

11210885.txt

Subject: cardiovascular diseases / cancer / autism / other

Alternative voice after laryngectomy using a sound-producing voice prosthesis.

OBJECTIVE To improve the voice **quality O: Other** of female laryngectomees and/or laryngectomees with a hypotonic pharyngoesophageal (PE) segment by means of a pneumatic artificial source of **voice I:** **Educational** incorporated in a **regular I: Drug** **tracheoesophageal I: Drug** (**I: Drug** **TE I: Physical**) shunt valve.

STUDY DESIGN Experimental, randomized, crossover trial.

METHODS The new sound source consists of a single **silicone I: Physical** **lip I: Physical**, which performs an oscillatory movement driven by expired pulmonary air flowing along the outward-striking lip through the TE shunt valve. A prototype of this pneumatic sound source is evaluated in vitro and in six laryngectomees. In vivo evaluation includes **speech O: Mental** **rate O: Mental**, **maximal O: Physical** **phonation O: Physical** **time O: Mental**, **perceptual O: Mental** **voice O: Mental** **evaluation O: Mental** of **read-aloud I: Educational** **prose I: Educational** by an expert listener, **speech O: Mental** **intelligibility O: Mental** measurements with 12 listeners, and self-assessment by the patients. Moreover, extensive acoustical and aerodynamic in vivo registrations are performed using a newly developed data acquisition system.

RESULTS The current prototype seems beneficial in **female P: Sex** laryngectomees with a hypotonic PE segment only. For them the sound-producing **voice I: Educational** prosthesis improves voice **quality O:** **Other** and increases the **average O: Mental** **pitch O: Mental** of **O: Mental** **voice O: Mental**, without decreasing **intelligibility O: Other** or **necessitating O: Other** **other O: Physical** **pressure O:** **Physical** and **O: Physical** **airflow O: Physical** **rates O: Physical** than regular TE shunt speech. **Pitch O: Physical** regulation of this prosthetic voice is possible, yet limited.

CONCLUSIONS The mechanism is feasible and does not result in unacceptable **airflow O: Physical** **resistance O: Physical**. For this new mechanism of alaryngeal voice to become an established technique for postlaryngectomy voice restoration, a voice suitably pitched for male laryngectomees has to be generated and a large part of the melodic and dynamic range of the sound source has to be attainable within physiological airflow rates.