INTERNAL BLADDER RETRACTOR FOR LAPAROSCOPIC CYSTECTOMY IN THE FEMALE PATIENT

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ABSTRACT

Purpose: To overcome difficult dissection of the vascular pedicles during laparoscopic radical cystectomy we used a novel technique of internal bladder retraction.

Materials and Methods: An internal bladder retractor was used to facilitate dissection of the vascular pedicles during laparoscopic radical cystectomy in a female patient.

Results: The application of the retractor is easy and it allows more precise control of the vascular pedicles and ureters. It also helps to overcome the space limitation when dissecting the perivesical structures. Laparoscopic cystectomy with hysterectomy was accomplished in 2.5 hours.

Conclusions: We successfully used a novel internal bladder retractor to facilitate laparoscopic radical cystectomy in a female patient.

Key Words: bladder, cystectomy, laparoscopy, equipment and supplies

Surgical Procedure

The female patient with invasive bladder cancer was positioned in the modified lithotomy position with hips slightly flexed and abducted, and the buttock at the edge of the table. Five ports were used, including 1 at the umbilicus for the telescope and 2 per side over the abdominal lower quadrants. An assistant stood between the patient legs to control the intraperitoneal cannula and later the internal bladder retractor.

The uterus was mobilized laparoscopically. The uterine cannula helped to stretch the uterine pedicles. Bipolar forceps were used to coagulate and divide them. The vagina was not opened at this stage. A Diamond Flex retractor (Genzyme Products, Tucker, Georgia) used previously for laparoscopic retraction was then passed through the urethra into the bladder. The tip was locked by screwing the rear handle to give it the oval configuration of its distal part (fig. 1). This retractor served as the internal bladder retractor. Using this internal bladder retractor and the uterine cannula the bladder and uterus were retracted up and lateral to stretch the ureters, and the superior and inferior vascular pedicles of the bladder (fig. 2, A). A 8Fr Foley catheter was inserted into the bladder for draining urine. These vascular pedicles were mobilized for an adequate length. The vessels were coagulated with bipolar forceps and divided. The ureters were also clearly identified and divided using laparoscopic scissors (fig. 2, B). Anterior dissection of the bladder neck and urethra was facilitated by displacing the bladder posterior using the internal bladder retractor.

After the whole bladder and uterus were mobilized posterior colpotomy was done on the posterior fornix of the vagina. The operation was then moved to the perineum to perform the remainder of the procedure conventionally. Colpotomy in the posterior fornix was extended around the cervix and urethral meatus. The whole specimen, including the bladder and uterus, was then delivered through the vagina. Any remaining bladder attachments were then divided between hemostats and the colpotomy was closed. This part of the operation required 2.5 hours.

Bilateral iliac lymph node dissection was then done. A 5 cm incision was made on the right lower quadrant, extending a laparoscopic port site. The small intestine and ureters were delivered through this incision and a continent ileal pouch with bilateral ureteral anastomoses was created extracorporeally. The pouch stoma was sutured to this abdominal incision.

Total operative time was 8.5 hours and blood loss was 550 ml. Flatus passage was noted on postoperative day 3 and hospital stay was 11 days. Histopathological evaluation revealed stage T2bN0M0 transitional cell carcinoma. The surgical margin was free of malignancy.

Discussion

It is a common technique in traditional open surgery to stretch tissue to facilitate dissection. Because they are re-
strained by the limited capability of retraction in laparoscopy, complex surgical procedures become even more difficult. This difficulty is especially obvious when a large organ which was located deep in the surgical field must be removed, as in radical cystectomy. In previous experience with laparoscopic radical cystectomy groups had great difficulty controlling the complex vascular structures surrounding the bladder. It is ideal if an easy method can be used to stretch the bladder to enable dissection of the bladder pedicles. However, there is a limit to this maneuver if the device or method must be applied intraperitoneally due to the small confined space in the pelvis and the proximity of major blood vessels in the lateral pelvic walls. In this confined space adequate bladder retraction is difficult and often results in clashing instruments.

Gynecologists have overcome this difficulty during laparoscopic hysterectomy using a uterine cannula inserted through the cervix for retracting the uterus upward and lateral. We followed the same principle using a special retractor passed through the urethra into the bladder in a female patient. The retractor has an oval shape and smooth corners. Thus, the bladder was flattened and the smooth corners of the retractor prevented perforation. This maneuver effectively and easily stretches the vascular pedicles of the bladder. They can then be visualized, mobilized and accurately controlled with bipolar cautery or clips away from the major structures in the lateral pelvic wall. Due to adequate exposure of the pedicles the stretched vascular structures allowed endoscopic clips or bipolar forceps to be placed accurately, thus, overcoming the necessity of an Endo-GIA stapler (United States Surgical Corp., Norwalk, Connecticut). Therefore, the procedure of controlling the vascular system becomes not only more precise, but also cost-effective.

Stretching short vascular pedicles in a confined space for facilitating dissection is a requirement for other laparoscopic procedures in the pelvis, such as laparoscopic radical prostatectomy. The same principle may also apply in open pelvic surgery. In open pelvic surgery the bony pelvic brim mechanically restricts the effective application of retractors to retract the viscera. The internal bladder retractor may be used effectively in these laparoscopic and open surgical situations for effective retraction by a second assistant from the perineal end. Thus, the hands of the surgeon and first assistant are free to dissect the major structures, such as vascular pedicles and ureters.

This case only demonstrated the feasibility of the internal bladder retractor for female cystectomy. We have also used the retractor to assist laparoscopic cystoprostatectomy in male patients. The retractor was easily inserted into the bladder and yet concomitant urinary catheterization was not possible. Therefore, a similar retractor with an internal drainage system is being designed.
CONCLUSIONS

Laparoscopic radical cystectomy is still in its infancy. We believe that this internal bladder retractor may help to delineate the vascular pedicles more precisely and enable division more cost-effectively. Further evaluation is necessary, including its application in male patients and its role in radical laparoscopic prostatectomy.

REFERENCES