

*In Reply:*

We appreciate the opportunity to respond to the issue raised by Ramachandran regarding our article<sup>1</sup> on perioperative outcomes in patients with modified metabolic syndrome (mMetS) who undergo noncardiac surgery. We thank the author for his comment that “[our] findings may indeed change the way physicians ... look at obese patients in the future.” In his letter, the author raises the issue about whether the current study proves the increased risk of mMetS or simply proves “that the preoperative presence of two independent risk factors (and one protective factor) is more significant than having one protective factor?”

Our study was designed to better understand the obesity paradox, the apparent protective effect of obesity on surgical mortality,<sup>2</sup> by distinguishing patients who were obese but “metabolically healthy” from patients with MetS.<sup>3</sup> The major new findings of our study were that patients with mMetS undergoing noncardiac surgery were at higher risk for cardiac, pulmonary, renal, and central nervous system complications.<sup>1</sup> Unlike the obesity paradox observed for mortality,<sup>4</sup> our study did not detect any evidence of a “protective effect” of obesity for these complications. Our analysis does not indicate whether the increased risk associated with the mMetS is due simply to the additive effects of diabetes, hypertension, and obesity, which together make up the modified metabolic syndrome (mMetS). In other words, we have not answered the question of whether the whole is greater than the sum of the parts. However, whether our findings represent, in a statistical sense, an additive effect or an interaction effect is less important than the simple recognition that mMetS is associated with a significantly higher risk of major postoperative complications. In particular, patients with mMetS have a 2- to 3-fold increased risk of cardiac complications and a 3- to 7-fold increased risk of renal complications. These findings are especially striking in light of the previous literature demonstrating an apparently protective effect of obesity on mortality during the perioperative period. From the standpoint of regression modeling, the increased risk associated with mMetS may boil down to the question of “simple math or aberrant physiology.” However, in clinical practice, the recognition that patients with mMetS are at a much higher risk of cardiac, pulmonary, and renal complications has both biologic plausibility and important implications for the management of these patients.

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**References**

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**Intraoperative Use of an Automated Chest Compression Device***To the Editor:*

Cave *et al.*<sup>1</sup> recently reviewed the many techniques available to support circulation during cardiopulmonary resuscitation (CPR): active compression-decompression CPR; phased thoracic-abdominal compression-decompression CPR with a handheld device, impedance threshold device, or mechanical piston device; and load-distributing band CPR or vest CPR. Among all the commercially available devices globally, two devices are currently available in France: LUCAS (Lund University Cardiopulmonary Assist System; Jolife AB, Lund, Sweden), which is a gas- or electric-powered piston device that produces a consistent chest compression rate and depth,<sup>2</sup> and the automated LifeBand® (AutoPulse; ZOLL Medical Corporation, Chelmsford, MA), which is a load-distributing, broad compression band that is applied across the entire anterior chest.<sup>3</sup> These devices can be placed rapidly and used easily. In addition, they do not require extra staff to perform resuscitation.<sup>4</sup> However, the only randomized study published concerning the use of a chest-compression device showed decreased survival.<sup>3</sup> Furthermore, a recent meta-analysis concluded that there is insufficient evidence from human randomized controlled trials to conclude that mechanical chest compression during CPR for cardiac arrest is associated with either benefit or harm.<sup>5</sup> Current American Heart Association<sup>6</sup> guidelines for CPR do not recommend its immediate application in the case of cardiac arrest. Equivalent French guidelines recommend use of this device only in the case of refractory cardiac arrest.<sup>7</sup> These devices are only intended to be used by properly trained personnel<sup>1</sup>—not by a witness of a cardiac arrest, either in or out of the hospital setting, contrary to recommendations for the use of semiautomatic defibrillators. We report here the intraoperative use of a device providing consistent external mechanical cardiac compression for a patient with hypovolemic cardiac arrest.

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