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# ORIGINAL ARTICLE

# TOTAL LAPAROSCOPIC HYSTERECTOMY VERSUS TOTAL ABDOMINAL HYSTERECTOMY: A RETROSPECTIVE STUDY

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**ABSTRACT: BACKGROUND:** Hysterectomy is a common gynaecological surgery which can be done by abdominal, vaginal or laparoscopic routes or with robotic assistance. Although there were concerns regarding the safety of laparoscopic surgery, a newer technique when compared with abdominal hysterectomy, it is now being recognized as a safe procedure in the hands of an experienced surgeon. **AIMS:** This study was done to compare the intra-operative and post-operative parameters of abdominal and laparoscopic hysterectomy. **SETTINGS AND DESIGN:** This study was done at JSS Hospital, Mysore between June 2013 and September 2014. It is a retrospective study. **MATERIALS AND METHODS:** Patients admitted in the Department of Obstetrics and Gynaecology at JSS Hospital, JSS University, Mysore, with an indication for total abdominal hysterectomy(TAH) or total laparoscopic hysterectomy(TLH) for benign pathology from June 2013 to September 2014 were included in the study. Exclusion criteria were suspicion of malignancy, vaginal prolapse higher than first degree and those undergoing laparoscopic assisted vaginal hysterectomy. Baseline characteristics, intraoperative and postoperative parameters were compared between the two groups. **STATISTICAL ANALYSIS:** The data were analyzed using independent T test, Chi square test and Mann Whitney test. A p value of <0.05 was accepted as significant. **RESULTS:** The mean time taken to perform TLH was significantly longer, i.e. 113.46 minutes compared with TAH, i.e. 70.44 minutes, with the p value being <0.0001. But the duration of stay in the hospital was shorter for the women undergoing TLH, mean duration being 3.74 days as opposed to 7.65 days in women undergoing TAH. This difference was also statistically significant with p value being <0.0001. Also, women undergoing TAH required more analgesic doses (mean 3.29) than those undergoing TLH (mean 1.36) and this difference was also statistically significant. **CONCLUSION:** Although TLH took a longer time to perform, it had various advantages over TAH like shorter duration of stay in the hospital and less analgesia requirement. Also it was not associated with a significant rise in the rate of complications.
**KEYWORDS:** Total laparoscopic hysterectomy, Total abdominal hysterectomy, Analgesia.

**INTRODUCTION:** Hysterectomy is one of the frequently performed gynaecologic surgeries. Abdominal hysterectomy is the traditional method of hysterectomy. Due to technical improvements and growing experience, hysterectomies are performed by laparoscopic route more and more frequently.[1] Factors that may influence the route of hysterectomy for benign causes include the size and shape of the vagina and uterus; accessibility to the uterus; extent of extra-uterine disease; the need for concurrent procedures; surgeon training and experience; available hospital technology, devices and support; emergency or scheduled cases and preference of the informed patient.[2]

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Although it has been shown that laparoscopic hysterectomy takes longer to perform than abdominal hysterectomy, it is associated with less post-operative pain, shorter hospital stay and better quality of life than abdominal hysterectomy.[3] There are very few contraindications to laparoscopic surgery, which usually arise from inability to tolerate pneumoperitoneum and/or Trendelenberg positioning, such as in patients with severe cardiopulmonary disease.

When choosing the route and method of hysterectomy, the surgeon should take into consideration how the procedure may be performed most safely and cost-effectively to fulfill the medical needs of the patient.

The purpose of this study was to compare the two routes of hysterectomy – total laparoscopic hysterectomy and abdominal hysterectomy – with respect to the intra-operative and post-operative parameters.

**MATERIALS AND METHODS:** Patients admitted in the Department of Obstetrics and Gynaecology at JSS Hospital, JSS University, Mysore, with an indication for total abdominal hysterectomy or total laparoscopic hysterectomy for benign pathology from June 2013 to September 2014 were included in the study. Thirty nine patients who underwent total laparoscopic hysterectomy (TLH) were included in the TLH group and 34 patients who underwent total abdominal hysterectomy (TAH) were included in the TAH group. The choice of surgery was made by the patients after discussion with their consultants.

Exclusion criteria were suspicion of malignancy, vaginal prolapse higher than first degree and those undergoing laparoscopic assisted vaginal hysterectomy. All the patients were evaluated for fitness for surgery. For each patient we recorded the baseline characteristics, including age; parity; previous caesarean section; other previous pelvic surgery; body mass index (BMI); uterine size and the indication for hysterectomy. Intra-operative parameters including time of surgery, complications – injury to bowel, bladder, ureter and postoperative parameters including hospital stay, infections, vault haematoma, DVT/ pulmonary embolism, vesicovaginal fistula and haemorrhage, if any, were recorded. Analgesic doses on the day of surgery were also recorded.

Prophylactic antibiotic was given to all patients at the beginning of the surgery and repeated 12 hours later.

The data were analyzed using independent T test, Chi square test and Mann Whitney test. A p value of $<0.05$ was accepted as significant.

**Ethics:** No experiments were done on human subjects.

**RESULTS:** The mean age of women undergoing TLH was 45.69 years and for those in TAH group it was 40.50 years and the difference was statistically significant. Women undergoing TLH had a higher BMI, i.e., 27.01kg/$m^2$ compared with women undergoing TAH, i.e., 23.66kg/$m^2$ and this difference was statistically significant. However, neither age nor BMI had any impact on the parameters compared in this study. (Table 1)

The difference in the size of the uterus between the two groups was not statistically significant. In the TLH group, the mean size of the uterus was 11.13 weeks whereas in TAH group it was 10.59 weeks. (Table 1)

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There was no statistically significant difference in parity between the groups. There were equal numbers of women with previous caesarean in both the groups. One patient in TAH group had history of previous pelvic surgery. None of the women in the TLH group had undergone any other previous pelvic surgery other than caesarean section. (Table 2)

The most common indication for hysterectomy was fibroid uterus in both the groups, among which 22 (56.4%) underwent TLH and 26(76.5%) underwent TAH. The next common indication was adenomyosis, with 6(15.4%) women undergoing TLH and 2(5.9%) women undergoing TAH for the same. Among women undergoing hysterectomy for dysfunctional uterine bleeding, 6(15.4%) underwent TLH and 1(2.9%) underwent TAH. Other indications were adnexal disease for which 2 women underwent TLH and 4 women underwent TAH and endometrial hyperplasia for which 1woman underwent TLH. (Table 2) There were no statistically significant differences between the groups when the indications for surgery were compared.

The mean time taken to perform TLH was significantly longer, i.e. 113.46 minutes compared with TAH, i.e. 70.44 minutes, with the p value being <0.0001. But the duration of stay in the hospital was shorter for the women undergoing TLH, mean duration being 3.74 days as opposed to 7.65 days in women undergoing TAH. This difference was also statistically significant with p value being <0.0001. Also, women undergoing TAH required more analgesic doses (mean 3.29) than those undergoing TLH (mean 1.36) and this difference were also statistically significant. (Table 3)

When we studied the rate of complications in both the groups, we found no statistically significant differences. One woman undergoing TAH had injury to rectosigmoid while releasing adhesions due to endometriosis which was recognized intra-operatively and repaired. Another two women undergoing TAH had abdominal wound infection in post-operative period followed by gaping which was managed by secondary suturing. One woman in TLH group came to us with vesicovaginal fistula on post-operative day 14 and it was repaired by laparoscopy. (Table 4)

**DISCUSSION:** The introduction of laparoscopic approach in hysterectomy has prompted a much greater interest in proper scientific evaluation of all forms of hysterectomy.

The method of hysterectomy in any given case will inevitably differ among gynaecologists. Until the past few years, the vast majority of hysterectomies for benign diseases were still performed abdominally. Although many gynaecologists in training are now exposed to laparoscopic hysterectomy, very few newly trained gynaecologists will have sufficient expertise and confidence to tackle total laparoscopic hysterectomy, which requires the highest level skills.[4]

Laparoscopic hysterectomy was initially criticized due to its technical difficulty, higher operative time and apparent increase in major complications, as regards the urinary tract. However, its benefits include less post-operative pain, a reduced hospital stay, an earlier return to professional activity, a short-term increase in quality of life and a better aesthetic outcome, when compared to abdominal hysterectomy.[5,6,7,8,9]

In our study, we found that the women undergoing TLH had a higher BMI than those undergoing abdominal hysterectomy. Obesity may make a laparoscopic approach to hysterectomy more challenging. However, when compared to obese women having abdominal hysterectomy,

those undergoing minimally invasive routes of hysterectomy benefit from lower estimated blood loss and shorter hospital stay.[10]

The time taken for surgery was significantly more in the TLH group compared with TAH group in our study. In the study done by Jan-Henrik Olsson et al, laparoscopic hysterectomy took a longer time (148 minutes compared with 85 minutes median value, p<0.001) compared with abdominal hysterectomy.[11,12,13]

Patients undergoing TLH required significantly less number of analgesic doses than those undergoing TAH in our study. The evaluate study and various other studies also came to the conclusion that laparoscopic hysterectomy was associated with less pain than abdominal hysterectomy.[3,11]

Patients undergoing TLH got discharged from the hospital much earlier than those posted for abdominal hysterectomy, indicating speedier post-operative recovery in TLH group. Other studies also found hospital stay to be shorter with laparoscopic hysterectomy.[3,11,13]

In the study done by Niel Johnson et al, there were more urinary tract injuries with laparoscopic than with vaginal hysterectomy, (Odds ratio 261 (95% confidence interval 6.4 to 12.6)) but no other intra-operative visceral injuries showed a significant difference between the surgical approaches.[4] The abdominal trial in evaluate study provides strong evidence of a substantial and clinically relevant increase in risk of a major complication associated with laparoscopic hysterectomy compared with abdominal hysterectomy. If the benefits of the laparoscopic approach are to be realized on a large scale, it is essential that these risks are widely recognized and additional techniques and technology to reduce these risks are developed and evaluated.[3] The prospective study done by Jan Henrik Olsson[11] did not find any difference in the complication rate between abdominal and laparoscopic hysterectomies. Our study also showed no statistically significant difference in the rate of complications between abdominal and laparoscopic hysterectomy.

Issues such as pain score, blood loss, patient satisfaction and return to work were not considered due to retrospective nature of the study. Other limitations of this study are lack of randomization and decreased sample size to study the rate of complications in the two groups. The financial implications of TLH vs TAH, as well as long-term differences in post-operative quality of life, require further study. In conclusion, though operating time in TLH is longer, it is more beneficial than TAH when we consider post-operative pain and hospital stay.

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| | **GROUP** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **TAH** | | | **TLH** | | | |
| | **Mean** | **SD** | **Median** | **Mean** | **SD** | **Median** | **P** |
| Age | 40.50 | 4.91 | 40.00 | 45.69 | 5.92 | 46.00 | <0.0001 |
| BMI | 23.66 | 6.75 | 20.95 | 27.01 | 4.95 | 26.60 | 0.02 |
| Uterine_size | 10.59 | 3.60 | 11.00 | 11.13 | 4.85 | 10.00 | 0.6 |

Table 1

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| | | GROUP | | | | |
|---|---|---|---|---|---|---|
| | | TAH | | TLH | | p |
| | | n | % | n | % | |
| Para | .00 | 2 | 5.9 | 0 | .0 | 0.6 |
| | 1.00 | 6 | 17.6 | 6 | 15.4 | |
| | 2.00 | 20 | 58.8 | 22 | 56.4 | |
| | 3.00 | 4 | 11.8 | 7 | 17.9 | |
| | 4.00 | 2 | 5.9 | 3 | 7.7 | |
| | 7.00 | 0 | .0 | 1 | 2.6 | |
| Previous_LSCS | No | 28 | 82.4 | 33 | 84.6 | 0.8 |
| | Yes | 6 | 17.6 | 6 | 15.4 | |
| Previous_Pelvic_Surgery | No | 33 | 97.1 | 39 | 100.0 | 0.3 |
| | Yes | 1 | 2.9 | 0 | .0 | |
| Indication | Fibroid Uterus | 26 | 76.5 | 22 | 56.4 | 0.2 |
| | Adenomyosis | 2 | 5.9 | 6 | 15.4 | |
| | DUB | 1 | 2.9 | 6 | 15.4 | |
| | Adnexal disease | 4 | 11.8 | 2 | 5.1 | |
| | Endometrial hyperplasia | 0 | .0 | 1 | 2.6 | |
| | Others | 1 | 2.9 | 2 | 5.1 | |

Table 2

| | GROUP | | | | | | |
|---|---|---|---|---|---|---|---|
| | TAH | | | TLH | | | |
| | Mean | SD | Median | Mean | SD | Median | P |
| Operation time | 70.44 | 29.35 | 60.00 | 113.46 | 44.34 | 105.00 | <0.0001 |
| Hospital stay days | 7.65 | 3.95 | 6.50 | 3.74 | 1.33 | 4.00 | <0.0001 |
| Analgesia dosage | 3.29 | .63 | 3.00 | 1.36 | .49 | 1.00 | <0.0001 |

Table 3

| | | GROUP | | | | |
|---|---|---|---|---|---|---|
| | | TAH (34) | | TLH (39) | | p |
| | | n | % | n | % | |
| Intra op complications | Visceral injury | 1 | 2.9 | 0 | .0 | NA |
| Post op complications | Infection | 2 | 5.8 | 0 | .0 | |
| | Vault hematoma | 0 | .0 | 0 | .0 | 0.08 |
| | Vesicovaginal fistula | 0 | .0 | 1 | 2.9 | |

Table 4

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