



Comparing outcomes of straight stick laparoscopic versus robotic hysterectomy for gender affirmation surgery



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Objective

There have been several studies demonstrating that minimally invasive hysterectomies reduce blood loss, length of stay and complication rates compared to traditional open surgery (1,2) The DaVinci robot is a robotic assisted surgical system and was introduced in 1997 as a method of performing minimally invasive surgery (3). It was first used for hysterectomies in 2000 and since then, has been used alongside the traditional straight-stick laparoscopy (SSL) approach (4). Advantages of the robot include a tremor filter, smaller incisions and lower rates of complications (5). In Chelsea and Westminster Hospital (CWH), SSL is being phased out for this new approach.

The Da Vinci robot is frequently used for elective hysterectomies, including those for gender affirmation surgery. To our knowledge, there have been no studies investigating the advantages of the Da Vinci compared to SSL in gender affirmation surgery.

We aim to compare the intra and postoperative surgical outcomes of both SSL and robotic hysterectomies for the indication of gender affirmation at CWH.

Design

This is a retrospective study comparing intra and postoperative outcomes for SSL and the DaVinci Xi System for gender affirmation hysterectomies in pre-menopausal trans masculine patients during the period of 07/2022-01/2023.

Methods

We obtained the outcomes of gender affirmation hysterectomies during the period of 07/2022-01/2023 from CWH Cerner documentation for the population of pre-menopausal trans masculine patients. 26 trans masculine patients were included in the study, with 5 undergoing hysterectomies performed by SSL compared to 21 using the DaVinci Xi. Data collected included demographics, estimated blood loss (EBL), operative time, length of stay and complications within 4 weeks post-operation. The data was recorded and analysed in Excel. All the included surgical cases were performed by the same team with the same lead consultant surgeon.



Results

Type of hysterectomy	Mean EBL (ml ± SD)	Complications within 4 weeks (%)	Mean length of hospital stay (hours ± SD)	Mean operative time (minutes ± SD)
SSL (n=5)	18.0 ml ± 18.8	20% (1/5 cases)	15.1 ± 10.7	101.2 ± 19.9
Robotic (n=21)	24.3 ml ± 23.8	9.5% (2/21 cases)	16.5 ± 10.8	89.0 ± 23.6

Table 1: A summary of the findings including mean (SD) estimated blood loss (EBL), percentage complications within 4 weeks, mean (SD) length of hospital stay and mean (SD) operative time. SD = standard deviation

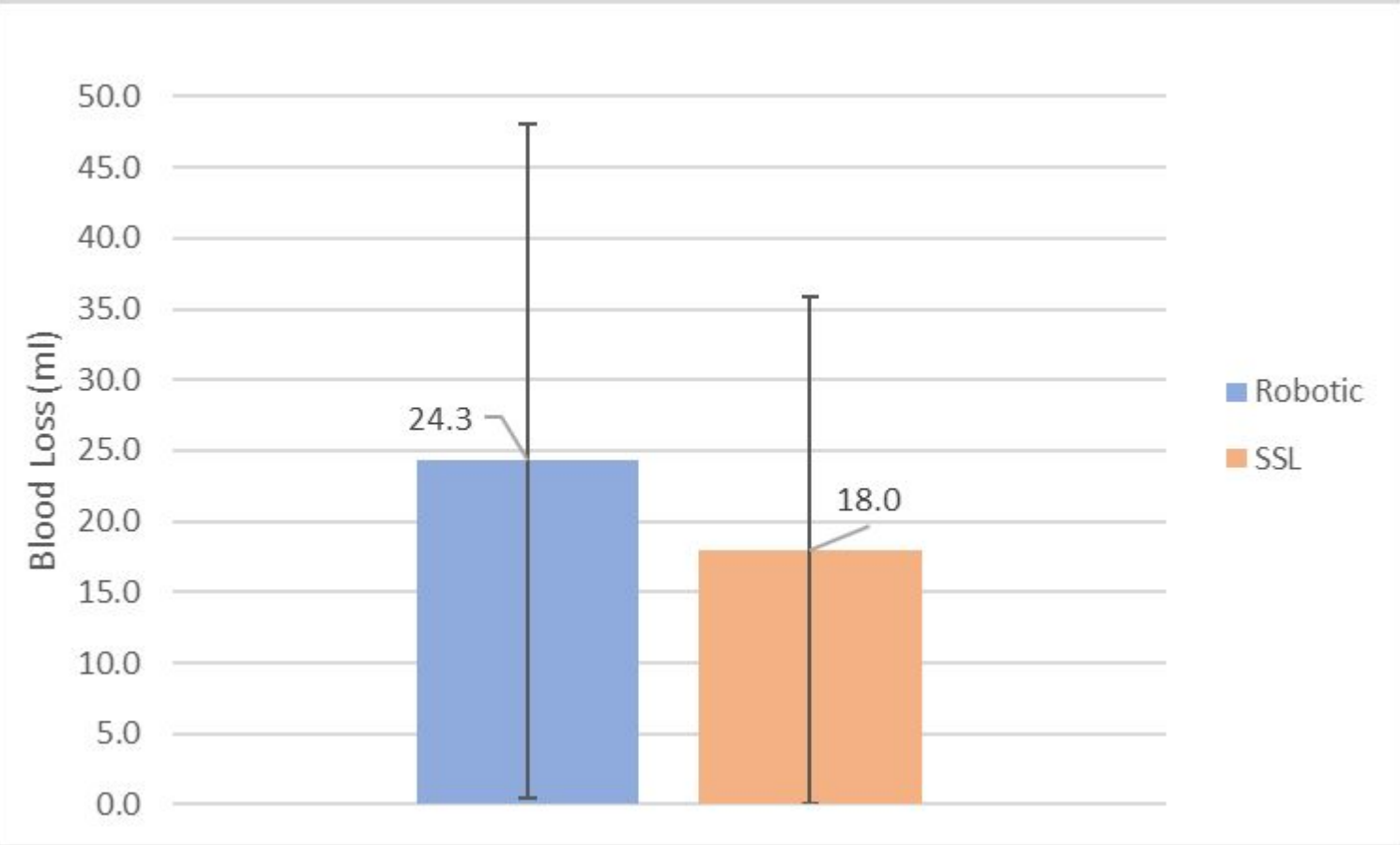


Figure 1. Mean (SD) estimated blood loss (ml) after robotic vs. straight-stick laparoscopic hysterectomies

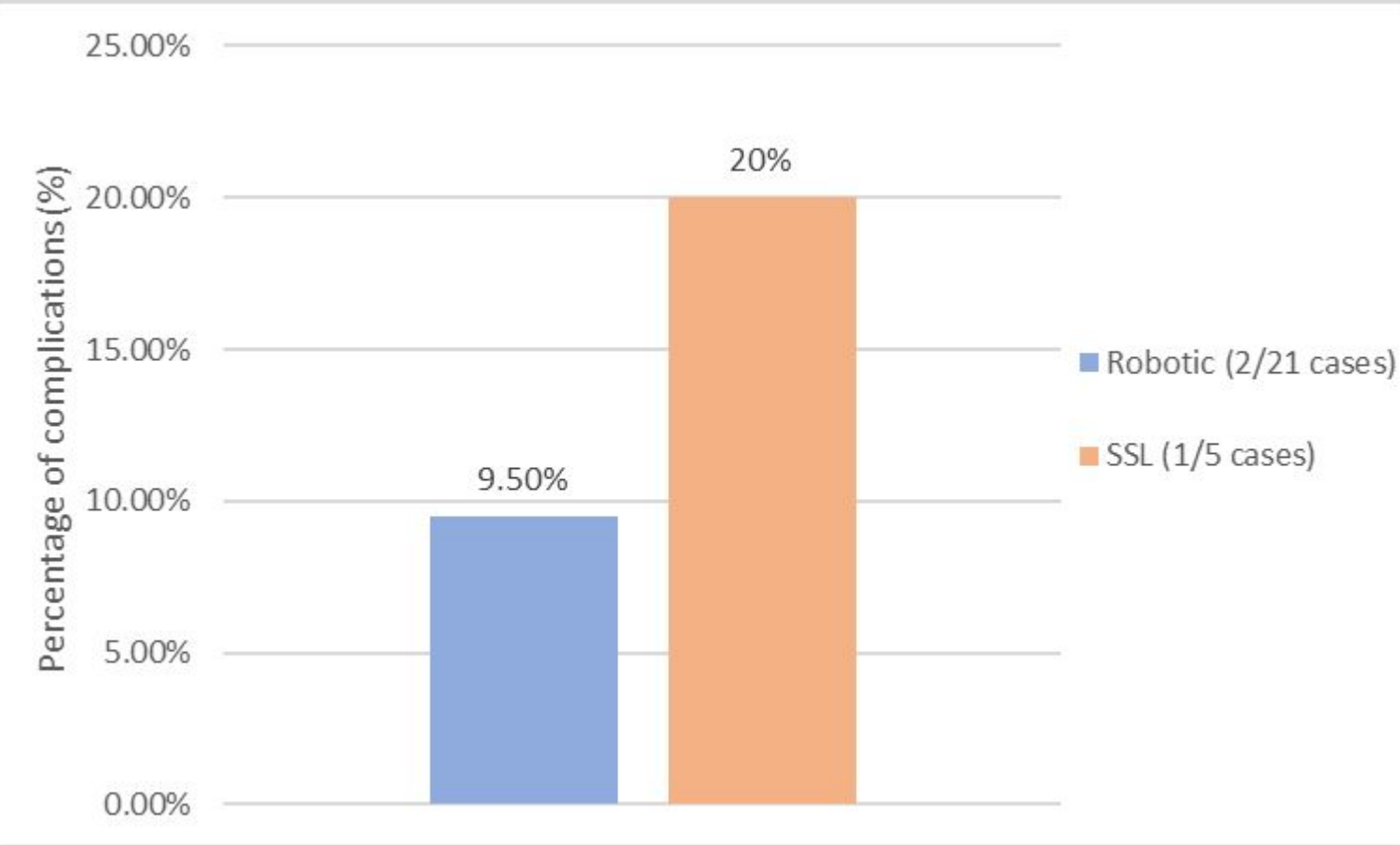


Figure 2. Percentage of complications (%) after robotic vs. straight-stick laparoscopic hysterectomies

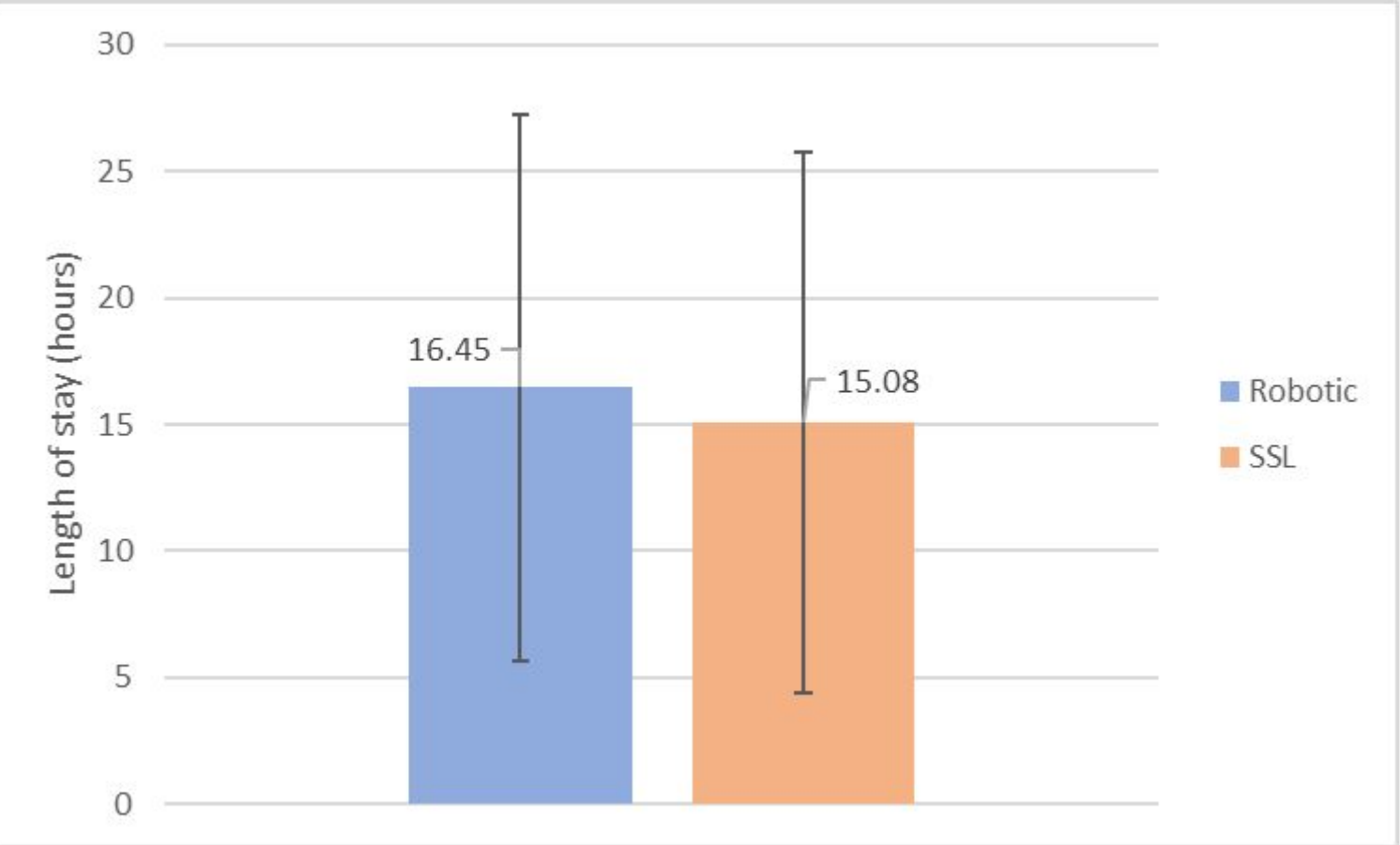


Figure 3. Mean (SD) length of stay (hours) after robotic vs. straight-stick laparoscopic hysterectomies

Participant Demographics	Mean (range)
Age (years)	29.8 (18-40)
BMI (kg.m ⁻²)	27.4 (16-37.5)

Table 2: Demographics of the included patients given as mean (range).

Complications	
Robotic	SSL
Small bowel perforation on entry by SpR (previous surgeries)	Umbilical infection
Port site haematoma	

Table 3: Complications occurring with 4 weeks of the operations.

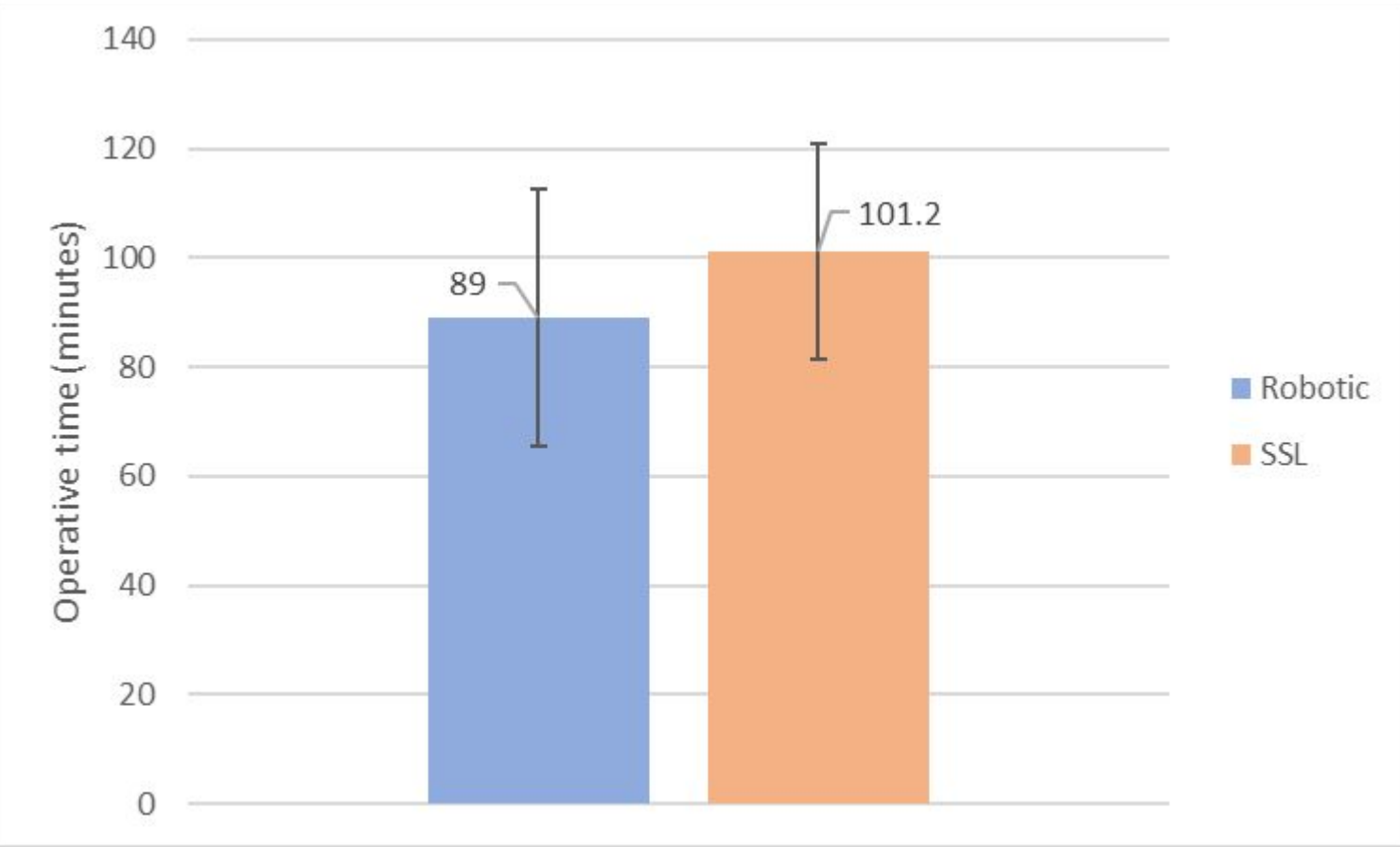


Figure 4. Mean (SD) operative time (minutes) during robotic vs. straight-stick laparoscopic hysterectomies

Discussion

Mean EBL was lower in the straight stick laparoscopy cohort though not clinically significant – both groups less than 25ml. Higher percentage of complications with SSL hysterectomies, however data are skewed by smaller sample size. Complications in both groups are related to entry rather than the procedure undertaken itself. Longer mean length of stay in hospital after SSL hysterectomies compared to robotic. All patients for both groups home within 24 hours however. Mean operative time was lower in the robotic hysterectomy group. There was no significant clinical difference between robotic and straight-stick laparoscopic hysterectomies which is in agreement with previous literature on benign gynaecological disease(6). This is likely due to the learning curve of robotic surgery. We expect improvement in outcomes with robotic surgery in the future Future studies should employ larger sample sizes in order to improve the accuracy of the results

Conclusion

After conducting this study, we can conclude that both methods of minimally invasive surgery are safe, time effective and reliable for performing hysterectomies for gender affirmation. Results show reduced mean estimated blood loss and length of stay with SSL. Comparatively they show reduced complication rate within 4 weeks and reduced operative length with robotic surgery though this may not be clinically significant. The audit was limited by the SSL sample size as after introduction of the robot, most hysterectomies have been performed by this approach. This has lead to the data being skewed. Many of the SSL and robotic hysterectomies are comparable in their outcomes and any difference could be attributed to the learning curve of implementing robotic surgery. Further work includes conducting a larger trial to determine the benefit of using the DaVinci Xi System as well as long term follow up on the patients included in this study. We hypothesise that with mastery of robotic surgery, all outcomes will improve. A cost benefit analysis should also be added to the study. Our work solidifies the safety of minimally invasive surgery and has the potential to help guide funding and treatment choices for gender affirmation hysterectomies.

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