

CORRESPONDENCE

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An Unusual Cause of Misleading Temperature Readings

To the Editor:—We wish to report that small amounts of oral secretions in the connection between the esophageal temperature probe and the cable leading to the temperature module can lead to incorrectly elevated temperature readings.

This was brought to our attention recently during a neurosurgical procedure. After the patient was turned to the prone position, the temperature obtained with the esophageal temperature probe (Hi-Lo Temp[®], Mallinckrodt Critical Care) increased from 36° to 40° C over 10 min. Replacing the probe and the temperature module itself (Hewlett-Packard 78214-C) had no effect. Eventually a drop of saliva was noted to be bridging the contacts on the patient end of the cable that connected the probe to the module. When this was cleaned and dried the temperature reading returned to near 36° C. The connectors used in this temperature monitoring system are shown in figure 1.

We then sought to confirm that an electrically conducting solution bridging the contacts of the esophageal temperature probe could result in a spurious yet realistically increased temperature reading. This effect would be due to formation of a second path for current within the temperature probe circuit, lowering the overall resistance. Using a clean probe and module we observed the readings for a temperature bath maintained at 37° C. Application of deionized water shifted the temperature reading to 37.8° C. Saline in the connector increased the reading to 41.2° C. The results with oral secretions varied from 39.4° to 40.4° C, depending upon the mucous content.

Most temperature sensors in the operating room are based on the use of thermistors that conform to the same industry standard (YSI 400 Series). Our experience with one particular brand is probably applicable to others. Since the case reported here, we have noticed that when patients are in a prone or sitting position, oral secretions frequently track down the wire from the esophageal temperature probe to the connector on the extension cable. In two instances, anesthesiologists unaware of this as a cause of elevated temperature readings were unable to determine the source of the problem. Thus, spurious intraoperative temperature readings may be occurring with some frequency.

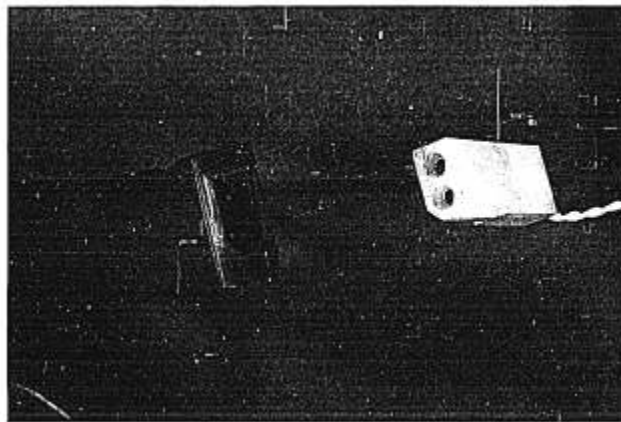


FIG. 1. Connectors used by the Mallinckrodt Hi-Lo Temp[®] esophageal temperature probe. The male connector from the temperature probe is on the right, the female connector from the cable leading to the temperature monitor is on the left.

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In Reply:—Thermistors are composed of materials whose electrical resistance varies with temperature. It is this property that makes it possible to measure temperatures with thermistors, and it therefore follows that any situation which would alter the electrical resistance, such as the creation of a saliva induced shunt, would result in a spurious reading. The present report from Berman is the first one we have seen on this subject and we can only add that electrical connections must always be kept dry.

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Opioid Premedicants Are Not Candy, Lollipops, or Funny Stickers

To the Editor:—As a pediatric anesthesiologist, I read with interest the article by Nelson *et al.* on oral transmucosal fentanyl citrate (OTFC) premedication in children.¹ OTFC appears to offer a safe and humane

approach to preoperative sedation with only minor side effects in children.^{1,2}

Most advocates of OTFC now refer to the preparation as a candy