

## ENDOUROLOGY & LAPAROSCOPY

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### **Laparoscopic management of intraperitoneal bladder rupture secondary to blunt abdominal trauma using intracorporeal single layer suturing technique**

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**Background:** Since Parra reported the first case of laparoscopic repair of bladder rupture caused by nonlaparoscopic injury to the bladder in 1994, several case reports have demonstrated the feasibility of this reconstructive surgical technique. We report the series of six patients that underwent laparoscopic repair of intraperitoneal bladder rupture (LRIB) because of blunt trauma using a single layer suturing technique. To our knowledge, this is the first series of LRIB reported secondary to blunt abdominal trauma.

**Methods:** From January of 2002 through June of 2006, a total of 139 patients were identified in our trauma registry with bladder ruptures secondary to abdominal blunt trauma. Among them 111 (79.8%) patients had associated pelvic injury. Seventy-one patients underwent surgical exploration and open bladder repair. Six cases were managed with laparoscopic technique. Patients were positioned in supine position and a three port-technique (5 mm, 10 mm, and 12 mm) was performed using the intracorporeal single layer suturing with a 3.0 Vycril (UR-6 needle). A close system Jackson-Pratt drain was placed in the retropubic space to monitor possible urine extravasation.

**Results:** The mean age of the patients was 47.3 years old (18-74 years). There were three female and three male patients. The average operation time was 43 minutes (31-75 minutes), mean length of bladder tear was 6.37 cm (5.3-7.7 cm), mean estimated blood loss was 16.6 cc (10-35 cc) and mean follow-up was 25.5 months (20-28 months). Two patients underwent combined orthopedic procedures. Computerized Tomography (CT) cystogram was performed between 5 days and 7 days after surgery with no signs of leakage in all patients.

**Conclusion:** LRIB perforation because of blunt abdominal trauma using single layer intracorporeal suturing technique is a minimally invasive alternative to open surgery in well selected patients with no other intrabdominal injuries or intracranial pressure issues, offering faster recovery and better cosmetic results.

### **Editorial Comment**

This retrospective study demonstrated the development of minimally invasive laparoscopic surgery in trauma, especially for the bladder. This manuscript brings new concepts and changes in old “dogmas” such as, bladder repair in 2 layers, use of supra-pubic urine diversion, and use of minimally invasive approach to trauma. At Denver Health Medical Center, a level 1 trauma center, pioneering studies such as gastro-intestinal anastomosis performed in 1 layer demonstrated efficacious repair and gave birth to the similar concept of repair for the bladder. As stated in this study, the large number of trauma patients allowed the development of new minimally invasive techniques, i.e.; among the 111 patients with pelvic injuries during a period of less than 5 years, only 6 patients were able to benefit from this minimally invasive approach to repair the bladder. The authors emphasize the specific indications and selection of patients and contra-indications, such as, associated head trauma that may not allow the insufflation pressures or the “light” Trendelenburg position.

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## **Hand assisted retroperitoneoscopic nephroureterectomy with the patient spread-eagled: an approach through a completely supine position**

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**Purpose:** We evaluated the feasibility of hand assisted retroperitoneoscopic nephroureterectomy for transitional cell carcinoma of the upper urinary tract with the patient completely supine (spread-eagled).

**Materials and Methods:** From October 2006 to January 2008 hand assisted retroperitoneoscopic nephroureterectomy with open bladder cuff excision was performed in 32 patients with upper tract transitional cell carcinoma. The patient was placed supine with the legs extended and abducted at 45 to 60 degrees, and the arms stretched out to the sides in the spread-eagle position. The patient was secured to the operation table with 3-inch tapes to permit lateral table tilt. The operation was completed via a 7 or 8 cm Gibson incision plus 2 laparoscopic ports.

**Results:** All procedures were successful. The mean time needed for hand assisted retroperitoneoscopic Nephroureterectomy and bladder cuff resection was 137.6 minutes. Mean estimated blood loss was 200 ml. Simultaneous transurethral endoscopic procedures were performed in 8 patients. Time to oral intake was 2.1 days and time to ambulation was 2.0 days. No specific complication was related to the position. All patients recovered to normal daily activity uneventfully.

**Conclusions:** Hand assisted retroperitoneoscopic nephroureterectomy with the patient completely supine is feasible and safe. The completely supine position has several advantages, including ease of patient positioning and the ability to perform simultaneous endoscopic procedures. It not only decreases the time and cost of changing position, but also avoids potential risks associated with the lateral decubitus position. Bowel interference with the visual field and mechanical bowel injury are not a concern using this approach.

### **Editorial Comment**

The laparoscopic radical nephroureterectomy (LRNU) still remains a controversial subject, from the position of the patient to the optimal techniques to manage the distal ureter and the bladder cuff. The authors of this study propose an interesting patient positioning and surgical technique to perform the LRNU. It is extremely curious that a hand port is used in an already “tight” retroperitoneal space, creating difficult surgical maneuvers due to the lack of surgical field/space. Another interesting point is the preference of the authors for the 0-degree laparoscope that can be easy to operate but may not offer the full range of visualization that a 30-degree or a flexible laparoscope may extend the view. The authors focused on the positioning of the patient and the lack of neurological or muscular complications that may occur during these laparoscopic procedures, fortunately very rare currently, since the “big” international learning curve has improved and better laparoscopic instrumentation, as well as, the knowledge of “laparoscopic anatomy” has been familiarized to the rest of the world through meetings, publications, etc. The oncological results appear similar to the other centers with high volume but the focus of the study seemed skewed towards the possible complications and advantage of not changing the patients positioning during this complex procedure. The authors should be congratulated for the attempt of optimizing the surgical technique of a known intricate procedure.

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