

Case Report

Eclectic rehabilitation for bell's palsy: A case report

Jyoti Jha¹, Huma Khan², Sahar Zaidi^{3*}¹Student Researcher; ²Assistant professor; ³*Assistant Professor, Department of Physiotherapy, Jamia Hamdard, New Delhi, India

ABSTRACT

Bell's Palsy is one of the most common mononeuropathies or disorders affecting a single nerve and is associated with facial nerve weakness and paralysis. Though self-limiting the disorder may leave its long-lasting residual manifestations in the form of abnormal facial symmetry, inability to close the eyes, and other poor outcomes leading to disability and impairment in societal functioning among patients. Treatment strategies include pharmacological, surgical, and therapeutic options and to limit the long-term devastating effects therapeutic options play a vital role.

Physiotherapeutic techniques have been widely used among patients with Bell's Palsy but not all techniques are performed in combination. One is compared with the other and also for short durations. We planned this study to see the outcome of combined techniques available in Physiotherapy on a patient with long-term follow-up. This is a case of 38 years old male patient diagnosed with right-sided bell palsy who received 7 weeks of rehabilitation in the form of electrotherapy, facial exercises, facial PNF, massage, and education on eye care.

The implementation of 7 weeks of physiotherapeutic rehabilitation led to improved facial functions and a reduction in the level of disability in the patient.

Keywords Bell's palsy, Facial palsy, Facial nerve paresis, Facial nerve disorder, Physiotherapy, Rehabilitation

INTRODUCTION

Bell's palsy also known as idiopathic facial nerve palsy is a form of paralysis or weakness of one side of the face. It occurs as a result of the dysfunction of the facial nerve (cranial nerve VII), which is responsible for the innervation of the mimetic muscles of the face (Gatidou AM *et al.*, 2021). The paralysis can cause a complete or partial loss of mobility on one side of the face and its onset is perceived by pain in the mastoid process (Finsterer J 2008). The annual incidence of Bell's palsy is 23 to 35 cases per 100,000 with an equal gender ratio. It is thought that 50–75% of acute unilateral facial paralysis appeared between 30 and 50 years old (Javaherian M *et al.*, 2020).

Though the causes of this illness are unknown it is believed to be associated with hypercholesterolemia, hypertension, diabetes, infections, poisoning, genetic syndromes, neoplasia, and musculoskeletal and neurological lesions (Ramos-Jimenez A *et al.*, 2015). Some evidence proposed that herpes simplex virus-1 reactivation at the

cranial nerve is the most strongly suspected cause of facial nerve inflammation in Bell's palsy (Zandian A *et al.*, 2014).

The prognosis of Bell's palsy is relevant the depends on factors such as time of recovery, age, pain behind the ear, taste distribution, and genetics (Katusic SK *et al.*, 1986, Dalla Toffola E *et al.*, 2012). Progression of this condition is within a week with a peak between 3 and 7 days; in contrast, recovery may take from a few weeks up to several years if denervation occurs and complete recovery may never be achieved (Dalla Toffola E *et al.*, 2012, Finsterer J 2008). However, most patients with idiopathic facial palsy (Bell's palsy) recover spontaneously, as demonstrated by Peitersen, who studied 2500 patients with the condition. He reported full recovery in 71% of the patients while 29% lingering with the motor deficit and 16% with synkinesis (Dalla Toffola E *et al.*, 2012) Partial motor recovery, synkinesis, Hemi facial spasm, contractures, salivation, and lacrimation alterations may persist in remaining cases. These residual symptoms have a significant impact on the quality of life because they cause appealing (asymmetry of the face at rest, during movements, speech, and alterations in smiling) and functional problems (difficulty in eating, drinking, and speech) (Nicastri M *et al.*, 2013).

The sequelae may trigger severe psychological problems because facial congruence and evenness influence the person's body image and how others perceive them and are determinant factors of facial attractiveness, indicators of good health, and a vehicle of expression of feelings (Nicastri M *et*

*Correspondence: Sahar Zaidi

E-mail: sahar@jamiahamdard.ac.in

Received June 08, 2022; Accepted Aug 24, 2022; Published Aug 31, 2022

doi: <http://dx.doi.org/10.5667/CellMed.2022.011>

©2022 by CellMed Orthocellular Medicine Pharmaceutical Association

This is an open access article under the CC BY-NC license.

(<http://creativecommons.org/licenses/by-nc/3.0/>)

al., 2013). So, to prevent or reduce these residual deficits, continuous efforts have been made to identify the most effective therapeutic approaches, including medications (Numthavaj P *et al.*, 2011), and physical therapy (Teixeira LJ *et al.*, 2011), or a combination of both.

Pharmacological treatment starts when the patient is assessed for the first time. Although therapy appears to reduce edema and secondary inflammation damage, it does not influence the amount of damage already present when the patient presents for medical attention and starts steroid intake. At present, efficacy has been shown for the use of corticosteroids alone (Numthavaj P *et al.*, 2011), with a better outcome if administered within 48 hours of the onset of palsy (Axelsson S *et al.*, 2011).

Physical therapy attempts to avoid, or at least minimize, the sequelae associated with drug administration (Nicastri M *et al.*, 2013). Physiotherapeutic interventions such as electrotherapy, massage, therapeutic exercise, patient feedback, and heat therapy have been shown to accelerate recovery, improve facial functioning and reduce complications (Gatidou AM *et al.*, 2021). The efficacy of physiotherapeutic interventions, as the only alternative to no treatment, has been shown in patients with stabilized sequelae (long-standing paralysis) by several observational studies. In contrast, the evaluation of physical therapy efficacy in the acute clinical phase is more complex because of the high rate of spontaneous recovery (Nicastri M *et al.*, 2013).

In the present literature, there are very few experimental or quasi-experimental studies, most of which compare different physical techniques (Coulson SE *et al.*, 2006). So, we planned this study to understand the effectiveness of the combination of physiotherapeutic interventions on a patient with acute onset of Bell's Palsy.

CASE PRESENTATION

This is a case report of a 38 years old male patient visiting Physiotherapy OPD at Jamia Hamdard's Rehabilitation center. He presented himself with the chief complaint of inability to close his right eye, inability to raise his eyebrow on the right, deviation of the mouth towards the left when trying to smile or speak, inability to speak properly, tears from his eyes when trying to eat something from the same side.

He was well 3 months back when he suddenly fell from the bike. He stated that he had a loss of consciousness and then he was taken to a nearby hospital. He was admitted to the general ward for about 1 week. He underwent several investigations and was diagnosed as having a head injury. In the ward, he was given medicines such as Refresh tears for eyes and Levea for stopping convulsions. Then he had continuous vomiting and even seizure attacks after which he was shifted to ICU.

He remained in ICU for 8 days. His consciousness was still impaired and then he was shifted to the ward as soon as

his condition improved. He was then referred to the All India Institute of Medical Sciences for further orofacial examination and there he was diagnosed for having right-sided bell's palsy. He received physiotherapy treatment for bell's palsy for about 20 days, in the form of electrical stimulation and facial exercises after which his condition improved. He had no relevant past medical and family history and was a non-smoker but was an occasional alcoholic.

On clinical observation, he could not raise the eyebrow on the right side, had asymmetric closure of eyes, had no movement of the nasolabial fold of the right side, and his mouth deviated towards the left while he attempted to smile. The severity was classified as grade IV according to the House-Brackmann classification (moderately severe dysfunction).

His higher mental functions were intact when he was assessed by Mini-Mental State Examination Scale and scored 26 out of 30 depicting normal functions. Functions of his cranial nerves were intact except for the diminished sensation of light touch and pinprick in the ophthalmic, maxillary, and mandibular divisions of the trigeminal nerve on the right side and had wasting of masseter and temporalis muscles. Also, the patient had diminished corneal reflex on the right side and diminished taste sensation in the region of the anterior 2/3rd and posterior 1/3rd of the tongue supplied by the facial nerve and glossopharyngeal nerve on the involved side. Functions of his muscles of facial expressions are listed in Table 1.

He scored 54 out of 56 on the Berg Balance Scale which indicates a low risk of falls. Facial Disability Index Scale is a scale designed to provide the clinicians with information about the disability and related social and emotional wellbeing of patients with facial nerve disorders, where he showed minimal disability in physical and social functioning. His CT investigation showed a longitudinal fracture of the left petrous part of the temporal bone, peri-mesencephalic subarachnoid hemorrhage, and right temporal convex subarachnoid hemorrhage, and was finally diagnosed as having moderate traumatic brain injury with right-sided bell's palsy.

Short-term and long-term goals and interventions are mentioned in Tables 2 and 3 respectively.

Table 1. Functions of muscles of facial expressions

Muscles	Right	Left
Frontalis	Slight movement	Normal
Procerus	Slight movement	Normal
Orbicularis oculi	Incomplete eye closure	Normal
Zygomaticus major	Asymmetric smiling	Normal
Levator labii superioris alaeque nasi	Slight movement	Normal
Risorius and levator angulii oris	Asymmetric smiling	Normal
Orbicularis Oris	Incomplete pursing of lip	Normal

Table 2. Short-term goals and interventions

Short Term Goals	Interventions
1) To make him able to execute muscles of facial expressions	Facial massage, facial exercises, electrical stimulation.
2) To prevent atrophy of facial muscles	Facial exercises and electrical stimulation
3) To make him able to eat and speak without difficulty	Oral muscles strengthening and tongue strengthening exercises
4) To prevent his eyes from drying, irritated, and burning	Education regarding eye care (use of ophthalmic ointments and sunglasses)
5) To prevent synkinesis	Facial exercises with appropriate biofeedback

Table 3. Long-term goals and interventions

Long Term Goals	Interventions
1) To regain strength, coordination, and motor control of facial muscles	Continue all the facial muscle exercises including PNF resistance exercises for the face
2) To make able to return to work and integrate into the community	Psychological counseling and education along with the continuation of the exercises



Fig. 1. Clinical Presentation of the patient



Fig. 2. Electrical Stimulation

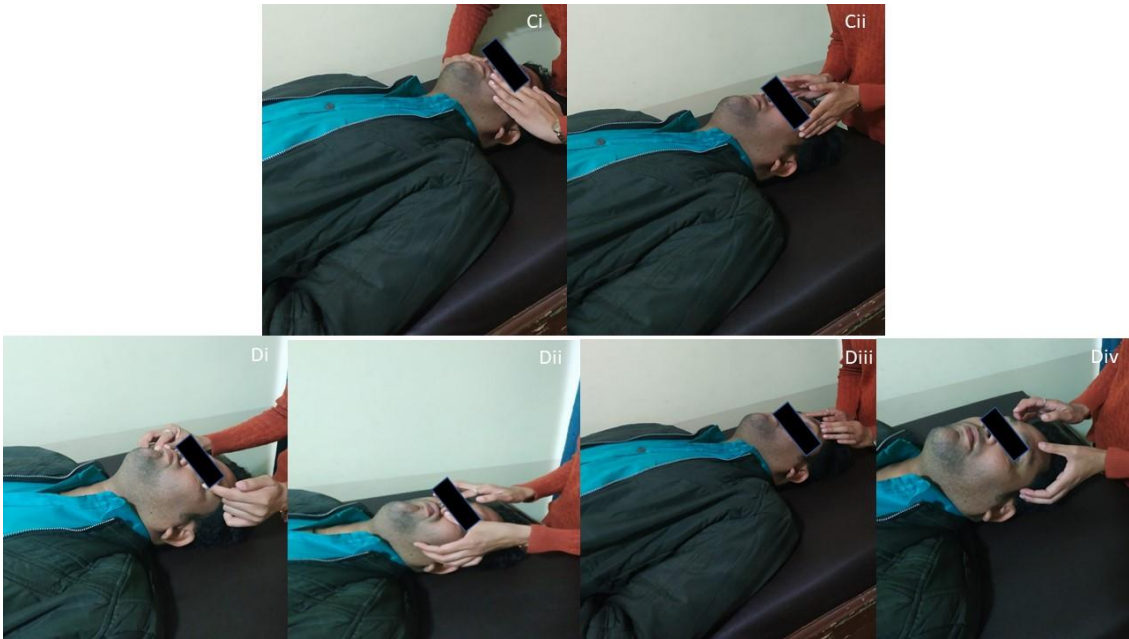


Fig. 3. Facial massage and PNF



Fig. 4. Improvement after 3 and 7 weeks

RESULTS

At the initial assessment, it was discussed with the patient that the prognosis for bell's palsy is very good, and almost full recovery could be expected at 6 months. Initially, he received treatment daily for a week, then was called on alternate days for about a week and then 3 times a week and reduced to once a week and treatment sessions lasted for about 45 minutes for altogether 7 weeks. Galvanic stimulation was given and the session lasted for about 15 minutes, with a phase duration or pulse duration of 1 millisecond and frequency of 20hz monophasic current on the major motor points of facial muscles.

He was assessed on the third week of treatment and improved ability to close his eyes, easiness of smiling and eating, and improved performance of facial expression exercises with less asymmetry were found.

The visit to physiotherapy OPD was terminated when the milestones such as his score on the House Brackmann scale was reduced to grade 2, could perform facial expressions better, had a subjective feeling of easiness in talking and smiling, and reintegrating into societal functions, and maintaining public relations. This was achieved after nearly 2 months of therapy and later he was suggested to continue with facial muscle exercises at home until he returned to his baseline function.

DISCUSSION

This study assessed the physiotherapeutic treatment regime for bell's palsy for about 7 weeks and improvements were seen with the passing weeks. The patient showed improvement on the House Brackmann grading scale from grade 4 to grade 2 and had a subjective feeling of easiness in smiling, talking, and eating and reduction in lacrimation of eyes, and also a reduction in disability as assessed by the Facial Disability Index Scale. The treatment had initially started before he presented to us and at the time of baseline assessment stated easiness after receiving physiotherapy treatment for about 20 days. Our treatment added to his recovery process and after 7 weeks he showed improvement over baseline.

The available literature shows no benefit or harm attributable to physiotherapy treatment after bell's palsy. A Cochrane systematic review regarding the incorporation of physical therapy for bell's palsy concluded that no treatment produced significantly more improvement than was observed

in untreated control groups (Teixeira LJ *et al.*, 2011). However, currently, there is some evidence that facial muscle exercises reduce recovery time (Murthy JM, Saxena AB. 2011). One study showed that there was a better improvement on the facial disability scale (self-administered) when Low-Level Laser Therapy and facial exercises were combined compared to exercise alone (Ordahan B *et al.*, 2017) It has also been demonstrated that the use of biofeedback when performing facial muscle exercises (by using a mirror, for example) can be beneficial in developing coordinated muscle activity and preventing synkinesis (Brach JS, Van Swearingen JM 1999).

There is still a lack of high-quality evidence which poses a challenge while creating treatment plans for bell's palsy. Many studies investigating Physiotherapy as a treatment for bell's palsy have small sample sizes, short study durations, or significant risk of bias in the study design. Also, evaluating the efficacy of any intervention for Bell's Palsy is especially challenging since ~70% of all cases will resolve spontaneously without any treatment (Madhok VB *et al.*, 2016). This demonstrates the need for more high-quality RCTs and systematic reviews to guide healthcare providers in making evidence-based treatment plans for patients diagnosed with bell's palsy.

In our case study, we followed a thorough intervention comprising all the interventional methods mentioned in literature for rehabilitation of bell's palsy and did monitoring of the same, while evidence available has compared one treatment modality with other. We found improved patient condition from baseline. We could hypothesize that the improvement was associated with our planned intervention because he was not on any kind of medication at the time when was presented to us. Still, the results or findings from our study cannot be generalized and the same type of study on a large sample could help clinicians in inferring the findings and applying them to practice.

ACKNOWLEDGEMENT

None

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

- Axelsson S, Berg T, Jonsson L, Engström M, Kanerva M, Pitkäranta A, Stjernquist-Desatnik A. Prednisolone in Bell's palsy related to treatment start and age. *Otology & Neurotology*. 2011 Jan 1;32(1):141-6.
- Brach JS, VanSwearingen JM. Physical therapy for facial paralysis: a tailored treatment approach. *Physical therapy*. 1999 Apr 1;79(4):397-404.
- Coulson SE, Adams RD, O'Dwyer NJ, Croxson GR. Physiotherapy rehabilitation of the smile after long-term facial nerve palsy using video self-modeling and implementation intentions. *Otolaryngology-Head and Neck Surgery*. 2006 Jan;134(1):48-55.
- Dalla Toffola E, Tinelli C, Lozza A, Bejor M, Pavese C, Degli Agosti I, Petrucci L. Choosing the best rehabilitation treatment for Bell's palsy. *Eur J Phys Rehabil Med*. 2012 Dec 1;48(4):635-42.
- Finsterer J. Management of peripheral facial nerve palsy. *European Archives of Oto-Rhino-Laryngology*. 2008 Jul;265(7):743-52.
- Gatidou AM, Kottaras A, Lytras D, Gatidou C, Iakovidis P, Kottaras I. Physiotherapy management of Bell's palsy-A review of evidenced based physiotherapy practice. *Int J Adv Res Med*. 2021;3(1):402-6.
- Javaherian M, Attarbashi Moghaddam B, Bashardoust Tajali S, Dabbaghipour N. Efficacy of low-level laser therapy on management of Bell's palsy: a systematic review. *Lasers in Medical Science*. 2020 Aug;35(6):1245-52.
- Katusic SK, Beard CM, Wiederholt WC, Bergstralh EJ, Kurland LT. Incidence, clinical features, and prognosis in Bell's palsy, Rochester, Minnesota, 1968–1982. *Annals of Neurology: Official Journal of the American Neurological Association and the Child Neurology Society*. 1986 Nov;20(5):622-7.
- Madhok VB, Gagyor I, Daly F, Somasundara D, Sullivan M, Gammie F, Sullivan F. Corticosteroids for Bell's palsy (idiopathic facial paralysis). *Cochrane Database of Systematic Reviews*. 2016(7).
- Murthy JM, Saxena AB. Bell's palsy: Treatment guidelines. *Annals of Indian academy of neurology*. 2011 Jul;14(Suppl1):S70.
- Nicastri M, Mancini P, De Seta D, Bertoli G, Prosperini L, Toni D, Inghilleri M, Filipo R. Efficacy of early physical therapy in severe Bell's palsy: a randomized controlled trial. *Neurorehabilitation and neural repair*. 2013 Jul;27(6):542-51.
- Numthavaj P, Thakkestian A, Dejthevaporn C, Attia J. Corticosteroid and antiviral therapy for Bell's palsy: a network meta-analysis. *BMC neurology*. 2011 Dec;11(1):1-0.
- Ordahan B. Role of low-level laser therapy added to facial expression exercises in patients with idiopathic facial (Bell's) palsy. *Lasers in Medical Science*. 2017 May;32(4):931-6.
- Ramos-Jimenez A. Effectiveness of Electro-stimulation as a Treatment for Bell's Palsy: An Update Review.
- Teixeira LJ, Valbuza JS, Prado GF. Physical therapy for Bell's palsy (idiopathic facial paralysis). *Cochrane Database of Systematic Reviews*. 2011(12).
- Zandian A, Osiro S, Hudson R, Ali IM, Matusz P, Tubbs SR, Loukas M. The neurologist's dilemma: a comprehensive clinical review of Bell's palsy, with emphasis on current management trends. *Medical science monitor: international medical journal of experimental and clinical research*. 2014;20:83.