknown cause" (4).

BP affects individuals across various age groups and in both sexes, with an annual incidence ranging from 13 to 107 per 100,000 persons (5). Notably, Bell's palsy is seen in the pediatric population, with 1 study citing an incidence of approximately 6.1 in 100,000 in children 1 to 15 years of age. In integrated health system, the incidence of Bell's palsy in children 18 years or younger was 18.8 per 100,000 person years in a 5-year. Although Bell's palsy is seen in patients across a large age spectrum, the incidence was noted to be highest in the 15- to 45-year-old age group study (3). According to the UK General Practice Research database the annual incidence rate (1992–1996) was reportedly 20.2 per 100,000 populations. Research studies globally have reported variations in the annual incidence rate 11–50 cases per 100,000 of Bell's palsy. The incidence rate of Bell's palsy was approximately 25.7 per 100,000 per year in the Qurayyat region of Saudi Arabia (2). Females and males are equally affected, although the incidence in the former is higher during pregnancy (6).

The cause of Bell's palsy is idiopathic; however many possible causes have been recognized, such as reactivation of the herpes simplex virus, human

immunodeficiency virus, and hepatitis C virus (2). Additionally, vascular ischemia may be primary, secondary, or tertiary. Primary ischemic neuropathy, which causes inflammation of the affected nerve, is more prone to take place in specific clinical circumstances, such as diabetes mellitus. In about 4-14% of individuals, hereditary predisposition narrows the fallopian canal. This genetic component is mostly autosomal dominant and put the nerve at additional risk of early compression with even the slightest edema (3). There are several known risk factors for Bell's palsy, including pregnancy. In a study of pregnant women, of 242,000 deliveries, 0.17% of expectant mothers were diagnosed with Bell's palsy. Obesity, chronic hypertension, and severe preeclampsia also increase the risk. Diabetes is also a risk factor, and hypertension may be independently associated with an increased risk of Bell's palsy.

The psychological burden of facial paralysis can be tremendous. Facial expression is fundamental to one's sense of well-being and ability to integrate into a social network. With diminished facial movement and marked facial asymmetry, patients with facial paralysis can have impaired interpersonal relationships and experience profound social distress, depression, and social alienation. Recent data show that patients with facial paralysis are perceived by casual observers as emoting negatively compared with individuals without paralyzed faces and are considered significantly less attractive. There are links between diminished attractiveness and depression, and these data may suggest that patients with paralyzed faces are at risk for depression, which can lead to decreased productivity and increased health care expenses (7).

Most patients usually have a good prognosis. According to The Copenhagen Facial Nerve Study, the majority of patients recover completely, around 13 percent suffer slight paresis and 4 to 5 percent are left with significant facial dysfunction. Prednisone and other oral corticosteroids reduce nerve swelling and may speed up the recovery of facial actions and expressions. These medications are most efficacious when started within 48 hours of the onset of symptoms. When taken with corticosteroids, antiviral drugs such as acyclovir for herpes are known to hasten the healing. This combination has a short treatment period and is cost-effective thus is very often recommended unless contraindicated. Ear pain can be relieved with the use of analgesics. The suggested dose of prednisone is 60 mg orally once a day for five days which is then tapered to 10 mg per day. Antivirals like acyclovir (Zovirax) can be initiated at a dose of 400 mg orally five times a day and continued for 10 days in case of associated herpes Bell's Palsy (8).

The physiotherapy intervention includes two primary components: electrotherapy and exercise therapy. Electro stimulation involves intermittent galvanic (IG) current muscle stimulation on different motor points such as the frontalis, orbicularis oculi, zygomaticus minor and major, nasalis, risorius, orbicularis oris, mentalis, and the trunk of the facial nerve. Exercise therapy involves proprioceptive neuromuscular facilitation (PNF) or Kabat therapy utilized to improve muscle strength (9).

Week 1: Phase 1 Rehabilitation protocol consisted of facial massage. Massage technique was given initially in supine position which includes effleurage, kneading with fingers and thumb, stroking, tapping. Each technique was given for 15 minutes with interval of five minutes. Facial Active exercises were taught to the patient and advised to do at home which is mandatory. The duration of treatment was 2 hours. This protocol was continuing for 1 week.

Week 2: Phase 2 On 8th day of rehabilitation, prior to the Electrical Muscle stimulation Superficial heat therapy was given for facial muscles for 15 minutes / session. Electrical Muscle Stimulator (interrupted galvanic current) was initiated with the help of pen electrode in supine position for 45 minutes. The muscles stimulated are frontalis, corrugator, orbicularis oculi, orbicularis oris, buccinator, nasalis,

mentalis. Each muscle was stimulated at interval of 2 minutes followed by massage technique. This was continued for the first 2 weeks of rehabilitation.

Week 3: Phase 3 The Mirror therapy (active exercises) was initiated, which was performed in front of a mirror in sitting position. The patient was instructed for activities like blowing air in the mouth, nasal flaring, smiling, raising and frowning of the eye brows, opening and closing of the eye, clenching of the teeth for 20 minutes along with massage and electrical muscle stimulation was also continued in 3rd week of rehab

Week 4: Phase 4 On 28th day of rehabilitation, resistance training was added in the protocol along with stretching exercises. The patient was instructed to place thumb inside the mouth and stretch the cheek in downward direction for 5 repetitions and maintained the stretch for 30 seconds. The Electrical muscle stimulation was also continued with faradic mode of stimulation for muscle re-education. On 28th day of rehabilitation there were significant improvement in facial functions in muscle strength as described in Table 2, strength duration curve showed status of innervation, House Brackmann Scale Score was 2 (slight dysfunction). Patient was advised to wear sunglasses during the day to prevent from complications (10).

Patient Information

A 62-years old male patient, Retired advocate come to the Physical Therapy and Rehabilitation OPD, Symptoms were appear suddenly, within 24-48 hours, having the medical history of Hypertension (10 years), controlled on medication, with a present complaint of Bell's Palsy on right side, Difficulty in eye opening and closing, difficulty in chewing and mastication and patient was more worried about his aesthetic feature of the face and was limited to home due to hesitation. The patient was psychologically depressed about the condition which was not cured for 3 months of different kind of treatments. The patient Family/Social history were Living with spouse (non-supportive) and children, nonsmoker, no alcohol history.

Clinical Findings

The clinical findings were Right-sided Bell's Palsy Drooping: A noticeable drooping of the forehead, eyebrow, and corner of the mouth on the affected side. Facial Paralysis/Weakness: Complete paralysis and significant weakness of facial muscles on one side. The patient was unable to Close Eye: Difficulty in fully closing the affected eyelid, leading to eye dryness or excessive tearing. Drooling: Inability to keep fluids in the mouth due to poor muscle control. Other symptoms include Headache, Tinnitus (Ringing in the ears can also occur) Difficulty Eating and Drinking was also noted (Reduced control of facial muscles which make it hard to eat and drink properly).

Diagnosis

Right side Bell's Palsy (Grade IV on House-Brackmann (HB) Scale for Bell's Palsy) (11).

Therapeutic Intervention

After detail history taking and examination by Dr. Zakir Ullah (PT) and Dr. Rooh Ullah (PT) a rehabilitation protocol "facial exercise therapy" (12) was designed and implemented by Dr. Rooh Ullah (PT) as per patient demand, the protocol duration was 06 weeks, 5 sessions/week, 45 minutes per session.

The "Facial exercise therapy" was applied for this patient; this is an effective rehabilitation approach for patients with Bell's palsy, aimed at improving muscle strength, symmetry, and neuromuscular control of the face. This treatment protocol

involves gentle, repetitive, and controlled movements such as smiling, puckering the lips, closing the eyes, raising the eyebrows, puffing the cheeks, and pronouncing exaggerated vowels, usually performed in front of a mirror to ensure accuracy. These exercises help prevent muscle atrophy, reduce stiffness, and minimize long-term complications like synkinesis or abnormal facial movements. Massage, relaxation techniques, and in some cases, biofeedback can be added to enhance outcomes(13). Evidence from recent studies suggests that facial exercise therapy, when introduced alongside standard medical treatment, significantly improves recovery and functional outcomes, making it a safe, low-cost, and valuable component of Bell’s palsy management (14).

Timeline

Date (2025)	Events & Interventions
10-Feb	Initial PT examination evaluation
10 Feb–24 March	“Facial exercise therapy” 06-weeks therapy program (5 days/week)
11-June	Re-evaluation and outcome assessment

Follow-Up and Outcomes

Outcome Measure	Baseline	Post-Intervention
House-Brackmann (HB) Grading System	Grade IV	Grade II
Facial Nerve Grading System 2.0 (FNGS 2.0)	15-19	5-9
Sunnybrook Facial Grading System	25	65

House-Brackmann (HB) Grading System, Most widely used clinical scale for the assessment of Bell’s Palsy on global level, which Grades facial nerve function from I (normal) to VI (total paralysis). This grading system is Quick and simple, but lacks detail for subtle changes.

Facial Nerve Grading System 2.0 (FNGS 2.0) was developed by the American Academy of Otolaryngology to overcome the short comings of the House-Brackmann scale, which is simple but lacks sensitivity to subtle changes. FNGS 2.0 provides a more detailed and standardized assessment of facial nerve function by dividing the face into five regions that is brow, eye, nasolabial fold, oral commissure, and synkinesis. Each region is scored from 0 to 5, where 5 represents normal movement and 0 represents no movement, while synkinesis is scored separately on a 0–3 scale. These regional scores are then weighted according to the functional and aesthetic importance of each area, with greater emphasis on the eye and oral commissure. A total score ranging from 0 to 100 is produced, with higher scores indicating better facial function. This system is more sensitive and reliable than the House-Brackmann

scale because it captures regional differences and includes the assessment of synkinesis, which is an important complication of facial palsy.

Sunnybrook Facial Grading System (SFGS) is more detailed assessment tool for facial nerve function, especially in Bell's palsy. It assesses three domains: resting symmetry, voluntary movement, and synkinesis and combines them into a composite score from 0 (complete paralysis) to 100 (normal function). Compared to the House-Brackmann scale, it is more sensitive, reliable, and responsive to change, making it valuable for both clinical practice and research, though it requires more time and training to apply consistently.

Discussion

This clinical case highlights the effectiveness of Facial exercise therapy as the conservative treatment for Bell's palsy. Improvements in Bell's palsy were noted after the treatment when applied properly. Effectiveness of Facial exercise therapy is strongly supported by current literature. Strengthening the facial muscles results in improving labial closure and increasing the strength of tongue elevation (15). Research suggested that physical therapy can help in recovery in patients with peripheral facial palsy and improves the score of the Sunnybrook facial grading system (13). An RCT concluded that significant improvement was noted with highly statistical significance among the patients' physical, social, and psychological wellbeing after implementation of facial exercises (16). The results of another study show that 15 sessions of physical therapy provide significant functional improvement in patients undergoing physical therapy with BP, and extending the number of physical therapy sessions to 30 does not have an additional effect on functions (17). Physiotherapy and rehabilitation programs in the form of infrared, trans electrical stimulation, vowel exercises, and mirror therapy can increase muscle strength and increase functional activity in Bell's palsy patients (18).

Strength: CARE Checklist is followed for this case report, detailed documentation and objective outcome measures.

Limitations: Single case, low generalizability.

Patient Perspective: *"I feel more confident while participating in social activities after physical therapy treatment. Before the treatment at school of health science (SHS) Physical Therapy OPD I was afraid of my facial aesthetics due to the disorder. I was afraid that I may not be able to recover from this pathology but after physical therapy treatment, I am smiling and happily recovered. I strongly recommend physical therapy treatment for Bell's palsy for everyone who suffers from this condition"*

Informed Consent: Written informed consent was obtained from the patient for participation and publication of this case report.

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