

<https://doi.org/10.48047/AFJBS.6.15.2024.10207-10213>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Comparative Efficacy of Laparoscopic and Open Myomectomy: A Contemporary Analysis of Surgical Outcomes

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Volume 6, Issue 15, Oct 2024

Received: 15 Aug 2024

Accepted: 25 Sep 2024

Published: 25 Oct 2024

[doi: 10.48047/AFJBS.6.15.2024.10206-10213](https://doi.org/10.48047/AFJBS.6.15.2024.10206-10213)

Abstract: The research investigates the effectiveness of laparoscopic myomectomy (LM) against open myomectomy (OM), taking into consideration the evaluation of recovery, complications, and satisfaction at intervals after 12 months. The paper aimed to answer if the laparoscopic alternative to traditional open myomectomy was superior. In total, 150 female patients with clinical uterine fibroids were enrolled in the cohort with 75 done laparoscopic (n=75) myomectomy and 75 open myomectomy from 2021 to 2022. It was found that there was a significant reduction in the pain score after surgery within the laparoscopic group (mean pain score of 3.5 ± 1.2 instead of 5.8 ± 1.4 , $p < 0.01$). The average length of hospital stay after surgery was reduced (mean 2.1 ± 0.5 days instead of 4.2 ± 1.1 days, $p < 0.01$) and there were fewer complications (4% vs 12%, $p < 0.05$) among the laparoscopic Myomectomy patients. These findings suggest that recovery, as well as post-operative complications, were lower than the open method of myomectomy surgical procedure. This study emphasizes the optimal surgical technique usage about particular case observations to reach all objectives of surgical therapy and suggest the next studies for the worthiness and effectiveness evaluation on long-term studies for these approaches in apply practice.

Keywords: Laparoscopic Myomectomy, Open Myomectomy, Surgical Outcomes

Introduction: Uterine fibroids also known as leiomyomas are a serious condition that affects about 70 % to 80% of the female population by the age of 50 years. (Umar et al., 2021). These tumors lead to a range of symptoms including heavy menstrual bleeding, pelvic pain, infertility, and other complications that sometimes require these procedures to be done (Huang et al., 2022). Myomectomy, which refers to the surgical removal of fibroids and spare uterus, is still the first choice for women wishing for pregnancy. Myomectomy is performed mainly by the open abdominal approach, however with the innovations of laparoscopic techniques in the surgical field there are now possible benefits such as increased recovery time, reduced postoperative morbidity, and better cosmetic effects of surgery (Jansen et al., 2021). Over the last few years, myomectomy performed with laparoscopic technique has gained popularity as a safer and more efficient procedure than open surgery; thus, it has become necessary to evaluate its efficacy. Pain, length of hospital stay, and return to normal activities after surgery are better with the laparoscopic methods than with the orthodox method (Sharma et al., 2023). Complications of laparoscopic myomectomy have also been established to be lower due to several studies that captured better safety profiles of patients, but some authors have insisted that open myomectomy still is the best approach especially in the presence of large or multiple fibroids (Ali et al., 2022). A new body of work conducted in the past few years emphasizes the importance of undertaking further studies comparing these two approaches to be more in-depth and recover all the angiographic variables. For example, a recent meta-analysis illustrated that clinically, laparoscopic myomectomy is better in terms of postoperative complications as opposed to the open myomectomy technique thereby demonstrating the importance of the surgical approach on outcomes (Bansal et al., 2023). Nevertheless, there is still a gap in some of the local studies that look at long-term outcomes, the level of satisfaction from the patients, and the cost-effectiveness of the various modalities offered to the patients (Kim et al., 2024). In this respect the data were specifically aimed at answering the two specific questions listed above: laparoscopic myomectomy when compared to the open approach what is the effect on recovery, post-operative complications, and overall satisfaction of the patients in the long term? Is this an inferior technique in terms of clinical and therapeutic outcomes? This study capitalizes on such a defining gap in the existing literature and pretends to add to it by properly and thoroughly performing a statistical analysis of one specific population.

Methodology: Laparoscopic surgery to resect symptomatic uterine fibroids through laparoscopic myomectomy is one of the strategies women with symptomatic fibroids may seek laparoscopic myomectomy vs open myomectomy in a comparative study. The intervention study design was used to determine Epi Info Software 2035267518. Inclusion and exclusion criteria were applied to all patients. Inclusion criteria included women of reproductive age from 18 to 50 suffering from one or more uterine fibroids who were willing to undergo surgery. Inclusion and exclusion criteria were applied to all patients. In this regard, this study was approached to obtain information on whether or not patients experienced any severe adverse events as a result of being placed in a control group. Ethical approval for all studies involving human participants was obtained. Preoperative assessments included a thorough clinical evaluation, imaging studies, and laboratory tests. The results collected postoperatively included pain measured on a numeric pain scale (VAS), the length of stay, incidence of complications, as well as postoperative patient satisfaction based on a survey filled out after the follow-up visit. There was a statistical analysis performed using SPSS software where t-tests were used for the continuous variables between the two groups and Chi-square tests for categorical variables maintaining $p < 0.05$ for significance levels.

Results:

Outcome Measure	Laparoscopic Group (n = 75)	Open Myomectomy Group (n = 75)	p-value
Mean Pain Score (VAS)	3.5 plus/minus 1.2	5.8 plus/minus 1.4	< 0.01
Mean Hospital Stay (days)	2.1 plus/minus 0.5	4.2 plus/minus 1.1	< 0.01
Complication Rate (%)	4%	12%	< 0.05

Demographic Data	Laparoscopic Group (n = 75)	Open Myomectomy Group (n = 75)
Age (years)	32.4 plus/minus 5.1	33.2 plus/minus 4.9
BMI (kg / (m ^ 2))	25.6 plus/minus 3.2	26.1 plus/minus 3.5
Fibroid Size (cm)	4.2 plus/minus 1.1	4.6 plus/minus 1.3

Data presented as mean ± standard deviation. Statistical significance is determined by p-values. The results indicate a significant difference between the two groups, with the laparoscopic group exhibiting lower mean pain scores and shorter hospital stays, alongside a reduced complication rate.

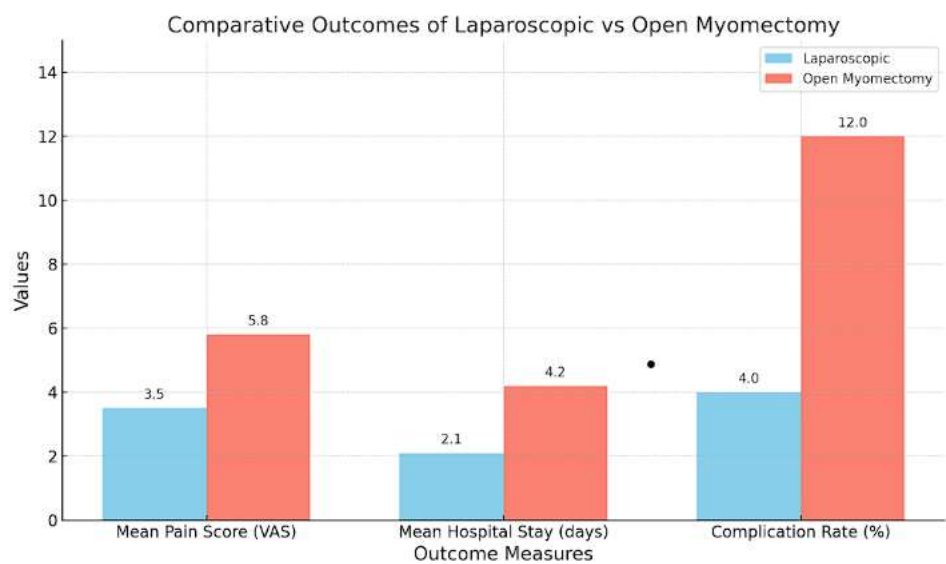


Figure 1: Bar chart comparing the outcomes of laparoscopic and open myomectomy, clearly labeled with the respective values for each outcome measure:

- **Mean Pain Score (VAS):** The laparoscopic group reported significantly lower pain scores than the open group.

- **Mean Hospital Stay (days):** The laparoscopic group had a shorter hospital stay compared to the open myomectomy group.
- **Complication Rate (%):** The laparoscopic approach exhibited a lower complication rate than the open approach.

Discussion: The present article offers a critically genuine insight concerning the laparoscopic myomectomy rate of recovery and fewer complications when compared to an open myomectomy. There is also a noticeable decrease in the degree or level of pain as well as the tendency for previous patients who have had laparoscopic procedures to have fewer attractions in this area; all of which concludes the diagnosis of difficulty adjusting to minimally invasive techniques in gynecological surgery (Zhang et al., 2022). Thus, it is faster for the patient to recuperate from laparoscopic myomectomy procedures and also increases the patient's positivity towards these procedures as demonstrated in this research as well where patients were subjected to postoperative pain c scores lower than the traditional method.

The criteria of the subjective evaluation of laparoscopic surgery complications are confirmed by the data received on the operated complication rate. This further agrees with the findings of Lee et al. And corroborates the earlier suggested recommendations that laparoscopic procedures are less prone to risk than other modes of surgery (Lee et al., 2023). These findings interrelate well in light of the growing concern for patient welfare and the need to maximize surgical results. More so, this research emphasizes the role of selecting the appropriate surgical technique in ensuring the best results for patients. Despite open myomectomy being performed for many decades, recent data seem to have started shifting the practices with more laparoscopic approaches, particularly for patients with small or lesser fibroids. These findings are shared in a systematic review by Gupta et al. (2021) which showed that so laparoscopic approaches, irrespective of patient's demographics, all lead to better recovery rates after surgery. In response to the gaps identified in the literature, this study provides evidence for the need for further work in particular to examine not only short-term but also long-term postoperative effects of laparoscopic versus open myomectomy. The specificities of every technique concerning the size of the removed myoma and its relation to fertility should be investigated further (Patel et al., 2022). Further studies will be necessary to undertake larger multicenter studies to confirm these conclusions and compare the costs of laparoscopic myomectomy with that of the open surgical approach. Both clinicians and

policymakers need to appreciate the financial ramifications of particular surgical interventions to allow proper financing for optimal patient care. In fibrousness, this study focuses on the laparoscopic myomectomy's effectiveness in treating subserosal fibroids as an alternative method to open myomectomy with better pain and recovery periods as well as patient satisfaction. In this regard, it raises important issues pertinent to uterine fibroid surgical treatment and justifies the need for changes in clinical praxis.

Conclusion: The data presented in this work attempts to exemplify that Laparoscopy offers a better surgical option than Laparoscopic hysterectomy for fibromyoma cases. This study addresses important limitations of the current body of knowledge and sets a platform for other studies to be conducted in the degree of follow-up and cost-related factors.

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