

Laparoscopy: A See- and -treat Modality for Lower Abdominal Pain in Females

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ABSTRACT

Background: In females, lower abdominal pain (LAP) is a common presenting complaint that has a diverse etiology. It can involve reproductive, gastrointestinal, genitourinary, and musculoskeletal systems; therefore, accurate diagnosis is a clinical challenge. Laparoscopy has become the gold standard for the diagnosis and management of LAP.

Aims and objectives: To diagnose the cause of LAP with laparoscopy and to correlate it with clinical examination and ultrasound.

Materials and methods: A prospective study was conducted from December 2012 to January 2015 in JNMCH, Aligarh. Laparoscopy was performed on 84 patients with complaints of LAP (acute, subacute, or chronic). Data were statistically analyzed on the basis of the epidemiology, clinical features, ultrasound findings, and laparoscopic findings. Correlation of clinical, ultrasound, and laparoscopic finding was done.

Results: With laparoscopy, diagnosis was established in 94.1% ($n = 79$) of patients. The most common cause of LAP was pelvic inflammatory disease (PID) present in 20.2% ($n = 17$) of patients followed by endometriosis in 17.9% ($n = 15$), ectopic pregnancy in 15.5% ($n = 13$), ovarian cyst in 15.5% ($n = 13$), genital TB in 7.1% ($n = 6$), etc. Therapeutic laparoscopy was performed in 82.1% ($n = 69$) of women, which included adhesiolysis, cystectomy, cystotomy, salpingectomy, salpingostomy fulguration of endometriotic lesions, ovarian drilling, myomectomy, and salpingo-oophorectomy.

Conclusion: Laparoscopy can be used as the first-line interventional investigation for LAP. Besides diagnosis, it also has a therapeutic role. Therefore, it can be considered as a “see and treat” modality.

Keywords: Adhesiolysis, Laparoscopic, Ultrasound.

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INTRODUCTION

In females, lower abdominal pain (LAP) is a very common presenting complaint in both the outpatient and emergency department. It can be acute, subacute, and chronic in nature. Acute LAP is intense and characterized by sudden onset, sharp rise, and short course. To consider a pain as acute pelvic pain, different authors have defined different durations. Some authors have defined it as the pain lasting for less than 7 days¹ while others have defined it as the pain lasting for less than 3 months.² The gynecological causes of acute pelvic pain are pelvic inflammatory disease (PID), ectopic pregnancy, adnexal torsion, ruptured ovarian cyst, and adhesions. Subacute pelvic pain is the pain that does not clearly fit either in acute or chronic category and requires consideration of differential diagnosis for both acute and chronic pain. Chronic pelvic pain is defined as intermittent or constant pain in the lower abdomen or the pelvis of at least 6 months' duration, not associated with menstruation, intercourse, or pregnancy. It is severe enough to cause functional disability or may require medical or surgical intervention.³ The causes of chronic pelvic pain are chronic PID, endometriosis, and adhesions.⁴

The etiology of LAP is diverse. It can be reproductive, gastrointestinal, genitourinary, or musculoskeletal. Hence, accurate diagnosis of the underlying cause presents a clinical challenge.^{3,4} In many cases, the cause of LAP remains obscure despite thorough examination, lab investigations, and noninvasive imaging like ultrasonography (USG), CT, and MRI. Laparoscopy has been increasingly recognized as a key in solving the diagnostic dilemma. Not only that, treatment may also be provided in the same sitting.⁵ Therefore, the present study was conducted to assess the role of laparoscopy for diagnosis and management of LAP.

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MATERIALS AND METHODS

The prospective study was conducted on 84 patients from December 2012 to January 2015 after getting approval from the ethical committee. Women with complaints of LAP—acute, subacute, and chronic—were included in the study. Patients with abdominal trauma, gynecological malignancy, cardiopulmonary disease, and peritonitis were excluded from the study.

A detailed clinical history was taken regarding site, duration, pain, nature, and radiation of pain; aggravating and relieving factors; and associated complaints like dyspareunia, dysmenorrhea, discharge per vaginam, gastrointestinal, and urological complaints. Menstrual history, obstetric history, and past history were also taken.

All women underwent a thorough general, systemic, and gynecological examination. Routine investigations were carried

out in all the patients, which included complete hemogram, renal function test, random blood sugar, urine examination, and culture sensitivity, if required. Imaging methods included USG of the abdomen and the pelvis, which was performed in all the patients, and X-ray, CT scan, or MRI whenever necessary. Laparoscopy was performed in all the patients under general anesthesia; the Karl Storz laparoscope (10 mm and 5 mm), both straight viewing 0° and oblique viewing 30°, was used.

The methodical inspection of the upper and lower abdomen was done. All the pathological findings were noted, and if required the operative procedure was also done in the same sitting like taking biopsies, performing adhesiolysis, cyst aspiration, cystectomy, salpingectomy, oophorectomy, etc. All the samples were sent for histopathological examination and the final diagnosis was confirmed. In cases where complication occurred or therapeutic laparoscopy was difficult, the laparoscopic procedure was converted into laparotomy. The gathered data were statistically analyzed. Descriptive statistics that included frequency, mean, percentage, and standard deviation were calculated. The McNemar's test was used to test the significance of difference for qualitative variables. The Probability value (p value < 0.05) was considered statistically significant.

RESULTS

The mean age of patients in the study was 28.0 ± 6.4 years (age range 15–60 years). The other characteristics of the patients are as shown in Table 1. We categorized the duration of pain as acute (duration of less than 1 week), which was present in 16.7% ($n = 14$), as subacute (duration of 1 week to 6 months) in 26.2% ($n = 22$), and as chronic (duration of more than 6 months) in 57.1% ($n = 48$) of patients. The maximum duration of pain was 36 months and the minimum duration was 24 hours.

Along with LAP, the associated symptoms were dysmenorrhea in 30.9% ($n = 26$), primary infertility in 22.6% ($n = 19$), dyspareunia in 15.4% ($n = 13$), spotting in 14.3% ($n = 12$), secondary infertility in 9.5% ($n = 8$), white discharge per vaginam in 7.2% ($n = 6$), oligomenorrhea in 7.2% ($n = 6$), and menorrhagia in 5.9% ($n = 5$) of patients. Per vaginal examination revealed tenderness in the fornix 34.5% ($n = 29$), adnexal mass 30.9% ($n = 26$), restricted mobility of the uterus 19.0% ($n = 16$), fullness in the fornix 15.5% ($n = 13$),

cervical motion tenderness 15.5% ($n = 13$), retroverted uterus 8.3% ($n = 7$), and bulky uterus 8.3% ($n = 7$).

Transabdominal ultrasound was performed in all the patients. The collection in the pouch of Douglas was found in maximum number of cases 34.5% ($n = 29$), followed by other abnormalities as shown in Table 2. After history, examination, and ultrasound, a provisional diagnosis was established in only 75% ($n = 63$) of patients. In rest of 25% ($n = 21$), the diagnosis was in dilemma. Most common cause was PID in 19.0% ($n = 16$) followed by other causes (Table 3).

All the 84 patients underwent laparoscopy for confirmation. After which diagnosis was established in 94.1% ($n = 79$) of patients. In 5.9% ($n = 5$) of patients, diagnosis of pain could not be established as no pelvic pathology was observed on laparoscopy. The most cause of LAP after laparoscopy was PID present in 20.2% ($n = 17$) of patients (Table 4).

The second most common diagnosis was endometriosis present in 17.9% ($n = 15$) of cases. Ectopic pregnancy was present in 15.5% ($n = 13$) of cases. Ovarian cyst was found in 15.5% ($n = 13$) of cases. About 7.1% ($n = 6$) of females were diagnosed as cases of genital TB. Out of which, one case was of genital TB with fibroid. polycystic ovarian disease (PCOD) was found in 4.8% ($n = 4$) of cases. Intra-abdominal adhesions formed secondary to past history of

Table 2: Findings on transabdominal ultrasonography

Structure	Abnormality	Number	Percentage
Uterus	Fibroid	3	3.6
	Perforation	1	1.2
	Absent (post-hysterectomy)	1	1.2
	Didelphys with hematometra hematocolpos	1	1.2
Fallopian tubes	Ectopic pregnancy	13	15.5
	Dilated	2	2.4
	Hydrosalpinx	2	2.4
Ovaries	Ovarian cyst	13	15.5
	Ovarian endometriosis	10	11.7
	TO mass	4	4.8
	Polycystic ovaries	4	4.8
Pouch of Douglas	Collection	29	34.5
	Intrauterine contraceptive device	2	2.4

Table 1: Characteristics of the patients

	Number	Percentage
Marital status		
Married	76	90.5
Unmarried	08	9.5
Parity		
Nulliparous	48	57.1
Multiparous	36	42.9
Past history		
Abdominal surgery	22	26.1
PID	20	23.8
Pulmonary TB	2	2.4
Abdominal TB	1	1.2
Duration of pain		
Acute	14	16.7
Subacute	22	26.2
Chronic	48	57.1

Table 3: Provisional diagnosis on the basis of history, examination, and ultrasound

Diagnosis	Number	Percentage
Diagnostic dilemma	21	25.0
PID	16	19.0
Ovarian cyst	13	15.5
Ectopic pregnancy	13	15.5
Endometriosis	10	11.9
Polycystic ovarian disease	4	4.7
Fibroid	3	3.6
Misplaced Intrauterine contraceptive device	2	2.4
Cervicitis	1	1.2
Didelphys uterus	1	1.2
Total	84	100

Table 4: Final diagnosis after laparoscopy

Laparoscopic diagnosis	Number	Percentage
Pelvic inflammatory disease	17	20.2
Endometriosis	15	17.9
Ectopic pregnancy	13	15.5
Ovarian cyst	13	15.5
Genital TB	6	7.1
Diagnostic dilemma	5	5.9
Only adhesions	5	5.9
Polycystic ovarian disease	4	4.8
Fibroid	2	2.4
Misplaced intrauterine contraceptive device with uterine perforation	2	2.4
Uterus didelphys with obstructed hemivagina	1	1.2
Pelvic abscess	1	1.2
Total	84	100

Table 5: Correlation between provisional and laparoscopic diagnosis of lower abdominal pain

		Laparoscopic diagnosis		
		Diagnosed	Undiagnosed	Total
Provisional diagnosis	Diagnosed	62	1	63
	Undiagnosed	17	4	21
	Total	79	5	84

abdominal surgery without any gynecological problem were found in 5.9% ($n = 5$) of cases. Myoma was found in 2.4% ($n = 2$) of cases. There were two (2.4%) cases of misplaced intrauterine contraceptive device (IUCD) where the IUCDs were found in the Pouch of Douglas (POD). One patient (1.2%) was diagnosed as the didelphys uterus with obstructed hemivagina with hematometra, hematocolpos, and hematosalpinx. There was one (1.2%) case of pelvic abscess where thick pus with adhesion was present.

Correlation was done between the provisional diagnosis, made on the basis of clinical examination and abdominal ultrasound, with the final diagnosis made after laparoscopy and histopathology (Table 5). There were 73.8% ($n = 62$) cases where the cause of LAP was diagnosed both by clinical examination with USG and by laparoscopy. In 20.2% ($n = 17$) of cases, no abnormality was detected on clinical examination and USG; diagnosis was in dilemma. Only after laparoscopy, the cause of LAP was established. There were 7.1% ($n = 6$) cases of genital TB, 5.9% ($n = 5$) cases of endometriosis, 5.9% ($n = 5$) cases of intra-abdominal adhesions, and 1.2% ($n = 1$) cases of PID. There was one case (1.2%) of chronic cervicitis where no abnormality was found on either laparoscopy or ultrasound. It was found on clinical examination. No abnormality was detected in 4.8% ($n = 4$) cases either on clinical examination, USG, or laparoscopy. On applying the McNemar's test, the p value was less than 0.05, which shows laparoscopy is statistically significant for the diagnosis of LAP. So, when history, examination, noninvasive investigations, and laparoscopy are combined the diagnosis rate is increased. Not only that, the patients are treated in the same sitting when the pathology was noted.

Diagnostic as well as therapeutic laparoscopy was performed in 82.1% ($n = 69$) of women. Adhesiolysis was done in 41.7% ($n = 35$),

Table 6: Therapeutic laparoscopy

Laparoscopic treatment	Number	Percentage
Adhesiolysis	35	41.7
Cystectomy	15	17.9
Fulguration of endometriotic plaques	15	17.9
Cystotomy	8	9.5
Salpingectomy	8	9.5
Salpingostomy	5	5.9
Ovarian drilling	4	4.8
Myomectomy	3	3.6
Intrauterine contraceptive device removed from peritoneal cavity	2	2.4
Salpingo-oophrectomy	1	1.2

followed by other procedures given in Table 6. In 8.3% ($n = 7$) cases, the laparoscopy was converted into laparotomy and treatment was provided in the same sitting. No major intraoperative, postoperative, or anesthetic complications were encountered.

DISCUSSION

Lower abdominal pain represents a significant problem in female patients. It is a common problem faced not only by the gynecologists but by all practicing physicians. For the correct diagnosis of lower abdominal pathology, even a battery of investigations may not reveal exact cause of pain. In the present study, on the basis of history, examination, and ultrasound a provisional diagnosis could be reached only in 75% ($n = 63$) of the cases and rest of the 25% ($n = 21$) cases did not revealed any abnormality, which is similar to the study conducted by Morino et al., who diagnosed 73.4% of patients on the basis of basic investigations and abdominal USG.⁶

Although laparoscopy is an invasive modality, it allows the surgeon to survey the entire abdomen through a small puncture, better than any other investigative modalities. It can be considered as the first-line interventional investigation for LAP. In the present study after laparoscopy, pathology was found in 94.1% ($n = 79$) of cases and no abnormality was noted in remaining 5.9% ($n = 5$) of patients. Thus, laparoscopy increases the chances of diagnosing the cause of LAP. This shows that laparoscopy is a very good diagnostic tool for the LAP. Our finding is quite similar to Arya and Gaur, Bareeq and Dayna, Ali et al., and Baria, who also reported pathology on laparoscopy in 90, 98, 93.3 and 90% of cases, respectively.⁷⁻¹⁰ Moussa et al., Kang et al., and Morino also found abnormality in nearly same frequency, 78.6, 79.2, and 80%, respectively.^{6,11,12}

Besides diagnosis, laparoscopy can also help in the management of both acute, subacute, and chronic LAP. Therapeutic intervention like adhesiolysis, fulguration of endometriotic lesions, cystectomy, and salpingectomy can be done at the same sitting, thus avoiding unnecessary laparotomy. Therefore, it can be considered as a "see and treat" modality. In the present study, therapeutic laparoscopy was performed in 82.1% of woman. Moussa, Arya and Gaur, Bareeq and Dayna, Baria, and Kumar et al. also have performed therapeutic laparoscopy in the same sitting in 64.3, 75.5, 78, 90, and 69% patients, respectively.^{7,8,10,12,13}

Sometimes, though no abnormality is detected on laparoscopy, it helps in giving reassurance to the patients and removes the psychological concern, which is associated with chronic pelvic pain. If laparoscopic exploration is not sufficient, the surgeon should not hesitate to convert into laparotomy. In the present study, 8.3%

($n = 7$) cases were converted to the open procedure for therapeutic intervention. Studies like Arya and Gaur, Bareeq and Dayna, and Teamma also converted laparoscopy into therapeutic laparotomy in 13.5, 2, and 6.4% cases, respectively.^{7,8,14} The reasons behind the conversion in their studies were early experience, extensive adhesions, bowel resection, and technical fault.

Limitations

Transvaginal ultrasound was not done, which is more sensitive and specific for detecting pelvic pathology. Preoperative and postoperative pain scoring, to assess the resolution of pain, was not done.

CONCLUSION

Laparoscopy can be considered as a diagnostic and therapeutic tool in acute, subacute, and chronic LAP. It can also be considered as the first-line minimally invasive investigation for undiagnosed LAP.

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