A speech communication aid system for total laryngectomies using voice conversion of body transmitted artificial speech. Keigo Nakamura, Tomoki Toda, Hiroshi Saruwatari, and Kiyohiro Shikano (Nara Inst. of Sci. and Technol., 8916-5, Takayama-cho, Ikoma-shi, Nara, 630-0192 Japan, kei-naka@is.naist.jp)

There are several problems associated with using existing electrolarynxes. For example, the loud volume of the device itself might disturb smooth interpersonal communication, and its generated speech is also unnatural. To improve the quality of speech communication using such a medical device, this paper proposes a novel speech communication aid system for total laryngectomies. This system detects articulated speech caused by a new sound source as an alternative to the existing electrolarynx through the soft tissues of the head with a nonaudible murmur (NAM) microphone attached to the surface of the skin [Nakajima et al, Proc. Interspeech 2005, pp. 293–296 (2005)]. The new sound source outputs signals of extremely low energy that cannot be heard by people near the speaker. Such body-transmitted artificial speech is converted to a more natural voice by statistical voice conversion [T. Toda and K. Shikano, Proc. Interspeech 2005, pp. 1957–1960 (2005)]. The performance of the proposed system is evaluated in terms of objective and subjective measures using body-transmitted artificial speech simulated by a non-disabled speaker. Experimental results show that body-transmitted artificial speech is consistently converted to a much more natural and intelligible voice. [Work supported by SCOPE-S.]