

# Interstitial Cystitis in Persistent Posthysterectomy Chronic Pelvic Pain

Maurice K. Chung, RPh, MD

## ABSTRACT

**Objectives:** Hysterectomies may be performed unnecessarily in women with chronic pelvic pain if the diagnosis of interstitial cystitis is not considered. The objectives of this study were to investigate the prevalence of interstitial cystitis in patients with posthysterectomy chronic pelvic pain and to evaluate the efficacy of various therapies for interstitial cystitis.

**Methods:** A study was performed of 111 patients with chronic pelvic pain whose pain persisted after hysterectomy. Patients were screened with the Pelvic Pain and Urgency/Frequency symptom scale, and underwent Potassium Sensitivity Testing. Patients were treated with dietary changes alone or in combination with cystoscopic hydrodistention or oral pentosan polysulfate, or both of these, for 3 to 6 months.

**Results:** Of the 111 patients enrolled, 79% (n=88) were diagnosed with bladder dysfunction consistent with interstitial cystitis. For patients treated with dietary modification alone (n=33), the mean score on the Pelvic Pain and Urgency/Frequency questionnaire improved 15.4%, from 13.18 at baseline to 11.15 at follow-up. For patients treated with pentosan polysulfate or cystoscopic hydrodistention, or both, plus diet changes (n=78), Pelvic Pain and Urgency/Frequency scores improved 34.2%, from 15.01 to 9.87.

**Conclusion:** In this study, nonsurgical treatment for interstitial cystitis resulted in a marked improvement in symptoms that had not improved with surgery. Without determining the origin of bladder pain, gynecologists should not proceed to hysterectomy in patients with chronic pelvic pain.

**Key Words:** Chronic pelvic pain, Posthysterectomy pain, Bladder-origin pain, Interstitial cystitis, Potassium Sensitivity Test, Pelvic Pain and Urgency/Frequency questionnaire.

Midwest Regional Center for Chronic Pelvic Pain, The Medical Park of Lima Memorial Hospital, Lima, Ohio.

Address reprint requests to: Maurice K. Chung, RPh, MD, Ob-Gyn Physicians, Inc., 310 S. Cable Rd, Lima, Ohio 45805, USA. Telephone: 419 228 1000, Fax: 419 227 3085, E-mail: Endosurgeon85@aol.com

© 2004 by JSLs, *Journal of the Society of Laparoendoscopic Surgeons*. Published by the Society of Laparoendoscopic Surgeons, Inc.

## INTRODUCTION

Chronic pelvic pain (CPP), defined as nonmenstrual pelvic pain that occurs for more than 6 months, is a debilitating condition that affects approximately 9 million women in the United States.<sup>1,2</sup> Chronic pelvic pain can have multiple causes, including disorders of the reproductive tract, gastrointestinal system, urologic organs, the musculoskeletal system, and the psychoneurological system.<sup>2</sup> Therefore, this condition is often difficult to diagnose accurately and is frustrating to treat.<sup>3</sup> Of the approximately 600,000 hysterectomies performed annually in the United States, 10% to 20% result from a diagnosis of CPP.<sup>2,4-7</sup>

Although hysterectomy is often effective for the relief of symptoms associated with CPP, several studies indicate that up to 38% of women report persistent postoperative CPP.<sup>3,6,8,9</sup> In those patients with persistent posthysterectomy CPP, often no evidence is present of uterine pathology on postoperative examination.<sup>2</sup> This evidence suggests that hysterectomies may be performed unnecessarily in some patients with CPP.

The Maryland Women's Health Study, a large 2-year prospective study of 1299 women, was designed to assess the efficacy of hysterectomies in benign conditions, including pelvic pain.<sup>8</sup> Over the 2-year posthysterectomy follow-up period, patients experienced a substantial improvement in symptoms, including pelvic pain (**Table 1**).<sup>8</sup> Although many patients had postoperative improvements, 8.5% of patients had persistent pelvic pain at 1 year posthysterectomy.<sup>8</sup> Another large prospective study, the Maine Women's Health Study, examined the rate of relief for specific symptoms in 418 women who had a hysterectomy for any nonmalignant condition.<sup>6</sup> One year after surgery, persistent pelvic pain was reported in 5% of patients who had some degree of pelvic pain before hysterectomy.<sup>6</sup> In both the Maine and Maryland studies, problems with urination (frequency, urgency, or incontinence) persisted in approximately 9% of patients.<sup>6,8</sup>

Two additional studies evaluated patient outcomes after hysterectomy. In a study by Hillis et al<sup>9</sup> of 308 women who underwent hysterectomy for CPP, 279 of whom were available for follow-up at 1 year, 21% (58/279) reported

**Table 1.**

Symptom Improvement Data From the Maryland Women's Health Study (N = 1299)\*s

Symptom	Before Hysterectomy	Postoperative Follow-Up	
		1 Year	2 Years
Vaginal bleeding	59.2	0.5	0.3
Pelvic pain	63.1	8.5	7.8
Back pain	43.1	46.4	17.4
Activity limitation	57.5	4.1	2.4
Sleep disturbance	40.9	21.8	20.6
Fatigue	70.0	26.7	24.7
Abdominal bloating	47.8	13.5	12.1
Urinary incontinence	19.5	8.5	8.3

\*Values are percentages unless otherwise indicated.

continued but decreased pain. Of the total study cohort of 308, 5%<sup>15</sup> reported that their pain was unchanged (2.5%, 7) or increased (2.5%, 8). Among the subset of 63 patients with no histopathologic abnormalities of the uterus or adnexa, 38.1% (24/63) reported persistent pain after 1 year, including 9.5% (6/63) with pain that had increased or was unchanged.<sup>9</sup> In a study by Stovall et al<sup>3</sup> involving 99 patients who underwent hysterectomy for CPP, 22% (22/99) reported persistent pain following the procedure. These results suggest that the source of CPP may be nongynecologic in many cases and may not require surgical intervention.

In clinical practice, endometriosis, abdominal/pelvic adhesions, irritable bowel syndrome, and interstitial cystitis (IC) are most frequently associated with CPP.<sup>2</sup> Symptoms of IC, in particular, may mimic gynecologic disorders, and include voiding symptoms, dyspareunia, flare-ups after sex, and perimenstrual exacerbations of pain.<sup>10</sup>

A study by Clemons et al<sup>11</sup> showed that among women with CPP, 38% (17/45) were diagnosed with IC. In addition, a recent retrospective study<sup>12</sup> of 60 patients with CPP found that at least 80% (48/60) of patients had both endometriosis and IC, suggesting that these disorders frequently overlap in patients with CPP. Differences in the rates of IC diagnosis between studies may be due to differences in patient populations or in the criteria used for diagnosis.

Diagnosis of IC can be difficult; however, several methods are available to facilitate an accurate diagnosis. A simple questionnaire called the Pelvic Pain and Urgency/Fre-

quency (PUF) patient symptom scale can be used as an effective screening tool to identify patients suspected of having IC.<sup>13</sup> The PUF questionnaire is an 8-question symptom scale that measures the presence and severity of symptoms on a scale of 1 to 35, and the extent to which each patient is bothered by those symptoms. A score of  $\geq 15$  is highly suggestive of IC. The PUF questionnaire may also be used to assess patient outcomes after therapy. This questionnaire has been validated by the Potassium Sensitivity Test (PST), which is used to confirm the presence of IC.<sup>13</sup> The PST involves instilling a solution containing potassium chloride (KCl) into the bladder and assessing symptoms. A study by Parsons et al<sup>14</sup> found increased bladder sensitivity to potassium, a marker for IC, in 85% (114/134) of patients with pelvic pain. In addition, cystoscopy has been shown to be effective in confirming the presence of IC with pathologic evidence such as glomerulations or Hunner's ulcers, or both.<sup>11</sup>

Once IC is diagnosed, effective treatments are available, including oral therapy with pentosan polysulfate sodium (PPS).<sup>15-18</sup> Changes in diet and avoidance of certain foods may also help to lessen symptom severity in some patients.<sup>19</sup> In advanced cases, multimodal therapy with hydroxyzine, amitriptyline, gabapentin, or narcotics may be used for further symptom relief.<sup>20-22</sup> Cystoscopic hydrodistention (CH) and instillation therapy with dimethyl sulfoxide and other agents are additional useful treatment modalities for acute flare-ups of IC.<sup>19,20</sup>

**METHODS**

A study to investigate the prevalence of bladder-origin pain/IC in patients with posthysterectomy CPP, and to evaluate the efficacy of various treatment regimens including dietary modification, PPS, or CH, or both PPS and CH together, was conducted from October 2000 to November 2002 at the Midwest Regional Center for Chronic Pelvic Pain in Lima, Ohio. This study included 111 patients (age range, 34 to 65 years) with persistent or recurrent pelvic pain who had undergone hysterectomy with or without oophorectomy for the treatment of CPP from 1979 to 2001.

All patients were evaluated using the PUF questionnaire, a PST, and a physical examination to identify lower abdominal, anterior vaginal wall tenderness, or bladder tenderness, or both. The PST involved first instilling 40 mL of water and then 40 mL of 0.4 M KCl for 5 minutes each. Subjective responses of urinary urgency or pain were recorded on a scale of 0 to 5. A provocation of symptoms resulting in an increase of 2 or more on either scale was considered positive.<sup>23</sup> Confirmation of IC by cystoscopy

was based on the National Institutes of Health-National Institute of Diabetes and Digestive and Kidney Diseases (NIH-NIDDK) guidelines.<sup>24</sup>

Regardless of PUF or PST results, all patients were counseled regarding changes in diet, such as elimination of hot or spicy foods and foods high in potassium. Patients were also asked to follow a low-acid /low-oxalate diet. Those patients with a positive PST were offered treatment with either dietary modification alone or dietary modification in combination with CH (the bladder was distended for at least 2 minutes with sterile water under 80 cm to 100 cm of hydrostatic pressure), or oral therapy with PPS (200 mg bid), or both (Figure 1). Patients who had a negative PST but experienced severe pain were treated with dietary modification in addition to CH (Figure 1). Patients were followed up for at least 6 months (range, 6 to 25) and improvements were noted by changes from baseline PUF scores.

**RESULTS**

Irritative voiding symptoms were present in 94% (104/111) of patients. The mean PUF score at presentation was 14.47, and 57% (63/111) of patients had a PUF score of 14 or higher. Eighty-eight (79%) patients had a positive PST response, indicating bladder dysfunction consistent with IC. Of the 66 patients who went on to receive CH, 92% (61/66) had cystoscopic evidence of IC. Only 3 of the patients with a positive PST who went on to receive CH

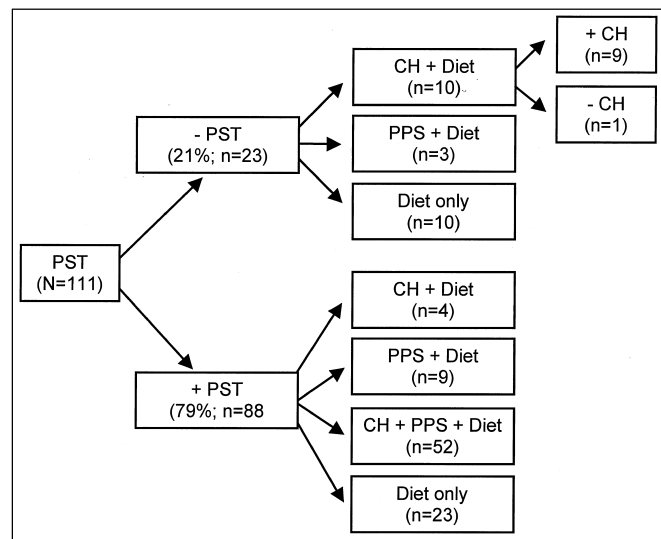
had no cystoscopic evidence of IC. Of the 10 patients who had a negative PST and opted for CH, 9 had cystoscopic evidence of IC.

Of the 23 (21%) patients with a negative PST, 10 (9%) were treated with dietary modification alone, 10 (9%) were treated with dietary modification plus CH, and 3 (3%) were treated with dietary modification plus PPS. Of the 88 (79%) patients with a positive PST, 23 (21%) were treated with dietary modification alone and 88 (79%) were treated with dietary modification in combination with PPS or CH, or both (Figure 1). Fifty-two patients received both PPS and CH. Nine patients received PPS alone and 4 patients received CH alone.

The follow-up period was at least 6 months. Table 2 shows mean PUF scores before and after treatment irrespective of PST result. For patients treated with dietary modification alone, the mean PUF score decreased from 13.18 at baseline to 11.15 at follow-up, an improvement of 15.4% (Table 2). Mean PUF scores for patients treated with PPS or CH, or both, plus dietary modification were 15.01 at baseline and 9.87 after therapy, an improvement of 34.2%, which is nearly double the improvement compared with the improvement in the group treated with dietary modification alone.

**DISCUSSION**

Chronic pelvic pain is a common condition with numerous potential causes that are often difficult to diagnose and treat. Patients with CPP of bladder origin are often misdiagnosed and undergo multiple diagnostic and surgical procedures resulting in little or no symptom relief.<sup>19</sup> Until recently, IC has largely been ignored and considerably underdiagnosed as a cause of CPP. If the diagnosis of



**Figure 1.** Potassium Sensitivity Test results and treatment decisions. CH=cystoscopic hydrodistention; PPS=pentosan polysulfate sodium; PST=Potassium Sensitivity Test.

**Table 2.**  
Mean PUF Scores Before and After Treatment Regardless of PST Result\*

PUF Score	All Patients (n = 111)	PPS and/or CH + Diet (n = 78)	Diet Alone (n = 33)
Baseline	14.47	15.01	13.18
Follow-up (≥6 mo)	10.25	9.87	11.15
Improvement, %†	29.2	34.2	15.4

\*CH = cystoscopic hydrodistention; PPS = pentosan polysulfate sodium; PST = Potassium Sensitivity Test; PUF = Pelvic Pain and Urgency/Frequency.  
†A decrease in score on the PUF questionnaire indicates symptom improvement.

IC is not considered before surgery, hysterectomies may be performed unnecessarily in women with CPP. Accurate diagnosis and nonsurgical treatment of IC may relieve the symptoms of CPP.

In this study, approximately 80% of women with persistent posthysterectomy CPP were diagnosed with bladder dysfunction based on the PST. Of the patients who received CH as part of their therapy, 80% had both a positive PST response and cystoscopic evidence of IC. Patients who were treated with CH or oral PPS, or both, showed improvement in bladder-related symptoms after 3 to 6 months, as evaluated with the PUF questionnaire. Even women who were treated with a low-potassium diet alone showed some improvement in bladder symptoms, although improvement was not as great as that with CH or PPS. These results suggest that bladder dysfunction may have been the source of pain for many of these women with posthysterectomy CPP. Other studies have also found that the prevalence of IC in patients with CPP is notable, suggesting that IC should be considered a primary diagnosis in these patients.<sup>2,11,12,14</sup>

Based on a review of the literature and results of the recently completed study, it is recommended that gynecologists rule out nongynecologic causes of pain before performing a hysterectomy in patients with CPP. Proper evaluation for bladder dysfunction, including a thorough medical history and physical examination to assess bladder tenderness, is critical to making an accurate diagnosis. In the study presented here, 92% (81/88) of patients with positive PST also had positive CH. This suggests that positive PST may be sufficient for a diagnosis of IC. Cystoscopy with hydrodistention may be used for diagnosis of IC in patients with a negative PST and significant pelvic pain and bladder tenderness. If the bladder is determined to be the source of pelvic pain, proper treatment of IC with PPS in combination with other therapies may result in effective relief of pelvic pain and urinary symptoms, thereby avoiding unnecessary surgery.

## References:

1. Mathias SD, Kuppermann M, Liberman RF, Lipschutz RC, Steege JF. Chronic pelvic pain: prevalence, health-related quality of life, and economic correlates. *Obstet Gynecol.* 1996;87:321–327.
2. Howard FM. Chronic pelvic pain. *Obstet Gynecol.* 2003;101:594–611.
3. Stovall TG, Ling FW, Crawford DA. Hysterectomy for chronic pelvic pain of presumed uterine etiology. *Obstet Gynecol.* 1990;75:676–679.
4. Keshavarz H, Hillis SD, Kieke BA, Marchbanks PA. Hysterectomy surveillance—United States, 1994–1999. In: *CDC Surveillance Summaries, July 12, 2002. MMWR Morb Mortal Wkly Rep.* 2002;51(SS-5):1–8.
5. Gambone JC, Mittman BS, Munro MG, Scialli AR, Winkel CA, and the Chronic Pelvic Pain/Endometriosis Working Group. Consensus statement for the management of chronic pelvic pain and endometriosis: proceedings of an expert-panel consensus process. *Fertil Steril.* 2002;78:961–972.
6. Carlson KJ, Miller BA, Fowler FJ Jr. The Maine Women's Health Study: I. Outcomes of hysterectomy. *Obstet Gynecol.* 1994;83:556–565.
7. Reiter RC. A profile of women with chronic pelvic pain. *Clin Obstet Gynecol.* 1990;33:130–136.
8. Kjerulff KH, Langenberg PW, Rhodes JC, Harvey LA, Guzinski GM, Stolley PD. Effectiveness of hysterectomy. *Obstet Gynecol.* 2000;95:319–326.
9. Hillis SD, Marchbanks PA, Peterson HB. The effectiveness of hysterectomy for chronic pelvic pain. *Obstet Gynecol.* 1995;86:941–945.
10. Parsons CL, Stanford EJ, Kahn BS, Sand PK. Tools for diagnosis and treatment. *Female Patient.* May 2002;suppl:12–17.
11. Clemons JL, Arya LA, Myers DL. Diagnosing interstitial cystitis in women with chronic pelvic pain. *Obstet Gynecol.* 2002;100:337–341.
12. Chung MK, Chung RP, Gordon D, Jennings C. The evil twins of chronic pelvic pain syndrome: endometriosis and interstitial cystitis. *JSLs.* 2002;6:311–314.
13. Parsons CL, Dell J, Stanford EJ, et al. Increased prevalence of interstitial cystitis: previously unrecognized urologic and gynecologic cases identified using a new symptom questionnaire and intravesical potassium sensitivity. *Urology.* 2002;60:573–578.
14. Parsons CL, Bullen M, Kahn BS, Stanford EJ, Willems JJ. Gynecologic presentation of interstitial cystitis as detected by intravesical potassium sensitivity. *Obstet Gynecol.* 2001;98:127–132.
15. Parsons CL, Benson G, Childs SJ, Hanno P, Sant GR, Webster G. A quantitatively controlled method to study prospectively interstitial cystitis and demonstrate the efficacy of pentosanpolysulfate. *J Urol.* 1993;150:845–848.
16. Mulholland SG, Hanno P, Parsons CL, Sant GR, Staskin DR. Pentosanpolysulfate sodium for therapy of interstitial cystitis: a double-blind placebo-controlled clinical study. *Urology.* 1990;35:552–558.
17. Parsons CL, Mulholland SG. Successful therapy of interstitial cystitis with pentosanpolysulfate. *J Urol.* 1987;138:513–516.
18. Nickel JC, Forrest J, Barkin J, Payne C, Mosbaugh P. Safety and

efficacy of up to 900 mg/day polysulfate sodium (Elmiron) in patients with interstitial cystitis. *Urology*. 57(suppl 6A):122–123, 2001.

19. Moldwin RM, Sant GR. Interstitial cystitis: a pathophysiology and treatment update. *Clin Obstet Gynecol*. 2002;45:259–272.

20. Lukban JC, Whitmore KE, Sant GR. Current management of interstitial cystitis. *Urol Clin North Am*. 2002;29:649–660.

21. Hanno PM. Amitriptyline in the treatment of interstitial cystitis. *Urol Clin North Am*. 1994;21:89–91.

22. Theoharides TC, Sant GR. Hydroxyzine therapy for interstitial cystitis. *Urology*. 49(suppl 5A):108–110, 1997.

23. Parsons CL, Greenberger M, Gabal L, Bidair M, Barne G. The role of urinary potassium in the pathogenesis and diagnosis of interstitial cystitis. *J Urol*. 1998;159:1862–1867.

24. National Institutes of Health. National Institute of Diabetes and Digestive and Kidney Diseases. National Kidney and Urologic Diseases Information Clearinghouse: Interstitial cystitis. Available at: [www.niddk.nih.gov/health/urolog/pubs/cystitis/cystitis.htm](http://www.niddk.nih.gov/health/urolog/pubs/cystitis/cystitis.htm). Accessed November 3, 2003.

---

Disclosure: Dr. Chung is a member of the speakers bureau for Ortho-McNeil.