

COMPARISON OF FUNCTIONAL OUTCOMES WITH PURELY LAPAROSCOPIC SACROCOLPOPEXY AND ROBOT-ASSISTED SACROCOLPOPEXY IN OBESE WOMEN

Hypothesis / aims of study

Obesity, which is defined by a body-mass index (BMI) ≥ 30 kg/m², is endemic in industrialized countries. POP surgery is required for some obese women, and sacrocolpopexy (LS) is considered to be one of the gold standards for the surgical treatment of POP. Since 2004, a robot-assisted laparoscopic approach to sacrocolpopexy (RALSCP) has been proposed as a viable alternative to the purely laparoscopic technique. RALSCP appears to be a practical option for obese women, having similar rates of complication and equivalent outcomes to those reported for non-obese women [1]. One recent study compared the LS and RALSCP approaches in a normal-weight population [2]. However, there is currently no specific data comparing LS and RALSCP in obese women. The aim of our study was thus to compare the operative and functional outcomes of LS and RALSCP in women with a BMI ≥ 30 kg/m².

Study design, materials and methods

In this study, we retrospectively reviewed all of the prospective data collected from obese female patients who had undergone RALSCP or LS between January 2008 and January 2013, and who had attended any one of five tertiary care centres. The following parameters 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. Objective assessment of POP was carried out using a split speculum during a Valsalva manoeuvre in the gynaecological position, following the POP ICS stage of POP. Each surgeon performed a prolapse-reduction manoeuvre using sponge-holding forceps in order to reveal the possible presence of masked urinary-stress incontinence. Operative and perioperative data included: concomitant surgical procedure (subtotal hysterectomy or mid-urethral sling); conversion to a laparotomy or a vaginal procedure; length of the operation; type of anaesthesia (according to the WHO classification); occurrence of complications; analgesic requirements; and length of hospital stay. A laparoscopic sacrocolpopexy was performed as previously described in the literature. Concerning the RALSCP, all procedures were carried out with a three-arm da Vinci® surgical system, using the trans-peritoneal four-port technique. All the surgeons had already completed their training and carried out sacrocolpopexy by LS or RALSCP with the same operative skill. 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

Thirty-nine obese patients underwent a laparoscopic sacrocolpopexy (group 1), and 17 patients underwent a robot-assisted laparoscopic sacrocolpopexy (group 2). The median (IQR) BMI was 30.5 kg/m² (30-32) in group 1 vs. 31.6 kg/m² (30-34) in group 2 (*p*=0.4). The median age was 54 years (48-58) in group 1 vs. 63 (56-69) in group 2 (*p*=0.002). There was no statistical difference between the two groups for any of the other patient characteristics. No significant difference was observed between the groups, with respect to the need for a concomitant procedure, such as a subtotal hysterectomy or a mid-urethral sling. The perioperative complication rate was similar in both groups. In particular, for the LS group and RALSCP groups respectively: bladder injury 2.5% (1/39) vs. 0% (0/17), *p*=0.6; and laparoconversion for perioperative complications 5.1% (2/39) vs. 5.9% (1/17), *p*=0.6. Conversion to abdominal laparotomy was required for one patient (5.9%) in group 2, as a consequence of pneumoperitoneum intolerance. In the LS group, a conversion to abdominal laparotomy was required for 2 patients (5.1%), as a result of vessel injuries. Both of these cases resulted from difficult access to the promontory, due to the presence of excessive fat. In one case, a pre-sacral vessel injury occurred, and in the second case a left iliac vein injury occurred. As a consequence of difficulties experienced in achieving selective haemostasis of the vessel, the surgeon was forced to convert to laparotomy. The operative time was similar in both groups, with a mean value of 220 minutes (170-320) vs. 190 minutes (160-237) for the RALSCP and LS groups, respectively (*p*=0.253). The median follow-up period was 14.9 months (IQR 8-25) in the LS group and 12 months (IQR: 7-15) in the RALSCP group (*p*=0.42). The overall anatomic repair rates were 98% and 94.1% for the LS and RALSCP groups, respectively (*p*=0.7). During the follow-up, a gynaecological examination revealed that prolapse of the posterior compartment had recurred in one patient in the RALSCP group after 12 months, and prolapse of the anterior compartment had recurred in one patient in the LS group. Both of these women underwent a subsequent procedure via the vaginal route. In the LS group, 3 (7.6%) post-operative complications occurred: an infected injury (*n*=1), a Douglas pouch haematoma (*n*=1) and a pelvic abscess (*n*=1). In the RALSCP group, there were no post-operative complications (*p*=0.6). The overall reoperation rate was similar in both groups: 18% (7/39) vs. 5.9% (1/17), *p*=0.4.

Interpretation of results

The aim of this study was to establish a comparison between the LS and RALSCP procedures in obese women. It was observed that the overall anatomical success rate was 98% for the LS group, and 94.1% for the RALSCP group (*p*=0.7). Furthermore, no significant difference in complication rate was observed between the two groups, for which similar operative times were required.

In the current study, independently of the surgical approach, we did not encounter a high rate of (peri- or post-operative) complications. Even if the current opinion is that obese patients are at a higher risk of morbidity, in the present study, the overall reoperation and vaginal erosion rates were similar in the normal-weight population. There are only few studies (with a small sample size) that have focused on the impact of BMI on the functional outcome of genital prolapse surgery. The major limitation of all of these studies is their short follow-up period, ranging from 6 months to 2 years. Two years after abdominal sacrocolpopexy, Bradley et al. [3] found similar outcomes in obese and healthy-weight groups. Symptom resolution, measured according to the UDI, POPDI, and CRADI score changes, as well as satisfaction with surgery, did not differ between the groups. The POP-Q examination was the same in both groups, apart from the fact that a smaller maximum posterior vaginal descent (point Bp, cm) (-3.0 (-3.0 to -2.0)) was observed in the obese group than in the normal-weight groups (-2.0 (-3.0 to -1.0)) ($p=0.003$). Mcdermott et al. [4] compared abdominal sacrocolpopexy and LS in obese women with a follow-up of 6 to 12 months. They found a similar overall satisfaction rate (86/100 in the ASC vs. 81/100 in the LS, $p=0.8$) and similar successful anatomical results (88/100 in the ASC vs. 88/100 in the LS, $p=1$). Following a laparoscopic sacrocolpopexy, Thubert et al. [5] found a similar rate of short-term satisfaction (6 months) in the obese and non-obese populations. The patients' global rate of satisfaction with LS was 74.5% in the obese group and 67.9% in the non-obese group ($p=0.09$). The short-term anatomical results assessed by POP-Q-ICS for postoperative functional disorders described by the obese and non-obese groups (*de novo* constipation, *de novo* anorectal dysfunction, voiding dysfunction, and *de novo* dyspareunia) were similar. Lo et al. [6] compared the outcomes of vaginal prolapse surgery as a function of BMI, revealing an objective cure rate of 90.6% in obese patients, with a 35 ± 18.9 month follow-up. The only difference with respect to the normal-weight population was related to the POPDI-6 ($p<0.037$) and the PISQ-12 ($p<0.005$), with less improvement in the obese than in the non-obese group

Concluding message

RALSCP can be a viable alternative to laparoscopy for the treatment of prolapse in obese women. It is shown that an inexperienced laparoscopic surgeon can achieve the same anatomical results and the same rate of perioperative complications as an experienced RALSCP surgeon. Nevertheless, when performed by a trained urogynecological staff surgeon, experienced in the use of both RALSCP and LS, LS should be preferred for reasons of cost.

References

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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