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**The approach of facial surface electromyography: A study on the measurement system in buccal area**

Tae-han Yook, Jong-uk Kim and Yoo-min Choi  
Woosuk University, South Korea

**Statement of the Problem:** Surface Electromyography (sEMG) is a diagnostic device that senses electrical signals of the muscle using surface electrodes. The facial part is a three-dimensional structure of many muscles, and normal facial expression is in terms of the sum of various facial muscle movements. Therefore, the measurement of sEMG is meaningful in the face. Although it is applicable for facial nerve paralysis or facial asymmetry, there is some difficulty in understanding of the results in each research because of the disagreement in method of measurement. We studied the sEMG measurement method of the buccal area, which occupies the widest range of facial parts.

**Methodology & Theoretical Orientation:** 44 healthy people were recruited. Two Korean medical practitioners who were skilled in sEMG drew three imaginary lines on the subject's face and measured the change of the length of the line and the change of sEMG during a buccal motion. The lines were described by the acupoints of TCM. The first line (L1) was the connecting line of acupoint ST4-ST6, the third one (L3) was that of acupoint ST4-SI18, and the second line (L2) was that of acupoint ST4-the center point of acupoint SI18 and acupoint ST6. Statistical analysis was performed to find the specific area that could most reflect the movement of the buccal part.

**Findings:** There was a significant difference between  $D3 < D1$ ,  $D3 < D2$ , and  $E1 < E2 < E3$ . The correlation between the surface distance change value and sEMG in the motion was positive at  $D1$  and  $E1$  ( $r=0.378$ ,  $p<0.05$ ),  $D2$  and  $E2$  ( $r=0.519$ ,  $p<0.001$ ).

**Conclusion & Significance:** The line that most strongly reflected the movement of the buccal area was the connecting line between ST4 and the midpoint of ST6 and SI18. The above method is proposed for the adequate measurement of sEMG in the buccal area.

**Biography**

Tae-han Yook is a Researcher in Acupuncture and Moxibustion Medicine in Korea. He has been teaching Acupuncture Medicine for more than 20 years in the College of Korean Medicine, Woosuk University in Korea. He makes his efforts to establish an electrophysiological diagnostic system in the facial part diseases such as facial nerve paralysis. He has been the Chairman of the Korean Acupuncture and Moxibustion Society for the past two years, and has been trying to broaden the base of acupuncture medicine. Through this study, he proposes a unified and objective diagnosis system of facial neuromuscular disease.

nasiss@naver.com

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