



## **Impact of Physical Therapy on a Patient with Bell's Palsy: A Case Report**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors ND, VK Conceptualized evaluated and treated and written the manuscript, authors OCW assisted in manuscript writing, authors PP Supervised the case report and manuscript preparation. All authors read and approved the final manuscript.*

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**Case Report**

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### **ABSTRACT**

Affecting the seventh cranial nerve, known as Bell's palsy and its neuropathy. It is a disfiguring disorder with significant impact on patient's physical mental and social health. It is normally caused by inflammation caused by traumatic, infectious, inflammatory or compressive conditions, and cranial nerve edema may lead to compression and eventual ischemia. In comparison with the central cause peripheral cause leads to more serious form of Bell's palsy. The symptoms usually include reduced production of tears, altered taste, facial pain, otalgia and aural pressure. the recovery is usually complete while in some cases incomplete recovery is seen. For treating Bell's palsy a multidisciplinary approach is required to completely return back to normal. A case of female patient whose age 43 year old came to the right hemifacial palsy department has been identified. There was a affected movement of right side eyebrows and affected right forehead movement during clinical evaluation, spontaneously opening and closing of the right eye, difficulty to close the right eye. No conclusive etiology could be traced out after a series of investigations, hence diagnosed as right side Bell's palsy. We address the clinical characteristics and modalities of care for Bell's palsy in this article. Education, facial muscle strengthening exercise, eye defense exercises, modalities and acupuncture were included in the physiotherapy intervention.

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## 1. INTRODUCTION

Facial nerve paralysis, depending on the degree of nerve damage, is defined as a central type or peripheral type [1]. Lower part of the facial muscle paralysis occurs due to involvement of central form of the opposite side of lesion. Owing to bilateral cortical relations, the upper facial muscles are spared [2]. Complete facial paralysis occurred due to involvement of lower motor neuron lesion. The nerve get swollen because of the viral infection and canal get compressed which passes through temporal bone [3]. Compared to the central lesion, facial paralysis occurred more in peripheral lesion in extreme form, but the serious brain problem occurred due to involvement of central lesion. A painful disease is facial nerve paralysis [4]. Patients with facial nerve palsy group involvement is extraordinarily restricted and difficult socialization. Paralysis of the facial nerves can be unilateral or bilateral [5]. A relatively common condition with many different causes, thousands of people experience facial paralysis every year. Facial nerve palsy affects people of all ages, but most often people between the ages of 15 and 45. The onset is abrupt, with weakening of the facial muscle developing within day or in hour. If all other potential causes are present then only its diagnose as bells palsy. While causes is not recognized, edema of the 7 cranial nerve and inflammation, bell's paralysis may cause due to involvement herpes simplex virus [6], the nerve in the bony canal, cause ischemia & compression when its trapped. This results in facial nerve neuropraxia or degeneration. a case of unilateral seventh cranial nerve palsy in which the cause is not defined after thorough investigations & treated as facial nerve paralysis.

## 2. PATIENT INFORMATION

Ravi Nair Physiotherapy College, Sawangi, [Wardha], registered a 43-year-old woman with right-hand dominance and her body mass index of 29 kg/m<sup>2</sup>. The appearance of the patient was asymmetrical face upon examination, spontaneous constant opening and closing of the right eye & right cheek twitching. History showed that the duration of paralysis was more than 3 months. The cause of onset is unknown. Patient presented with no history of injury, fever or infection but with present history of exposure of cold. Patient mentioned she was using steroid

eye drop since the last 2 years. There is no significant surgical history associated with the condition. The patient did not have a history of ear and mouth vesicles or oro-facial edema. There is no significant medical history like Diabetes Mellitus, Hypertension, thyroid problems and no other systemic involvement. No history of tobacco consumption in any form, alcohol or other prohibited drugs. Patient not get relived after visiting many doctors and here we diagnosed temporarily as facial palsy.

## 3. PHYSICAL EXAMINATION

She was mesomorphic in build, oriented, and there was asymmetry between both sides of the face. On clinical evaluation, Lack of right forehead and eyebrow movement, repetitive right eye blinking (synkinesis). There was natural symmetry and tonality of the facial muscles at rest. The woman was unable to close her eyes completely and with right eye vision was blurred from the history of the beginning. Range of motion assessment showed, decreased motion on the forehead. When smiling, deviation occurred on the affected side right side of the muscle involvement is more than the left side. Patient complains of moderate discomfort over the ears and forehead, no prolonged facial sweating. The patient's hearing was normal and her speech was normal. There was no improvement on dryness in eyes, weakness in facial muscle, facial sensation.

## 4. DIAGNOSTIC ASSESSMENT

Magnetic resonance imaging (MRI) and contrast enhanced brain computed tomography (CT). Additional cranial nerves trigeminal, abducent, glossopharyngeal and vagus was normal upon assessment. From the assessment there was lower motor neuron lesion involvement and patient was diagnosed with right side unilateral facial nerve palsy with grade III score of facial nerve classification of House-Brackman scale which is mild dysfunction.

## 5. INTERVENTION

1. In the first few days to a week after symptoms begin, the physical therapist will assess the condition and will immediately advise the patient about how to protect the face and eyes.

2. Show how to perform the tasks of everyday life despite of facial paralysis.
3. Explain the anticipated road to recovery so that the signs and symptoms of recovery are understood.
4. Assess progress and determine whether specialists need to be referred to.

injury. The transparent front portion of the eye, which covers the iris, pupil, and front chamber of the eye, may scratch the cornea and can permanently damage the vision. The physical therapist will explain how to protect the eyes immediately.

## 6. THE FIRST PRIORITY IS TO PROTECT THE EYES

The failure to complete and rapidly close the eye makes the eye prone to dryness and debris

1. Using self- made and commercial eye patches.
2. Setting a regular schedule for refreshing eye fluids.
3. Carefully closing the eye with the help of finger.

**Table 1. Combination therapy**

<b>Intervention</b>	<b>Frequency</b>	<b>Intensity</b>	<b>Rationale</b>	<b>Additional Notes</b>
Eye closing exercise	5 reps every hour	Active Assisted (if needed)	Improve lubrication of the eye to decrease eye dryness and strengthen the eye lid muscles.	Focus on point 5 feet ahead of you on the ground and practice closing eyes fully. Do exercises in front of Mirror for visual feedback.
AAROM (smile, eyebrow raise, frown, pucker lips, scrunching face)	10 reps 3 times daily	Isometric hold working up to 10 seconds	Exercises to help strengthen facial muscles.	
Neuro-proprioception facilitation Techniques. (Physiotherapist provides resistance to various muscles of facial Expression).	10 reps 3 times daily	Activate Muscles asmuch aspossible.	Exercises to help strengthen facial muscles.	This treatment was provided once Mrs. S was able to active muscles Independently.
Low Level Laser Therapy (LLLT)	Once per Week	10 J/cm2 for 2 minutes (8 points)	Improve muscle function to assist with drinking and Speaking.	Completed on opposite Days from acupuncture.
Soft Tissue Mobilization (effleurage)	2 times per Week	5 minutes [8 points]	Improve circulation of the facial muscles.	
Acupuncture	Once per Week	10 needles for 30 Minutes.	Can help to regulate nerve channels, strengthen Resistance to pathogenic factors, increase the excitability of the damaged nerve and promote regeneration of the Nerve fibers.	Completed on opposite Days from LLLT.

## 7. MODALITY

It uses electrical stimulation, massage and exercises. There are no electrophysiological signs of muscle denervation; faradic stimulation can be given for 50-200 contractions/session, 2 sessions/week for 8 weeks using 0.1-1 ms period pulse administered at a frequency of 1-2 pulses/s or more [transcutaneous electric nerve stimulation, TENS].

Interrupted galvanic stimulation of rectangular pulses of 100 ms provided at a rate of 1 pulse/s for 30-100 contraction/session, until muscle exhaustion occurs, electrical stimulation should stop [7].

## 8. INITIATION EXERCISES

The patient with trouble generating facial movement at all in the early stage, manually teaching the exercise that activates facial movement and performing facial movement with assisted range of motion, mirror exercise.

### 10.1 Outcome

Splinting- splitting the facial muscle is done to prevent muscle atrophy and maintain muscle flexibility.

## 9. FACILITATION EXERCISES

When the patient enters the point where the patient initiates the movement and then begins exercising to increase muscle function, the manual resistance strengthens the muscle.

Combination therapy increases facial function and minimizes the initial exercise of sequelae, biofeedback, laser therapy, electrical stimulation, massage and thermotherapy [8]. In defining key element for a successful recovery is evidence based practice, a tailored treatment plan will show a good result. Bell's palsy physical therapy treatment aims at regaining facial functions, avoiding muscle wasting and facial muscle.

## 10. FOLLOW-UP AND OUTCOME

A monitoring time of 6 months was observed. As the enhancement of muscle strength and facial movement behavior was observed, the facial symmetry was normalized with no deviations during movement.



Fig 1. Pre and post treatment comparison

## 11. DISCUSSION

The most prevalent neurological disorders that affect cranial nerves are facial nerve paralysis. This results in a signature facial distortion. This occurs as a result of facial expression loss. It is most often caused by a benign inflammatory disorder known as Bell's palsy, which is self-limiting. With facial muscle fatigue developing over hours to days, the onset is abrupt [9]. However, etiology is thought to be correlated with inflammation, nerve compression and autoimmune dysregulation, and it is still poorly understood [10,11]. The patient obtained details about the disease and its prognosis after a complete examination by the physiotherapist. In order to deal with her dry eye, the physiotherapist offered advice to use eye patch and to take breaks from the screen [7,12]. To help restore normal muscle function, facial muscle strengthening exercises and modalities were given. In our plan, as patient impairment varies with rehabilitation, the exercise regimen transitions with time [13,14]. Few of the related studies were reported [15-17]. The exercise programmed for facial neuromuscular re-education emphasizes the precision of facial movement patterns and isolated muscle regulation, and eliminates exercises that facilitate muscle mass contraction related to more than one facial expression. Different studies have not shown a clear underlying cause in this situation, which was implemented (idiopathic). Eventually, after 4 months of therapy, the facial weakness of the patient finally vanished without complications and the prognosis was strong [12]. As this report highlights positive impact of physiotherapy.

## 12. CONCLUSION

We conclude that a proper tailored treatment plan along with patient education regarding the cause, course, progression and good prognosis. Ergonomic advice consists of use of eye patch, avoid exposure to cold, splinting of facial muscle, taking breaks from the screen. All these measures lead to improvement in patient condition.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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