e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(2); 603-611

Original Research Article

Comparison of Surgical Outcome After Non-Descent Vaginal Hysterectomy and Total Laparoscopic Hysterectomy-An Observational Study

Kranti Chandrajai[1], Akanksha Singh[2], Alem C Phom[3], Vandana Gupta[4]

[1,2,3] Senior resident, Department of Obstetrics and Gynaecology, Rajarshi Dashrath Autonomous state Medical College, Ayodhya, U.P.

[4]Assistant professor, Department of Obstetrics and Gynaecology, Rajarshi Dashrath Autonomous state Medical College, Ayodhya, U.P.

Received: 21-12-2022 / Revised: 17-01-2023 / Accepted: 10-02-2023
Corresponding author: Dr Kranti Chandrajai
Conflict of interest: Nil

Abstract

Background: Hysterectomy is a common gynaecological surgery. This surgery can be performed following several different approaches.

Aim: To compare the intra- and postoperative outcomes including complication rates among the patients undergoing Non-Descent Vaginal Hysterectomy (NDVH) and Total Laparoscopic Hysterectomy (TLH).

Material and Methods: This was a single centre, hospital based prospective study involving a total of 80 patients who underwent hysterectomy at the study institute. The study outcomes- Operating time, change in haemoglobin level, amount of blood loss, post operative pain score, ambulation, complications, and duration of hospital stay were measured and compared in the two groups.

Results: The duration of surgery, mean blood loss, pain score, change in haemoglobin level were significantly lower among the patients who underwent NDVH in comparison to TLH ($p<0.05$). There was no intraoperative complication(s) in any group. However, 3 participants in each of the two groups developed postoperative complication. Most common postoperative complication was fever. The duration of postoperative ambulation was similar in both the groups (2 days). However, the duration of postoperative hospital stay was shorter among patients who underwent NDVH in comparison to TLH ($p<0.05$).

Conclusion: NDVH done through natural orifice is less invasive as compared to the TLH, leaves no scar on abdomen, needs lesser handling of intestine, is quicker, low pain score and lower blood loss during surgery. All this resulting in shorter duration of hospital stays and quicker discharge.

Keywords: NDVH, TLH.

Introduction

Hysterectomy, after the Caesarean section is considered one of the most common operations performed on women[1]. In India, about 4-6% of adult women undergoes hysterectomy every year, most of the cases are being performed for benign causes, including adenomyosis leiomyoma, uterine prolapse and severe

dysmenorrhea[2]. Many routes of performing hysterectomy are available, however, the preferred route should provide facility in the ease of operation with minimum associated complications to provide best surgical outcome and also considering cosmetic in view[3–5]. Non descent vaginal hysterectomy (NDVH) is a simple yet an effective technique for benign conditions and pathologies of the uterus[1]. NDVH is also less difficult and safer in cases of patients with previous abdominal surgeries. NDVH has the advantage of using the natural orifice/entrance, requires no incision over the abdomen, rectus sheath neither opened nor sutured, providing direct access to the cervix, minimizing the risk of infections, wound hematoma, or development of hernia[1]. In comparison Laparoscopic surgery involves multiple incisions over abdomen resulting in wound & consequently scar[6–8]. It has a long and sharp learning curve, requires skilled surgeons and specialized staff. It also requires costly laparoscopic instruments modernized Operation Theatre set-ups. when compared to vaginal hysterectomy, TLH due to costly instruments and heavy maintenance cost poses a greater financial burden to the patient[9]. There are many studies which stated that haemorrhage, hematoma formation, bladder, ureteric and bowel injury, anaesthetic complications due to general anaesthesia are found more in laparoscopic hysterectomy group[6,8]. However, because of its minimal invasiveness and direct visualization of pelvic structures, laparoscopic approach is gaining popularity among surgeons. But many studies on hysterectomy done for benign conditions, concluded that NDVH should be preferred by all surgeons it is almost an extra-peritoneal surgery as the peritoneum is opened to a minimal extent and thus having advantage of minimal bladder and bowel handling as compared to Abdominal hysterectomy[6,8,10]. The morbidity associated with abdominal incision because of discomfort of scar, wound hematoma scar dehiscence, infections, hernia, complications of energy source, endotracheal intubation , general anaesthesia is also circumvented[6,8,10].

Due to reduced requirement of intravenous medications and fluids, early ambulation and quick return of bowel functions and early recovery there is decreased post-operative morbidity in cases of Non descent vaginal hysterectomy[6,8,10]. Hence, it is better tolerated by elderly and obese patients, and with patients who have medical disorders**.** In India, most of the women come from rural areas and background, belonging to the working class and most of are financially challenged. Keeping in mind this demographic profile of Indian population, it is important that the procedure should be with minimal post-operative complications, early ambulation, recovery and discharge from hospital and cost- effective. Therefore, this study was conducted with an aim to study and compare the intraoperative and postoperative outcome among the participants undergoing Non-Descent Vaginal Hysterectomy (NDVH) and Total Laparoscopic Hysterectomy.

Material and Methods

Study design: This was a single centre, prospective, observational study[11].

Study setting: The present study was conducted at the Department of Obstetrics and Gynaecology, LN Medical College, and affiliated JK hospital, Bhopal, Madhya Pradesh.

Study duration: Total duration of the study was 18 months i.e., from Dec 2019 to July 2021.

Study outcomes: Operating time, Pre-operative & post operative haemoglobin level, amount of blood loss, post operative pain (Visual analogue scale), duration of post-operative ambulation, postoperative complications, duration of hospital stay. Intraoperative and Post-operative complications were defined as complications that occurred during and before discharge from hospital. Duration of surgery was defined as from the start of

'incision at cervico-vesical junction to the closure of the vaginal vault' in case of Non descent vaginal hysterectomy and from creation of main port to the closure of all the port sites in total laparoscopic hysterectomy. Estimation of the blood loss is done by the amount of blood collected in the suction bottle. Post operative pain scaled according to visual Analogue Scale on 2nd day of surgery. The post operative ambulation of the patients noted in the ward.

Participant's recruitment: The participants were recruited into the study after verifying that they fulfilled the following criteria:

Inclusion Criteria

1. Patients with age >40 years
2. Patients with uterine size of 12 weeks or lesser
3. All cases of benign pathologies of the uterus mainly abnormal uterine bleeding (AUB), polyp, fibroid, endometriosis, adenomyosis.
4. Cases not responding to medical treatment.
5. Patients having her family completed or having at least 1 living child.

Exclusion Criteria

1. Uterine prolapse.
2. Uterine size more than 12 weeks.
3. Reduced or Restricted mobility of uterus
4. Complex adnexal mass or cyst.
5. Suspicion of any genital malignancy.
6. Patient's refusal to give consent for the study.

Sample Size: The minimum required sample size for the study was calculated using the following formula for a prospective observational study. Using this formula, the minimum sample size was calculated as 80 (40 in each group)[12]. All participants who fulfilled the selection criteria were recruited into the present study until the desired sample size was completed.

Informed Consent: All the questions from participants about the study, procedure (surgery and anaesthesia) and data privacy were answered. The participants were informed and explained that they have the right to withdraw from the study at any point in time. Thereafter, willing participants were asked to sign the consent form.

Data Collection: The data was collected in a proforma approved by the ethical committee before starting data collection. The proforma had 4 parts as follows: Part 1: Obstetric & gynaecologic history and Demographic details; Part 2: Pre-operative examination including laboratory and radiological examination; Part 3: Intra-operative details; and Part 4: Post-operative details including complications.

Statistical Analysis: All the data were collected in a proforma and thereafter the data was entered into Microsoft excel. For the continuous data, mean, median, mode and standard deviation. Quantitative data confirming the normal distribution were described as means ± standard deviation and the data of the non-normal distribution were represented by the median and the interquartile range[13]. For discrete data, the author calculated and reported frequency, proportion, and percentage. Comparison of continuous variables was analysed using a student's t-test. Categorical variables were analysed using chi-square test (χ^2). A P-value < 0.05 was considered statistically significant.

Surgical Technique: Non descent vaginal hysterectomy surgery were performed under spinal anaesthesia while in the Total laparoscopic hysterectomy were performed under general anaesthesia.

1. Non-Descent Vaginal Hysterectomy:
NDVH is performed by the standard technique. To have an idea about size of uterus, mobility of uterus and any adnexal mass per vaginal examination is done under anaesthesia in all cases. With all aseptic precautions parts are painted and draped.

Posterior vaginal wall retracted with Sim's speculum and anterior and posterior lip of cervix is held with vulsellum and long Allie's forceps respectively. Circumferential incision is given at the vesico-cervical junction, and bladder mobilized upward by sharp and blunt dissection. And then mobilized upwards by speculum carefully, till the anterior peritoneum is visible. The anterior pouch of peritoneum which is called vesico-uterine pouch is opened by holding peritoneum between two artery forceps and cutting. Posterior pouch which is called pouch of Douglas is also opened subsequently. Uterosacral and cardinal ligaments followed by uterine arteries followed by cornual ligaments clamped , cut and transfixed and sutured bilaterally. Uterus and cervix is removed and sent for histopathological examination. Pedicles checked for haemostasis, after assurance of haemostasis vault is closed by continuous locking sutures with polyglycolic acid sutures. Infundibulopelvic ligaments are clamped, cut and transfixed depending on whether ovaries to be removed or not.

2. Total Laparoscopic Hysterectomy:

All surgeries are performed under general anaesthesia. patient placed in the semi-lithotomy position, deep Trendelenburg position and with knees flexed over Allen stirrups. Pneumoperitoneum is created by Carbon di oxide using a Veress needle and the pressure is maintained at 15 mm Hg intra-peritoneally throughout the surgery. For instrumentations 4 ports are made over abdomen: a 10 mm port infraumbilically, 5 mm port on right and left lower quadrant, and a 5 or 10 mm suprapubically. The round ligaments fallopian tube and ovarian ligament are desiccated using bipolar cautery and divided using monopolar needle cautery. The infundibulopelvic ligaments are desiccated and transected depending on whether ovaries to be removed or not. The utero-vesical fold of peritoneum at the level of the vaginal fornix is incised and the bladder is dissected off the lower uterine segment giving a clear exposure of the vaginal fornixes. Anterior colpotomy is done by incising then vagina at the level of the fornix, laterally and posteriorly, thus making the uterus free from its vaginal attachments.

Results:

In the present study a total of 40 participants each underwent NDVH and TLH. Table 1 illustrates, the descriptive characteristics of the participant. There was no significant difference among the participants in the two groups with regard to age, parity, menopausal status, and history of LSCS ($p > 0.05$). Lastly, most of the participants in both the groups had abnormal/increased size of the uterus.

Table 1: Descriptive characteristics of participants (n=80)

Variable	NDVH (n=40)	TLH (n=40)	P-value
Age (mean, SD)	44.50 (4.06)	44.58 (4.77)	0.940
Parity (Median)	2	2	-
LSCS (n, %)	6 (15%)	8 (20%)	0.556
Menopause (n, %)	24 (60%)	26 (65%)	0.644
Preoperative Hb	11.6	11.7	0.893
Size of Uterus			
Normal	4 (10%)	5 (12.5%)	0.723
Abnormal	36 (90%)	35 (87.5%)	

With regard to most of the study outcome, non-descent vaginal hysterectomy was better in comparison to Total Laparoscopic Hysterectomy. The mean blood loss and consequently the decline in Hb levels were significantly less in NDVH in comparison to TLH ($p<0.05$). Further, the total duration of surgery was significantly shorter for

NDVH in comparison to TLH (1.42 versus 2.5 hours), consequently, there was less tissue damage among NDVH patients. Thus, the patients in NDVH group had significantly lower pain score (2.4 versus 3.2) than patients with TLH. The mean duration of hospital stay was also significantly lower among patients who underwent NDVH in comparison to TLH.

Table 2: Descriptive characteristics of participants (n=80)

Outcome	NDVH (n=40)	TLH (n=40)	P-value
Mean Duration of Surgery (Hours)	1.42	2.5	<0.001
Delta Hb	0.7	1.2	<0.001
Mean Blood Loss (ml)	53.63	78.8	<0.001
Pain Score	2.43	3.18	<0.001
Hospital Stay (mean, median)	4.8 (*4*)	5.68 (*6*)	0.004
Postoperative ambulation (days)	2	2	-
Postoperative complication	3 (7.5%)	3 (7.5%)	1.00
Type of Postoperative complication			
Fever	1 (2.5%)	2 (5%)	0.556
UTI	1 (2.5%)	0	0.314
Vaginal Discharge	0	1 (2.5%)	0.314
Bladder injury	0	1 (2.5%)	0.314

A total of 3 patients each in the NDVH and TLH groups had postoperative complications. There was no significant difference among the participants in the two groups in terms of type of postoperative complications. Most common postoperative complication was fever.

Discussion:

Hysterectomy is one of the most common major gynaecological surgeries performed in India and worldwide. The newer trend in surgery is towards those approaches which are minimally invasive, less painful, less blood loss and have less complications, and are more cosmetic[6,8,10]. To avoid laparotomy dissection either total laparoscopic hysterectomy (TLH) or non-descent vaginal hysterectomy (NDVH) is the recently new practiced options[6,8,10]. The decision regarding route of surgery depends on the indications for operation, size of uterus, surgeon's preference, training and skill, and patient's choice[6,8,10]. The present study is an observational study conducted in 80 patients to compare the NDVH and TLH surgeries.

In the present study, the mean age of the study population was 44.54 years. Mean age of the 2 groups are compared without any significant difference (p=0.940) The age group of our study population is similar to those in the studies by Murali S et al and Aratipalli J et al[4][14]. Only 11.3% of our study participants had a normal size uterus. All others had an enlarged uterus. The distribution of normal and abnormal sized uterus was comparable in both groups (p=1.000). Aratipalli J et al also studied the 2 groups with comparable distribution of uterus size[14].

In the present study, the mean duration surgery was significantly lower (1.42 versus 2.56 hours) in NDVH & TLH groups, respectively. Several studies including a systematic review also concluded that NDVH is of shorter duration in comparison to TLH. Chattopadhyay S et al., Murali S et al., Nagar O et al., and Leung PL et al. reported that NDVH is of shorter duration in comparison to TLH[15–18]. Jain SB et al concluded that NDVH is a time saving procedure[19]. Cochrane database systemic review in 2015 also conclude that TLH increases OT occupancy

and operating time[20]. In contrast to our findings, Chang et al., reported tit is found that NDVH takes longer time than TLH.

In the present study, the mean amount of blood loss and decline in haemoglobin level after surgery was significantly higher among patients who underwent TLH in compared to those who underwent NDVH group.($p<0.001$). Similar to our study, Murali S et al, and Shafiq M et al., also reported that the blood loss during surgery was significantly more among TLH group in comparison to NDVH[15][21]. However, Jain SB et al., found no difference in blood loss among the 2 groups[19]. In contrast to our findings, Chattopadhyay S et al, and Nagar O et al. reported that the blood loss is lower in the TLH group[17,22].

In the present study, the mean pain score was significantly lower among the patients who underwent NDVH in comparison to those who underwent TLH ($p<0.001$). Jain SB et al., and Aratipalli J et al., also reported that pain score was higher among patients who underwent TLH[14,19]. Also, Murali S et al, it is seen that the requirement of analgesics are similar in both groups[4]. More pain in TLH is observed in our study can be attributed to multiple port incision on abdomen, gaseous distension, bowel handling, more tissue damage secondary to long operating time. In addition, laparoscopic procedure has a long and steep learning curve.

In contrast to our findings, Bhatt S et al, and Chattopadhyay S et al, reported pain score was significantly lower in the TLH group immediately after surgery as well as during the postoperative period[23][17]. The studies by Nagar O et al, Konar H et al and Shafiq M et al., also found a lower pain score in the TLH group[21,22][24]. The mean post-operative ambulation in the present study is 2 days in both the study groups. Chattopadhyay S et al, Nagar O et al and few others in their studies found a statistical difference in the post-op ambulation time in the 2 groups[17,22]. They found the ambulation time significantly lower in the TLH group. In a study which compared NDVH, TLH and TAH, it is seen that the NDVH group had earlier post-op ambulation compared to the other 2 groups.

The mean duration of stay in hospital is 4.83 days in NDVH group and 5.6 days in TLH group ($p=0.004$) Similar results are found in the studies by Shafiq M et al and in the comparative study by BC et al[21]. The findings of our study is contradictory to the findings of the studies by Chattopadhyay S et al, Konar H et al, Nagar O et al and Bhatt S et al, where they found lesser hospital stay for the TLH group[17,22–24]. Jain SB et al and Aratipalli J et al also found no significant difference in the duration of hospital stay between the two groups[14,19].

In the present study 92.5% of the participants had no post-op complications. There is no association with the development of complication and type of surgery. In the study by Aratipalli J et al, most common post-operative complication is fever, followed by vaginal discharge and urinary tract infection (UTI)[14]. Chattopadhyay S et al, Nagar O et al and Bhatt S et al also reported no major complications in the surgeries in their studies[17,22,23]. Murali S et al., and Shafiq M et al reported that a few patients had intraoperative complications in the TLH group requiring conversion to laparotomy, while no intraoperative complication was found in NDVH group[15,21]. In the retrospective analysis by Jain SB et al and Aratipalli J et al, there are intraoperative complications in both groups but is higher in the TLH group[14,19]. In the study by Durga BC et al urinary tract infection (UTI) is common in both groups[25]. But wound infection and postoperative fever is more seen in those cases who underwent TAH.

In a systematic review and meta-analysis of Comparison of vaginal hysterectomy and laparoscopic hysterectomy there is no

differences in, postoperative pain, length of hospital stay and recuperation time and overall complications between NDVH and TLH in the meta-analysis[5,8,26].

Conclusion:

NDVH is conducted through natural orifice/opening, thus avoiding abdominal incision, avoiding incision of peritoneum, thus it is significantly less invasive in comparison to the TLH. NDVH is quicker and is associated with lesser intraoperative complications and blood loss. The post-operative pain is less, and the recovery is faster and hence patients are discharged early. NDVH may be preferred as compared to laparoscopic surgeries.

References:

1. Moen MD, Richter HE. Vaginal hysterectomy: Past, present, and future. Int Urogynecol J Pelvic Floor Dysfunct. Springer-Verlag London Ltd; 2014;25:1161–5.
2. National Family Health Survey (NFHS-5) India 2019-21 [Internet]. NFHS-5 Rep. Mumbai; 2021. Available from: http://rchiips.org/nfhs/NFHS-5Reports/Rajasthan.pdf
3. Schindlbeck C, Klauser K, Dian D, Janni W, Friese K. Comparison of total laparoscopic, vaginal and abdominal hysterectomy. Arch Gynecol Obstet. 2008;277:331–7.
4. Sarada Murali M, Khan A. A Comparative Study of Non-descent Vaginal Hysterectomy and Laparoscopic Hysterectomy. J Obstet Gynaecol India [Internet]. J Obstet Gynaecol India; 2019 [cited 2023 Jan 30];69:369–73. Available from: https://pubmed.ncbi.nlm.nih.gov/31391746/
5. Sandberg EM, Twijnstra ARH, Driessen SRC, Jansen FW. Total Laparoscopic Hysterectomy Versus Vaginal Hysterectomy: A Systematic Review and Meta-Analysis. J Minim Invasive Gynecol. Elsevier B.V.; 2017;24:206-217.e22.
6. Matteson KA, Butts SF. Choosing the Route of Hysterectomy for Benign Disease. Obstet Gynecol. Lippincott Williams and Wilkins; 2017;129:E155–9.
7. Kovac SR, Barhan S, Lister M, Tucker L, Bishop M, Das A. Guidelines for the selection of the route of hysterectomy: Application in a resident clinic population. Am J Obstet Gynecol [Internet]. Mosby Inc.; 2002 [cited 2023 Jan 30];187:1521–7. Available from: https://pubmed.ncbi.nlm.nih.gov/12501056/
8. Aarts JWM, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BWJ, et al. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database Syst Rev. John Wiley and Sons Ltd; 2015;2015.
9. Ames D Orsey JH, Atrice H Oltz PM, Obert G Riffiths RI, Argaret M C G Rath MM, Arl S Teinberg EP. Costs and Charges Associated with Three Alternative Techniques of Hysterectomy. N Engl J Med. New England Journal of Medicine (NEJM/MMS); 1996;335:476–82.
10. Walter AJ. Why do we argue about route of hysterectomy? A call for dialogue. Int Urogynecol J. Springer London; 2017;28:339–40.
11. Belbasis L, Bellou V. Introduction to epidemiological studies. Methods Mol Biol [Internet]. 2018 [cited 2022 Nov 26]. 1–6. Available from: https://pubmed.ncbi.nlm.nih.gov/29876887/
12. Charan J, Biswas T. How to Calculate Sample Size for Different Study Designs in Medical Research? Indian J Psychol Med [Internet]. Indian Psychiatric Society South Zonal Branch; 2013 [cited 2022 Nov 26];35:121. Available from: /pmc/articles/PMC3775042/
13. Najmi A, Sadasivam B, Ray A. How to choose and interpret a statistical test? An update for budding researchers. J

Fam Med Prim Care [Internet]. Medknow; 2021 [cited 2022 Nov 26];10:2763. Available from: https://journals.lww.com/jfmpc/Fulltext/2021/10080/How_to_choose_and_interpret_a_statistical_test__An.8.aspx
14. Aratipalli J, Bandi B. Comparison of outcome between total laparoscopic hysterectomy and vaginal hysterectomy in a non-descent uterus in a tertiary care hospital. Int J Appl Res. 2018;4:214–9.
15. Sarada Murali M, Khan A. A Comparative Study of Non-descent Vaginal Hysterectomy and Laparoscopic Hysterectomy. J Obstet Gynaecol India [Internet]. Springer; 2019 [cited 2023 Jan 30];69:369. Available from: /pmc/articles/PMC6661041/
16. Balakrishnan D, Dibyajyoti G. A Comparison Between Non-Descent Vaginal Hysterectomy and Total Abdominal Hysterectomy. J Clin Diagn Res [Internet]. JCDR Research & Publications Private Limited; 2016 [cited 2023 Jan 30];10:QC11. Available from: /pmc/articles/PMC4740655/
17. Chattopadhyay S, Patra KK, Halder M, Mandal A, Pal P, Bhattacharyya S. A comparative study of total laparoscopic hysterectomy and non-descent vaginal hysterectomy for treatment of benign diseases of uterus. Int J Reprod Contraception, Obstet Gynecol [Internet]. Medip Academy; 2017 [cited 2023 Jan 30];6:1109–12. Available from: https://www.ijrcog.org/index.php/ijrcog/article/view/2411
18. Hwang JL, Seow KM, Tsai YL, Huang LW, Hsieh BC, Lee C. Comparative study of vaginal, laparoscopically assisted vaginal and abdominal hysterectomies for uterine myoma larger than 6 cm in diameter or uterus weighing at least 450 g: A prospective randomized study. Acta Obstet Gynecol Scand. 2002;81:1132–8.
19. Jain SB, Mitra N, Singh N, Jha S. Keyhole to no hole hysterectomy-A retrospective analysis of NDVH and TLH in a teaching hospital. Indian J Obstet Gynecol Res. 2016;5:89–92.
20. Aarts JWM, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BWJ, et al. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database Syst Rev [Internet]. John Wiley and Sons Ltd; 2015 [cited 2023 Jan 30];2015. Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD003677.pub5/full
21. Shafiq M, Jain G. Prospective Randomised Study for Comparison of Total Laparoscopic Hysterectomy and Non Descent Vaginal Hysterectomy for the Treatment of Benign Diseases of Uterus. Sch J App Med Sci. 2018;6:1889–92.
22. Nagar O, Sharma A, Shankar V, Agarwal G. A comparative study of total laparoscopic hysterectomy and non-descent vaginal hysterectomy for treatment of benign diseases of uterus. Int J Clin Obstet Gynaecol [Internet]. 2018;2:63–8. Available from: https://www.gynaecologyjournal.com/articles/107/2-4-10-494.pdf
23. Bhatt S, Shah A, Shah M, Irusappan S, Amarnath G, Chandrasekaran S. Post operative outcomes of Total laparoscopic hysterectomy versus Non descent vaginal hysterectomy in Abnormal uterine bleeding patients: A prospective randomized control study. IJSR - Int J Sci Res [Internet]. IJSR - International Journal of Scientific Research(IJSR), IJSR; 2019 [cited 2023 Jan 30];Volume 8 Issue 11:63–5. Available from: https://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/article/post-operative-outcomes-of-total-laparoscopic-hysterectomy-versus-non-descent-vaginal-hysterectomy-in-abnormal-uterine-bleeding-patients-a-prospective-randomized-control-study/MjMxMzk=/

24. Konar H, Sarkar M, Dessa D. Deciding the Appropriate Route and Method of Hysterectomy for Women with Benign Diseases: A Cross-sectional Study at a Tertiary Care Hospital, India. J Clin Diagnostic Res [Internet]. 2021 [cited 2023 Jan 30];15. Available from: www.jcdr.net
25. BC D, Sharma A, Mahaseth B, Sharma N. A Comparative evaluation of Non-descent vaginal hysterectomy versus total Abdominal hysterectomy: A hospital based case control study. J Nepalgunj Med Coll [Internet]. Nepal Journals Online (JOL); 2019 [cited 2023 Jan 30];17:20–2. Available from: https://www.nepjol.info/index.php/JNGMC/article/view/25310
26. Lee SH, Oh SR, Cho YJ, Han M, Park JW, Kim SJ, et al. Comparison of vaginal hysterectomy and laparoscopic hysterectomy: A systematic review and meta-analysis. BMC Womens Health [Internet]. BioMed Central Ltd.; 2019 [cited 2023 Jan 30];19:1–12. Available from: https://bmcwomenshealth.biomedcentral.com/articles/10.1186/s12905-019-0784-4