

Blood pressure monitoring in obese patients

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Video Abstract

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Abstract

What's the best way to measure blood pressure in surgical patients with obesity? While oscillometry using blood-pressure cuffs is the standard, in patients with obesity, these may not fit well. And oscillometry only provides intermittent information. Arterial catheters provide continuous monitoring but are invasive and can cause complications. One alternative is using a non-invasive, continuous finger cuff method. But little is known about how these various methods compare in obese patients. A new prospective study published in the journal *Anesthesiology* has found that in patients undergoing bariatric surgery, there was better agreement between intraarterial measurement and the finger cuff than with standard cuffs for mean arterial pressure and diastolic blood pressure. And with standard cuffs, forearm measurements were superior to those on the upper arm or lower leg. The researchers evaluated the different types of blood-pressure monitoring in 90 patients with a mean body mass index of 48 who underwent bariatric surgery. At six points during the surgery, the team recorded the mean arterial pressure and systolic and diastolic blood pressure with a radial artery catheter – which served as the reference – and with a finger cuff and a classic cuff used on the upper arm, forearm, and lower leg. The finger cuff measurements were fairly close to the intraarterial measurements. For mean arterial pressure and diastolic blood pressure, there was better agreement between the intraarterial reference and the finger cuff than with any of the standard cuff measurements. In an error grid analysis, in which experts set risk zone boundaries to see whether the therapeutic interventions triggered by measurement differences would be of high or low risk, the vast majority of the differences between finger cuff and intraarterial blood pressure measurements were of no or low clinical risk. While the absolute and the trending agreement between finger cuff blood pressure measurements and the intraarterial reference were only moderate, 99 percent of the difference occurred in no-risk or low-risk zones. The oscillometric readings did not agree as well with the intraarterial reference, although the forearm measurements were superior to those from the upper arm or lower leg. This is a new finding, and suggests the forearm may be used in surgical patients with severe obesity when using the oscillometry method, although more research is needed before making this a general recommendation. The success of the finger cuff also suggests this newer technology is a reasonable alternative to oscillometric blood pressure monitoring in surgical patients with obesity.