PROPOSAL OF TRAINING DEVICE FOR ESOPHAGEAL SPEECH METHOD WITH MYOELECTRIC SIGNAL

Aims: Development of the esophageal speech method training system by using of myoelectric signal. The esophageal speech method is an excellent speech method for laryngectomy person, but this method is difficult to acquire, because of there is no scientific training method. In this research, we aim to establish the systematic training method with bio (myoelectric) signal measurement.

Findings/Results/Outcomes: In this report, the following results were clarified by bio signal measurement.

1. The esophageal speech users used tongue and diaphragm for taking air to esophagus.

2. The spots suitable for myoelectric signal measurement were lower jaw and the lowest part of intercostal.

3. The sequence of each muscles activation and voice generation was same, not depended on trial.

Abstract (249 words)

The patients who undergo the laryngectomy lose their voice. The voice is very important communication method for human, and these patients become to feel inconvenient. For these patients some speaking method are developed and used. One of them is the esophageal speech, this method uses the air from esophagus to generate the primary tone. This method has good characteristics at voice quality and convenience. But learning of this method is difficult, the acquisition rate of a simple conversation is about 60-70%, and the training term is more than 6 months. One of the reasons is the scientific training method is not established.

In this research, we aim to establish the training method of esophageal speech with bio monitoring. The esophageal speech method use some muscles for taking in air to the esophagus. Therefore, it is important that the clarification of "what muscle" is activated in esophageal speech. And "when" the muscle activates is important, too.

In this report, we took a survey to esophageal speech users, for clarification of "what muscle" is activated in esophageal speech. From the result, it was clarified that the muscles of mouth and abdominal were tensing up, we guessed the tongue and diaphragm were activated in esophageal speech. Based on these results, the myoelectric signal of the lower jaw and the lowest intercostral were measured, at the same time, the voice was measured, too. From the result of measurement, it was clarified that the sequence of each muscle activation and voice generation was same.