

## “Effect of Electrical Muscle stimulation and Facial Massage Techniques in Rural Bell’s Palsy Patient: A Case Study”

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### Abstract

**Background:** Bell’s palsy, or idiopathic facial paralysis (IFP), is defined as an acute peripheral palsy of seventh cranial nerve. It is one of the most common neurological disorders which usually manifests with facial weakness, ear pain, taste disturbance, hyperacusis, and increased tearing. The worldwide incidence of IFP is 11 to 40 per 100,000 people annually. The most common causes of the abrupt onset of unilateral facial weakness are stroke and Bell’s palsy. The most common cause of acute onset unilateral peripheral facial weakness is Bell's palsy. The incidence of Bell's palsy is 20-30 cases for 100,000 and accounts for 60-70% of all cases of unilateral peripheral facial palsy. Either sex is affected equally and may occur at any age, the median age is 40 years. **Aim:**The aim of this case study is to find out effect of Electrical muscle stimulator and Facial Massage techniques in rural Bell’s Palsy Patient. **Case Study:** A 58-year-old male a diagnosed case of unilateral Bell’s palsy came to the OPD with the complaint of deviation of mouth towards the left side, dribbling of saliva from right side of mouth, unable to closed his right eye and lacrimation from eye. **Methods:**After signing informed consent, patient was assessed by using Neurological assessment proforma and House-Brackmann Scale and received a Physiotherapy programme including Electrical Muscle Stimulation, facial massage and home exercise programs for the period of once a day for six weeks. Each session consisted of 45 minutes. **Result:** Result of this case study showed that there was improvement of facial functions along with the improvement in closure of eye, decrease in lacrimation of eye and deviation of mouth. **Conclusion:** This case study concluded that, patient showed improvement of facial functions along with the improvement in closure of eye, decrease in lacrimation of eye and deviation of mouth.

**KEYWORDS:** Bell’s palsy, Electrical Muscle Stimulation, Facial Massage, Physiotherapy, House Brackman Scale.

### INTRODUCTION:

Bell’s palsy, or idiopathic facial paralysis (IFP), is defined as an acute peripheral palsy of seventh cranial nerve. It is one of the most common neurological disorders which usually manifests with facial weakness, ear pain, taste disturbance, hyperacusis, and increased tearing. The worldwide incidence of IFP is 11 to 40 per 100,000 people annually. Its prevalence among males and females is more or less equal and its peak incidence is in the fourth decade of life. The occurrence of familial Bell’s palsy is about 14% and its recurrent risk is about 10%. Unilateral paralysis is the most common presentation of IFP occurs with the same frequency on the right and left sides of the face. The most common causes of the abrupt onset of unilateral facial weakness are stroke and Bell’s palsy.<sup>1</sup>

The most common cause of acute onset unilateral peripheral facial weakness is Bell's palsy. The incidence of Bell's palsy is 20-30 cases for 100,000 and accounts for 60-70% of all cases of unilateral peripheral facial palsy. Either sex is affected equally and may occur at any age, the median age is 40 years. The incidence is lowest under 10 years of age and highest in people over the age of 70. Left and right sides are affected equally.<sup>2</sup>

Bell's palsy is regarded as temporary paresis of one side of the face and resulting in loss of facial function especially facial expressions.<sup>3</sup>The palsy is often sudden in onset and evolves rapidly, with maximal facial weakness developing within two days. Associated symptoms may be hyperacusis, decreased production of tears, and altered taste.<sup>4</sup>

Bell's palsy (BP) can cause unilateral paralysis of the facial muscles and synkinesis. Because of the persistence of synkinesis and use of exercises or electric stimulation in an inadequate way, total recovery of the function of the facial muscles can be jeopardized.<sup>6</sup>

The facial nerve controls a number of functions, such as blinking and closing the eyes, smiling, frowning, lacrimation, salivation, flaring nostrils and raising eyebrows. It also carries taste sensations from the anterior two-thirds of the tongue, via the chorda tympani nerve (a branch of the facial nerve). Because of this, people with Bell's palsy may present with loss of taste sensation in the anterior 2/3 of the tongue on the affected side.<sup>7</sup>

Cochrane systemic review of the efficacy of physical therapies, electrostimulation and exercises, on outcome of Bell's palsy concluded that there was no significant benefit or harm from any of these physical therapies for Bell's palsy. There was limited evidence that improvement began earlier in the exercise group.<sup>2</sup>

## **CASE STUDY**

**AIM:** The aim of this case study is to find out effect of Electrical muscle stimulator and Facial Massage techniques in rural Bell's Palsy Patient.

## **MATERIAL & METHODS:**

### **Material:**

House-Brackmann Scale.<sup>10,11,12</sup>

### **Methods:**

A 58 years old male a diagnosed case of unilateral Bell's palsy came to the OPD with the complained of deviation of mouth towards the left side, dribbling of saliva from right side of mouth, unable to closed his right eye and lacrimation from eye. Ophthalmologist has been advised for stitches at lateral side of eye to facilitate eye closer and to reduce watering of eye. After signing informed consent, patient was assessed by using Neurological assessment proforma and House-Brackmann Scale.

#### **a) Neurological Examination:**

On Examination, all the cranial nerve was intact except 7<sup>th</sup> Cranial nerve (Facial Nerve), sensation was impaired, tone of facial muscles was flaccid on right side of face, asymmetrical facial expression on Facial expressions testing.

**b) House-Brackmann (HB) Scale:**

- i) House-Brackmann Scale is used to to quantify facial function.
- ii) A patient was asked for grading facial function in six steps from normal (HB I) to total paralysis (HB VI).
- iii) The grade of facial function noted.

**Intervention:**

1. Physiotherapy programme included Electrical Muscle Stimulation, facial massage.
2. With the electrical stimulation frontalis, orbicularis oculi, corrugator, orbicularis oris, zygomaticus minor, Nasalis dilator, Buccinator, Mentalis muscles of right side of face were stimulated for strengthening purpose.
3. Facial massage included effleurage to improve circulation and draining of waste to reduced oedema and gentle stoking was given to stimulated muscles and improve tone.
4. Physiotherapy programme was implemented for the period of once a day for six weeks. Each session consists of 45 minutes.
5. At the time of discharge, patient was reassessed by using House-Brackmann Scale.

**OUTCOME MEASURE:**

House-Brackmann(HB) Scale.

**RESULT:**

Result of this case study showed that there was improvement of facial functions along with the improvement in closure of eye, decrease in lacrymation of eye and deviation of mouth.

On House-Brackmann (HB) Scale before Physiotherapy intervention the grade was 'V' (Gross: only barely perceptible motion; At rest: asymmetry; Motion: forehead - none; eye - incomplete closure; mouth - slight movement) and after 6 weeks of Physiotherapy Intervention the grade was 'I' (Normal facial function in all areas) which indicated that there was improvement in facial functions.



1<sup>st</sup> Day

6<sup>th</sup> Week

### DISCUSSION:

In this case study, patient showed improvement of facial functions along with the improvement in closure of eye, decrease in lacrimation of eye and deviation of mouth by using Electrical Muscle Stimulation and Facial Massage.

**Murthy JMK et al (2011)** suggested that in Bell's palsy various physical therapies, such as exercise, biofeedback, laser, electrotherapy, massage and thermotherapy are used to hasten recovery.<sup>2</sup>

**Rahman et al (2017)** in their case study indicated that the patient showed improvement in pain and facial expressions after receiving physiotherapy treatment.<sup>3</sup>

**Nivetha et al (2016)** in their review article found that physical therapy exercises used to stimulate your facial muscles.<sup>4</sup>

**Holland NJ (2008)** suggested several physical therapies, including massage and facial exercises, are recommended to Bell's palsy patients.<sup>7</sup>

**KalafatisD. (2014)** in their case study concluded that there was improvement in facial function by Physiotherapy treatment including massage and electrical stimulation.<sup>8</sup>

The above studies supported the result of our studies.

Because of the Physiotherapy Intervention there was no need for stitches at lateral side of eye to facilitate eye closer and to reduce watering of eye.

### CONCLUSION:

This case study concluded that, patient showed improvement of facial functions along with the improvement in closure of eye, decrease in lacrimation of eye and deviation of mouth.

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## TABLES AND GRAPHICAL PRESENTATION

Treatment Day	House-Brackmann (HB) Scale Grading
First Day	Grade V
Last Day of Intervention	Grade I

