Robotic surgery techniques for obese patients

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See related article on page 250.

The current article reviews a single surgeon, single institution robotic assisted radical prostatectomy (RARP) outcomes of 153 cases in which outcomes were stratified based on the World Health Organization cutoff body mass index (BMI) values for normal-weight, overweight and obese.[1] Significant findings included increased length of stay (4.3 vs. 2.9 days) during the initial 50 cases, however this was not observed when analyzing the entire cohort. Unfortunately, there is no clear explanation as to why obese men had a prolonged hospital stay during the initial learning curve. Overall operating room time and blood loss were statistically comparable between the 2 groups, however a trend toward increased values was seen in the obese cohort.

Recently, Wiltz and colleagues reported on their evaluation of BMI impact on perioperative functional and oncological outcomes in a large RARP cohort.[2] In their study, 945 men were included with all patients evaluated with the UCLA-PCI-SF36v2 validated, quality-of-life questionnaire preoperatively and postoperatively to 24 months. A similar BMI stratification was used for outcomes analysis. Their data demonstrated that, preoperatively, obese men had a significantly greater percentage of medical comorbidities ($p < 0.01$) as well as a baseline erectile dysfunction (lower mean baseline SHIM score $p = 0.01$] and UCLA-PCI-SF36v2 sexual function domain scores [$p = 0.01$]). Compared with the current study, the Wilts study demonstrated that operative time was significantly longer in obese patients when compared with normal and overweight men (234 min vs. 217 min vs. 214 min; $p = 0.0003$). This result was particularly pronounced during the initial 100 robotic-case experiences. No difference in mean hospital stay was noted. Although overall complication rates were comparable between groups, a greater incidence of case abortion caused by pneumoperitoneal pressure with excessive airway pressures was noted in obese men. Interestingly, urinary continence and potency outcomes were significantly lower for obese men at both 12 and 24 months (all $p < 0.05$). The authors conclude that surgeons early in their RARP learning curve should proceed cautiously with surgery in these technically more difficult patients or reserve such cases until the learning curve has been surmounted. These details, including inferior urinary and sexual outcomes, should be discussed with obese patients during preoperative counselling.

Minimally invasive radical prostatectomy (MIRP) in obese

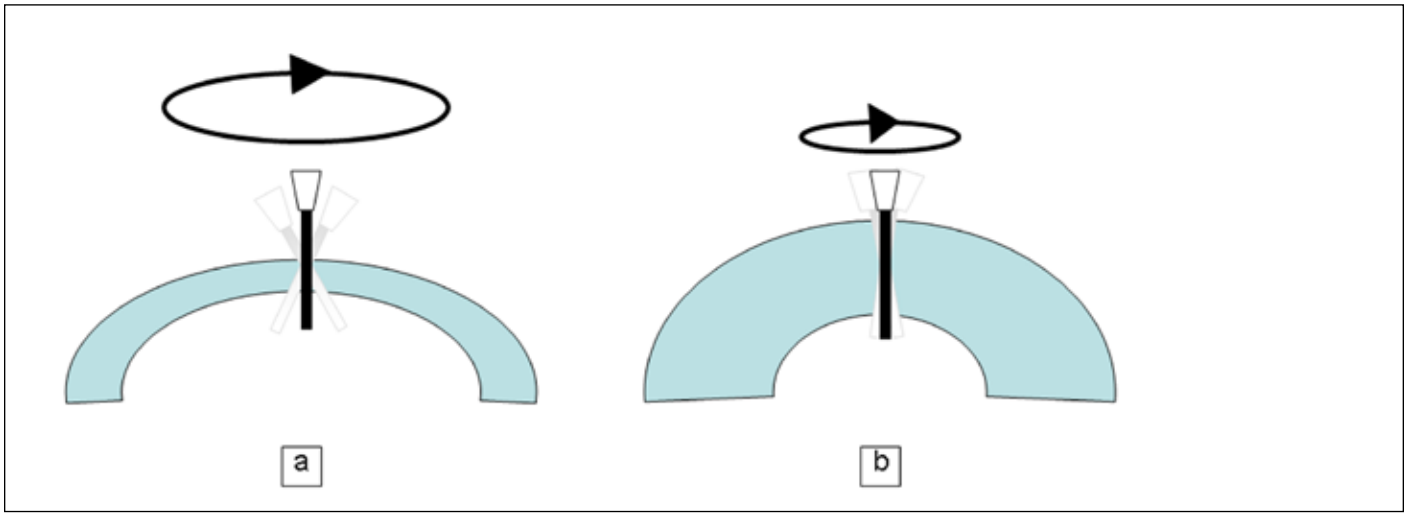

Fig 1. Impact of abdominal wall thickness (skin to peritoneal distance) on trocar range of motion. A) In the lean male, the rigid trocar has a greater range of motion with less tissue resistance compared to B) male with thick "belly fat" which hampers the freedom of instrument maneuverability. A greater amount of force/torque is required to change the trocar angulation. Such evaluation is more accurate with waist circumference and waist-to-hip ratio, as well as measuring on axial imaging.

men can be more challenging for several technical reasons. These include the potential for restricted instrument range of motion and reach due to a thicker abdominal wall (Fig. 1), as well as decreased intra-pelvic working space due to increased omental fat. Troubleshooting due to excess subcutaneous fat and/or visceral fat can help explain the increase in surgical time. Newer generations of the DaVinci console, with longer instrument reach, may help minimize such limitations. Exposure and closure of the specimen extraction site are often challenging in obese men. Moreover, variation in equipment (bariatric instruments and longer trocars) is often required.

Unfortunately, when using BMI to group patients into obesity categories (which is often the case in published MIRP outcomes series), one must be aware of the limitations of this measure.[3] In essence, BMI assesses the entire body mass without differentiating between its components, namely muscle, visceral fat, subcutaneous fat, bone and fluid. It does not help specify those men with thick abdominal walls or those with excess omental/visceral fat. Waist-to-hip ratio (WHR) and waist circumference (WC) are other simple measurements to determine obesity. Waist circumference, 1 of the 5 specific criteria of the metabolic syndrome, has an important advantage over BMI; WC can be appreciated after a patient commits to resistance exercise or weight training. An increase in muscle mass from exercise can actually cause an increase in BMI (and actually facilitate MIRP). However, this does not occur when using WHR or WC. These measures, more so in WHR, better reflect an increase in visceral fat and a relative lack of gluteal muscle.[4] Because WHR and WC are more sensitive markers for central obesity, they may better indicate risk associated with obesity with robotic surgical outcomes. Future studies should be encouraged to confirm the consistency of these results in RARP patients.

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