

## A Device for Evaluation of Eustachian Tube Functionality

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**Developed Fall 2013**

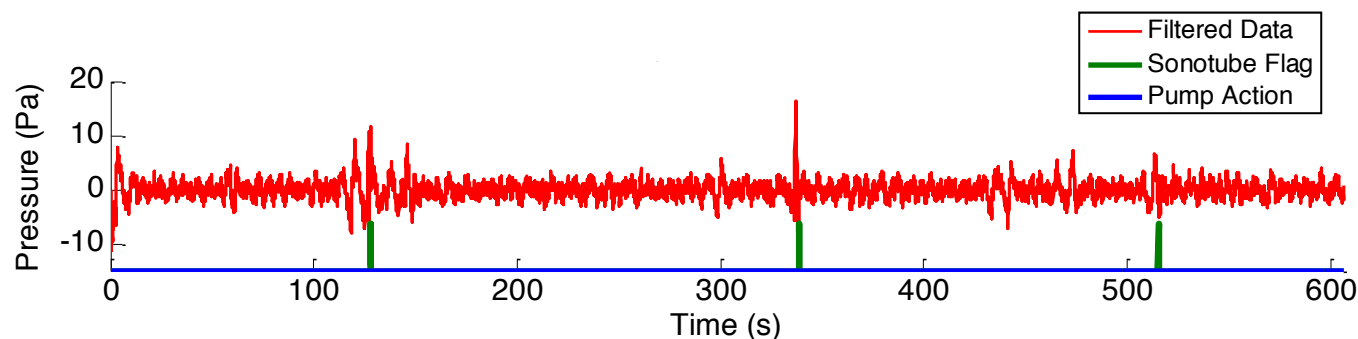
### Clinical Challenge

Develop a device to monitor the dynamic activity of the eustacian tube with pathophysiological significance in a clinical setting.

Eustacian tube (ET) dysfunction is the leading cause of otitis media, or middle ear infections, the most common acute medical condition in children. Effective evaluation of ET function would enable preventative care and ensure proper diagnosis. However, no existing technique of evaluating ET function has been shown to have any clinical significance.

### Solution

Continuous and long duration measurement of the air pressure in the ear canal allows diagnosis of ET function in a “natural” patient state. The process is non-invasive, with only a small probe inserted into the patient’s ear, similar to a music earbud. The device sets a slight negative pressure in the ear canal and measures the pressure changes resulting from the ET equalizing the middle ear pressure with ambient. The small, portable device evaluates ET function in individuals with intact or perforated tympanic membranes. Its low cost allows usage in routine pediatric checkups. Preliminary testing shows sufficient sensitivity to detect all aspects of ET functioning. Further development of this proof-of-concept device will yield a product to significantly improve quality of care for children, reducing incidence of otitis media, antibiotic use, and ear pain.



Ear canal pressure over time, correlated with flags of adult ET function verified with the principles of sonotubometry

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