

# Effects of Thread Embedding Therapy on Complete Facial Palsy

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## [Abstract]

### Effects of Thread Embedding Therapy on Complete Facial Palsy

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**Objectives** : The aim of this study was to observe the effect of Embedding therapy on complete facial palsy after primary treatment.

**Methods** : 11 patients with complete facial palsy were treated with Embedding therapy. It was performed once a day, every two weeks. 15~20 Embedding threads were used in each Embedding therapy treatment. The total number of Embedding therapy treatments was 4 or 8. Frontalis muscles (including the Yangbaek (GB<sub>14</sub>)), Orbicularis oculi muscle, Levator labii superioris muscle, Zygomatic major muscle, Zygomatic minor muscle (including the Georyo (ST<sub>3</sub>) and Jichang (ST<sub>4</sub>)), Masseter muscle, Buccinator muscle (including the Hyeopgeo (ST<sub>6</sub>)) and Orbicularis Oris muscle were selected. Yanagihara's score and House-Brackmann scale were compared for before and after treatment to evaluate the effect of Embedding therapy.

**Results** : Yanagihara's score increased significantly ( $p=0.003$ ). House-Brackmann Scale decreased significantly ( $p=0.005$ ). Three patients were extremely satisfied, six patients were satisfied, and two patients responded neutrally in regards to Embedding therapy.

**Conclusions** : Embedding therapy can be effective in improving symptoms of complete facial palsy.

#### Key words :

Complete facial palsy ;  
 Bell's palsy ;  
 Embedding therapy ;  
 Korean medicine

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## I. Introduction

Unilateral facial palsy is a major symptom of the facial palsy. Decrease or increase of the tear, auditory hypersensitivity, tinnitus, taste disorder, ear pain and salivation disorders may be associated<sup>1)</sup>. This condition is called Bell's palsy. Most cases of this disease, the cause is not clear. Ramsay Hunt syndrome due to herpes zoster and trauma are also cause of facial palsy<sup>2)</sup>.

In generally, this disease started with the pain in mastoid process. Almost simultaneous, palsy of facial muscles progress. Symptoms like difficulty of closing eyes, drooling and pararthria occur because of it<sup>3)</sup>.

In Korean medicine, acupuncture, herbal medicine, physical therapy and taping therapy have been performed at facial palsy<sup>4)</sup>. Various treatments have been attempted additionally, such as electropuncture<sup>5)</sup>, Hominis Placenta pharmacopuncture<sup>6)</sup>, Bee-Venom acupuncture<sup>7)</sup>, moxibustion<sup>8)</sup> and scalp acupuncture therapy<sup>9)</sup>. Recently, studies about embedding therapy have been reported<sup>10,11)</sup>.

Embedding Therapy is also known as Meridian point burial therapy or Medication thread burial therapy. The principle of this treatment that medication thread continue remain to under the skin so the effect lasts longer<sup>4)</sup>.

Han<sup>12)</sup> reported the efficacy of Embedding therapy to facial palsy within one month after onset, Kang's Embedding therapy study<sup>10)</sup> was about sequela of facial palsy with one month later after onset and Lee's Embedding therapy study<sup>11)</sup> was about sequela of facial palsy with three months later after onset. But no study about Embedding therapy for advanced to complete palsy after primary care has ever been reported.

About 75~85 % of the facial palsy patient were showed a natural recovery. In incomplete facial palsy, 95 % patients were recovered. But in complete palsy, recovery rate is about 50 % or less<sup>1)</sup>.

Many patients suffered from complete facial palsy tend to give up treatment because symptoms

improvement was not showed any more for several months.

Accordingly, we carried out Embedding therapy to complete facial palsy that was not showed improvement any more after primary treatment. Thus, we report the results.

## II. Subject and Method

### 1. Subject

The research involved 11 patients who visited the acupuncture & moxibustion department at Semyung University Hospital of Oriental Medicine for facial palsy treatment from April 30, 2013 to November 30, 2014. They were diagnosed with peripheral type of facial palsy and were complete palsy state after primary care. They had no abnormalities with the brain CT or MRI examination. Purpose of the study, procedures and adverse reactions were explained enough to participants and all participants agreed to voluntarily participated. The protocol was approved by the Institutional Review Board of Semyung university hospital (2015-16-01).

Exclusion Criteria included the following :

- 1) In association other disease showed up on the X-ray, CT or MRI
- 2) Patients with keloid, allergen or sensitive skin
- 3) Getting a skin laser treatment or going to be
- 4) Patients with skin infections
- 5) Other patient that doctor determines not suitable for this study

### 2. Treatment Method

#### 1) Embedding therapy

Medical thread for Embedding therapy were purchased from Dongbangchimgusa(Korea). The spec-

ifications of the used medical thread is 3 cm, 29 Gauge, generalized smooth form. The medical procedure areas were based on the Park's<sup>13)</sup> and Kim's<sup>14)</sup> study. Frontalis muscle including the Yangbaek (GB<sub>14</sub>), Orbicularis oculi muscle, Levator labii superioris muscle, Zygomatic major muscle and Zygomatic minor including the Georyo (ST<sub>3</sub>), Jichang (ST<sub>4</sub>), Masseter muscle, Buccinator muscle including the Hyeopgeo (ST<sub>6</sub>) and Orbicularis Oris muscle are selected. Medical embedding thread was inserted in the same direction as the direction of muscle fiber in Frontalis muscle, Orbicularis oculi muscle, Levator labii superioris muscle, Zygomatic major muscle and Zygomatic minor and Orbicularis Oris muscle. Medical embedding thread was inserted in the vertical direction as the direction of muscle fiber in Masseter muscle and Buccinator muscle. All medical embedding were inserted outward from the facial center line and upward from below.

Embedding therapy was performed once a day, once per two weeks. 15~20 Embedding thread were used in one time Embedding therapy. The number of Medical embedding threads is different depending on degree of symptoms. The total number of Embedding therapy was 4~8 depending on the condition of the patient.

## 2) Acupuncture treatment

The acupuncture were disposable, stainless-steel filiform needles (0.30 mm × 40 mm) from Dongbang Acupuncture, Inc. Following the meridian points, the acupuncture was operated at the Yepung (TE<sub>17</sub>), Gakson (TE<sub>20</sub>), Nosik (TE<sub>19</sub>), Gyeonjeong (GB<sub>21</sub>) of the affected side before Embedding therapy. The acupuncture's retaining times were 15 min.

## 3. Investigation analytical method

In order to the general characteristics of patients and the effect of Embedding therapy, we investigated following. : 1) Distribution of gender and age, 2) Distribution of facial palsy area, 3) Distribution

of duration of disease, 4) Number of treatment, 5) Yanagihara's score<sup>15)</sup> of five rating before and after Embedding therapy, 6) House-Brackmann scale<sup>16)</sup> before and after Embedding therapy, 7) Treatment results (Yanagihara's score change, House-Brackmann score change, patients satisfaction)

The data were expressed as mean ± standard deviation and analyzed by using Wilcoxon signed rank test of SPSS 18.0 for windows program. Values of  $P < 0.05$  were considered as statistically significant. Patients satisfaction were described very much satisfied, satisfied, so so, dissatisfied and very much dissatisfied.

## III. Result

### 1. Distributions of gender and age

The 11 patients in this study were composed of 1 man and 10 women, and the distribution of gender and age is shown in Table 1.

Table 1. Distributions of patients

	Classification	Number
Gender	Male	1
	Female	10
Age	21~30	1
	31~40	1
	41~50	6
	51~60	2
	more than 61	1

### 2. Distributions of facial palsy areas, onset and number of Embedding therapy.

The facial palsy was located on the left (Lt) side in 7 patients and on the right (Rt) side in 4 patients.

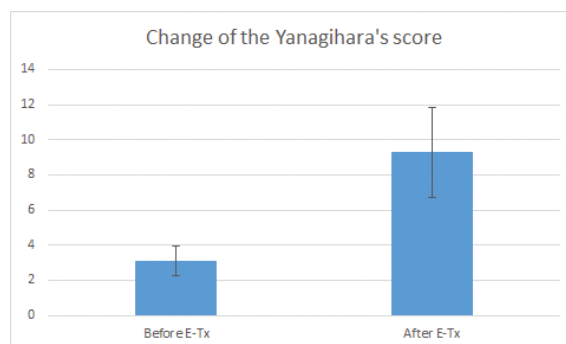
In distribution of onset of facial palsy, less than 1 year 5 patients, 1~3 years 2 patients, more than 3 years 4 patients (Table 2). 5 patients were treated 4 times and 6 patients were treated 8 times (Table 2).

**Table 2. Distributions of facial palsy areas, onset and number of Embedding therapy**

Area	Classification	Number
	Left	7
Right	4	
onset	less than 1 year	6
	1~3 years	2
	more than 3 years	4
number of Embedding therapy	4 times	5
	8 times	6

### 3. Yanagihara's score

Before Embedding therapy, Mean of Yanagihara's scores is  $3.09 \pm 0.83$ . After 4 or 8 times Embedding therapy, Mean of Yanagihara's scores  $9.27 \pm 2.53$ . Mean of Yanagihara's score changes is  $6.18 \pm 2.24$ . In the Wilcoxon signed rank test, the Yanagihara's score increased significantly ( $p=0.003$ ) (Table 3, Fig. 1).



**Fig. 1. Change of Yanagihara's score**

E-Tx : Embedding therapy

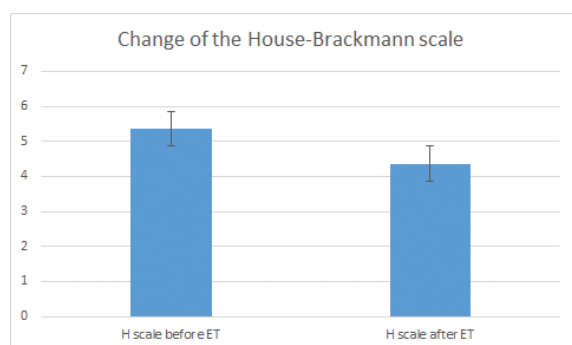
**Table 3. Change of Yanagihara's score**

	Before E-Tx	After E-Tx	Z	P
Yanagihara's score	$3.09 \pm 0.83$	$9.27 \pm 2.53$	-2.943	0.003*

Values are the mean  $\pm$  standard deviation

\* :  $p < 0.01$  by Wilcoxon signed rank test

E-Tx : Embedding therapy



**Fig. 2. Change of House-Brackmann scale**

E-Tx : Embedding therapy

### 4. House-Brackmann Scale

Before Embedding therapy, Mean of House-Brackmann Scales is  $5.36 \pm 0.50$ . After 4 or 8 times Embedding therapy, Mean of House-Brackmann Scales is  $4.36 \pm 0.50$ . Mean of House-Brackmann Scale changes is  $-1.00 \pm 0.60$ . In the Wilcoxon signed rank test, House-Brackmann Scale decreased significantly ( $p=0.005$ ) (Table 4, Fig. 2).

**Table 4. Change of House-Brackmann Scale**

	Before E-Tx	After E-Tx	Z	P
House-Brackmann Scale	$5.36 \pm 0.50$	$4.36 \pm 0.50$	-2.81	0.005*

Values are the mean  $\pm$  standard deviation

\* :  $p < 0.01$  by Wilcoxon signed rank test

E-Tx : Embedding therapy

## 5. patients satisfaction

Three patients were very much satisfied with the Embedding therapy (27.2 %). Six patients were satisfied (54.5 %) and two patients were so so (18.2 %).

## IV. Discussion

Guanwasa is called facial palsy in western medicine. The facial nerve is the seventh cranial nerve. It controls the same side of the face muscles. It related to taste, tears and saliva secretion, but it consists mostly of motor nerve fibers<sup>14</sup>. So patients undergoes a facial movement disorder. When they make facial expression, the distortion of the face reveals more clearly. In some cases, they accompanied by pain in the ear, lacrimal secretion disorders, sensitive hearing and loss of taste.

In Korean medicine, It is considered that the cause of the Guanwasa is wind or cold air. In recent years, Korean medicine therapeutic effect about Guanwasa have been reported<sup>17</sup>.

Embedding Therapy is that melting thread is embedded by using a specially designed needle. That melting thread also used as the material for surgical sutures for surgery<sup>18</sup>.

Embedding therapy is similar to continuous stimulation by acupuncture for a period of times. It can effect constantly while staying acupuncture points<sup>19</sup>. It is widely used for chronic diseases, musculoskeletal disorders, dermatology disorders and gynecological disorders in korean medicine<sup>13</sup>.

In recent years, Embedding therapy has been used in the field of face cosmetic surgery. Hong<sup>19</sup> reported the principles of Embedding therapy and Lee<sup>20</sup> reported on its effectiveness on face skin elasticity and moisture. Park<sup>13</sup> explained that Embedding therapy can be used in facial palsy. Some studies about Embedding therapy for facial palsy were reported<sup>10-12,19</sup>. But their studies were about early stages or sequela of facial palsy. So we tried

to improve symptoms of complete facial palsy with Embedding therapy.

Research subjects are constituted by 1 man and 10 women. By age, 20s is 1 person, 30s is 1, 40s is 6, 50s is 2, and more than 61 is 1. 40s has the most percentage.

The facial palsy was located on the left (Lt) side in 7 patients and on the right (Rt) side in 4 patients.

The purpose of Embedding therapy on facial palsy is to improve facial muscle movement, soften muscle stiffness and promote nerve regeneration. In order to objectively evaluate the effect of Embedding therapy, Scale that can accurately estimate the degree of facial palsy is necessary. Because Yanagihara's score and House-Brackmann scale are most often used for evaluate of facial palsy<sup>22</sup>, we used these scales and the results are as follows :

After 4 or 8 times Embedding therapy, mean of Yanagihara's score changes was  $6.18 \pm 2.24$ . This change was statistically significant.

Mean of House-Brackmann scale changes was  $1.00 \pm 0.60$ . This change was also statistically significant.

There were more changes of score in patients who have received eight treatment than patients who received four treatments.

Yanagihara's score of all patients had increased. House-Brackmann scale did not changes in just two patients.

Most patients felt very positive and just two patients answered 'soso' about Embedding therapy. There were no patients with a negative answer about Embedding therapy. All patients were observed 4 weeks after therapy, and there were no side effects except small bruises.

These results indicate that Embedding therapy is a available method to treatment of complete facial palsy.

However, this study has a few limitations, including the number of patients that was too small and a short treatment period. Large scale studies on complete facial palsy and Embedding therapy needs to be performed.

## V. Conclusion

Through our research, we obtained the following conclusions : The Embedding therapy change the Yanagihara's score and House-Brackmann scale significantly in complete facial palsy. 82 % of the patients were satisfied or very much satisfied with Embedding therapy. Embedding therapy can be used for complete facial palsy, And it is considered that this treatment is worthy of further studying.

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## VII. References

1. Beak MK. The newest Otolaryngology. Seoul : Ilmoongak, 1997 : 121-7.
2. National teacher training center for health personnel. Family medicine. Seoul : Seoul University Press, 2001 : 519-24.
3. Na CS, Lee UJ, Hwang WJ, Won JS. The guideline of head, spine, extremity disease. Seoul : Daesung Moonhwasa, 1995 : 31-9.
4. Korean Acupuncture & Moxibustion Society. The acupuncture and moxibustion medicine. Pa-ju : Jipmoondang, 2012 : 200, 625-9.
5. Lee SW, Han SW. Clinical study of facial nerve paralysis through electro-acupunctre treatment. The Acupuncture, 1999 ; 16(4) : 149-63.
6. Lee EY, Yook TH, Kim EH, Lee JH, Kim YH. The Clinical Observation of peripheral facial paralysis used Aqua-acupuncture treatment. The Acupuncture, 2002 ; 19(3) : 11-23.
7. Kim MS, Kim HJ, Park YJ, Kim EH, Lee EY. The clinical research of the efficacy of bee venom aqua-acupuncture on peripheral facial paralysis. The Acupuncture, 2004 ; 21(4) : 251-62.
8. Kwon SJ, Song HS, Kim KH. The Influence of Moxibustion and Basic Compound Therapy on Peripheral Facial Paralysis. The Acupuncture, 2000 ; 17(4) : 160-71.
9. Choi YJ, Yoon KJ, Kim MS, Park JY, Jeon JC, Lee TH. Effects of Scalp Acupuncture with Usual Acupuncture on Peripheral Facial Palsy in Comparison with Usual Acupuncture Only. The Acupuncture, 2010 ; 27(6) : 101-9.
10. Kang EK, Kim JH, Seo HS. The Clinical investigation studies in peripheral facial paralysis using Needle-Embedding Therapy. The J Korean Med Ophthalmol Otolaryngol Dermatol, 2009 ; 22(2) : 118-27.
11. Lee CW, Lee SM, Jeon JH, Kim JI, Kim YI. Effects of Needle-Embedding Therapy on Sequelae of Peripheral Facial Palsy : A Case Series. The Acupuncture, 2011 ; 28(4) : 93-103.
12. Han JM, Yoon JW, Kang NR, Ko WS, Yoon HJ. The Clinical investigation studies in early stage of intractable peripheral facial paralysis using Needle-Embedding Therapy. The J Korean Med Ophthalmol Otolaryngol Dermatol, 2012 ; 25(3) : 113-28.
13. Park YU. The Thread-embedding Therapy. Seoul : Hanglimseowon, 2003 : 23, 27-8.
14. Kim JH, Kwon HJ, Song JH, Choi DY, Lee SH, Lee JD. A Review of the Anatomy of Face for the Clinical Application of Facial Acupuncture. The Acupuncture, 2008 ; 25(3) : 221-8.
15. Yanagihara N. Grading of facial palsy. The Proceedings of the Third International Symposium on Facial nerve surgery ; 1976 ; Zurich, Birmingham : Aesculapius Publishing Co, 1977 : 533-5.
16. Kang TS, Vrabc JT, Giddings N et al. Facial nerve grading systems(1985~2002) : beyond the House-Brackmann scale. Otol Neurotol, 2002 ; 23(5) : 767-71.
17. Won JS, Chou CY, Cho AR, Kim JH, Kim CH. The Clinical observation of acute Bell's palsy 80

- Case. *The J Korean Med Ophthalmol Otolaryngol Dermatol*, 2010 ; 23(2) : 151-62.
18. Wen MS, Xiangrong Z. Various embedding therapies. Beijing : Ren min jun yi Publishing Co, 2002 : 20-44.
  19. Hong KE. Comprehension of Embedding Therapy Through Meridian Muscle System-Focused on Face. *The Acupuncture*. 2008 ; 25(3) : 215-9.
  20. Lee KS, Ko MK, Lee JH, Kim MJ, Hong KE. The Effect of Facial Embedding Therapy on Skin Elasticity and Moisture Content. *The Acupuncture*. 2011 ; 28(5) : 111-9.
  21. Lee JC, Park SH, Yoon JH, Kim JW, Lim CG. Preliminary Standard Procedure for Face Lift and Correction of Nasolabial Fold using Thread-Embedding (Maeseon) of Korean Medicine. *The J Korean Med Ophthalmol Otolaryngol Dermatol*, 2013 ; 26(4) : 43-50.
  22. Lee WS, Woon BM, Kim DY, Lee JH. Clinical Application of FEMA Grading System. *Korean J Otolaryngol*, 1998 ; 41(11) : 1378-82.

Appendix 1. Yanagihara's unweighted grading system

	Scale of five rating
At rest	0 1 2 3 4
Wrinkle forehead	0 1 2 3 4
Blink	0 1 2 3 4
Closure of eye lightly	0 1 2 3 4
Closure of eye tightly	0 1 2 3 4
Closure of eye on involved side only	0 1 2 3 4
Wrinkle nose	0 1 2 3 4
Whistle	0 1 2 3 4
Grin	0 1 2 3 4
Depress lower lip	0 1 2 3 4

Appendix 2. House–Brackmann Scale

Grade	Description	Characteristics
I	Normal	Normal facial function all areas
II	Mild dysfunction	Gross Slight weakness is noted on close inspection may have a slight synkinesis At rest normal symmetry and tone Motion Forehead : Moderate to good function Eye : complete closure with minimal effort Mouth : slight asymmetry
III	Moderate dysfunction	Gross Obvious but not disfiguring difference between both sides, noticeable but not severe synkinesis, contracture, or hemifacial spasm At rest normal symmetry and tone Motion Forehead : slight to moderate movement Eye : Complete closure with effort Mouth : slightly weak with maximum effort
IV	Moderately severe dysfunction	Gross Obvious weakness and/or disfiguring asymmetry At rest normal symmetry and tone Motion Forehead : none Eye : incomplete closure Mouth : asymmetry with maximum effort
V	severe dysfunction	Gross only barely perceptible At rest asymmetry Motion Forehead : none Eye : incomplete closure Mouth : slight movement
VI	Total paralysis	No movement