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**2.3**

**Direct measurements and monitoring of middle ear pressure**

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**Purpose:** The normal function of the middle ear depends on the maintenance of a pressure close to ambient pressure. However, deviation in middle ear pressure (MEP) is a common finding in otitis media and related sequelae, and hence, it is considered a major pathogenetic factor. Up till now, available data were either obtained from indirect measurements, resulting in limited accuracy, or from short term acute experiments, or from longer term measurements in ears with perforated eardrums. The purpose of the present study was to introduce a new improved method for direct accurate monitoring of MEP in ambulant humans with intact ear-drums.

**Materials and Methods:** A new method is presented, where a catheter was inserted into the mastoid through a small hole burred into its antero-lateral tip. Patients included were submit-*ted* for parotidectomy, where this region is routinely exposed. The catheter was connected to a high accuracy pressure transducer ( $\pm 1$  Pa), and data were stored in a portable unit, at a sam-*pling* rate of 10 Hz for up to 48 hours. Hence, MEP could be continuously monitored also after discharge from hospital for investigating pressure changes during daily life activities. The catheter was removed after 48 hours similarly to an ordinary drainage tube, and data transferred to a PC.

**Results:** Preliminary findings have illustrated pressure changes in relation to altitude changes (elevator trip), Eustachian tube openings, and supine position. The study is ongoing and addi-*tional* results including day-night variations and various other pressures challenges will be presented.

**Conclusions:** The method has showed high accuracy and capability of long term monitoring of MEP and it can be used also for studying the results of various pressure challenges as well as daily life fluctuations. Such data provide new information on the exact pressure variations of the middle ear and possibly of its regulation. Hence, these observations are likely to be valuable for the understanding of pressure regulation also in pathological ears.