

## Development of Swallowing Movement Analyzer with Pneumatic Sensor

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A new, portable device, called the swallowing movement analyzer, which is capable of detecting spontaneous swallowing, was developed. This analyzer was composed of a pneumatic sensor and a differential pressure transducer (TSD110 : BIOPAC systems Inc.). The sensor of the device was placed and fixed on the thyroid cartilage. In this way, it was capable of sensing each upward and downward movement of the thyroid cartilage during deglutition. The electric potential by the transformation of the sensor at the time of pressure was analyzed and a wave pattern was displayed on the monitor.

This paper reported the characteristics of the sensor and the clinical application of the swallowing movement analyzer. The electric potential became higher toward the central part of the sensor under pressure. The values were affected by the temperature in the laboratory. The most appropriate temperature was between 24 °C and 28 °C. A smooth wave pattern was displayed with an easily swallowable food, but a distorted wave pattern was obtained with a food which was difficult to swallow. This device made it possible to analyze the swallowing movement in the pharyngeal phase qualitatively and quantitatively.

Key words : swallowing dysfunction, swallowing movement, pneumatic sensor

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