real or by inaccurate measurement, make the adoption of the ASA Performance Guidelines for hypothermia as not meeting the standard of a single-threshold temperature in the postanesthetic period inappropriate.²

To address the issue of accuracy of thermometers used in clinical practice, we did state, "A number of studies have documented that infrared tympanic thermometers are not reliable. Our data suggest that reliance on an inaccurate device measurement, as is routinely done in clinical practice, could yield indications that performance guidelines were not being met, largely based on spurious data."²

Harper¹ brings up several valid points, suggesting that, in our clinical practice, the various types of equipment that we use to measure temperature can be fraught with error, thus further supporting our conclusion.

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Beware of the "Serpentine" Inferior Thyroid Artery While Performing Stellate Ganglion Block

To the Editor:

The frequency of retropharyngeal hematoma after stellate ganglion block is reported to be 1 in 100,000 cases with resulting airway compromise and obstruction.¹ However, Kapral et al.² reported a greater incidence of asymptomatic hematoma with the blind technique (3 of 12 patients), with no hematoma occurring when ultrasound guidance was used. Hematoma was attributed to injury to the thyroid gland or the vertebral artery.

I believe that the inferior thyroid vessels may be the major source of the retropharyngeal hematoma because of their vulnerable and variable anatomy. The inferior thyroid artery originates from the thyrocervical trunk of the subclavian artery and ascends anteriorly to the vertebral artery and the longus coli muscle and then curves medially behind the carotid sheath to enter posteriorly the inferior part of the thyroid lobe. It is vulnerable to injury as it lies anterior to the vertebral artery at C7 level or more commonly when it crosses (at C6-7 level) behind the carotid artery from lateral to medial to end in the thyroid gland. This is the most critical portion of the vessel to be injured during performing the procedure with the blind technique

SCM

Lateral

or even with fluoroscopic guidance whether the approach is medial or lateral to the carotid artery. As the artery has a variable unpredicted anatomy³ and has a very tortuous serpentine course,⁴ it may be injured by the needle and this should be prevented using ultrasound guidance.

The best way to avoid injury or injection into this artery is to perform an ultrasonographic prescan of the neck in the short-axis view to identify the artery and to follow its course from its origin at the thyrocervical trunk of the subclavian artery to the thyroid gland. As the artery curves medially behind the carotid artery, one usually can obtain a longitudinal view of the artery at this level extending along a critical area that can be easily injured using the anterior paratracheal approach whether medial or lateral to the carotid (Fig. 1). If the artery has a very tortuous course, more than one cross-section of the artery may be seen (Fig. 2). Using real-time ultrasonography, once the artery is identified, the transducer can be moved slightly cephalad or caudad until the artery is not seen. The needle can be placed either out of plane, obliquely, or preferably in plane (if technically feasible) to target the cervical sympathetic chain anterior to the longus coli muscle.

In conclusion, ultrasound-guided stellate ganglion block may improve the safety of the procedure by direct visualization of the related critical anatomical structures especially the

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Figure 1. (A) Ultrasonographic shortaxis image at C7 using a linear (L12-3) transducer. (B) Corresponding illustration. SCM = sternocleidomastoid muscle; Th = thyroid; symp Ch = sympathetic chain; LC = longus coli muscle; ITA = inferior thyroid artery; CA = carotid artery; IJV = internal jugular vein (compressed); Scal A = scalenus anterior muscle; VV = vertebral vein; VA = vertebral artery; N = nerve root.

CA

Th

Medial



inferior thyroid artery and accordingly the risk of retropharyngeal hematoma may be minimized.

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Figure 2. (A) Ultrasonographic shortaxis image at C7 using a curved (C8-4) transducer. (B) Corresponding illustration. Tr = trachea; Es = esophagus; Th = thyroid; symp Ch = sympathetic chain; LC = longus coli muscle; ITA = inferior thyroid artery; CA = carotid artery; VA = vertebral artery.

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