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URINARY DIVERSION FOR INTRACTABLE INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME: WHETHER THE TRANSVAGINAL URETHRECTOMY CAN PLAY A PART

Hypothesis / aims of study

Interstitial cystitis/bladder pain syndrome (IC/BPS) is an unpleasant sensation perceived to be related to the urinary bladder, associated with lower urinary tract symptoms of more than six weeks duration, in the absence of infection or other identifiable causes [1]. The etiology and pathology of this condition are poorly understood, therefore diagnosis is established symptomatically, and all available therapies follow general clinical principles or experiences. In clinical practice, although most patients improve in symptoms and related quality of life following the recommended treatments [2], a few patients do not improve. Despite the benign nature of IC/BPS, the frequent and painful symptoms undeniably affect social function severely, even evolving into serious psychological harm. Accordingly, if conservative and minimally invasive therapies have been exhausted without any significant improvement, irreversible major surgery is recommended.

The present study retrospectively evaluated the history, intraoperative, and postoperative outcomes of patients choosing major surgery as the final IC/BPS treatment. Furthermore, because ileal conduit urinary diversion with cystectomy or cystourethrectomy was selected in the majority of cases, we compared the therapeutic benefits and risks of the procedures involving transvaginal urethrectomy.

Study design, materials and methods

The medical records of the urology department outpatients experiencing frequent and painful urination for a long duration were reviewed. Patients reporting no improvement or exacerbation of symptoms were considered surgical candidates and eligible for the study. The ability of surgical candidates to endure the procedure was evaluated individually. The uncertain surgical outcome, as well as risks and benefits were discussed with each patient. The main surgical options were urinary diversion with cystectomy or cystourethrectomy and orthotopic ileocystoplasty because of their low re-operation rate. A classical ileal conduit urinary diversion, i.e. Bricker conduit, was performed transabdominally with cystourethrectomy that the bladder was excised from the trigone to the pubourethral ligament and the urethrectomy was performed transvaginally when possible. An orthotopic ileocystoplasty was performed transabdominally with supratrigonal cystectomy that the excision did not include the trigone or the ureteral orifices. Intraoperative and postoperative medical records were retrospectively reviewed.

Patient's satisfaction was considered as the main standard of successful operation. Surgical outcomes were gauged based on a repeated voiding diary, visual analog scale (VSA), the Chinese edition of the MOS (medical outcomes study) item short form health survey (SF-36).

Results

In total, 14 women with a mean age of 61.3 (range 43 to 75) years were eligible and elected surgical intervention after 7.14 (range 2 to 14) years duration of symptoms due to conservative treatment failure. The population perioperative characteristics are presented in Table I. Classic Hunner's lesions were observed cystopically in only one patient (Patient No. 3). In total, five cystectomy with ileal conduit urinary diversions, eight cystourethrectomy with ileal conduit urinary diversions, and one supratrigonal cystectomy with orthotopic ileocystoplasty were performed by a single surgeon. Preoperatively, the reported micturition pain or urethral burning was binomial distributed (8 out of 14), and the transvaginal urethrectomy incidence was not associated with the reported pain symptoms gauged by the Fisher exact probability test ($p = 0.140$). Moreover, the preoperative baselines, postoperative outcomes and re-operation rate were not significant between groups of urethrectomy and non-urethrectomy gauged by independent samples t test or Wilconxon rank sum test (p values > 0.05). One patient experienced delayed healing of the transvaginal incision with troublesome local inflammation and pyosis. Wound therapy was performed daily for 3 weeks and was the primary barrier to recovery (Patient No. 7).

The surgical outcomes were remarkable in all 14 patients. Management of the ileal conduit urinary diversion was feasible using a urine collection device. Patients reported improved social function and mental condition postoperatively due to a decreased urinary frequency. Histopathologic outcomes indicated that in patients receiving a urethrectomy glandular urethritis with squamous metaplasia of urethral epithelial was reported in six (6/8) specimens. The bladder capacity was 450-ml, but the post-void residual (PVR) was 100-ml in the single ileocystoplasty case six months postoperatively; a clean intermittent catheterization (CIC) was performed each evening before sleep and in the morning to avoid nocturia and overmuch PVR. Otherwise, she reported no greater than six daytime urinations in her voiding diary. The mean follow-up duration was 27 (range 6 to 68) months. Reported pain significantly decreased compared with baseline gauged by paired t test samples ($p < 0.01$). To date, additional surgery to alleviate persistent symptoms or postoperative complications has not been necessary.

Interpretation of results

Although urethra-localized pain is associated with a worsened prognosis for substitution enterocystoplasty [3], few studies confirm whether the transvaginal urethrectomy can play a part. In the present data, five cystectomy and eight cystourethrectomy with ileal conduit urinary diversions were performed. Urethrectomy was performed transvaginally only as a radical operation. There was no significant association between the outcomes with urethra involvement and the transvaginal urethrectomy incidence. Hence, the urethra may not be a source of IC/BPS symptoms. Histopathologically, glandular urethritis with squamous metaplasia was the primary finding in the urethral epithelium, but typical ulceration lesions or interstitial change is absent. Furthermore, in the present study, transvaginal urethrectomy was associated with postoperative delayed healing at the transvaginal incision. Overall, transvaginal urethrectomy proved unsuitable as the initial surgical option for IC/BPS.

Concluding message

Based on the present understanding and available therapy for interstitial cystitis/bladder pain syndrome, major surgery cannot be completely avoided. A careful and thorough evaluation weighing the individual benefits and risks is required. Overall, surgery resulted in favorable subjective and objective outcomes in the selected patients. Transvaginal urethrectomy was not recommended as an initial surgical technique.

Table I. The population perioperative characteristics.

Patient ID	Age (year)	Voiding diary (times, diurnal and nocturnal)[a]	BC under anesthesia (ml)[b]	VAS (pre-post-operation)	Procedure	Follow-up duration (month)	SF-36[c]	Would have surgery again
1	65	30 and 6	270	8, 0	Cystourethrectomy with ileal conduit	54	111	Yes
2	67	26 and 11	140	7, 0	Cystourethrectomy with ileal conduit	68	107	Yes
3	55	Incontinence	120	8, 1	Cystourethrectomy with ileal conduit	24	128	Yes
4	60	27 and 14	150	8, 1	Cystourethrectomy with ileal conduit	44	86.7	Yes
5	69	29 and 10	140	8, 0	Cystourethrectomy with ileal conduit	16	101	Yes
6	68	21 and 6	260	7, 1	Cystourethrectomy with ileal conduit	37	107.15	Yes
7	57	48 and 21	70	8, 0	Cystourethrectomy with ileal conduit	23	76.2	Yes
8	43	41 and 19	200	6, 0	Cystourethrectomy with ileal conduit	18	123	Yes
9	50	23 and 10	340	7, 1	Cystectomy with ileal conduit	41	110	Yes
10	75	18 and 5	360	6, 1	Cystectomy with ileal conduit	16	94.9	Yes
11	69	26 and 13	260	8, 1	Cystectomy with ileal conduit	13	99.65	Hesitation
12	53	37 and 11	170	8, 0	Cystectomy with ileal conduit	12	109	Yes
13	65	36 and 16	160	9, 2	Cystectomy with ileal conduit	6	-	Yes
14	62	19 and 15	340	7, 0	Supratrigonal cystectomy with ileocystoplasty	12	118	Yes

BC: bladder capacity; VAS: visual analog scale, which is a self-assessment of pain symptoms on a 1 to 10 scale. The postoperative VAS was tested half a year after surgery.

[a]Voiding diary outcomes were calculated from the mean value of the latest preoperative evaluation over 3 or more days consecutively.

[b]Bladder capacity was measured at the beginning of surgery based on a 40 cmH2O intravesical pressure.

[c]The Chinese edition of the MOS (medical outcomes study) item short form health survey performed 1 year postoperatively. A perfect score is 150.

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