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ORIGINAL RESEARCH

Comparison of manual vaginal morcellation with laparoscopic power morcellation in specimen retrieval during laparoscopic myomectomy

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ABSTRACT

Background: Most popular specimen retrieval techniques in laparoscopic myomectomy are manual vaginal morcellation and power morcellation. **Materials and Methods:** This prospective study included 150 patients who underwent laparoscopic myomectomy. **Results**: Specimen extraction time was about 9.744 ±1.076 minutes in the vaginal morcellation group and 77.366 ±324.067 minutes in power morcellation group (p value 0.062). Cost of surgery in US dollars was 954.550± 2.272 USD in vaginal morcellation group and 1266.329± 215.246 USD in power morcellation group (p value < 0.001). About 0.013± 0.112 patients in vaginal morcellation group required of additional analgesia post operatively. This was required in about 0.171 ± 0.379 patients in power morcellation group (p value < 0.001). Patients who had vaginal morcellation were discharge ready at 128.625 ± 13.664 minutes. Whereas this was 182.561± 30.381 minutes in power morcellation group (p value of < 0.001). About 0.013± 0.112 patients in the vaginal morcelaltion group had wound related adverse effects. About 0.171 ± 0.379 patients had such adverse effects in the power morcellation group (p value < 0.001). **Conclusion**: From our findings we conclude that Manual vaginal morcellartion is a much quicker, inexpensive and less painful alternative to power moecellation to extract specimens after laparoscoic myometomy. Manual vaginal morcellation also has less wound related complications with quicker post operative discharge readiness.

Keywords: Erector spinae block, Regional Analgesia

INTRODUCTION

Uterine fibroids are the most common benign tumour seen in women. The incidence of fibroid is around1,2 laparoscopic myomectomy has evolved considerably in the hands of skilled surgeons. Undoubtedly the most preferred method to do myomectomy is laparoscopy and is considered the gold standard.[3] It has many advantages 20–25%. The various symptoms are heavy bleeding during periods, pain during periods, sub-fertility and pressure symptoms including abdominal distension in case of large fibroids. Minimally invasive techniques such as less adhesion and a quick return to normal activity. [4] There are various techniques to retrieve specimen during laparoscopic myomectomy. Most popular among these are manual vaginal morcellation and power morcellation. Due to the fear of power morcellation causing parasitic fibroids and spread of sarcoma, there has been a huge surge in the interest shown on alternate specimen retrieval techniques. [5] High cost associated with endo-bags used in power morcellation [6] further increased the interest on manual vaginal morcellations.

AIMS AND OBJECTIVES

To compare vagianal morcellation technique of specimen retrieval with power morcellation technique to retrieve specimen during laparoscopic myomectomy.

MATERIALS AND METHODS

This was a prospective observational study done at Saraswathi Institute of medical Sciences all patients who underwent myomectomy via laparoscopy route during this period were included in this study. All women with single fibroid with size between 5 cm and 7 cm were made a part of this study. Unmarried women who were sexually inactive, women with

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multiple fibroids and those with co-existing endometriosis were excluded from this study. The surgeries were performed by the same surgical team. Various outcome measures were specimen extraction time, cost of surgery, requirement of additional post-operative analgesia discharge readiness post-operatively and wound related adverse effects.

Data was entered into MS Excel sheets and was analysed using SPSS version 28.0. χ^2 test and student's unpaired t test were the tests of statistical significance employed.

RESULTS

A total of 150 patients underwent myomectomy via laparoscopy route at these centres. Out of this, 75 underwent manual vaginal morcellation and remaining had laparoscopic power morcellation. Mean age of patients in our study was 25.97 ± 3.6 yeras. The mean age in the patients who underwent manual vaginal morcellation was 26.05±3.6 and who underwent laparoscopic power morcellation was 25.89±3.6 years.

Average size of fibroid in patients who underwent manual vaginal morcellation was 5.6±0.8cm and in patients who had laparoscopic power morcellation was 6±0.8cm. This was comprable. Specimen extraction time was about 9.744 ±1.076 minutes in the vaginal morcellation group. Where as in the power morcellation group it was much higher (77.366 ±324.067 minutes). Time taken for power morcellation included time to insert the morcellation bag, power morcellator and specimen extraction. This value was statistically not significant (p value 0.062). Cost of surgery in US dollars was 954.550± 2.272 USD in patients who underwent vaginal morcellation. The cost was 1266.329± 215.246 USD in those who had power morcellation. This difference was found to be statistically significant (p value < 0.001). About 0.013± 0.112 patients who underwent vaginal morcellation required additional analgesia post operatively apart from the routine analgesia administered. The requirement of additional post operative analgesia recorded in about 0.171 ± 0.379 patients. This difference was found to be statistically significant (p value < 0.001). Patients who had vaginal morcellation were discharge ready at 128.625 ± 13.664 minutes after surgery. Where as this time was 182.561± 30.381 minutes in patients who underwent power morcellation. This finding was statistically significant with a p value of < 0.001. About 0.013± 0.112 patients in the vaginal morcellation group had wound related adverse effects, where as as many as 0.171 ± 0.379 patients had such adverse effects in the power morcellation group. This difference was again found to be statistically significant (p value < 0.001).

DISCUSSION

Specimen extraction has always been a challenge following laparoscopic surgeries, Different methods have been tried for specimen retrieval. Most important ones are laparoscopic power morcellation and manual vaginal extraction of specimen, in this study we have compared these two methods of specimen retrieval.

Time taken to extract the specimen was in patients who underwent manual vaginal morcellation was 77.366±324.067 minutes and in patients who underwent laparoscopic power morcellation, it was 9.744 ±1.076 minutes. However, we did not find this observation to be statistically significant. Still, this observation shows that manual vaginal morcellation was much quicker than power morcellation the increased duration in power morcellation is due to the time taken to insert the morcellation bag and the power morcellator. Quicker surgeries results in less anaesthesia risk to patients. Similar findings were made by Boza A et al in their study on laparoscopic myomectomy. [7]

Cost of surgery in US dollars was 954.550± 2.272 USD in patients who underwent vaginal morcellation. The cost was 1266.329± 215.246 USD in those who had power morcellation. This difference was found to be statistically significant (p value < 0.001). This shows cost of surgery is much higher when we use power morcellator. This could be due to the usage of morcellation bags which are expensive and the cost incurred with the use of power morcellator. A study by Güven et al came up with similar findings. However, in Güven's particular study, comparison was drawn between morcellation bags and glove bags. But this is very much relatable to our study. [8]

The data presented compares two groups of patients who received distinct methods of morcellation—Vaginal Morcellation and Power Morcellation—in terms of postoperative results. In terms of discharge preparedness, the mean time for the Vaginal Morcellation group (N=80) is 128.625 minutes with a standard deviation of 13.664 minutes and a standard error of 1.528. The Power Morcellation group (N=82) had a higher mean time (182.561 minutes), with a standard deviation of 30.381 minutes and a standard error mean of 3.355. The independent sample t-test value for this comparison is 14.511, with a P value less than 0.001, indicating a statistically significant difference between the two groups.

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Table 1: Various parameters studied

	Size of fibroid (cm)	Specimen extraction time (minutes)	Cost of surgery(in USD)	Discharge readiness post operatively	Requirement of additional post op analgesia	Wound related adverse effects
Patients who underwent manual vaginal morcellation	5.6	9.744 ±1.076	954.550± 2.272	128.625 ± 13.664	0.013± 0.112	Nil
Patients who underwent laparoscopic power morcellation	6	77.366 ±324.067	1266.329± 215.246	182.561± 30.381	0.171 ± 0.379	0.061± 0.241
p value	0.062	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005

The mean number of participants in the vaginal morcellation group who require extra postoperative analgesia was 0.013, with a standard deviation of 0.112 and a standard error of the mean of 0.013. The mean number of patients requiring supplemental analgesics in the Power morcellation group is 0.171, with a standard deviation of 0.379 and a standard error of 0.042. The independent samples t-test yields a t-value of 3.588, with a P value of less than 0.001, indicating a statistically significant difference between the two groups. A study by Ali Akdemir et al made observations similar to our study. [9] Similar findings were alsos made by Laganà AS et al in their study. [10]

These findings indicate that individuals having Vaginal Morcellation are more ready for discharge postoperatively, and they also need less additional postoperative analgesia in comparison to those undergoing Power morcellation. A patient is considered discharge ready when she is free of pain and anaesthesia related complications. This time was shorter in vaginal morcellation group s compared to power morcellation group.Patients who had vaginal morcellation were discharge ready at 128.625 ± 13.664 minutes after surgery. Whereas this duration was 182.561± 30.381 minutes in patients who underwent power morcellation. Both comparisons had statistically significant P values (<0.001), confirming the robustness of the findings. The t-values used in the analysis are those of an independent samples t-test. This test compares the means of two independent groups to see if there is a statistically significant difference between them. In this regard, patients undergoing vaginal morcellation and power morcellation are compared. The independent samples t-test is suitable here, because the two groups are distinctive and not paired or matched.

No patients in the vaginal morcellation group had wound related adverse effects, where as 0.061± 0.241 patients had such adverse effects in the power morcellation group. This difference was again found to be statistically significant (p value < 0.001). Various wound related adverse effects were surgical site infections, pain at surgical site and herniation at morcellation wound site. Study by Sparic et al reported similar rates of wound related adverse effects following power morcellation. [11]

A study by Abouzid A et al made observations on complications of trans-vaginal specimen extraction where in he reported very few wound related adverse effects following specimen extraction vaginally. This was similar to the observations made by us. [2]

CONCLUSION

Manual vaginal morcellation is a much quicker, inexpensive and less painful alternative to power morcellation to extract specimens after laparoscopic myomectomy. Manual vaginal morcellation also has less wound related complications with quicker post operative discharge readiness.

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