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Comparison of Mean Pain Score in Patients Undergoing Total Laparoscopic Hysterectomy and Total Abdominal Hysterectomy

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ABSTRACT

Background: Laparoscopic hysterectomy becomes a preferred option all over the world because it is related with less post-operative pain, short hospital stay and early recovery as compared with total abdominal hysterectomy. **Objective:** To compare mean pain scores between patients undergoing total laparoscopic hysterectomy and total abdominal hysterectomy. **Study Design:** Randomized control trial. **Settings:** Department of Obstetrics & Gynecology, Allied Hospital, Faisalabad Pakistan. **Duration:** 8th March 2019 to 7th September 2019. **Methods:** Total 60 patients about 40-75 years of age undergoing hysterectomy were selected. Patients with history of pelvic or abdominal irradiation, endometriosis or pelvic inflammatory disease, history of cardiac or pulmonary disease or previous pelvic surgery were excluded. Patients were randomized in group A, where total laparoscopic hysterectomy was performed where as in group B, total abdominal hysterectomy was performed. All patients were followed for mean post-operative pain for first 24 hours. **Results:** Our study showed that stratification of pain scores with respect to age in 40-60 years age group was significant where as in 61-75 years age group it was nonsignificant. BMI was another effect modifier, which showed significance in both groups (<25 and >25BMI). Postoperative mean pain score was assessed in both groups at 2hr, 4hr, 8hr, 12hr and 24hr, showed significance. **Conclusion:** Standardized technique, patients counselling, relatively younger age group, lower BMI and appropriate post-operative nursing care plays vital role in maintaining pain scores in TLH.

Keywords: *Total laparoscopic hysterectomy (TLH), Total abdominal hysterectomy (TAH), Mean pain score.*

INTRODUCTION

Hysterectomy is among the most common surgical procedure performed by gynecologists worldwide.[1] In United States, around 600,000 hysterectomies are performed annually,[2] second only to cesarean sections[3]. Common indications for hysterectomy in literature are fibroid uterus (33%), uterine prolapse (28%), abnormal uterine bleeding (21%) and chronic pelvic pain (3%).[4]

Total abdominal hysterectomy (TAH) is a safe and suitable procedure for patients suffering from advanced pelvic malignancies or other pelvic pathologies that makes them unsuitable for vaginal or laparoscopic surgery.

After the introduction of laparoscopic hysterectomy in 1989, a growing trend to perform this procedure using minimally invasive technique spread worldwide. Laparoscopy have the advantage of improved overall patient's satisfaction due to less per-operative hemorrhage, requirement for blood transfusion,[5] less incidence of wound related complications and reduced postoperative pain which ultimately lead to early discharge and return to routine life. As far as disadvantages are concerned longer operative time thus more tissue manipulation, long learning curve and relative increased incidence of operative complications are noteworthy. Experienced surgeons, following standardized technique can overcome such issues. Post-operative pain is one of the most important factors while

considering any surgical procedure from a patient's perspective.[6] The rationale of this study was to highlight the patient related benefits of laparoscopic hysterectomy in comparison to conventional total abdominal hysterectomy in terms of reduced post-operative pain. Other benefits such as early mobility and return to routine daily activity as well as reduce hospital stay decrease overall cost of the procedure.

METHODS

Randomized control trial was used as study design. It was done in Department of Obstetrics & Gynecology, Allied Hospital, Faisalabad. Duration of study was from 8th March 2019 to 7th September 2019. By using WHO sample size calculator for two population mean, the total sample size came 60 (30 in each group) keeping power of study 90%; level of significance 5%; anticipated population mean 3.98[7] test value of population mean 5.57[7] and the pooled standard deviation as 1.06. Sampling technique used was non-probability, consecutive sampling. Patients with 40-75 years of age group were included with any of the following benign diagnosis:

- Fibroid uterus (12 – 14 weeks)
- Bleeding of endometrial origin (BEO)
- Uterine prolapse (first degree)
- Chronic pelvic pain.

Uterine size greater than 14wks, BMI more than 35, previous pelvic or abdominal irradiation, severe endometriosis or pelvic inflammatory disease, advance pelvic malignancy, history of cardiac or pulmonary disease and previous history of pelvic surgery patients were excluded from the study.

After taking approval of this study from hospital ethical review committee. Patients of both groups were well informed regarding purpose of this study and the operative procedure. Written informed consent was taken from both groups with contact details. Surgeries in both groups were done under general anesthesia. Patients in Group A underwent Total laparoscopic hysterectomy (TLH) whereas patients in Group B had undergone Total abdominal hysterectomy (TAH), resected specimens were later sent for histopathology.

In post-operative period patients of both groups were provided with analgesia in the form of 75mg diclofenac sodium injection by intramuscular route 12 hourly in first 24 hour. In patients where pain was not controlled with baseline therapy, additional injection of intravenous opioid was given and recorded. Patients were mobilized on first postoperative day, TLH group patients got discharged on second postoperative day whereas TAH group patients were discharged on 3rd postoperative day with no active complaints.

The patients in both groups were compared for the degree of pain experienced by them at 2hr, 4hr, 8hr, 12hr and 24hr after surgery. This information was collected using visual analogue scale ranging from 0 to 10; 0 being no appreciable pain, 5 moderate pain and 10 worst possible pain. All the data was collected with the help of a questionnaire.

Data was analyzed using SPSS v18. Descriptive statistics like mean and standard deviation were calculated for all quantitative variables like age, BMI and visual analogue scale (VAS). Independent sample t-test was used to compare pain scores in both groups. Effect modifiers like age and BMI were controlled by stratification. Post stratification independent sample t-test was applied, p-value less than 0.05 was taken as significant.

RESULTS

TLH was first introduced in 2015 in our department and since then most patients discharged within 48 hours of surgery, even some patients were discharged on same day. Characteristics of 60 patients were summarized according to age in Table 1, where mean age was 52.13 ± 6.56 and according to BMI in Table 2 mean BMI was 28.90 ± 2.42.

Table 1: Age distribution for both groups (n=60)

Age (years)	Group A (n=30)		Group B (n=30)		Total (n=60)	
	No. of patients	%age	No. of patients	%age	No. of patients	%age
40-60	24	80.0	25	83.33	49	81.67
61-75	06	20.0	05	16.67	11	18.33
Mean ± SD	53.50 ± 6.75		50.40 ± 6.20		52.13 ± 6.56	

Table 2: Distribution of patients according to BMI in both groups

BMI (kg/m²)	Group A (n=30)		Group B (n=30)		Total (n=60)	
	No. of patients	%age	No. of patients	%age	No. of patients	%age
< 25	12	40.0	09	30.0	21	35.0
>25	18	60.0	21	70.0	39	65.0
Mean ± SD	28.80 ± 2.67		29.0 ± 2.13		28.90 ± 2.42	

VAS score evaluation at 2,4,8,12 and 24 hours postoperatively were reported in Table 3. Significant difference in pain score was found between the two groups. This study described the pain characteristics during first 24 hours postoperatively in patients

undergoing TLH as well as TAH. Our results showed that overall pain score after TLH remained low throughout as compared to TAH where it rises initially and then plateaued.

Table 3: Comparison of mean pain scores between patients undergoing total laparoscopic hysterectomy and total abdominal hysterectomy

	Time in hour	Group A (n=30)	Group B (n=30)	p-value
		Mean ± SD	Mean ± SD	
Pain score	2	3.1 ± 1.16	7.13 ± 1.48	0.0001
	4	2.33 ± 1.16	5.5 ± 1.28	0.0001
	8	2.67 ± 0.96	5.27 ± 0.83	0.0001
	12	3.53 ± 0.86	5.53 ± 0.97	0.0001
	24	2.53 ± 1.01	5.9 ± 0.85	0.0001

Table 4: Stratification of pain scores with respect to age

		Group A (n=30)		Group B (n=30)		P-value
		pain scores		pain scores		
		Mean	SD	Mean	SD	
Age (years)	40-60	3.46	0.83	5.68	0.95	0.0001
	61-75	3.83	0.98	4.80	0.84	0.116

There was no significant difference among 61-75year age groups regarding the severity of pain, whereas raised BMI showed significant difference in overall postoperative pain as mentioned in stratification of mean pain score with respect to age in Table 4 and stratification of mean pain score with respect to BMI in Table 5.

Table 5: Stratification of pain scores with respect to BMI

		Group A (n=30)		Group B (n=30)		P-value
		pain scores		pain scores		
		Mean	SD	Mean	SD	
BMI (kg/m^2)	<25	3.50	0.80	5.22	1.09	0.0001
	>25	3.56	0.92	5.67	0.92	0.0001

DISCUSSION

It has been 20 years since Harvey Reich performed the first total laparoscopic hysterectomy.[8] A meta-analysis by the Cochrane Library showed that the benefits of laparoscopic hysterectomy versus abdominal hysterectomy were higher because of shorter duration of hospital stay, rapid return to normal activities, less abdominal wall infections at the cost of longer operating time and more urinary tract (bladder or ureter) injuries.[9]

We have conducted this study to compare mean pain scores between laparoscopic and total abdominal hysterectomy patients. Mean pain score was calculated by VAS at 2,4,8,12 & 24 hours, which showed significance in TLH group as compared to TAH group. Terzi H *et al* conducted study which manifest mean post-operative pain scores in laparoscopic hysterectomies considerably less than those undergoing abdominal route at various intervals.[10]

Sutasanasuang S study showed similar results like ours where mean pain score (5.4 +/- 0.7 vs. 8.7 +/- 1.3), hospital stay (3.2 +/- 1.1 d vs. 5.3 +/- 4.3 d) in laparoscopic hysterectomy was significantly less than in the TAH group.[11] Sirisabya *et al* found similar postoperative pain and patient satisfaction results as in our study, but with much higher postoperative complication rate in laparoscopic group.[12] Obesity has been associated with pain sensitivity although with some contradictory results.[13] Raised BMI effect the pain score after TLH which is significant in our study in comparison to study conducted by Choi JB *et al*[14].

Some studies compared pain score between LAVH and VH as Eggemann H *et al* found lower pain scores were in VH by less than 1 numeral rating scale (NRS) as compared to LAVH, which was not significant.[15] In another study conducted in Turkey, no difference found between the studied groups with respect to parity and BMI. Duration of hospitalization and need for analgesia were significant in laparoscopic hysterectomy as compared to vaginal hysterectomy.[16] Muzii *et al* done a prospective randomized multicenter study, his results declared lower pain score in LAVH group by 1.5-2 (NRS) on first and second postoperative day as compared to abdominal group which supports our study.[17]

Most studies focus on quality of life, whereas few studies had evaluated pain scores after procedure. Donnez O et al used VAS score to evaluate pain postoperatively comparing TLH and VH in cases of benign disease, which corelate with our study and hence showed advantage in TLH group[18]. Some studies focused quality of life and favorable operative outcome like conducted by Billfeldt el at a Swedish study, which showed postoperative outcomes to be favorable in TLH as compared to abdominal group[19]. Seung H et al conducted a meta-analysis, between VH and LH group which showed no difference in overall complications and postoperative pain in both groups.[20]

CONCLUSION

Our results clearly showed that TLH is safe procedure with low levels of mean pain score. Standardized technique as well as patients counseling and appropriate post-operative nursing care plays vital role in maintaining pain scores in TLH.

LIMITATIONS

Single institution base study with limited sample size.

SUGGESTIONS / RECOMMENDATIONS

Majority of studies focus quality of life while comparing TLH and TAH, very few studies concentrate on pain management. We suggest further studies should be carried out on pain management at larger scale.

CONFLICT OF INTEREST / DISCLOSURE

None.

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