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## **LAPAROSCOPIC ASSESSMENT OF CHRONIC PELVIC PAIN IN WOMEN – SEE AND FIGHT POLICY**

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### **ABSTRACT**

Chronic Pelvic pain is a major cause of morbidity in reproductive years of women. This study was conducted to evaluate the laparoscopic findings in women with chronic pelvic pain, correlating its accuracy with clinical pelvic examination and managing treatable lesions at the same sitting. This was a prospective observational study conducted at Mahatma Gandhi University of Medical Sciences and Technology, Jaipur, on one hundred and ten women with complaint of lower abdominal pain attending the OPD during the period from Sept. 2011 – Sept. 2012. The subjects included in the study were all reproductive age women with pain in the lower abdomen of at least 6 months duration occurring continuously or intermittently not associated with menstruation or sexual intercourse. Women beyond the age between 18 years to 50 years, pregnancy and its related causes, acute pelvic infection, Pelvic organ prolapse, Malignancy, congenital and acquired spinal deformities were excluded from the study group. All the eligible candidates were subjected to detailed clinical evaluation and transvaginal ultrasound with study of both hard and soft tissue markers followed by diagnostic laparoscopy. Findings were recorded and statistical analysis done using Yates Chi square test in a 2 x 2 table. The mean age of patients was  $30.31 \pm 7.03$  years. Mean duration of pain was  $2.61 \pm 1.25$  years with 35.45% of the patients suffering from chronic pain of 2-3 years which was mild to moderate in severity. Most common primary complaint was dyspareunia in 83.64% women followed by dysmenorrhoea (70%). The sensitivity of pelvic examination to diagnose the etiology of pelvic pain was 76.84% the correlation between clinical examination findings and laparoscopic findings was not found to be statistically significant, (p value = 0.394). Laparoscopic examination showed some pelvic pathology in 86.36% most common of them was adhesions (54.55%), followed by endometriosis (25.45%). Twenty-two (20%) cases demonstrated hydrosalpinges, tubo-ovarian masses and adhesions suggestive of chronic pelvic inflammatory disease. Adhesiolysis, fulguration of endometriotic lesions, cyst aspiration done during the same sitting after obtaining informed consent. Thus, Laparoscopy is an excellent tool in evaluation of CPP in subject with no obvious physical signs and symptoms at the same time its use can be extended as a “see and fight” procedure in cases of obvious pelvic pathology.

**Key Words:** *Chronic Pelvic Pain, Laparoscopy, Transvaginal Ultrasonography, Endometriosis, Chronic Pelvic Inflammatory Disease, Pelvic Adhesions*

### **INTRODUCTION**

Chronic Pelvic Pain (CPP) is a common gynaecological problem affecting woman during the peak of their productive years (Reiter *et al.*, 1990). RCOG (2005) has proposed the definition of chronic pelvic pain as intermittent or constant pain in the lower abdomen or pelvis of at least 6 months' duration, not occurring exclusively with menstruation or intercourse and not associated with pregnancy. It is a symptom, not a diagnosis (Okaro *et al.*, 2006). An estimated prevalence of Chronic pelvic pain in UK is 38 per 1000 women aged 15-73 years and Monthly prevalence rates range from 18.2 per 1000 women in 15-20 year olds to 27.6 per 1000 women in women older than 60 years (Zondervan *et al.*, 1999). Similar prevalence of chronic pelvic pain has been described in other countries (Zondervan *et al.*, 1999). There may be numerous somatic and visceral disorders that cause chronic pelvic pain. Potential visceral sources of chronic pelvic pain include the reproductive, genitourinary and gastrointestinal tracts, and potential

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somatic sources include the pelvic bones, ligaments, muscles and fascia. It may also be due to psychological disorders and neurological diseases, both central and peripheral.

The clinical history and clinical examination are not sufficient and concluding for exact diagnosis of chronic pelvic pain. Since the late 1960s laparoscopy, has been used as both a diagnostic and therapeutic modality in patients with CPP. Laparoscopy is considered the gold standard diagnostic tool for evaluation of chronic pelvic pain. CPP is responsible for upto 50% of laparoscopies in women (Roseff *et al.*, 1990). Under experienced hands diagnostic laparoscopy for gynecologic indications is safe with conversion rate to open laparotomy is 0.12% (Ikechebelu *et al.*, 2013). The advantage of laparoscopy is that simultaneous treatment of evident cause can be undertaken at the same sitting. Laparoscopy for chronic pelvic pain is an operation based on the “see and fight” principle (Demir *et al.*, 2012).

With the advancement of sonography with resonance power of 7.5MHz there is a definite place of TVS for diagnosis of chronic pelvic pain because it is non-invasive, without any complications. Conventionally, an ultrasound scan will report the presence or absence of structural abnormality, called hard marker, such as ovarian cysts or hydrosalpinx. However, more subtle information is available about the state of the pelvis based on the degree of ovarian mobility, site specific pelvic tenderness as well as presence of loculated peritoneal fluid in the pelvis. These pelvic findings are termed as ‘soft markers’ (RCOG, 2005). Further Conscious Pain Mapping (CPM) while laparoscopy has been studied to identify the sources of pain particularly in patients for whom it is difficult in the pre-operative work-up to reveal the etiology of CPP by pelvic examination, laboratory findings or imaging study (Hong-mei *et al.*, 2010).

### **MATERIALS AND METHODS**

This Prospective observational study was conducted on one hundred and ten women attending the OPD of gynecology department of University Hospital during the period from Sept. 2011 – Sept. 2012. Women aged between 18-50 years and having pain in the lower abdomen of at least 6 months duration occurring continuously or intermittently not associated with menstruation or sexual intercourse were included in the study. Exclusion criteria were: Age: <18 years and > 50 years, Pregnancy and its related causes, Acute pelvic infection, Pelvic organ prolapse, Malignancy, Congenital and acquired spinal deformities.

A careful clinical history was taken regarding site, duration, pain, nature and radiation of pain to other sites, aggravating and relieving factors, association with menstrual cycle and dyspareunia. Each woman was also asked about any other associated complaints like, discharge per vagina, consistency of discharge, colour of discharge, odour of discharge, gastrointestinal, urological, musculoskeletal complaints. All subjects were interviewed to collect the information on menstrual history, obstetric history, medical and surgical history in a properly designed questionnaire.

Detailed Past history of tuberculosis, hemorrhoids, fissure, polyp, UTI, nephrolithiasis, trauma, sexual abuse, known psychiatric problem was taken. All women underwent a general physical examination and systemic examination including per abdominal examination for any palpable mass in pelvis or hernial sites, tenderness in pelvis, pain in right iliac fossa (appendicitis) and examination of spine and joints to rule out musculoskeletal causes of CPP. Pain and restriction of joint movements suggest referred pain to the pelvis.

Per speculum examination was performed to know vaginal ulceration, inflammation of vagina. Vaginal discharge, colour of discharge, consistency, smell and pruritus. Cervical pathology, healthy, unhealthy, ectropy, entropy, hypertrophied, eroded, growth, regular feeling, irregular feeling and nabothian cyst.

Per vaginal examination was performed to know cervix position. Uterine size, position, mobility, tenderness. Condition of adnexa (normal, tender, thickening, fullness, mass) and sites of tenderness. POD (normal, tender, nodularity, mass).

Bimanual pelvic examination done to rule out organic pelvic lesion. Rectal examination done may reveal a mass or stricture. Routine blood investigations were done like, CBC, ESR MT, urine pregnancy test, urine routine.

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Systemic examinations were done according to complaints. Stool examination to rule out GI infestation. Urine was sent for culture and sensitivity to rule out urinary tract infection. X- Ray for KUB region was done to know urolithiasis. PAP smear and high vaginal swab or endocervical swab was taken for all women to know the reproductive tract infection. Premenstrual endometrial biopsy of all cases taken for histopathology and AFB culture. Whole abdominal USG was done for all patients to rule out other pathology.

All subjects underwent transvaginal sonography using a GE (General Electronics) 7.5MHz transvaginal ultrasound probe. Longitudinal and transverse views were taken to obtain information on uterus (size, position and endometrial thickness), ovaries (size, follicular development), adnexa and pouch of Douglas. The TVS results were classified as normal or abnormal based on conventional findings, presence or absence of hard and soft markers on TVS for chronic pelvic pain (RCOG, 2005).

Diagnostic Laparoscopy was performed under general anaesthesia. A 5 mm karl storz 30° angle laparoscope was used. Pneumo-peritoneum created with carbon-dioxide with a 15-gauge verses needle. Second puncture was established in every case lateral to rectus muscle to improve visualization and careful evaluation of entire pelvic peritoneum along with manipulation of pelvic organs. A third port was established similarly on other side whenever an operative procedure was undertaken such as fulguration, adhesiolysis and cyst wall puncture. Undersurface of liver and diaphragm was always inspected for adhesions before completing procedure. Adhesiolysis, fulguration of endometriotic lesions, cyst aspiration done during the same sitting after obtaining informed consent.

The clinical history, examination and TVS findings compared with diagnostic laparoscopy. These findings were subjected to statistical analysis. Yates test were applied to calculate the P values for the associations between the variables studied.

### **RESULTS**

The demographic profile revealed that in our study majority of the women were in the mean age group of  $30.31 \pm 7.03$  years. The Mean parity, in our study was  $(0.70 \pm 1.17)$ . 70% women belong to lower middle socio-economic status. The mean duration of pain was a  $(2.61 \pm 1.25)$  year with 35.45% of the patients suffering from chronic pain of 2-3 years which was mild to moderate in severity. Amongst the primary complaints associated with pain, in our study 83.63% women complained of dyspareunia followed by dysmenorrhoea (70%). 55.45 percent of the subjects were also distressed due to primary infertility and 10.90% patients suffer from secondary infertility along with pelvic pain. 44.54 percent of the patient reported presence of recurring discharge per vaginam along with pelvic pain indicating chronic pelvic inflammatory disease.

On clinical examination, restricted mobility of the uterus was seen in 20.90% of the patients and thickening in the fornices in 23.63% of the patients, both suggestive of adhesions due to chronic pelvic inflammatory disease. The sensitivity of pelvic examination to diagnose the etiology of pelvic pain was 76.84% .

Transvaginal sonography, on the basis of hard markers was abnormal in 56.67% and normal in 43.33% of the cases. Adnexal pathology was found in 59.10% of the cases, commonest being ovarian cysts in 24.55% of the cases. Hydrosalpinx was seen in 12.72%, enlarged ovaries in 8.18%, hemorrhagic cysts in 8.18% and endometriotic cysts in 3.63%. The 'soft markers' analyzed on TVS were site specific pelvic tenderness, ovarian mobility and loculated peritoneal fluid. On statistical analysis sensitivity was found to be 89.47% and specificity 40.00%. It was observed that out of the 95 patients with abnormal laparoscopy, TVS-based soft markers could detect 85 patients as abnormal, thereby demonstrating a PPV of 90.43%. However, of the 15 normal patients on laparoscopy, TVS-based soft markers were falsely positive in 9 patients. These 9 cases had site specific pelvic tenderness on TVS but showed no pathology on laparoscopy.

A total of 48 cases out of 110 had a normal ultrasound on the basis of absence of hard markers. Out of these 48, 44 cases (91.66%) had an abnormal scan on the basis of presence of soft markers. Further, out of

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these 44, 33 cases (75%) had pelvic pathology on laparoscopy (mainly consisting of dense and flimsy adhesions in the pelvic and endometriotic spots and patches on the uterus, pouch of Douglas and peritoneum).

The TVS-based soft markers and laparoscopy showed a statistically significant association with a p value of 0.002. Further, in our study, patients with endometriotic spots or patches and/or adhesions demonstrated site-specific pelvic tenderness with the TVS probe and those with adhesions involving the ovaries demonstrated restricted mobility of the ovaries on pressure with the TVS probe. (Table 1)

**Table 1: Co-relation between TVS – Soft Markers (TVS - SM) and Laparoscopic findings in chronic pelvic pain**

TVS-Soft markers (TVS-SM)	Total no. of patients in TVS-SM	Laparoscopy findings		P value
		Pathology detected	No Pathology detected	
<b>Pathology detected</b>	94	85	9	0.002
<b>No Pathology detected</b>	16	10	6	

Laparoscopic examination was normal in 13.64% of the subjects whereas the remaining 86.36% showed some pelvic pathology. The most common pathology detected was adhesions (54.55%), followed by endometriosis (25.45%). Twenty-two (20%) cases demonstrated hydrosalpinges, tubo-ovarian masses and adhesions suggestive of chronic pelvic inflammatory disease. Adhesiolysis, fulguration of endometriotic lesions, cyst aspiration done during the same sitting after obtaining informed consent.

**DISCUSSION**

In our study, the correlation between clinical examination findings and laparoscopic findings was not found to be statistically significant, applying the chi square test (p value = 0.394). This can be compared to a similar weak agreement (k = 0.57) demonstrated by Gourisankar’s study in 2005. Thus, the results of our study showed that there is poor correlation between pelvic examination findings and laparoscopy (Table -2). The sensitivity and specificity of TVS hard markers (Table - 3) for the detection of pelvic pathology was 61.05% and 73.33%. While PPV and NPV were 93.55% and 22.92% respectively.

A statistically significant association (p = 0.012) was seen between hard markers and laparoscopy indicating that hard markers on transvaginal sonography can be used reliably in the detection of pelvic pathology.

**Table 2: Co-relation between clinical examination findings and laparoscopic findings in chronic pelvic pain**

Clinical findings	Total no. of patients in Clinical findings	Laparoscopy findings		P value
		Pathology detected	No Pathology detected	
<b>Pathology detected</b>	83	73	10	0.394
<b>No Pathology detected</b>	27	22	5	

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**Table 3: Co-relation between TVS-Hard markers (TVS-HM) and Laparoscopic findings in chronic pelvic pain**

TVS-Hard markers (TVS-HM)	Total no. of patients in TVS-HM	Laparoscopy findings		P value
		Pathology detected	No Pathology detected	
Pathology detected	62	58	4	0.012
No Pathology detected	48	37	11	

Guerriero *et al.*, (1997) studied the role of TVS and clinical factors in the diagnosis of pelvic adhesions in a population of 139 pre-menopausal non-pregnant women submitted to diagnostic and/or operative laparoscopy for varied complaints including pelvic pain. The presence of one of the following findings on TVS was considered to indicate the likelihood of pelvic adhesions:

(i) blurring of the margins of the ovary (margins); (ii) adhesion from the ovary to the uterus, which persisted with abdominal palpation (fixation); (iii) augmentation of the usual distance of the ovary from the probe which persisted with abdominal palpation (distance). They concluded that adhesion of the ovary to the uterus as evaluated by TVS is most accurate in diagnosing pelvic adhesions ( $k = 0.5$ ) (Guerriero *et al.*, 1997).

Harris *et al.*, (2000) conducted a study to understand the clinical outcome in 86 female patients with pelvic pain and normal pelvic USG findings. They found the negative predictive value of normal TVS findings to be 70%.

Transvaginal ultrasound, including power Doppler examination, can distinguish between women with and without pelvic congestion yet Haligan *et al.*, (2000) concluded in their study that, TVS measurements of adnexal vasculature, including power Doppler measurements, cannot reliably distinguish women with pelvic congestion from controls.

As an enhancement to TVS, Dessole *et al.* conducted a study to evaluate the efficacy of a new technique, the sonovaginography, for the assessment of rectovaginal endometriosis. Sonovaginography is based on transvaginal ultrasonography combined with the introduction of saline solution into the vagina that creates an acoustic window between the transvaginal probe and the surrounding structures of the vagina. Ultrasound findings were compared with the results of surgical exploration and histological examination. They found that sonovaginography diagnosed rectovaginal endometriosis more accurately than did TVS, with a sensitivity and specificity of 90.6% and 85.7%, respectively as compared to 43.7% and 50% shown by TVS (Dessole *et al.*, 2003). The prevalence of endometriosis in our study was lower.

Exacoustos *et al.*, (2003) estimated whether laparoscopic staging of endometriosis can be predicted by ultrasound findings. Prospective study was conducted on 121 women, who were subjected to ultrasonographic staging and laparoscopic assessment. These results were compared with laparoscopic staging. Concordance between methods was 83.5%. Specificity and sensitivity of ultrasonographic staging of stages 3 and 4 disease were 86% and 82% and 76% and 91%, respectively. Thus it was concluded that ultrasonographic findings can predict pelvic extension and stage of endometriosis.

Gourisankar *et al.* reported on the correlation between clinical examination, ultrasonography and laparoscopy in the evaluation of chronic pelvic pain. One hundred women with pelvic pain of more than 6 months duration were included. Among the 74 patients with abnormal laparoscopic findings, 53 had abnormal clinical findings and 61 had positive ultrasound findings. The sensitivity of clinical examination and TVS to diagnose the etiology of CPP was 71.6% and 82.4% respectively. The negative predictive values of clinical examination and TVS were 55.3% and 66.7% respectively, whereas the positive predictive value of both was 100%. Applying Kappa statistics, the strongest agreement is between laparoscopy and TVS (Kappa=0.71) and the weakest between clinical examination and laparoscopy

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(Kappa = 0.57). Thus they concluded that diagnostic laparoscopy is a more sensitive method for evaluation of chronic pelvic pain (Kamilya *et al.*, 2005).

Zubor *et al.*, (2005) and associates conducted a prospective study on 86 women with CPP, who were subjected to laparoscopy. The mean patient's age was 35.8 years (1956). The mean parity was 1.6, ranging from 0-5, pelvic organ pathology was present in 88.4% of the patients. The most frequent finding was endometriosis (31.4%). Pelvic adhesions, myomas, pelvic varicosities and chronic inflammatory process were present in 25.6, 15.1, 9.3 and 3.5% of the cases, respectively. No somatic origin of pain was identified at laparoscopy in 11.6% of patients. Preoperative ultrasonic examination with pelvic pathology findings were performed in 36 patients, and laparoscopy correlated with ultrasonographic findings in 31(86.1%) cases. The average pain duration was 11.5 months (6-28) with the majority among women with history of previous surgical intervention (48.8%) and parturated women. Presence of pain was most common among women after 31 years of age.

Redcecha *et al.*, (2000) and colleagues evaluated laparoscopic findings in women with CPP. A retrospective study was conducted on 43 patients, who underwent diagnostic laparoscopy for detection of cause of CPP. The average age of patients was 29.97% years. Organic findings on internal genitals were found in 36 cases (83.7%). Endometriosis was diagnosed in 11 cases (25.6%). Chronic inflammatory process was diagnosed in 12 cases (18.6%), and ovarian cysts in 3 cases (7.0%). Varicose pelvic veins and uterine myoma occurred in one case (2.3%), respectively. In 7 cases, no pathological change was revealed.

Mara *et al.*, (2002) conducted a retrospective study to analyze laparoscopic findings in women with CPP. 480 laparoscopies for CPP were performed from the year 1995 to 1999. The most frequent findings were adhesions (22.3%), endometriosis (20.4%), PID (17.7%), and normal finding (17.7%). In 53% of all cases the operative laparoscopic procedure was done, most frequently the adhesiolysis (62.2%). Only one serious complication during laparoscopy was recorded (0.21%). In women younger than 30 years endometriosis was the most frequent finding (22.8%), in women older than 30 years, pelvic adhesions were the most often (31.9%). In patients with previous operation in the pelvis, adhesions were found most frequently (46.2%). In women treated for PID, pelvic inflammation was found in 25.8%, but in 22.5% the finding was negative and in 20.2% endometriosis was diagnosed. In infertile women, suffering from CPP, PID was found most frequently (41.2%). A suspicion of chronic appendicitis was verified in 64.3%. In patients with dysmenorrheal, as well as in women suffering from dyspareunia, endometriosis was the dominant finding (34.4%, resp. 29.1%). Kang *et al.*, (2007) analyzed the clinical data of 3068 cases of diagnostic laparoscopy performed for CPP. They compared the diagnosis after diagnostic laparoscopy, and those after pelvic examination and imaging modalities such as USG and computed tomography. They found that pelvic endometriosis was the most common (60.2%) laparoscopic finding in patients with CPP, followed by normal pelvic findings (21.2%) and pelvic congestion (13.0%). They stated that diagnostic laparoscopy had an influence of correcting previous plans of surgery based on imaging modalities in 42.7% patients. In our series we found a little lesser incidence of endometriosis and 8 cases of myoma uteri on TVS out of which 3 were confirmed on laparoscopy as subserous myoma and there was no mortality.

In their recent study Sharma et al found the mean age and parity of the patients with CPP  $30.88 \pm 7.71$  years and  $1.74 \pm 1.38$ , respectively. The mean duration of pain was 2.8 years (6 months-8 years). The commonest finding on laparoscopy was adhesions in 40%, endometriosis in 18%, and pelvic congestion syndrome in 20%, while 10% of the patients had normal pelvis. Laparoscopic findings were taken as gold standard and pelvic examination and ultrasonographic findings were compared with it (Sharma *et al.*, 2011).

### **Conclusion**

Chronic Pelvic Pain is a syndrome in which biological and psychosexual factors play role. Accuracy of clinical examination is limited by the presence of objective physical signs and symptoms. TVS approach can be of promising value in evaluation of CPP but also needs training and experience for the techniques to

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increase sensitivity. Laparoscopy is the excellent tool as diagnosis and treatment can be done at a same sitting. Thus chronic Pelvic Pain is best investigated laparoscopically before any treatment is planned.

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