

Role of laparoscopic presacral neurectomy as an effective surgical treatment option in cases of severe midline dysmenorrhea and intractable chronic pelvic pain and as an adjunct to treatment of severe endometriosis.

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Abstract

Aim: To evaluate the role of laparoscopic presacral neurectomy in cases of severe dysmenorrhea and as an adjunct to treatment of severe endometriosis and chronic pelvic pain.

Design: Observational study with follow up for at least one year.

Material and Methods- 150 women (18-45 years) with severe midline dysmenorrhea and chronic pelvic pain referred because medical and surgical management had failed. Subjects without a central (midline) component to their discomfort were excluded. During surgery, severity of endometriosis was assessed using revised

American Fertility Society scoring. Laparoscopic presacral neurectomy was performed on all subjects along with excision of endometriotic lesions and adhesiolysis. The superior hypogastric plexus or the presacral nerve was excised. The severity of dysmenorrhea was assessed using 100mm VAS at the time of hospital admission and at 1, 3, 6 and 12 months following surgery. Overall pelvic pain and dysmenorrhoea relief were determined by office visit, telephone interview and questionnaire at a minimum of one year postoperatively.

Results: 112(75%) patients got relief from pain after surgery. Significant pain relief was found in 22 (55%) of 40 women with adenomyosis, in 20(75%) of 25 with

moderate to severe endometriosis with dysmenorrhea, in 32 (84%) of 38 with minimal to mild endometriosis with dysmenorrhea, in 23 (85%) of 27 with primary dysmenorrhea, and in 15 (75%) of 20 with chronic pelvic pain. Remaining patients reported no significant pain abatement and 3 of them had laceration of the middle sacral vein controlled during laparoscopy. 8 of them suffered constipation which was relieved via medicines and diet modification.

Conclusion: The efficacy of pain relief by laparoscopic presacral neurectomy in chronic pelvic pain and dysmenorrhea is documented at about 75-80%. Major complications are rare with a rate of less than 1% reported. Laparoscopic presacral neurectomy in experienced hands therefore offers an effective surgical intervention for treatment of chronic pelvic pain and midline dysmenorrhea and proves to be an useful adjunct to surgical treatment of severe endometriosis

Keywords: Presacral Neurectomy, Midline Dysmenorrhea, Pelvic Pain, Superior Hypogastric Plexus, Endometriosis

Introduction

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Chronic pelvic pain (CPP) is reported in about 20 percent of menstruating females. It refers to menstrual or non-menstrual pain of at least six months' duration. It is very distressing for the patient and is the usual cause of frequent visits to a gynaecologist. The etiology of chronic pelvic pain is diverse and may be related to reproductive system, urological, musculoskeletal, neurological, gastrointestinal systems or maybe psychological. Major causes include pelvic endometriosis, pelvic adhesions, genital KOCH'S, PID, appendicitis, pelvic congestion syndrome, cystitis, diverticulitis or depression.(1)

Dysmenorrhea, painful menstrual cramps, is a very common gynaecologic problem with a prevalence of 45-90% in women of reproductive age. Dysmenorrhea interferes with the performance of daily activities, and may even lead to job or school absenteeism.(2)

Therefore, the main goal of treatment is to provide pain attenuation sufficient to sustain the woman's daily performance. Medical therapy is usually the first line of management after a thorough research of etiological factors by thorough history, physical examination and ultrasonography and other related investigations. Major medical treatment includes oral contraceptive pills, systemic or local progestins, non-steroidal anti-inflammatory drugs, danazol and gonadotropin-releasing hormone analogues. (3)

Surgical therapies stay as the second line of treatment in refractory cases because medical therapies are associated with a failure rate of 20-25%. Surgical intervention includes the interruption of a major group of cervical and uterine sensory nerve fibers, known as pelvic denervation. (4)

Presacral neurectomy is an effective treatment for chronic pelvic pain and dysmenorrhea. The sensory pathways from the pelvic viscera through the inferior and superior hypogastric plexus are located in the presacral area, to the spinal columns. The excision of the presacral nerve trunk can obstruct pain sensory pathways and this forms the basis of presacral neurectomy being used as an surgical treatment of chronic pelvic pain and dysmenorrhea. Operative endoscopy further facilitates the adaptation of the laparoscopic approach to this pelvic denervation.(5)

Objective

To evaluate the role of laparoscopic presacral neurectomy in cases of severe midline dysmenorrhea

and chronic pelvic pain and as an adjunct to surgical treatment of pelvic endometriosis.

Material and Methods

150 women (18-45 years) with intractable pelvic pain, referred because medical and surgical management had failed. Subjects without a central (midline) component to their discomfort were excluded. Patients with the symptoms of dysmenorrhea (pelvic pain during menstrual periods) and chronic pelvic pain for more than 6 months were consecutively enrolled in the study. All patients underwent multidisciplinary evaluation by the urology, gastroenterology, physical therapy, and psychiatry departments to exclude other potential causes of pelvic pain. All patients were questioned and physically examined to determine the exact location of their pain. Written informed consent for the details of surgical procedure including the risks, benefits of laparoscopic presacral neurectomy was taken from all patients and recurrence rate of pelvic pain was explained. On laparoscopy severity of endometriosis was assessed using revised American Fertility Society scoring followed by excision of endometriotic lesion and adhesiolysis. In steep trendelenburg position, the small intestines and sigmoid colon over sacral promontory were pushed out laterally. After identifying the ureter on right side, the peritoneum over sacral promontory was incised vertically. Retroperitoneal fat and loose areolar tissue anterior to sacral promontory dissected to identify the presacral nerve or the superior hypogastric plexus which is then excised approximately a segment of 1cm, using harmonic scalpel.

We reviewed records of 150 patients receiving laparoscopic conservative surgery and laparoscopic presacral neurectomy. Pain relief was evaluated at least 12 months postoperatively. Overall pelvic pain and

dysmenorrhoea relief were determined by office visit, telephone interview and questionnaire at a minimum of one year postoperatively. The severity was assessed by 100 mm VAS that ranged from “least possible pain to worst possible pain”. Duration of hospital stay, blood loss, and intraoperative and postoperative complications were also recorded.

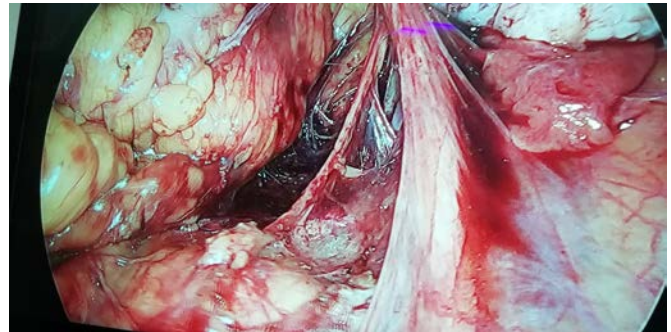


Figure 1: Superior Hypogastric Plexus

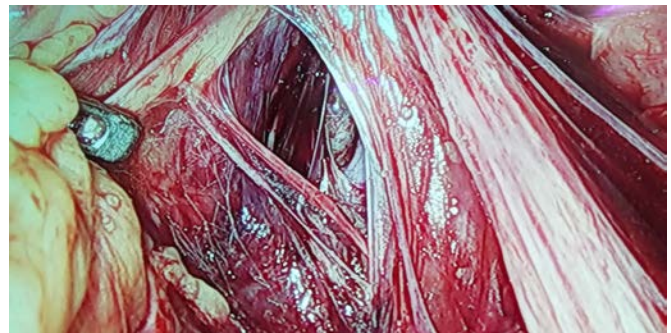


Figure 2: Inferior Hypogastric Plexus

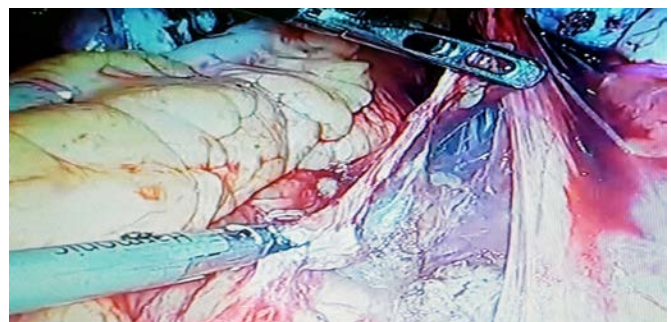


Figure 3: Identification of superior hypogastric plexus



Figure 4: Transecting the nerve plexus

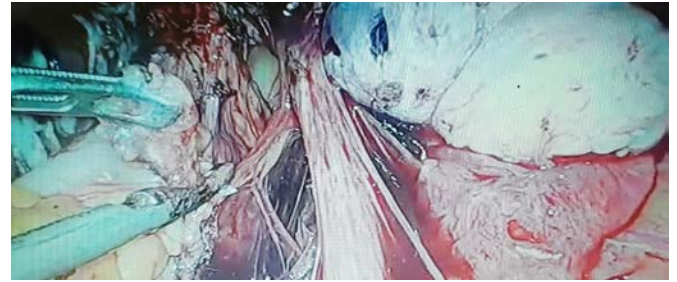
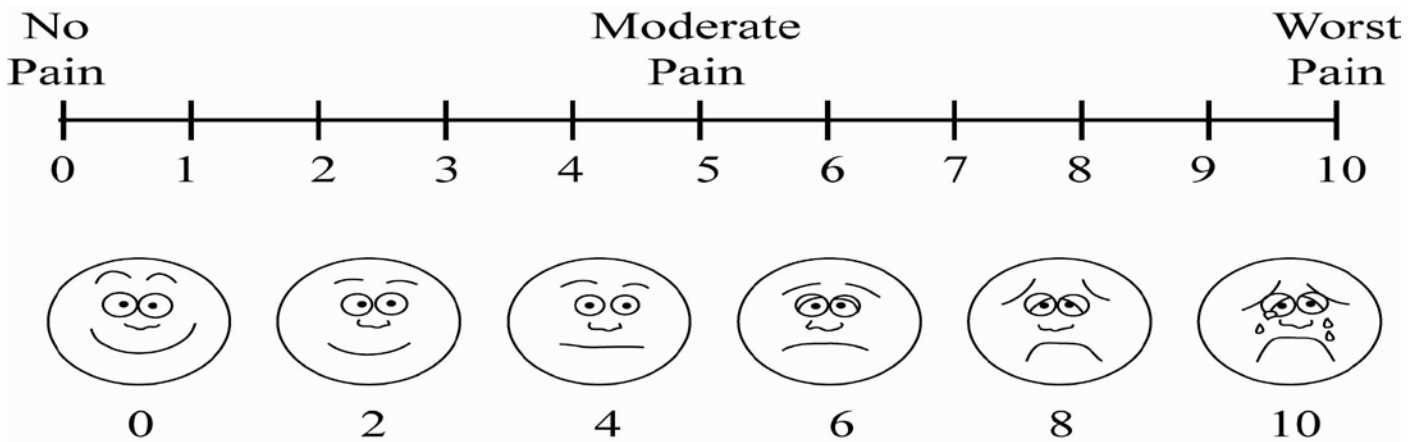


Figure 5: Pre sacral neurectomy

Results

112(75%) patients got relief from pain after surgery. Significant pain relief was found in 22 (55%) of 40 women with adenomyosis, in 20(75%) of 25with moderate to severe endometriosis with dysmenorrhea, in 32 (84%) of 38 with minimal to mild endometriosis with dysmenorrhea, in 23 (85%) of 27 with primary

dysmenorrhea, and in 15 (75%) of 20 with chronic pelvic pain. Remaining patients reported no significant pain abatement and 3 of them had laceration of the middle sacral vein controlled during laparoscopy. 8 of them suffered constipation which was relieved via medicines and diet modification.



The results and the statistically obtained results are tabulated as below

Table 1

Sn.	Disease Pattern	Total	Pain Relief (12mths)	%	P-Value
1.	Adenomyosis	40	22	55%	>0.05
2.	Primary Dysmenorrhea	27	23	85%	0.001
3.	Minimal To Mild Endometriosis With Dysmenorrhea	38	32	84%	0.001
4.	Moderate To Severe Endometriosis With Dysmenorrhea	25	20	73%	0.001
5.	Chronic Pelvic Pain Due To Other Misc. Causes	20	15	75%	0.001
	Total	150	112	75%	

Pain relief in all disease patterns after laparoscopic presacral neurectomy was considerable ranging from 73-85% which was statistically highly significant

except for in adenomyosis(55%) where it showed to be statistically not significant.

Table 2

Sn.	Disease Pattern	Av. Vas Score				
		Pre Op	1mth	3mths	6mth	12mth
1.	Adenomyosis	6.1	3.13	2.3.	1.17	0.4
2.	Primary Dysmenorrhea	7.2	3.4	2.2	1.3	0.08
3.	Minimal To Mild Endometriosis With Dysmenorrhea	6.3	2.9	3.0	0.9	0.18
4.	Moderate To Severe Endometriosis With Dysmenorrhea	7.0	2.56	1.6	0.8	0.2
5.	Chronic Pelvic Pain Due To Other Misc. Causes	6.3	2.9	1.5	0.75	0.25
	Total Av. Vas Scores	6.5	2.9	2.2	1.1	0.23
	Standard Deviation	1.12	1.02	0.88	1.19	0.44
	Z-Value		29.26	37.14	40.62	64.02
	P-Value		0.001	0.001	0.001	0.001

Mean VAS score for pain relief after presacral neurectomy in all patients at 1,3,6,12 months compared to pre-operative phase was shown to be statistically highly significant. Calculating the p-value with the above results;the results show significant improvement in pain relief comparing from preoperative average VAS scores and those at 1,3,6,12 months follow up after Laparoscopic presacral neurectomy.

Discussion

Chronic pelvic pain is defined as non-cyclic pain of 6 months duration or more localized to pelvis, anterior abdominal wall below the pelvis or lower back severe enough to cause functional disability that requires medical or surgical treatment. It may or may not be associated with menstrual periods. Evaluation of patients with chronic pelvic pain should include a thorough comprehensive questionnaire with a thorough medical history supplemented by psychologic evaluation and assessment of the woman's social background. At the time of physical examination, the

location , intensity and radiation of the pain should be measured. A visual or verbal analog pain scale to record pain severity 0-10 stating “no pain” or worst possible pain is important in assessing severity of pain. Appropriate tests include pelvic ultrasound and magnetic resonance imaging. Ultimately, laparoscopy may provide the final diagnosis.(6)

Treatment milieu for chronic pelvic pain and dysmenorrhea must be thereupetic, optimistic and supportive. It requires a multidisciplinary approach as the management of chronic pelvic pain depends on the underlying cause, severity of symptoms, the extent and location of disease, the desire for pregnancy, and the age of the patient. Dysmenorrhea, or painful menstrual cramps of uterine origin is a very common gynaecological complaint. Medical therapy for dysmenorrhea includes OCPS and NSAIDS which both act by suppressing prostaglandin levels. Surgical management of dysmenorrhea has become an option for cases which are refractory to medical treatment. Patients with neuropathic pain may benefit from low

dose of tricyclic antidepressants and selective SSRIs. Role of opioid therapy for treatment of chronic pelvic pain is considered after failure of all medical treatment and should be given in accordance with updated guidelines. (7) The most common findings at the time of laparoscopy for Chronic pelvic pain are endometriosis (15-40%) and adhesions. Conservative medical treatments for endometriosis include non-steroidal anti-inflammatory drugs and oral contraceptives. If these fail to relieve symptoms, second-line pharmacologics, such as danazol and gonadotropin-releasing hormone analogs, may be indicated.

Conservative surgery for deeply infiltrating endometriosis and adhesions involves excision, fulguration, or laser vaporization of endometriotic implants and removal of associated adhesions. Hysterectomy may be considered for patients with severe symptoms that do not respond to conservative treatment. Endometriotic implants acquire a vascular and nerve supply that may contribute to peripheral and CNS sensitization and persistence of pain even after surgical therapy. (8)

Recent advances in endoscopic surgeries have allowed the surgeons to perform nerve transection procedures for the treatment of chronic pelvic pain. They are often carried out during the course of other surgical treatment for endometriosis, in women who have severe midline dysmenorrhea or deep central pelvic pain refractory to medical treatment. Uterine nerve ablation and presacral neurectomy are two nerve transection surgical procedures which have become popular. These procedures interrupt sensory nerve fibres thus diminishing uterine pain. Laparoscopic uterine nerve ablation involves the destruction of the uterine nerve fibers that exit the

uterus through the uterosacral ligament. The superior hypogastric plexus (in older texts, hypogastric plexus or presacral nerve) is a plexus of nerves situated on the vertebral bodies anterior to the bifurcation of the abdominal aorta. It is situated in the retroperitoneum bilaterally extending from L5-S1 and receives fibres from inferior hypogastric plexus which in turn receives fibres from all afferent fibres from pelvic organs; thereby making its transection effective in cases of severe dysmenorrhea and chronic pelvic pain. Therefore presacral neurectomy as this procedure is called can be done laparoscopically for surgically treating Chronic pelvic pain. It was first described by Jaboulay in 1899. (9)

The operation of presacral neurectomy by laparotomy can be dated long back in history and was described even before the outbreak of second World War. Laparoscopic presacral neurectomy is regarded as an extremely advanced level 4 procedure and to be performed only at specialized laparoscopy centres. The efficacy of pain relief by laparoscopic presacral neurectomy in chronic pelvic pain and dysmenorrhea is documented at about 75-80%. Unfortunately 20-25% of patients treated medically for severe, disabling pelvic pain fail to show improvement. The presacral nerve namely the superior hypogastric plexus carries pain afferents from cervix, body of uterus and proximal fallopian tube but does not receive fibres from ovaries and lateral pelvic structures. Therefore presacral neurectomy is effective for cases of severe midline dysmenorrhea and intractable pelvic pain. (10)

Conclusion

The efficacy of pain relief by laparoscopic presacral neurectomy in chronic pelvic pain and dysmenorrhea is documented at about 75-80%. Major complications are rare with a rate of less than 1%

reported. Laparoscopic presacral neurectomy in experienced hands therefore offers an effective surgical intervention for treatment of chronic pelvic pain and midline dysmenorrhea and proves to be an useful adjunct to surgical treatment of severe endometriosis.

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