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COMPARISON OF OUTCOMES AFTER ROBOT-ASSISTED LAPAROSCOPIC SACROCOLPOPEXY IN WOMEN WITH A BMI BELOW AND ABOVE 30

Hypothesis / aims of study

Obesity and pelvic-floor disorders are both increasing medical situations. The number of people with a body-mass index (BMI) of ≥30 kg/m^2 is rapidly increasing. In 2008, the prevalence of obesity among US adults was >30%, while the age-adjusted combined prevalence among women who were overweight (BMI 25–30) and obese (BMI ≥30) was 64.1%. As the prevalence of obesity and discomfort from POP is increasing in the Western world, it is important for surgeons to know how to manage such patients. In obese women, surgery may be associated with an increased risk of both perioperative and postoperative complications [1]. Open abdominal sacrocolpopexy has been the established gold-standard procedure to correct prolapse of the anterior and/or apical vaginal-wall compartments. However, a minimally invasive laparoscopic approach has been developed over recent years, and has been shown to be comparable to surgery in terms of functional outcome whilst also demonstrating all the advantages of laparoscopy. Since 2004, a robot-assisted laparoscopic approach for sacrocolpopexy (RALSCP) has been suggested to be a viable alternative to a purely laparoscopic technique [2]. To date, however, there are no specific data available concerning the results of RALSCP in obese women. The aim of our study, therefore, was to compare the functional outcomes associated with RALSCP in women with a BMI either below or above 30.

Study design, materials and methods

In this study, we retrospectively reviewed all the prospective data from female patients who had undergone RALSCP between January 2008 and January 2013 and who had attended two tertiary care centers. The following data were extracted from their charts: age at the time of surgery, BMI, menopause status, initial stage of genital prolapse (according to the Baden and Walker classification), past medical history, obstetric and surgical histories, past prolapse treatment(s), date of the sacrocolpopexy procedure, operative and perioperative data, complications, anatomical results, and functional results. Operative and perioperative data included the concomitant surgical procedure (subtotal hysterectomy or mid-urethral sling); conversion to a laparotomy or a vaginal procedure; length of the operation; type of analgesia (according to the WHO classification); occurrence of complications; analgesic requirements; and length of hospital stay. All procedures were achieved using a three-arm da Vinci® surgical system using a trans-peritoneal four-port technique. Surgical time was classified as either "strict operating time" (time for port insertion plus the procedure, but excluding preparation and docking of the robot) or as "overall operating time" (total time in operating theatre). Follow-up visits were at 6 and 12 months postoperatively, and then every year. At these visits, POP was assessed using the ICS-POP quantification. Surgery was considered successful if the patient was symptomatically satisfied and if the POP score was below stage 2 for all compartments. Statistical analyses of the data were performed using R statistical software (Bell Laboratories, Lucent Technologies, Paris, France). Descriptive statistics are shown as medians and IQRs (interquartile range). The Mann–Whitney U-test was used to compare continuous variables, and Fisher's exact test compared categorical variables. A *p*-value of <0.05 was considered statistically significant.

Results

In all, 95 women underwent RALSCP during the study period: 17 women were in the obese group and 78 in the non-obese group. The median BMI in the obese group was 32 (IQR 30.4–34.1) versus 23.6 (IQR 22.2–25.4) in the non-obese group (p <0.0001). All other characteristics did not significantly vary different between the two groups. The operating time was the same in both groups: 220 vs. 200 min in the obese and non-obese groups, respectively (*p*=0.232). No significant difference was observed between the groups concerning a concomitant procedure, such as subtotal hysterectomy or a mid-urethral sling. Two meshes (anterior and posterior) were placed in 17 (100%) of the obese women and in 76 (97.4%) of the non-obese women (*p*=0.79). An isolated anterior mesh was placed in two (2.56%) women from the non-obese group. Perioperative complication rates were similar for the two groups. Bladder injury occurred in three women (3.8%) who were all in the non-obese group (*p*=0.95). Conversion to abdominal laparotomy was required for one patient (5.9%) in the obese group because of pneumoperitoneum intolerance. The median follow-up period was 12 months for both groups: IQR 6–19.75 for non-obese and IQR 7–15 in the obese group (*p* =0.86). The overall anatomic repair rate was 94.1% and 97.4% for obese and non-obese groups, respectively (*p*=0.95). During the follow-up, a gynecological examination revealed that prolapse of the posterior compartment had recurred in one patient from the obese group after 12 months, and one prolapse had recurred in the anterior compartment in the non-obese group. Both these women underwent a subsequent procedure via the vaginal route. No significant difference was observed in complication rates between the two groups. The following adverse outcomes were reported during the follow-up in obese and non-obese groups, respectively: urinary infections (0/17 vs. 8/78, *p*=0.37), chronic pelvic pain (0/17 vs. 2/78, *p*=0.79), straining to defecate (0/17 vs. 1/78, *p*=0.39), constipation (0/17 vs. 2/78, *p*=0.79), and *de novo* urinary incontinence (3/17 vs. 10/78, *p*=0.89). We observed erosion of two meshes in the non-obese group, which occurred at 9 and 20 months after surgery for the mid-urethral sling and the anterior vaginal mesh, respectively. The overall reoperation rate (including surgery for *de novo* urinary-stress incontinence) was 5.9% for the obese group versus 11.5% for the non-obese group (*p*=0.8).

Interpretation of results

The ultimate aim of our study was to determine the impact of BMI on the outcome of RALSCP. We have reported that the overall anatomic repair rate was 94.1% and 97.4% for obese and non-obese groups, respectively (*p*=0.95). Moreover, no significant difference was observed in complication rates between the groups. Even if the current opinion is that obese patients are at higher risk of surgical morbidity we didn't report high rate of complications in this population. A few previous studies have found that

abdominal surgery for a gynecologic benign condition (other than POP) is associated with a greater incidence of wound infection in obese women compared to non-obese women [1].We have hypothesized that robotic-assisted laparoscopy is of potential benefit for obese women because of the loss of ergonomy using the laparoscopic approach, due to the thickness of the abdominal wall. In the literature, only one retrospective study has specifically evaluated the impact of BMI in robot-assisted laparoscopy. Perioperative outcomes of 442 patients, who underwent robotic-assisted laparoscopic hysterectomy for a benign or malignant condition, were analyzed according to BMI. Overall, no significant difference was found regarding operative time, estimated blood loss, length of hospital stay, and complication rates [3]. To conclude, RALSCP can be an alternative to the laparoscopic approach for obese women for a non-experienced laparoscopic surgeon, even if the operating time for RALSCP is longer than for laparoscopy.

Concluding message

As the prevalence of obesity, aging, and discomfort from POP is increasing in high-income countries, it is important that surgeons know how to manage such patients. Indeed, the number of surgical interventions for POP will increase substantially over the next 40 years [8]. The findings from our study suggest that RALSCP is a viable option for obese women operated on by non-experienced laparoscopist surgeons. The complication rates and outcomes appear to be similar to those reported for non-obese women.

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Disclosures

Funding: none **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** The Ethical Review Committee (CEROG) examined the present study and found that it complied with the generally accepted scientific principles and ethical standards of medical research, and was in agreement with the laws and regulations of the country in which the research experiment was carried out (submission number CEROG-GYN-2011-08-01; CNGOF, Paris). **Helsinki:** Yes **Informed Consent:** Yes