

Tympanic Thermometry -Utility In The Operation Theatre .

Manish Munjal, Dinesh Sood Porshia Rishi ,Shubham Munjal

Oto-rhino-laryngology and anaesthesia services .Dayanand Medical College Ludhiana

Abstract-

Tympanic thermometry in the operation theatre measures the core body temperature being superior to oral , nasopharyngeal, axillary ,oesophageal and rectal measurements.

The tympanic membrane is the site where the core body temperature can be measured with most accuracy .The temperature at the ear canal and the tympanic membrane are rapidly responsive and give precise estimate of the hypothalamic temperature and correlate with the oesophageal temperature. Benzinger M 1969 , Cork RC 1983^[1,2]

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I. Introduction

As early as 1963 ,Piironen P^[3] ,introduced measurement of the body temperature at the level of the ear tympanum , Piironen explained in detail that ,'the internal carotid artery entered the skull traversing in the carotid canal ,which was separated from the middle ear cavity by a thin lamina of bone at its anterior wall ". The tympanic membrane and the walls of the tympanic cavity are vascularised by blood vessels going to the cranium. The region though represents a fraction of the mass of the head but it passes most of the blood into the head .The conditions at the tympanic membrane with respect to heat transfer by conduction and circulatory convection,or generation from regional tissue metabolism resemble those in the oesophagus at the lower mediastinum .It appears probably that the temperature of the tympanic membrane ,which is situated at the vicinity of the internal carotid artery closely follows and faithfully reflects the temperature of the arterial blood flowing into the region of the head"

Tympanic thermometry is superior to oesophageal and rectal measurements.in context to cleanliness ,ie dry site and disposable probe sterility . Moreover there is minimal inconvenience ,embarrassment or discomfort to the patients and the physicians alike . Contraindications of rectal and oesophageal measurements are manifold unlike the tympanic technique ,Benzinger M 1969^[1]

Unfortunately tympanic membrane trauma has been documented in sporadic studies ,thus the aural canal is now the preferred site. The compliance is high with probes and can even be utilized to measure core temperature in marathon surgical interventions,before induction of anaesthesia and in the recovery phase . The tympanic membrane damage can be avoided by using the infrared tympanic membrane thermometer and is ideal for use when intermittent measurement of core temperature is all that is required . Shinozaki T 1988^[4] The external auditory meatus is an easy site to measure changes in core temperature and due to the common arterial blood supply closely and rapidly follows the temperature of the central receptors in the midbrain, ,Copper KE 1964^[5]

Core temperature at the tympanic level can be recorded at every 1 minute for first 5 minutes followed by 10 minutes till the end of surgery using a tympanic thermometer .Room temperature is too recorded at the initiation of surgery ,after half an hour and after the end of surgery .using a recording thermometer.



Figure- Tympanic thermometer -Thermoscan Plus of Braun

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