



COMPARING QUALITY OF LIFE OUTCOMES FOLLOWING HYSTERECTOMY: A COMPREHENSIVE ANALYSIS OF LAPAROSCOPIC VS. VAGINAL ROUTES

Obstetrics & Gynaecology

Dr. Pooja Singh	Professor, Department of Obstetrics & Gynecology, GCS Medical College, Hospital & Research Center, Naroda Road, Ahmedabad, Gujarat-380025, India
Dr. Ayush Limbachiya	Third Year Postgraduate Resident, GCS Medical College, Hospital & Research Center, Naroda Road, Ahmedabad, Gujarat-380025, India
Dr. Ajay Labana	Second Year Postgraduate Resident, GCS Medical College, Hospital & Research Center, Naroda Road, Ahmedabad, Gujarat-380025, India

ABSTRACT

Background: Hysterectomy is one of the most common surgical procedures performed on women worldwide. While it is often necessary for treating various gynecological conditions, its impact on the quality of life (QoL) remains an important consideration. This study aims to compare the post-surgical resumption of QoL after laparoscopic and vaginal hysterectomy for benign indications. **Methods:** A prospective, randomized, observational study was conducted at a tertiary care teaching hospital in Western India on a total of 100 patients, comprising 50 cases of vaginal hysterectomy and 50 cases of laparoscopic hysterectomy. All the eligible study participants were required to fill out the standard SF-36 form at 3 months and 6 months following their respective surgeries to assess QoL. Appropriate statistical analysis was performed to analyze the data. **Results:** In the evaluation of general health perception among study participants, there were no significant differences between laparoscopic and vaginal hysterectomy groups. In assessing limitations in vigorous activities post-hysterectomy, the laparoscopic group demonstrated fewer limitations, with 54% reporting no restrictions compared to 30% in the vaginal group. In the laparoscopic group, 60% reported no limitation, 36% had little limitation, and 4% experienced major limitation, meanwhile, the vaginal group showed 42%, 42%, and 16% for no, little, and major limitations, respectively for moderate activities. Differences between groups were also observed in pain levels ($p=0.003$), interference of pain in normal work ($p=0.004$), feelings of calm and peace ($p=0.08$), and energy levels ($p=0.0001$). **Conclusion:** Both laparoscopic and vaginal approaches are safe and effective in terms of immediate postoperative outcomes, laparoscopic hysterectomy may offer advantages in terms of physical function, pain management, and social well-being.

KEYWORDS

Hysterectomy, Quality-of-life, Laparoscopy, Vaginal route

BACKGROUND

Hysterectomy, the surgical removal of the uterus, is one of the most common gynecological procedures worldwide.¹ Over the years, advancements in surgical techniques have offered alternatives to traditional open abdominal hysterectomy. Laparoscopic and vaginal approaches have gained popularity due to their perceived advantages, including reduced surgical trauma, shorter hospital stays, and quicker recovery times.² While the hysterectomy is often performed to address various medical conditions such as uterine fibroids, endometriosis, or malignancies,³ the choice of surgical approach—particularly between laparoscopic and vaginal methods—remains a subject of ongoing debate in the medical community.

The impact of these surgical approaches on postoperative outcomes, specifically in terms of patients' quality of life (QoL), has become a critical area of investigation. However, the selection of the most appropriate approach involves considering not only surgical outcomes but also the overall impact on patients' well-being and daily functioning. Quality of life is a multidimensional concept encompassing physical, emotional, and social well-being.⁴ Assessing QoL after hysterectomy involves evaluating various aspects such as pain, sexual function, psychological well-being, and overall satisfaction with the surgical outcome.⁵ While several studies have investigated clinical outcomes, there is a paucity of research focusing specifically on the comparative QoL implications between laparoscopic and vaginal hysterectomy. Understanding the nuanced differences in QoL outcomes between laparoscopic and vaginal hysterectomy is essential for informed decision-making by both healthcare providers and patients. By elucidating the potential variations in postoperative recovery and overall well-being associated with these surgical routes, we aim to contribute valuable insights to the existing body of knowledge.

The choice of a surgical approach is often influenced by factors such as the surgeon's expertise, patient characteristics, and the specific pathology requiring intervention.⁶ However, considering the long-term implications on QoL is equally crucial. This study seeks to bridge the gap in the current literature by systematically evaluating and comparing the quality-of-life outcomes of patients who have undergone laparoscopic or vaginal hysterectomy.

The primary objective of this study is to compare the quality-of-life

outcomes following laparoscopic and vaginal hysterectomy. Specific aspects of interest include pain levels, sexual function, psychological well-being, overall patient satisfaction, and the potential influence of pre-surgical anxiety. Additionally, we aim to identify factors that may influence QoL outcomes, providing a more nuanced understanding of the patient experience post-hysterectomy.

METHODS

This was a prospective, randomized, observational study to compare the quality-of-life outcomes in patients undergoing hysterectomy via two distinct surgical routes: laparoscopic and vaginal. The study included a diverse sample of premenopausal and postmenopausal women aged 18 to 65 years, diagnosed with benign gynecological conditions necessitating hysterectomy, while patients with malignant indications and those undergoing abdominal hysterectomies were excluded. Patients with contraindications for either laparoscopic or vaginal surgery were also excluded to ensure homogeneity in the study population. The recruitment process involved collaboration with the gynecological clinic of the tertiary care teaching hospital of Western India. The study was conducted for a duration of 1 year.

Institutional review board (IRB) approval was obtained from the relevant ethical committees, and informed consent was obtained from all participants. Privacy and confidentiality of participant data were strictly maintained throughout the study.

Based on previous literature and expected effect sizes, a sample size of 50 participants per group was deemed sufficient to achieve a statistical power of 80% at a significance level of 0.05. To minimize bias, a randomization procedure was employed to allocate participants into either the laparoscopic or vaginal hysterectomy group. Randomization was achieved using computer-generated random numbers, and allocation concealment was ensured through sealed opaque envelopes. Participants, clinicians, and data analysts were kept blinded to the assigned surgical route to minimize performance and detection biases. Participants underwent either laparoscopic or vaginal hysterectomy procedures based on their randomized assignment. The laparoscopic group received surgery using minimally invasive techniques, including small incisions and the use of a laparoscope for visualization. The vaginal group underwent surgery through the vaginal route without external abdominal incisions. Standardized protocols were followed for both surgical approaches to maintain

consistency across procedures.

Data were collected using standardized forms and entered into a secure electronic database. Regular audits were conducted to ensure data accuracy and completeness. The dataset was securely stored, and access was restricted to authorized personnel only. Data collection included both preoperative and postoperative assessments. Preoperative assessments included baseline demographic information, medical history, and pre-existing quality-of-life measures. Postoperative assessments were conducted at regular intervals (e.g., 1 week, 1 month, 3 months, 6 months, and 1 years) and comprised validated quality-of-life questionnaires, such as the Short Form Health Survey (SF-36) and disease-specific measures. Clinical follow-ups were conducted to monitor complications, recovery, and any adverse events. The SF-36 questionnaire provided a broad assessment of physical and mental health domains, while disease-specific measures were tailored to capture the gynecological health-related quality of life aspects.

Statistical analysis involved both descriptive and inferential methods. Descriptive statistics were used to summarize baseline characteristics, while inferential statistics, such as t-tests and chi-square tests, were employed to compare demographic variables between the laparoscopic and vaginal groups. Longitudinal analyses, including repeated measures analysis of variance (ANOVA), were conducted to assess changes in quality-of-life outcomes over time and to identify any significant differences between the two surgical groups. P-value <0.05 was considered statistically significant.

RESULTS

Table 1: Characteristics Of The Study Participants (n=50)

Characteristics	Total	Laparoscopic Hysterectomy Group	Vaginal Hysterectomy Group	p-value
Number of patients (n)	50	25	25	
Age at the time of surgery (Years) (Median)	47.2	46.4	47.8	0.62
Parity (Time)	2.0±1.2 (0–4)	2.0±1.0 (0–4)	2.0±1.5 (0–6)	0.82
BMI (kg/m2) (Median)	24.7	24.4	24.9	0.54
Indication for Surgery				
Hypermenorrhea, n (%)	31 (62)	18 (72)	13 (52)	
Dysmenorrhea, n (%)	9 (18)	5 (20)	4 (16)	
Postmenopausal bleeding, n (%)	2 (4)	1 (4)	1 (4)	
Others, n (%)	8 (16)	1 (4)	7 (28)	
Postoperative outcome				
Postoperative complications, n (%)	2 (4)	1 (4)	1 (4)	0.92
Wound infection, n (%)	2 (4)	0	2 (8)	0.76

In this study involving 50 patients undergoing either laparoscopic or vaginal hysterectomy, no significant differences were observed in age, parity, or BMI between the two groups ($p>0.05$). Surgical indications varied, with hypermenorrhea being the most common. Postoperative complications were minimal (4%), and there were no significant differences in outcomes, including wound infection rates, between the laparoscopic and vaginal hysterectomy groups ($p>0.05$) (Table 1).

Table 2: General Health Perception Of The Study Participants (n=50)

	Laparoscopic Hysterectomy Group: n (%)	Vaginal Hysterectomy Group: n (%)	p-value
Excellent	9 (18)	11 (22)	0.608
Good	13 (26)	9 (1)	
Very Good	28 (56)	30 (60)	
Total	50 (100)	50 (100)	

In the evaluation of general health perception among study participants, there were no significant differences between

laparoscopic and vaginal hysterectomy groups. Both groups demonstrated similar distributions across categories of excellent, good, and very good health ($p=0.608$) (Table 2).

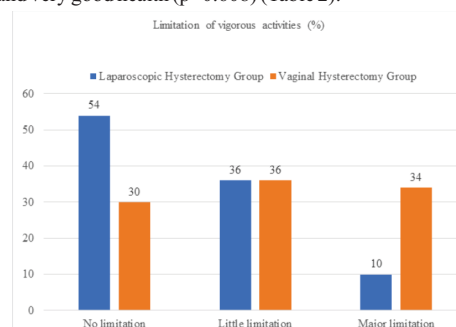


Figure 1: Limitations Of Vigorous Activities Among Study Participants (n=50)

In assessing limitations in vigorous activities post-hysterectomy, the laparoscopic group demonstrated fewer limitations, with 54% reporting no restrictions compared to 30% in the vaginal group. Conversely, major limitations were higher in the vaginal group (34%) compared to the laparoscopic group (10%). Overall, significant differences in activity limitations were observed between the two groups ($p<0.05$) (Figure 1).

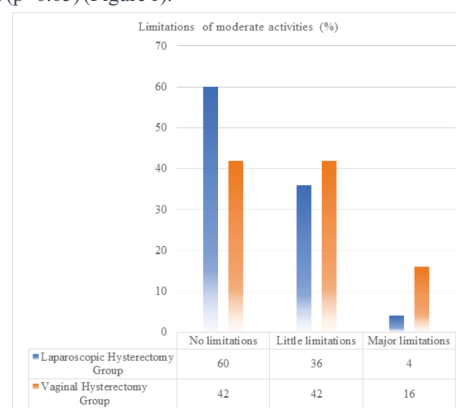


Figure 2: Limitations Of Moderate Activities

Figure 2 illustrates the moderate activities limitation among patients who underwent laparoscopic hysterectomy and vaginal hysterectomy. In the laparoscopic group, 60% reported no limitation, 36% had little limitation, and 4% experienced major limitation. Meanwhile, the vaginal group showed 42%, 42%, and 16% for no, little, and major limitations, respectively.

Table 3: Comparisons Of Quality-of-life Parameters Among Two Group Of Study Participants (n=50)

Characteristics	Laparoscopic Hysterectomy Group: n (%)	Vaginal Hysterectomy Group: n (%)	p-value
Lifting or carrying groceries			
No limitation	33 (66)	26 (52)	0.02
Little limitation	17 (34)	17 (34)	
Major limitation	0 (0)	7 (14)	
Kind of work or other activities			
Limitation of activity	9 (18)	20 (40)	0.01
No limitation of activity	41 (82)	30 (60)	
Difficulty performing the work or other activities			
Yes	8 (16)	15 (30)	0.09
No	42 (84)	35 (70)	
Pain			
None	17 (34)	24 (48)	0.003
Very mild	17 (34)	8 (16)	
Mild	15 (30)	8 (16)	
Moderate	1 (2)	10 (20)	
Interference of pain in normal work			
Not at all	24 (48)	34 (68)	0.004

A little bit	23 (46)	8 (16)	
Moderately	3 (6)	8 (16)	
Feelings of calm and peace			
A good bite of time	10 (20)	9 (18)	0.08
All of the time	13 (26)	6 (12)	
Most of the time	22 (44)	34 (68)	
None of the time	2 (4)	0 (0)	
Some of the time	3 (6)	1 (2)	
Feeling of lot of energy			
A good bite of time	4 (8)	8 (16)	0.0001
All of the time	18 (36)	6 (12)	
Most of the time	22 (44)	7 (14)	
None of the time	4 (8)	18 (36)	
Some of the time	2 (4)	11 (22)	

Table 3 presents a comprehensive comparison of quality-of-life parameters between participants who underwent laparoscopic hysterectomy and vaginal hysterectomy. Results indicate significant differences in various aspects. Notably, 66% of the laparoscopic group reported no limitation in lifting or carrying groceries compared to 52% in the vaginal group (p=0.02). In terms of limitations in kind of work or other activities, 18% in the laparoscopic group faced limitations compared to 40% in the vaginal group (p=0.01). Differences were also observed in pain levels (p=0.003), interference of pain in normal work (p=0.004), feelings of calm and peace(p=0.08), and energy levels (p=0.0001) (Table 3). These findings underscore the varied impact of surgical approaches on postoperative quality of life.

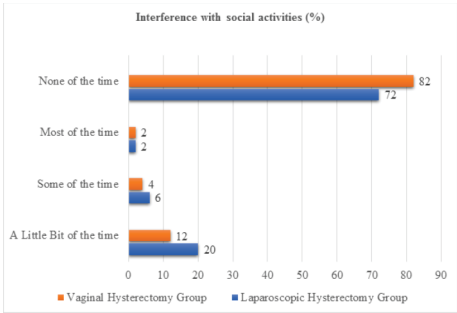


Figure 3: Interference With Social Activities Among Study Participants (n=50)

Figure 3 outlines the interference with social activities in laparoscopic and vaginal hysterectomy groups. In the laparoscopic group, 72% experienced no interference, 20% reported a little interference, and 2% faced interference most of the time. Conversely, the vaginal group demonstrated 82% with no interference, 12% with a little interference, and 2% facing interference most of the time. These findings shed light on the impact of surgical approaches on social activities post-hysterectomy.

DISCUSSION

Hysterectomy, a common gynecological procedure, can significantly impact a woman's quality of life.⁷In this prospective, randomized, observational study, we aimed to compare the quality-of-life outcomes following laparoscopic and vaginal hysterectomy. The study revealed several important findings that contribute to the understanding of the impact of surgical approaches on postoperative quality of life.The study population consisted of premenopausal and postmenopausal women diagnosed with benign gynecological conditions requiring hysterectomy. Exclusion criteria were implemented to ensure homogeneity in the study population, and the randomization process aimed to minimize bias. The study's strength lies in its rigorous methodology, including the use of validated quality-of-life questionnaires and regular follow-ups at multiple time points. Also, improved patient counseling regarding expected post-surgical QoL(Quality-of-life) outcomes, and informed decision-making for gynecologists when choosing between laparoscopic and vaginal hysterectomy for benign indications are certainly other benefits of the study.

Our findings revealed overall an improvement in QoLfor patients undergoing both laparoscopic and vaginal hysterectomy. These results align with previous studies reporting enhanced QoL post-hysterectomy due to symptom relief and improved physical functioning.⁸⁻¹⁶The baseline characteristics of the laparoscopic and

vaginal hysterectomy groups were comparable, with no significant differences in age, parity, or BMI. The indications for surgery varied, with hypermenorrhea being the most common indication. Postoperative complications were minimal, and there were no statistically significant differences in outcomes, including wound infection rates, between the two groups. These findings suggest that both laparoscopic and vaginal approaches are safe and effective in terms of immediate postoperative outcomes.In evaluating general health perception, no significant differences were observed between the two surgical groups. Both laparoscopic and vaginal hysterectomy groups demonstrated similar distributions across categories of excellent, good, and very good health. This indicates that, from the patient's perspective, there was no apparent superiority of one surgical approach over the other in terms of overall health perception.However, when assessing limitations in vigorous and moderate activities post-hysterectomy, significant differences emerged. The laparoscopic group reported fewer limitations in vigorous activities compared to the vaginal group, while the vaginal group showed higher rates of major limitations. Similar patterns were observed in moderate activities, suggesting that laparoscopic hysterectomy may be associated with less impairment in physical activities compared to the vaginal approach.

The comprehensive comparison of quality-of-life parameters further highlighted significant differences between the two surgical groups. Notably, the laparoscopic group reported fewer limitations in lifting or carrying groceries, fewer limitations in the kind of work or other activities, lower pain levels, and less interference of pain in normal work compared to the vaginal group. Additionally, the laparoscopic group reported higher levels of feelings of calm and peace and energy compared to the vaginal group.Interference with social activities also differed between the groups, with the laparoscopic group experiencing less interference overall. These findings collectively suggest that laparoscopic hysterectomy may offer advantages in terms of physical function, pain management, and social well-being compared to the vaginal approach.^{11,12}

While this study provides valuable insights into the quality-of-life outcomes following laparoscopic and vaginal hysterectomy, it is essential to acknowledge certain limitations. The study's generalizability may be limited due to its single-center nature and the specific population characteristics. Also, several other similar studies also evaluated the impact of hysterectomy on the sexual outcomes, and bowel and bladder function,^{13,14} while our study didn't include these parameters for the evaluation. Additionally, long-term follow-up beyond the one-year duration of the study would provide a more comprehensive understanding of the sustained the impact of different surgical approaches on quality of life.

CONCLUSION

In conclusion, this study contributes valuable evidence to the ongoing discourse on the optimal surgical approach for hysterectomy. The findings suggest that while both laparoscopic and vaginal approaches are safe and effective in terms of immediate postoperative outcomes, laparoscopic hysterectomy may offer advantages in terms of physical function, pain management, and social well-being. Further research with larger, diverse populations and longer follow-up periods is warranted to validate and expand upon these findings.

Acknowledgement: We are sincerely thankful to all the participants who took part in our study

Funding: No funding sources

Conflict of Interest: None declared

Ethical Approval: The study was approved by the Institutional Review Board

REFERENCES

1. Van Den Akker T, Brobbel C, Dekkers OM, Bloemenkamp KW. Prevalence, indications, risk indicators, and outcomes of emergency peripartum hysterectomy worldwide. *Obstetrics & Gynecology*. 2016 Dec 1;128(6):1281-94.
2. Noh JJ, Kim MS, Kang JH, Jung JH, Chang CS, Jeon J, Kim TJ. Comparison of surgical outcomes of hysterectomy by vaginal natural orifice transluminal endoscopic surgery (vNOTES) versus single-port access (SPA) surgery. *Journal of Personalized Medicine*. 2022 May 26;12(6):875.
3. Maduke-Laveaux OS, Elsharoud A, Al-Hendy A. What we know about the long-term risks of hysterectomy for benign indication—a systematic review. *Journal of clinical medicine*. 2021 Nov 16;10(22):5335.
4. Sinha BR. Introduction: An overview of the concept of quality of life. *Multidimensional Approach to Quality-of-Life Issues: A Spatial Analysis*. 2019:3-23.
5. Fortin C, Hur C, Falcone T. Impact of laparoscopic hysterectomy on quality of life. *Journal of Minimally Invasive Gynecology*. 2019 Feb 1;26(2):219-32.
6. Loro A, Fulvio F, Alt V. Treatment of bone infections in children in low-income countries—A practical guideline based on clinical cases. *Injury*. 2023 Dec

- 1;54(12):111066.
7. Naughton MJ, McBee WL. Health-related quality of life after hysterectomy. *Clinical obstetrics and gynecology*. 1997 Dec 1;40(4):947-57.
 8. Kumari A, Malik S, Kishore J. Assessment of physical and sexual quality of life in women undergoing planned hysterectomy in tertiary care hospital. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2021 Jun 1;10(6):2448-53.
 9. Kumari A, Malik S, Kishore J. Comparison of Physical and Sexual Quality of Life before and After Hysterectomy and Its Effect on Demographic Factors. *Research Highlights in Disease and Health Research*. 2023 Jun 24:50.
 10. Zhang H, Jia Y, Li X, Feng Y, Wang X. Effects of psychological intervention on quality of life, negative emotions, and psychological rehabilitation in post-hysterectomy women. *Int J Clin Exp Med*. 2018 Jan 1;11(7):7304-11.
 11. Stone R, Carey E, Fader AN, Fitzgerald J, Hammons L, Nensi A, Park AJ, Ricci S, Rosenfield R, Scheib S, Weston E. Enhanced recovery and surgical optimization protocol for minimally invasive gynecologic surgery: an AAGL white paper. *Journal of Minimally Invasive Gynecology*. 2021 Feb 1;28(2):179-203.
 12. Alkatout I. Laparoscopic hysterectomy: total or subtotal? -Functional and didactic aspects. *Minimally Invasive Therapy & Allied Technologies*. 2022 Jan 3;31(1):13-23.
 13. Mokate T, Wright C, Mander T. Hysterectomy and sexual function. *British Menopause Society Journal*. 2006 Dec 1;12(4):153-7.
 14. Brooks RA, Wright JD, Powell MA, Rader JS, Gao F, Mutch DG, Wall LL. Long-term assessment of bladder and bowel dysfunction after radical hysterectomy. *Gynecologic Oncology*. 2009 Jul 1;114(1):75-9.