ORIGINAL ARTICLE

Diagnostic Laparoscopy for Chronic Pelvic Pain after Hysterectomy: A Nonrandomized Control Study from North India

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Abstract

Background: Chronic pelvic pain (CPP) following a surgical procedure has been reported to affect a significant number of patients and is associated with a decreased quality of life.

Objective: To evaluate CCP laparoscopically in patients who had previously undergone hysterectomy for benign lesions.

Material and methods: A multicentric study conducted over a period of 8 years. The study group included 88 females with posthysterectomy CPP of more than 8 months in whom a definitive diagnosis was either not reached or was in doubt despite thorough clinical and radiological investigations. Fifty-four patients agreed to the procedure while 34 patients were treated conservatively. Baseline characteristics, subjective pain relief, and overall patient satisfaction were compared between the two groups.

Results: The mean age of the patients, body mass index (BMI), duration of symptoms, preoperative visual analog scale (VAS) for pain, and primary approach for hysterectomy were found to be statistically insignificant between the operative and conservative groups ($p > 0.05$). The most common indications for previous hysterectomy in both groups were dysfunctional uterine bleeding and leiomyoma. The most frequent findings at diagnostic laparoscopy were adhesions (53.70%), cystic lesions of preserved functional ovary (22.22%), and hydro/pyosalpinx (9.25%). Ten (18.51%) patients did not reveal any obvious positive finding. Adhesiolysis and ovarian cystectomy were the most frequently done procedures. Laparoscopic diagnosis was confirmed by histopathology in most of the patients. Improvement in VAS score was more significant in the operated group than in the conservative group.

Conclusion: Diagnostic laparoscopy is an effective and accurate tool to evaluate CPP after gynecological surgery apart from being an excellent approach for therapeutic interventions.

Keywords: Chronic pelvic pain, Diagnostic laparoscopy, Hysterectomy.

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Introduction

Chronic pelvic pain (CPP) can be defined as constant or intermittent lower abdominal or pelvic pain, not related to the menstrual cycle lasting for a duration of at least 6 months and is severe enough to cause functional disability which may require medical or surgical treatment.[1] The prevalence of CPP varies between 12 and 39% of the reproductive age group women.[2] Several studies have demonstrated that a number of surgical procedures like amputations, thoracotomy, mastectomy, and inguinal herniorrhaphy per se may cause chronic or long-lasting pain in about 6–7% of cases. Various risk factors suggested as a cause of chronic postsurgical pain include the type of surgery, initial preoperative pain, acute postoperative pain, psychological factors as well as genetic factors.[3]

About 10% of gynecological patients attending outpatient departments (OPDs) have CCP as their primary symptom, out of which exploratory laparoscopy is indicated in 40% of these women, but to what extent specifically a gynecologic surgery in itself is responsible for chronic pain has been barely studied.[1,4–6] Chronic postoperative pain of varying degrees has been reported to affect 4.7–31.9% of women following hysterectomy. Chronic pelvic pain is associated with a decreased quality of life in them as well as poses a significant clinical challenge to be managed adequately.[4,7] The objective evaluation of chronic abdominal or pelvic pain is a difficult task as the clinical signs are either inconclusive or even completely absent. Most of the patients are treated symptomatically without sufficient assessment and many are referred to as a somatoform disorder by a psychiatrist.[8]

Laparoscopy has been proven to have a crucial role in diagnosis as well as for treatment in selected patients with chronic abdominal

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Table 1: Basic demographic data, primary indication and previous procedures

Baseline characteristics	*Diagnostic laparoscopy group (n = 54)*	*Conservative group (n = 34)*	*p-value*
Mean age in years (range)	45 (31–63)	47 (34–71)	0.8771
Mean BMI (kg/m^2) (range)	24.7 (17.1–36.2)	23.9 (16.9–37.6)	0.6792
Mean duration of CPP in months (range)	16 (8–38)	18 (8–36)	0.3423
Mean VAS and SD (range)	6 ± 0.355 (4–9)	5.05 ± 0.63 (3–9)	0.4135
Mean follow-up period in months (range)	8 (6–10)	9 (6–12)	0.5616
Primary indication for hysterectomy			
Dysfunctional uterine bleeding	20 (37.03%)	12 (35.29%)	0.8197
Leiomyoma (fibroids)	15 (27.77%)	9 (26.47%)	0.7870
Adenomyosis	9 (16.66%)	7 (20.58%)	0.1251
Endometriosis	6 (11.11%)	4 (11.76%)	0.9915
Uterine prolapse	2 (3.70%)	1 (2.94%)	0.7694
Cervical dysplasia	1 (1.85%)	1 (2.94%)	0.1416
Emergency cesarean hysterectomy	1 (1.85%)	0 (0.00%)	0.0000
Primary approach for hysterectomy			
Conventional open hysterectomy	31 (57.40%)	19 (55.88%)	0.7549
Vaginal hysterectomy	10 (18.51%)	6 (17.64%)	0.9897
Laparoscope-assisted vaginal hysterectomy	8 (14.81%)	6 (17.64%)	0.3628
Total laparoscopic hysterectomy	5 (9.25%)	3 (8.82%)	0.7960

disorders, whose diagnosis remains uncertain, despite exploring the requisite laboratory and imaging modalities. Presently, less than 20% of population in the developing countries have access to ultrasound, computerized tomography (CT), magnetic resonance imaging, Doppler, or other imaging modalities. Paradoxically, at present, vast areas of the developing world have access to a laparoscope, which currently remains true at most private as well as at the government district and subdistrict level hospitals in Kashmir, India.[9]

The current study is aimed at laparoscopic diagnostic evaluation of CCP in patients who had undergone hysterectomy for benign lesions. The outcome of concurrent laparoscopic therapeutic interventions is also evaluated.

Materials and Methods

This multicentric study was conducted from June 2011 to March 2019 at three hospitals (Government Subdistrict Hospital, Guru Multispecialty Hospital, and Government SKIMS-MC Hospital) in Kashmir, India. The study group included a total of 88 females who had previously undergone hysterectomy for proven benign lesions and had a history of postsurgical CPP of more than 8 months duration. Basic demographic data, primary indication, and previous procedures were noted. Despite thorough general physical and systemic examinations, routine laboratory investigations, abdominal and transvaginal ultrasonography and in some cases, CT-scan, a definitive diagnosis was either not reached or was in doubt. All these patients with uncertain diagnoses were advised diagnostic laparoscopy for clarification and possibly treatment for their CPP. While fifty-four patients agreed to the procedure, the other 34 patients either refused or were unfit for surgery and were given conservative treatment and were followed regularly.

Diagnostic laparoscopy was performed using a high-definition camera, connected to a Hopkins II 30° telescope. High-definition 32″ monitor was used for video display. The pneumoperitoneum was created by the open method by a supraumbilical or subumbilical incision using the umbilical cicatrix tube. An umbilical port (10 mm) was used for the camera while two working ports (5 mm) were placed according to the base-ball diamond configuration for exploration of the target area and therapeutic intervention. An additional 5-mm port was used for retraction whenever required.

The details of intraoperative findings and therapeutic procedures done were recorded. Three patients had concurrent ultrasound-documented gallstone disease which was taken care of at the same surgical setting. All the patients were followed for a minimum period of 6 months and the primary outcome of subjective pain relief as per VAS score (0–10) was compared at 1, 3, and 6 months with the patients who were treated conservatively. Other parameters studied were overall patient satisfaction, recurrence or worsening of pain, recurrence of the disease process after laparoscopic management, and histopathological analysis of the surgical specimen.

Written and informed consent for publication of the identifiable details if any was obtained from the patient/study participant/parent/guardian. To calculate the *p*-value, Fisher's exact test, and Pearson's Chi-square test were applied to compare the frequencies for categorical parameters, and the unpaired *t*-test was used to compare the means (two tailed) among continuous variables. The results were calculated on a 95% confidence interval. A *p*-value below 0.05 was considered statistically significant.

Results

In the study group of 88 patients with CPP, 54 of them were subjected to diagnostic laparoscopy, while the other 34 patients were treated conservatively. The mean age of the patients, BMI, duration of symptoms, the preoperative VAS for pain, and follow-up period are depicted in Table 1, which were found to be statistically insignificant between the operative and conservative groups ($p > 0.05$). The most common indication for hysterectomy in both groups was dysfunctional uterine bleeding and leiomyoma (fibroids) in a total of 32 (36.36%) and 24 (27.27%) patients, respectively. Also, no significant difference in the primary approach for hysterectomy was noticed between the laparoscopy and conservative groups (Table 1). The initial procedures, irrespective of the approach,

Table 2: Findings at diagnostic laparoscopy and therapeutic interventions done

Laparoscopic findings	*Number of patients (N = 54)*	*Laparoscopic procedures done*
Ovarian cyst of preserved functional ovary	12 (22.22%)	Ovarian cystectomy/salpingo-oophorectomy*
Endometriosis		
Peritoneal	1 (1.85%)	Excision of endometriosis*
Ovarian	3 (5.55%)	Ovarian cystectomy*
Retention cyst due to adhesions	2 (3.70%)	Deroofing and drainage*
Hydrosalpinx/pyosalpinx	5 (9.25%)	Salpingo-oophorectomy*
Isolated adhesions		
Omental	13 (24.07%)	Adhesiolysis
Ileal	1 (1.85%)	Adhesiolysis
Tubal	1 (1.85%)	Salpingectomy
Band	1 (1.85%)	Division
Chronic/recurrent appendicitis (dense adhesions in the RIF and/or thickened appendix)	3 (5.55%)	Appendectomy*
Tuberculosis	1 (1.85%)	Biopsy of lesion and ATT
Inguinal hernia (indirect)	1 (1.85%)	TAPP
No abnormality detected	10 (18.51%)	Nil

ATT, antitubercular treatment; TAPP, transabdominal preperitoneal repair; *Procedures requiring adhesiolysis in some cases

included hysterectomy with bilateral salpingo-oophorectomy in 47 (53.40%) patients who were either above 40 years of age, and/or had a bilateral diseased ovary. Hysterectomy with bilateral or unilateral ovarian preservation was the initial procedure in 41 (46.59%) patients who were less than 40 years of age with one or both ovaries being healthy.

At diagnostic laparoscopy in 54 women, the most frequent finding noted was adhesions in 29 (53.70%) patients which were either isolated (29.62%) or in combination with other pathologies. Cystic lesions of preserved functional ovary were diagnosed in 12 (22.22%), and hydro/pyosalpinx in another 5 (9.25%) patients (Table 2). No obvious abnormality could be detected in 10 (18.51%) patients. Other positive findings included endometriosis, chronic appendicitis, and retention cysts due to adhesions in 4 (7.40%), 3 (5.55%), and 2 (3.70%) patients, respectively. Tuberculosis and unilateral indirect inguinal hernia were diagnosed in each of the patients. Concurrent surgical procedures done were according to the findings at laparoscopy and are shown in Table 2. No complications or conversions to an open approach were needed. All the patients were discharged on the first or the second postoperative days and were regularly followed for at least 6 months.

The VAS scores for pain were compared between the operative and conservative groups at 1, 3, and 6 months after surgery which were found to be statistically significant (Table 3). None of the patients in the laparoscopy group complained of worsening pain, but seven (20.58%) of the patients treated conservatively complained about the same at 6 months. There was no recurrence of the disease process in the operative group with a better overall patient satisfaction rate of 83.33% as compared with the conservative group (23.5%).

Histopathological analysis of ovarian specimens of 20 patients revealed simple cysts in 11, normal ovaries in 4, hemorrhagic cysts in 2, and endometriotic cysts in another 3 patients. Two patients with peritoneal deposits revealed peritoneal endometriosis in one and tuberculosis in another on histopathology. Pseudocyst lining was seen in the cyst wall specimen of two patients confirming a retention cyst. The salpingectomy specimen of 11 patients revealed normal tubes in 2, features of chronic or acute chronic salpingitis in 4, and hydro/pyosalpinx in 5 patients. Histopathological features of chronic appendicitis were noted in an appendicular specimen of all three patients.

Table 3: The VAS score for pain on follow-up

	Mean VAS score with SD		
Postoperative period	*Operated group (n = 54)*	*Conservative group (n = 34)*	*p-value*
1 month	3.96 ± 0.556	4.91 ± 0.593	0.0031
3 months	2.53 ± 0.482	5.08 ± 0.593	0.0006
6 months	2.46 ± 0.482	5.35 ± 0.640	0.0001

Discussion

Accurately diagnosing a CPP is sometimes one of the baffling problems faced by surgeons and gynecologists despite a thorough clinical evaluation. Also detailed biochemical, serological, and imaging techniques may only provide indirect evidence of underlying disorder and therefore, many of the cases remain inconclusive. Laparoscopy is an excellent diagnostic modality that is often underutilized due to risks inherent to surgical procedures. The safety of diagnostic laparoscopy and concurrent therapeutic procedures is well established beyond doubt and with advances in technology and increasing experience, it is being used in diagnosing chronic abdominal or pelvic pain where all other methods have failed.[10] In the current study, the reason for posthysterectomy CPP could be established in 44 (81.48%) patients confirming the previous reports of laparoscopy being a valuable method of evaluation of undiagnosed CPP in women.[11,12] The causes of CCP could not be ascertained in 10 (18.51%) of our patients, which is in accordance with the incidence of negative laparoscopy reported by various authors irrespective of previous surgeries and ranges between 12 and 44%[11] This reflects that even after excluding uterine causes for CPP in our study, the incidence of failure to establish a conclusive diagnosis laparoscopically does not seem to be significantly different from some studies.[10–12]

Intra-abdominal adhesions of variable degrees have been reported as a common cause of chronic pelvic/abdominal pain in a number of studies as was the case in the present study.[11,13–15] Intra-abdominal adhesions can cause chronic abdominal pain by restricting the mobility or the distensibility of the bowel. Omental adhesions to the viscera or parties can also be responsible for varying degrees of chronic abdominal pain. Laparoscopic adhesiolysis significantly reduces chronic abdominal/pelvic pain in nearly 70% of patients with improvement in their VAS scores at follow-up. However, long-term efficacy needs to be proved as the results of previous randomized trials seem to be equivocal.[16]

Excluding gynecological cases, studies from third-world countries report abdominal tuberculosis as the most frequent cause of chronic abdominal pain, but in our study, only one patient was diagnosed with abdominal tuberculosis.[17,18] Pelvic congestion was found to be the cause of CCP in 18.6% of patients in a study by Hebbar S and Chawla C who diagnosed it laparoscopically. The findings included a bulky/boggy uterus with varicosities in the surrounding supporting ligaments of the uterus, the etiology that was already excluded in view of previous hysterectomy in our study group.[11]

Ovarian cysts (follicular/polycystic) of preserved functional ovary/s found in 22.2% of the operative group of this study could at least theoretically explain the origin of pelvic pain. Other possibilities for CCP could be ovarian remnant syndrome and residual ovary syndrome.[19] The former is defined as pelvic pain or dyspareunia associated with the regrowth of residual ovarian tissue after salpingo-oophorectomy, while the latter is described as the presence of persistent pelvic pain or dyspareunia or a pelvic mass after conservation of one or both ovaries at hysterectomy, both of which can be effectively managed by an experienced laparoscopic surgeon.[19,20]

Endometriosis is a growing healthcare problem all around the world commonly affecting women of reproductive age with a very diverse range of presentations including CPP. Pelvic endometriosis is a common laparoscopic finding in patients with CPP.[18,21,22] In the present study, the indication for initial hysterectomy was endometriosis in a total of 10 patients. Six of these patients were subjected to diagnostic laparoscopy which revealed the presence of recurrent endometriotic lesions (ovarian/peritoneal) in 4 (66%) of them. Advanced stages of endometriosis have high recurrence rates where the ovaries were conserved with 6–8-fold risk of recurrent pain and reoperation respectively. The decision between the conservative or operative treatment of these cases largely depends upon taking into consideration the age of the patient and the impact of early menopause on their lifestyle. The recurrence of endometriosis and related symptoms are directly correlated to the surgical precision and complete removal of peritoneal and deeply infiltrating endometriotic lesions so as to keep the risk of recurrence as low as possible.[23]

In the present study, hydrosalpinx/pyosalpinx was diagnosed laparoscopically in 5 (9.25%) patients, the incidence of which probably could have been higher as all patients in our study did not have conserved adnexa at the time of their previous surgery. Chronic recurrent appendicitis has been reported as a cause of chronic abdominal/pelvic pain in 0–40.67% of cases.[10–12,15–18,24] Dense adhesions in the right iliac fossa (RIF) and/or thickened appendix were found in three of our patients which was dealt with appropriately.

Although the VAS scores for pain in our study were significantly better in the operative than in conservative groups at 1, 3, and 6 months after surgery, it did not reach zero-score in all patients (Table 3). It is possible that at times, multiple reasons can be associated with chronic abdominal pain in a single patient and the pelvic pathology seen at laparoscopy may not be the only reason for patient discomfort/pain.[25] Our study also revealed no apparent recurrence of the disease process in the operative group with better overall patient satisfaction rate up to 6 months. More randomized studies with larger sample size and prolonged follow-up is required to further validate the benefits of therapeutic laparoscopy in patients with chronic abdominal/pelvic pain.

Conclusion

The current study suggests that diagnostic laparoscopy is a fairly accurate tool in evaluating patients with posthysterectomy CPP with uncertain diagnosis, as well as has the added advantage of a therapeutic intervention in the same setting in most cases. Diagnostic laparoscopy can be especially useful in evaluating and treating postsurgical chronic abdominal/pelvic pain in patients from the developing nations who may not have access to sophisticated and expensive imaging devices. However, the possible benefits and risks associated with laparoscopy need to be assessed for each woman individually.

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