

# Efficacy of Electro Acupuncture in Bell's Palsy – A Clinical Interventional Pilot Trial in Indian Patients

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## ABSTRACT

**Introduction:** Bell's palsy is an acute peripheral facial neuropathy and is the most common cause of lower motor neuron facial palsy. Various treatment modalities including steroids, physiotherapy, antivirals have been described. We aimed to study the efficacy of electroacupuncture to modify and improve the muscle paralyses.

**Material and methods:** The first twenty patients who were willing for the study were selected. Fourteen sittings of thirty minutes each were done with one chun silver needles and stimulation was electrical and the intensity was adjusted for *de qi* feeling for the patients. House-Brackmann Classification of Facial Function was used to categorize the patients before and after treatment. Improvement in the score of more than 1 was termed significant relief.

**Results:** Out of the twenty patients 17 had significant improvement of power and three had mild improvement. Three patients had minimal bleeding in a few points which stopped with simple pressure. Watering of the eye stopped in all the cases. The majority of patients were satisfied according to partha patient satisfaction score.

**Conclusion:** To conclude, electroacupuncture has a significant role in early paralytic phase of Bells palsy without many side effects.

**Keywords:** Bells Palsy, Facial Function, Acupuncture, Electrical

## INTRODUCTION

Bell's palsy is the commonest dysfunction affecting the facial nerves affecting 11–40 persons per 100,000 population each year.<sup>1,2</sup> Various medical interventions are described to promote the recovery process and also to minimize the risk of complications to get better long-term effects. Management includes eye protection with ointment and surgery, drug treatment with corticosteroids or antivirals, physical therapy, surgical intervention and acupuncture. Spontaneous recovery is found in majority of cases. Yet disfigurement, lacrimation and difficulty in laughing make them socially and medically disabled.<sup>3</sup> Acupuncture has been used for many diseases including many painful conditions, perioperative care and conditions which need a combined analgesia with muscle stimulation like complex regional pain syndrome.<sup>4,5,6</sup> Acupuncture is known to be safe for Bell's palsy and no evidence of harm has been reported so far with such treatment except very minor complications. There are a lot of trials conducted in China with variable results.<sup>7,8</sup> Electroacupuncture is a described form of acupuncture where a small electric current is passed between selected pairs of acupuncture needles. According to a few acupuncturists, this

practice augments the use of regular acupuncture and can restore health and well-being, and is particularly good for treating pain. We wanted to utilise the muscle stimulating use of acupuncture and the studied the possible effect on muscle paralyses. There were doubts raised about the use of acupuncture where there is complete denervation. We usually don't resort to manual stimulation as it is very painful. Hence we decided to study the efficacy of electroacupuncture in paralytic state of Bell's palsy in select Indian patients.

The primary aim of the study was to measure the recovery of motor power in facial muscles. The secondary aim of the study was to measure patient satisfaction and the incidence of side effects.

## MATERIAL AND METHODS

Twenty patients with diagnosed and established Bell's palsy were taken up for the study. All the twenty patients were started on antiviral drug acyclovir 800 mg thrice a day and steroids in the form of tablet methylprednisolone 4 mg thrice a day for five days. All patients were explained about the procedure and informed consent was obtained. On the second day of treatment they were advised electroacupuncture as described below. The focus was application of acupuncture to local points related to muscles of facial expression which were paralyzed. Acupuncture was applied to GB14 (Yangbai) and acu points within 3 cm. Acupuncture was applied to the orbicularis oculi muscle region. Acupuncture was also applied to DU 20, SI18 (Quanliao) and ST3 (Juliao) at the zygomaticus major. The levator labii superioris was needled at EX-HN8 (Shang Yingxiang) and LI20 (Yingxiang). The orbicularis oris muscle was needled at Jiashuigou, MHN18 (Jiachengjiang), and ST4 (Dicang).<sup>9</sup> The one chun (Chinese meter equivalent to the width of the patient thumb) silver needles were inserted superficially and manipulated to enter

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the muscular layer (fig 1).The elicitation of *De qi* was a must in all the points in all sessions. The sessions continued for seven days each half an hour followed by a gap of five to six days. This was again followed by a repeat session. Electrical stimulation with 10 Hz was done in all cases. The intensity was adjusted to get a mild muscle twitch which is not discomforting for the patient. The frequency was increased to 20 Hz after 15 minutes of each session which is the practice of electrical stimulation in all our cases. The technique of removal of needles was done according to Partha's method of acupuncture needle removal. In this, after twenty five minutes, a trial removal will be done. If it comes out easily, then it's removed. If there is any resistance, another trial of removal at 30 minutes will be done. Usually the ease of removal is definitely established within thirty five minutes in each session. This technique of needle removal in acupuncture is being followed by us for more than two decades The House-Brackmann Classification of Facial Function (HBC score) was done and noted before electro acupuncture (Table 1).

The significant improvement was defined as improvement in score at least by two points. The improvement in tears was also noted. The satisfaction scores were done by a Partha's scoring system of patient satisfaction developed by us. The scoring system was divided into three basic subdivisions included treatment, explanation, respect and cordial speech. Prior Explanation - 0 = unsatisfied 1= partially satisfied 2= fully satisfied

Treatment result - 0 = unsatisfied 1= partially satisfied 2= fully satisfied

Respect and courtesy - 0 = unsatisfied 1= partially satisfied 2= fully satisfied

Side effects - 0 = unsatisfied 1= partially satisfied 2= fully satisfied

A score of six or more than six in partha satisfaction score means the patients were satisfied. This scoring system was

developed after two decades of practice and ideal score of satisfaction was derived. If there is consistent bleeding in two or more sites in a majority of sittings, then it was concluded to be a defined complication.

## RESULTS

All the enrolled patients completed the study. There were no major side effects to discontinue the study. The compliance was cent per cent. The mean age was 45.07±8.20. The male female ratio was 15:5.

The results were tabled. All side effects were noted.

S. No.	Pre – HBC score	Post HBC score	Tears im-prove-ment	Side effects	Partha Satisfaction score
1	5	3*	Yes	Bleeding	
2	5	2**	Yes		7
3	5	3*	Yes		6
4	5	2*	Yes		6
5	4	2*	Yes		6
6	4	2*	Yes		7
7	4	3 ?	Yes		5 #
8	5	4 ?	Yes		5 #
9	5	2**	Yes		7
10	5	3*	Yes		7
11	5	2**	Yes	Bleeding	6
12	5	3*	Yes		7
13	5	2**	Yes		8
14	4	2*	Yes		6
15	4	2*	Yes		6
16	4	2*	Yes		7
17	5	4 ?	Yes		5 #
18	5	2**	Yes	Bleeding	5 #
19	5	2**	Yes		6
20	4	2*	Yes		7

\* = decreased by two scores  
 \*\* = decreased by three scores  
 ? = insignificant - one or less  
 # = not satisfied

Tale 1 showing The House-Brackmann Classification of Facial Function

Grade	Description	Gross function	Resting appearance	Dynamic appearance
1	Normal	Normal	Normal	Normal
2	Mild dysfunction	Slight weakness with effort, may have mild <u>synkinesis</u>	Normal	Mild oral and forehead asymmetry; complete eye closure with minimal effort
3	Moderate dysfunction	Obvious asymmetry with movement, noticeable <u>synkinesis</u> or contracture	Normal	Mild oral asymmetry, complete eye closure with effort, slight forehead movement
4	Moderately severe dysfunction	Obvious asymmetry, disfiguring asymmetry	Normal	Asymmetrical mouth, incomplete eye closure, no forehead movement
5	Severe dysfunction	Barely perceptible movement	Asymmetric	Slight oral/nasal movement with effort, incomplete eye closure
6	Total paralysis	None	Asymmetric	No movement



**Figure-1:** Showing a few needles with electrical stimulation

Sixteen out of 20 patients were satisfied with a partha's patient satisfaction score of six or more. Out of the four in which the score is less, three patients had insignificant therapeutic benefit. Three patients were having complications of bleeding which got controlled with compression. The watering in eyes stopped in ten days in all the patients. There were no other complications.

## DISCUSSION

Bell palsy is sudden onset of facial paralysis that is usually temporary, resolving within a few weeks or months, although it can sometimes be permanent. As such the course of the disease may wane and improve within months; the involvement of the eyes may expose the patients to dangerous vision losses. Hence we attempted to study the effect in three weeks and explore the possibility of early recovery and decreased morbidity. We found out that in majority of cases, the recovery of muscle function was remarkable. Sha-bei Xu et al<sup>10</sup> have proved in a study that electrical stimulation of acupuncture points with elicitation of *de qi* was better than routine acupuncture in recovery of muscle power in bells palsy. Hence we were very particular about *de qi* sensation during insertion and stimulation. Manual stimulation may be effective but a study by Langevin et al<sup>11</sup> has proved the technique to be having more pain and discomfort. Hence we decided to have maximal benefit with minimal side effects. Corneal damage may ensue if eyes are exposed by Bells palsy in a week or two. Hence we targeted the symptom of watering of eye to disappear as one of the main focus of efficacy. In our study, all the patients significantly improved in that aspect so that there was no watering in the eye with the eye almost closed. This recovery of eyelid muscles was very much significant in our study compared to others. In a systematic review, Xiao-Wen Zhang et al<sup>12</sup> have questioned the efficacy of acupuncture in recovery of muscle function after established Bells palsy, but in our trial study we found the treatment to be effective. We had a good patient satisfaction score in a majority of cases. Four out of twenty patients had a less satisfaction score out of which three had ineffective improvement in muscle function. We propose that the ultimate result in the efficacy of any treatment may contribute more towards patient satisfaction even though this is a small study to authenticate the same. The major limitation of our study is that the disease per se is

recoverable without intervention and hence we had no control group to state the efficacy of acupuncture. After seeing the recovery of eyelid function, we thought it's not ethical to go ahead with control group to validate the efficacy of electro acupuncture. We did not study the effects of adding drugs in the needles as suggested by Wu J et al.<sup>13</sup> The timing of removal of needles (partha' technique) was vital in our study which is not described earlier in many trials. This could be a contributing factor in our success. There were no major side effects in most of the studies but we encountered three cases of bleeding in the site of insertion. We did not study any electrical activity either of the nerve or the muscle in our study as ours was a simple clinical trial with targets as clinical recovery.

## CONCLUSION

The administration of electro acupuncture in defined points along with steroids and antivirals is efficacious in getting the desired result of muscle recovery. We propose that the elicitation of *de qi* is essential for getting results. The effect of electro acupuncture in stopping eye watering was pronounced. The patient satisfaction was striking in our study. There were no significant side effects except mild bleeding.

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