Al-Azhar International Medical Journal

Volume 5 | Issue 7 Article 20

7-31-2024
Section: Obstetrics and Gynecology

Impact of Uterine-Sparing Surgery on Reliving Symptoms of Adenomyosis

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How to Cite This Article

Mohamed, Ehab Hassanin; Ellaban, Mostafa Mohammed; and Amer, Mahmoud Ahmed Mahmoud (2024) "Impact of Uterine-Sparing Surgery on Reliving Symptoms of Adenomyosis," *Al-Azhar International Medical Journal*: Vol. 5: Iss. 7, Article 20.
DOI: https://doi.org/10.58675/2682-339X.2538

ORIGINAL ARTICLE

Impact of Uterine-Sparing Surgery on Reliving Symptoms of Adenomyosis

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Abstract

Background: ***The benign endometrial invasion into the myometrium known as adenomyosis results in a diffusely enlarged uterus that, when examined under a microscope, shows non-neoplastic endometrial glands and stroma encircled by hypertrophic and hyperplastic myometrium.***

Aim and objectives: ***To assess the impact of uterine-sparing surgery on relieving symptoms of adenomyosis.***

Subjects and methods: The Al-Hussien University Hospital served as the site of this prospective observational study. Thirty women with symptomatic adenomyosis participated in this trial.

Result: ***A highly statistically significant difference (p=<0.001) was observed between the three groups for menorrhagia (mL), which ranged from 29 to 269 with mean±SD=142.07±63.02 in 3 months FU, 13 to 106 with mean±SD=65.43±28.63 in 6 months FU, and 5 to 64 with mean±SD=42.47±20.33 in 9 months FU. Following 3, 6, and 9 months of follow-up with the study population, the Mansfield-Voda-Jorgensen menstrual bleeding scale (MVJ). A statistically significant difference (p=<0.001) was seen in the MVJ scale among the three groups under investigation.***

Conclusion: ***In women with severe adenomyosis, the unique technique of adenomyomectomy as a uterus-sparing operation can relieve the symptoms of dysmenorrhea and menorrhagia. Furthermore, this process seems to offer efficient long-term symptom relief***

Keywords: Uterine-Sparing Surgery; Reliving; Symptoms; Adenomyosis

1. Introduction

Unknown, 10-35%: Histological reports after hysterectomy, 20.9%: US report, and 20-25%: ART units. Over 40, Multipara and AUB, and recently: Young, infertile + endometriosis.[1]

The infiltration of the basalis layer of the endometrium into the myometrium, the occurrence of small-scale damage in the junctional zone caused by tissue injury and subsequent healing, the development of new tissue types from stem cells, and the invasion of tissue from outside to inside triggered by the backward flow of menstrual blood.[2]

Depth of endometrial invasion>2.5 mm below the endometrial-myometrial interface (EMI) in one low-power field.[3]

The observed findings include irregular thickening of the uterine wall, cysts within the muscle layer, areas of increased echogenicity, shadowing in a fan-like pattern, lines, and buds with increased echogenicity beneath the innermost layer of the uterus, abnormal blood flow within the lesion, and abnormal junctional zone.[4]

The characteristics seen include small apertures, an uneven lining of the uterus, excessive blood vessel formation, a distinctive pattern like a strawberry, and the presence of cystic hemorrhagic lesions.[5]

TVUS and MRI are effective and equivalent noninvasive imaging modalities.[6] A study on long-term treatment has shown that it is well-tolerated and leads to a decrease in pain.[7]

The reduction in the size of adenomyoma and improvement in symptoms were comparable to those achieved with GnRH agonists.[8]

The surgical procedures of double-flap and triple-flap adenomyomecyomy have been extensively documented.[9]

The present study aims to evaluate the influence of uterine-sparing surgery on alleviating symptoms of adenomyosis.

Accepted 21 July 2024.
Available online 31 July 2024

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https://doi.org/10.58675/2682-339X.2538

2. Patients and methods

In this prospective observational study, thirty symptomatic women with adenomyosis were enrolled from February 2022 to September 2023. This research was conducted at the University Hospital of Al-Hussien. The patients were sourced from the outpatient clinics. Every woman participating in the study was informed about the study's methodology and informed written consent was obtained.

Inclusion criteria: Age range: 30-45 years, with symptoms of diffuse adenomyosis (maximum diameter > 5cm, or more than half of the uterine body), diagnosed by MRI and ultrasonography; adenomyosis resistant to treatment, and a strong desire to keep the uterus intact.

Exclusion criteria: Individuals who have uterine adenomyoma or focally localized adenomyosis with a post-operatively negative result for adenomyosis.

Ethical approval: The study was approved by Al-Azhar University Ethics Board.

Sample size: 30 symptomatic women with adenomyosis were enrolled. All procedures were conducted in accordance with guiding principles for patient care and were approved by the Al-Azhar University Ethical Board.

Methods:

All patients were subjected to Adenomyomectomy, and an assessment of dysmenorrhea and Menorrhagia was done after 3.6 and 9-month follow-up regarding the following scales. The degree of discomfort experienced during menstruation was rated on an 11-point numerical scale (0 being no pain and 10 being the worst possible agony).[10]

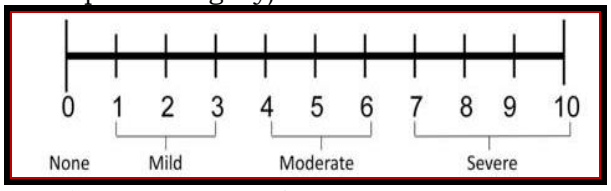


Figure 1. NRS Scale.

In order to determine menorrhagia, the Mansfield-Voda-Jorgensen menstrual bleeding scale (MVJ) was utilized. Here, we employ a subjective Likert-type scale, where a score of 1 indicates spotting and a score of 6 indicates really heavy bleeding or gushing.[10]

Spotting: One or two drops of blood; the patient may choose to use sanitary protection, although it is not required. Minimal bleeding: The patient would only need to replace the least absorbent tampon or pad once or twice a day, though they may decide to change more frequently. Light bleeding: Two or three times a day, the patient should change a regular or low-absorbency tampon or pad. They might, nonetheless, choose to switch them out more frequently. Moderate bleeding: Changing an absorbency tampon or pad every three to four hours is recommended, while it is not required. Severe bleeding: Changing more frequently may be the patient's decision. Every three to four hours, the patient should change a high-absorbency tampon or pad. Overindulgent bleeding or gushing: Replace the tampon or pad with the highest absorbency every hour or two; prevention is hardly effective. The MVJ scale classified menorrhagia's full regression (CR) as 2-3, but the NRS scale defined dysmenorrhea's CR as 0.

Every sufferer endured the following:

Entire history: A thorough medical history was obtained, encompassing factors such as age, parity, menstrual history, pain, history of chronic illnesses such as diabetes and hypertension, and surgical history involving D/C and cesarean sections.

Physical examination: A general examination is performed to determine the presence of diabetes mellitus, hypertension, and scars from prior pelvic and abdominal surgeries. Inspection of the abdomen is performed to detect any pelvic-abdominal masses, enlarged ovaries, or uterus. Vaginal exam to assess discomfort and any related cervical disorders.

Investigations: Represented by both Ultrasonography and MRI.

Statistical Analysis:

Utilizing the Statistical Package for Social Science (SPSS) (Released in 2015), the data were gathered, edited, and input into a personal computer (PC). Armonk, New York: IBM Corp., IBM SPSS Statistics for Windows, Version 23.0; Although quantitative data were given as mean and standard deviations or median with inter-quartile range (IQR) based on their distribution, qualitative data were expressed as numbers and percentages. They were using a 95% confidence interval and a p-value deemed significant at the <0.05 level.

3. Results

Table 1. Age distribution among the study population.

	STUDY POPULATION (N=30)
AGE (YEAR)	
MEAN±SD.	35.37±3.03
MEDIAN (IQR)	35 34-36.75)
RANGE (MIN-MAX)	12 (30-42)
AGE DISTRIBUTION	
30-34 YEARS	11 (36.67%)
35-39 YEARS	16 (53.33%)
40-45 YEARS	3 (10%)

SD: standard deviation. IQR: interquartile range.

The study population's age (year) varied from 30 to 42, with a mean±SD of 35.37±3.03. The number of patients aged 30-34 The study population's age distribution was 11 (36.67%).

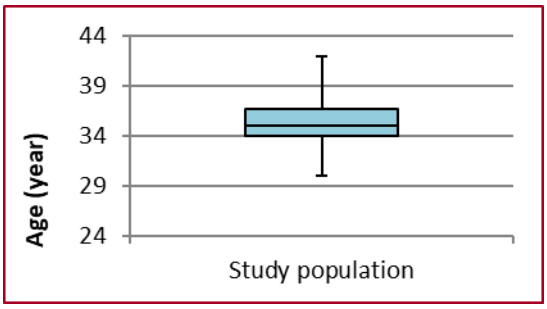


Figure 2. Box-plot showing study population data regarding age (year).

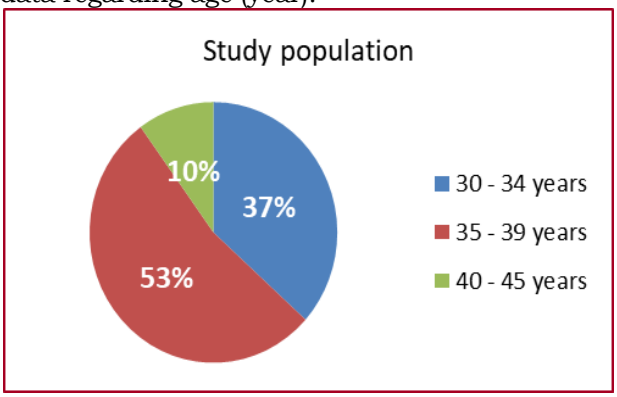


Figure 3. Pie chart displaying demographic study data on the distribution of ages.

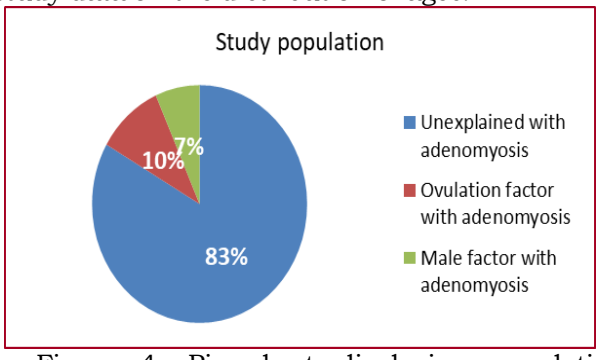


Figure 4. Pie chart displaying population survey data on the causes of infertility.

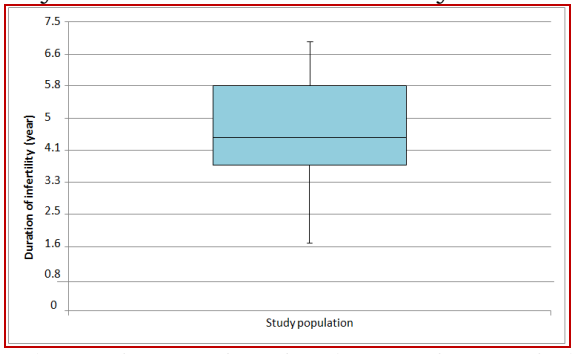


Figure 5. Box-plot showing study population data regarding duration of infertility.

Table 2. Operation time, excised adenomyosis and estimated blood loss among the study population.

STUDY POPULATION (N=30)	
OPERATION TIME (HOUR)	
MEAN±SD.	5.27±1.56
MEDIAN (IQR)	5.45 (4.23-6.27)
RANGE (MIN-MAX)	5.2 (2.6-7.8)
EXCISED ADENOMYOSIS (GM)	
MEAN±SD.	92.93±42.09
MEDIAN (IQR)	87.5 (65.25-128)
RANGE (MIN-MAX)	137 (26-163)
BLOOD LOSS (ML)	
MEAN±SD.	497.13±214.81
MEDIAN (IQR)	555 (294.75-666)
RANGE (MIN-MAX)	665 (129-794)

SD: standard deviation. IQR: interquartile range

Excised adenomyosis and estimated blood loss among the study population. Operation time (hour) in the study population ranged from 2.6 to 7.8 with mean±S=5.27±1.56. Excised adenomyosis in the study population ranged from 26 to 163 with mean±SD=92.93±42.09. Estimated blood loss in the study population ranged from 129 to 794 with mean±SD=497.13±214.81.

There were two ways to estimate blood loss: visually or using the gravimetric method. Visual estimation involves measuring the volume of blood in sponges and suction containers, as well as external blood losses. The gravimetric method is an indirect way to measure blood loss; it involves weighing surgical material that has been contaminated with blood and subtracting its dry weight. Then, adding up the measured weight of the blood and estimating the amount of mixed liquids (such as blood and rinse liquid) in the suction container. Finally, using the conversion of 1 g = 1 ml blood, one can calculate the blood loss.

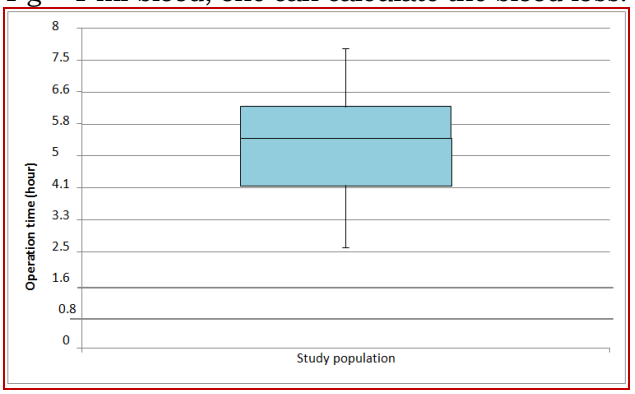


Figure 6. Box-plot showing study population data regarding operation time (hour).

Table 3. Pelvic endometriosis and Postoperative complications among the study population.

	STUDY POPULATION (N=30)
PELVIC ENDOMETRIOSIS	
YES	11 (36.67%)
NO	19 (63.33%)
POSTOPERATIVE COMPLICATIONS	
PELVIC INFECTION	1 (3.33%)
POI AFTER THE OPERATION	1 (3.33%)
SUBFASCIAL HEMATOMA	1 (3.33%)
SHRINKAGE OF UTERUS	1 (3.33%)
NO	26 (86.67%)

There were 11 (36.67%) patients with pelvic endometriosis in the study group. There was one patient (3.33%) with a pelvic infection in the study sample.

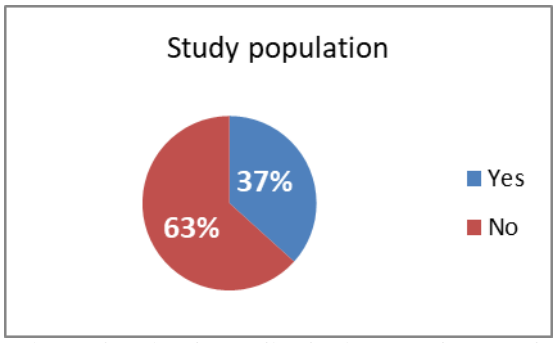


Figure 7. Pie chart displaying study population statistics about endometriosis in the pelvis.

Table 4. 11-point Numerical Rating Scale (NRS) results after 3, 6 and 9 month follow up among the study population.

	3 MONTHS FU (N=30)	6 MONTHS FU (N=30)	9 MONTHS FU (N=30)	TEST OF SIG.	P
NRS				F=214.467	<0.001
MEAN±SD.	7.27±2.05	1.57±0.63	1.27±0.45		
MEDIAN (IQR)	7 (6-9)	1.5 (1-2)	1 (1-1.75)		
RANGE (MIN-MAX)	10 (1-11)	2 (1-3)	1 (1-2)		
	P1=<0.001, P2=0.038, P3 =<0.001				

F: ANOVA test. SD: standard deviation. IQR: interquartile range. p: p value for comparing between the studied groups. P-value > 0.05: Non-significant; P-value < 0.05: Significant; P-value < 0.001: Highly significant. P1: Group 1 vs Group 2. P2: Group 2 vs Group 3. P3: Group 1 vs Group 3

The NRS varied from 1 to 11 in 3 months FU with a mean±SD of 7.27±2.05, from 1 to 3 in 6 months FU with a mean±SD of 1.57±0.63, and from 1 to 2 in 9 months FU with a mean±SD of 1.27±0.45. There was a highly significant difference (p=<0.001) between the three groups.

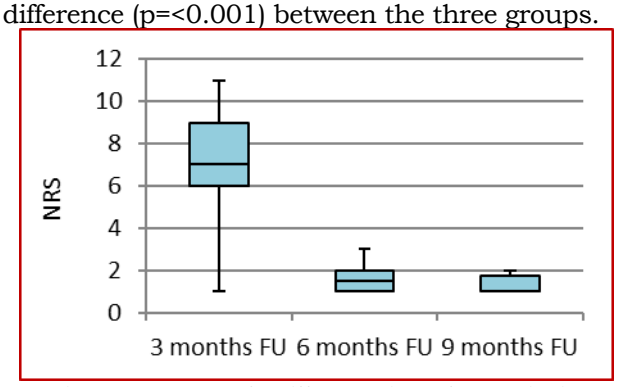


Figure 8. Box-plot illustrating the variations in NRS between the research groups.

Table 5. Menorrhagia volume (mL) after 3, 6 and 9 month follow up among the study population.

	3 MONTHS FU (N=30)	6 MONTHS FU (N=30)	9 MONTHS FU (N=30)	TEST OF SIG.	P
MENORRHAGIA (ML)				F=47.043	<0.001
MEAN±SD.	142.07±63.02	65.43±28.63	42.47 ± 20.33		
MEDIAN (IQR)	137.5 (95-179.5)	71.5 (45.25-88)	52.5 (30.5-57.75)		
RANGE (MIN-MAX)	240 (29-269)	93 (13-106)	59 (5-64)		
	P1=<0.001 , P2=0.001 , P3=< 0.001				

F: ANOVA test. SD: standard deviation. IQR: interquartile range.

p: p value for comparing between the studied groups. P-value > 0.05: Non-significant; P-value < 0.05: Significant; P-value < 0.001: Highly significant. P1: Group 1 vs Group 2. P2: Group 2 vs Group 3.P3: Group 1 vs Group 3.

Menorrhagia (mL) varied between 29 and 269 in 3 months FU, with a mean±SD of 142.07± 63.02; in 6 months FU, it varied between 13 and 106 with a mean±SD of 65.43±28.63; and in 9 months FU, it varied between 5 and 64 with a mean±SD of 42.47±20.33. There was a highly significant difference (p=<0.001) between the three groups.

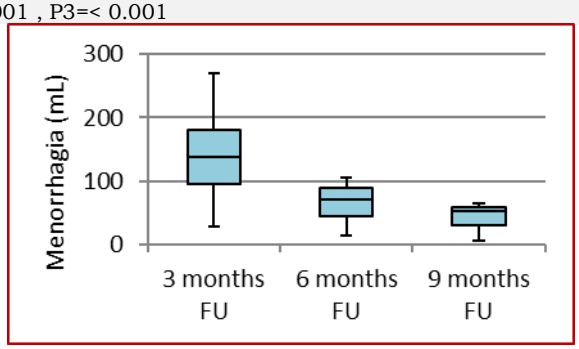


Figure 9. Box-plot illustrating menorrhagia differences (mL) between research groups.

Table 6. The Mansfield-Voda-Jorgensen menstrual bleeding scale (MVJ) after 3, 6 and 9 month follow up among the study population.

	3 MONTHS FU (N=30)	6 MONTHS FU (N=30)	9 MONTHS FU (N=30)	TEST OF SIG.	P
MVJ SCALE					
SPOTTING	0 (0%)	0 (0%)	5 (16.67%)		
VERY LIGHT BLEEDING	0 (0%)	2 (6.67%)	1 (3.33%)		
LIGHT BLEEDING	2 (6.67%)	5 (16.67%)	4 (13.33%)		
MODERATE BLEEDING	2 (6.67%)	11 (36.67%)	20 (66.67%)	X2 = 60.224	<0.001
HEAVY BLEEDING	9 (30%)	12 (40%)	0 (0%)		
VERY HEAVY BLEEDING	17 (56.67%)	0 (0%)	0 (0%)		
	P1=<0.001, P2=<0.001, P3=<0.001				

x2: Chi- Square test. p: p value for comparing between the studied groups. P-value > 0.05: Non-significant; P-value < 0.05: Significant; P-value < 0.001: Highly significant. P1: Group 1 vs Group 2.

P2: Group 2 vs Group 3.

The range of menorrhagia (mL) was found to be between 29 and 269 in three months of FU, with a mean±SD of 142.07±63.02; between 13 and 106 in 6 months FU, with a mean±SD of 65.43±28.63; and between 5 and 64 in 9 months FU, with a mean±SD of 42.47±20.33. Between the three groups, there was a highly significant difference (p=<0.001).

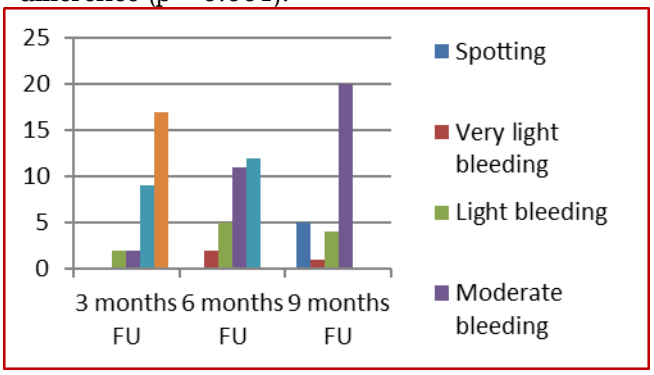
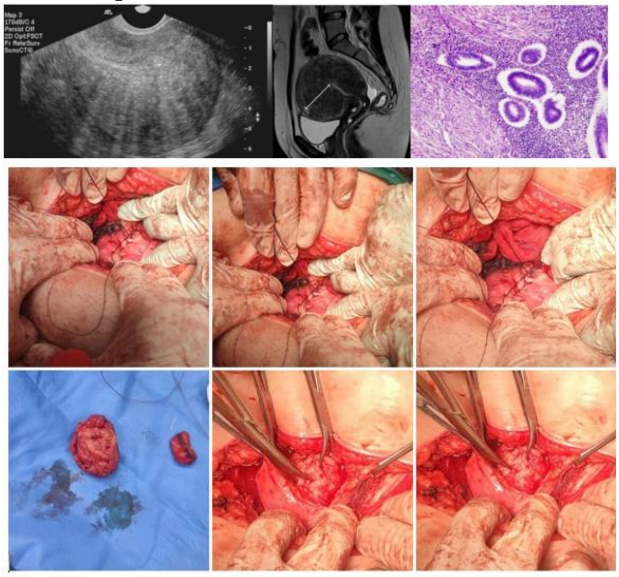
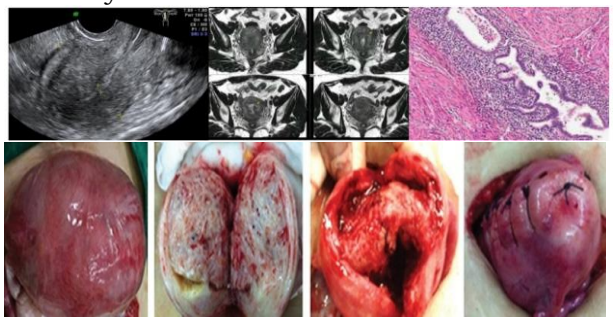


Figure 10. Bar graph illustrating the MVJ scale comparison between the research groups.

Case presentation

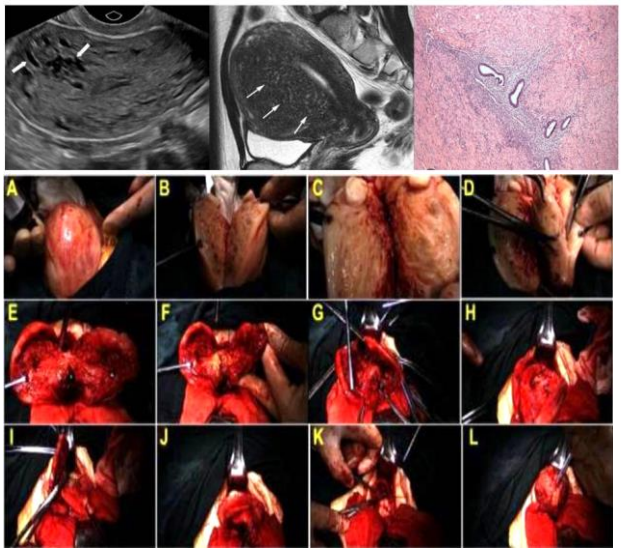


Case 1. A female patient 37 years old, presented with abnormal uterine bleeding due to adenomyosis.



Case 2. A female patient 39 years old, presented with dysmenorrhea bleeding due to adenomyosis.

P3: Group 1 vs Group 3.



Case 3. A female patient 41 years old, presented with abnormal uterine bleeding due to adenomyosis

4. Discussion

The current research can be backed up by Yoon et al.,[11] They sought to determine whether this cutting-edge adenomyomectomy technique could increase the rate of conception. A secondary objective was to determine whether it could lessen the symptoms of Menorrhagia and dysmenorrhea. This study included fifty women who had adenomyosis-related infertility. The average age was 35.60±3.33 years, according to their research.

Zhu et al.[12] concurs with our findings. They aimed to compare the efficacy of laparoscopy and laparotomy for adenomyomectomy in the same circumstances, as well as to evaluate the long-term effects of laparoscopic double-flap adenomyomectomy in treating severe diffuse uterine adenomyosis. A mean age of 38.3±8.7 years was determined for the study population

Also, our results are consistent with Saremi et al.,[13] He wanted to provide this surgical method as a uterine adenomyosis treatment option instead of a hysterectomy, especially for patients who want to keep their uterus and maybe have children in the future. In this investigation, 103 Iranian women with uterine adenomyosis that was symptomatic and documented were included (severe adenomyosis with diameter>1.5 cm by TVUS). The patients' age was reported to be (mean±SD) 37.46±5.37 years.

Our results are consistent with those of Chong et al.,[14] We sought to ascertain whether gonadotropin-releasing hormone (GnRH) or laparoscopic or robotic adenomyomectomy was more effective over the long term in treating significantly symptomatic adenomyosis. The study population's mean age (year) was reported

to be 39.4±4.3 years.

In our analysis, we discovered that 25 (83.33%) of the study population had adenomyosis and infertility that could not be explained. The study cohort had an infertile duration ranging from 1.75 to 7 years, with a mean±SD of 4.62±1.48. There were 28 nullipara patients (93.33%) in the study population.

Our results are consistent with those of Yoon et al.,[11] who discovered that 42 (84% of the study population) had adenomyosis and unexplained infertility. The study population's mean infertility duration was 55.48±48.24 years. There were 46 (92%) nullipara patients in the study population.

In contrast with our results, Sun et al.,[15] sought to determine the clinical effectiveness and safety of treating symptomatic adenomyosis with laparoscopic adenomyomectomy in conjunction with intraoperative replacement of the levonorgestrel-releasing intrauterine device (LNG-IUS). Six (11.5%) of the research population's patients were reported to be nullipara.

In our investigation, we found that, regarding operation time, excised adenomyosis, and estimated blood loss among the study population. Operation time (hour) in the study population ranged from 2.6 to 7.8 with mean±SD=5.28±1.57. Excised adenomyosis in the study population ranged from 26 to 163 with mean±SD=92.93±42.09. Estimated blood loss in the study population ranged from 129 to 794 with mean±SD=497.13±214.81.

In agreement with our results, Yoon et al.[11] discovered that the mean operation time (min) for the study population was 321.02±97.06 in terms of excised adenomyosis, estimated blood loss, and operation time. The adenomyosis excised had a mean of 94.15 ± 56.63. The mean blood loss estimate was 507.00±404.95.

Our results are consistent with Kwack et al.,[16] who discovered information about the study population's expected blood loss and surgical time and removed adenomyosis. The removed adenomyotic lesion weighed, on average, 108.29 g (SD107.12; range: 10 to 610 g). The entire surgery duration averaged 116.12 minutes (SD 37.27; range: 60 to 300 min). The estimated blood loss was 207.22 mL on average (SD 161.08), with a range of 30 to 1200 mL.

Our research revealed the following about postoperative complications and pelvic endometriosis in the study population: In the study population, 11 (36.67%) patients had pelvic endometriosis, and just one (3.33%) pelvic infection patient had pelvic endometriosis.

Our results are consistent with those of Yoon et al.,[11] who discovered that in relation to surgical complications and pelvic endometriosis in the study population, 17 (37.8) patients had pelvic endometriosis. Four patients experienced postoperative complications, which included subfascial hematoma, ureter fistula, early ovarian insufficiency, and uterine shrinkage.

Our results are consistent with those of Yoon et al.,[11] who stated that, with respect to the 11-point Numerical Rating Scale (NRS), six months following surgery, all patients saw a highly statistically significant difference in the relief of dysmenorrhea symptoms (NRS; 7.28±2.30 vs 1.56±1.30).

Our results are consistent with Yoon et al.,[11] who reported that regarding menorrhagia volume (mL) after six month follow up among the study population, Menorrhagia (mL) mean preoperative was 140.44±91.68, while in 6 months FU, the Menorrhagia (mL) mean was 66.33±65.85 with highly statistically significant difference (p=<0.001).

As we followed up with the study group after three, six, and nine months, we discovered the following information regarding the Mansfield-Voda-Jorgensen menstrual bleeding scale (MVJ). A statistically significant difference (p=<0.001) was seen in the MVJ scale among the three groups under investigation.

Our results are consistent with those of Mikos et al.[17] the study population's 6-month follow-up on the Mansfield-Voda-Jorgensen menstrual bleeding scale (MVJ). There was a significant difference in the MVJ scale between the preoperative and 6-month follow-up (p=<0.001).

4. Conclusion

In women with severe adenomyosis, the unique technique of adenomyomectomy as a uterus-sparing operation can relieve the symptoms of dysmenorrhea and Menorrhagia. Furthermore, this process seems to offer efficient long-term symptom relief.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article

Funding

No Funds : Yes

Conflicts of interest

There are no conflicts of interest.

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