

Transperitoneal Laparoscopic Ureterolithotomy for Large Distal Ureteric Stone: The first Experience in Hasan Sadikin Hospital, Bandung

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Abstract

Introduction: Laparoscopic ureterolithotomy has become an alternative to open surgery for removing large stones that is not amenable to endoscopic treatment. In most of the published literature, laparoscopic approach for lower ureteric stone is described to be less successful than middle and upper ureter. Identification in anatomical landmarks and Exposing the distal ureter has been the major boundaries in establishing laparoscopic distal ureteral stone. In this videos, we hope to provide clarity and feasibility that may increase our knowledge in laparoscopic ureterolithotomy for large distal ureteral stone. The obbjective is to share our experience in Laparoscopic ureterolithotomy for large distal ureteric stone with transperitoneal approach

Methods: A 37 years old male has been diagnosed with a right hydronephrosis due to proximal ureterolithiasis and stone at left calyx inferior, first and stone migrated to right distal ureter on 12 hours prior surgery. He underwent laparoscopic ureterolithotomy with transperitoneal approach.

Results: We successfully perform laparoscopic ureterolithotomy with transperitoneal approach on a 37 y.o male patient who diagnosed with a a right hydronephrosis due to distal ureterolithiasis and stone at left calyx inferior. Duration of operation was 45 minutes. Patient was discharged at 2nd postoperative day without any complications.

Conclusion: A Transperitoneal laparoscopic ureterolithotomy for distal ureteric stone is a safe and feasible technique that should be an options on every patients who plan to undergo distal ureterolithotomy especially large stone (J I Bedah Indones. 2014;43:61–64).

Keywords: Transperitoneal, laparoscopy, distal ureterolithotomy.

Abstrak

Laparoskopi ureterolitotomi merupakan salah satu terapi alternatif yang menggantikan operasi terbuka untuk batu ureter besar yang tidak bisa diterapi dengan endoskopik. Pada sebagian besar literatur, pendekatan laparoskopik untuk batu ureter distal angka keberhasilannya lebih kecil dibandingkan dengan batu ureter media dan proksimal. Identifikasi anatomi dan operasi ureter distal seringkali menyulitkan untuk tindakan laparoskopik batu ureter distal. video ini diharapkan dapat menambah pengalaman kami untuk terapi laparoskopik ureterolitotomi pada batu ureter distal yang besar. Tujuan tulisan ini adalah untuk membagi pengalaman mengenai tindakan laparoskopik ureterolitotomi pada batu ureter distal yang besar melalui pendekatan transperitoneal.

Metode: Seorang pria usia 37 tahun didiagnosis awal dengan hidronefrosis kanan yang disebabkan oleh batu ureter proksimal dan batu kaliks inferior kiri. Kemudian pada 12 jam sebelum operasi dilakukan BNO dengan hasil batu migrasi ke ureter distal kanan. Pasien kemudian menjalani operasi laparoskopik ureterolitotomi dengan pendekatan transperitoneal.

Hasil: Kami telah berhasil melakukan laparoskopik transperitoneal ureterolitotomi pada seorang pria usia 37 tahun dengan diagnosis hidronefrosis kanan yang disebabkan oleh batu ureter distal kanan dan batu kaliks inferior kiri. Durasi operasi ini selama 45 menit. Pasien pulang pada hari kedua tanpa komplikasi.

Simpulan: Laparoskopik transperitoneal ureterolitotomi pada batu ureter distal merupakan salah satu teknik operasi yang aman dan mudah yang dapat menjadi pilihan manajemen pada setiap pasien yang akan

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(*J I Bedah Indones.* 2014;43:61–64).

Kata kunci: *Transperitoneal, laparoscopi, ureterolitotomi distal.*

Introduction

The treatment of urinary lithiasis has been revolutionized during the last three decades. Laparoscopic surgery provides a higher degree of patient satisfaction than open surgery from a cosmetic perspective. It is also effective in reducing postoperative pain, operative wound complications, blood loss, and the length of hospital stay. Laparoscopy as a minimally invasive treatment is continuously gaining place in the treatment of urinary stones, mainly replacing open surgery.

In most of the published literature, laparoscopic approach for lower ureteric stone is described to be less successful than middle and upper ureter. Upper and mid ureteric stones are safely approached retroperitoneally but lower ureteric stones are better approached

transperitoneally. This article describes important technical points to successfully retrieve large lower ureteric stones through transperitoneal laparoscopy.^{1,2,3}

Case Report

A 37 years old male has been diagnosed with a right hydronephrosis due to proximal ureterolithiasis and stone at left calyx inferior, first and stone migrated to distal ureter on 12 hours prior surgery. He underwent laparoscopic distal ureterolithotomy with transperitoneal approach. We successfully perform laparoscopic ureterolithotomy with transperitoneal approach. Duration of operation was 45 minutes. Patient was discharged at 2nd postoperative day without any complications.

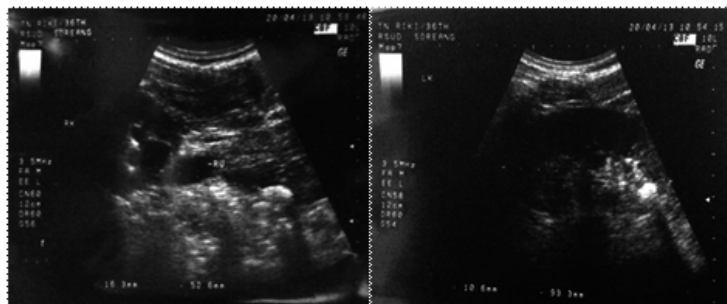


Fig 1. Ultrasonography showing stones at right upper ureter and left kidney



Fig 2. Intravenous pyelography shiwing stone at right upper ureter of 25x9 mm and lower calyx of the left kidney measuring 10x11 mm.



Fig 3. Preoperative assessment using plain x ray showing migrated stone from upper to lower ureter.

Surgical Technique

The Patient with right distal ureteric stone of size 25 x 9 mm was treated with transperitoneal laparoscopic ureterolithotomy. Patient was placed in 30–45° semi Trendelenburg position (figure 4). Camera port was placed at the umbilicus with close technique. Dominant port of 11 mm was inserted under vision in the iliac fossa and the non dominant port of 5 mm at the suprapubic area (figure 4).

The semi trendelenburg position was set to move colon cranial and medial direction. So we can identified the pulse of the right external iliac vessels and made it easier to identify the ureter, which is then crossed with the right external iliac artery. Ureter was then dissected distally staying away from the adventitia till the stone site was reached (figure 4).

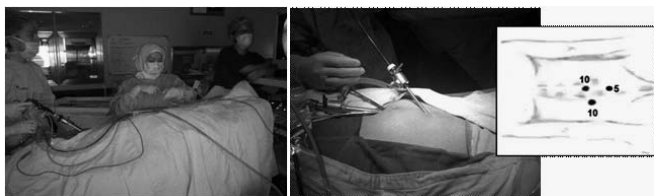


Fig 4. Left: Position of patient, the monitor and operator. Right: Port of laparoscopy position and the scheme of port position (inset)

Determining position of the stone sometimes becomes challenging. Pinching the ureter gently gave us the exact location of the stone. Using Maryland dissector, a non stone bearing part of the ureter could be pinched fully, but the stone carrying part could not. Once the stone was localized by 'ureteral pinching',

pointed diathermy hook was used to incise the ureter over the stone. Maryland dissector was used to fish out the stone with closed forceps' tip or using its one prong only (figure 5). The same dissector could be used to hold the stone and bag it in the glove finger, which was then attached with a clip to the parietal wall for its removal at the end of surgery (figure 5).

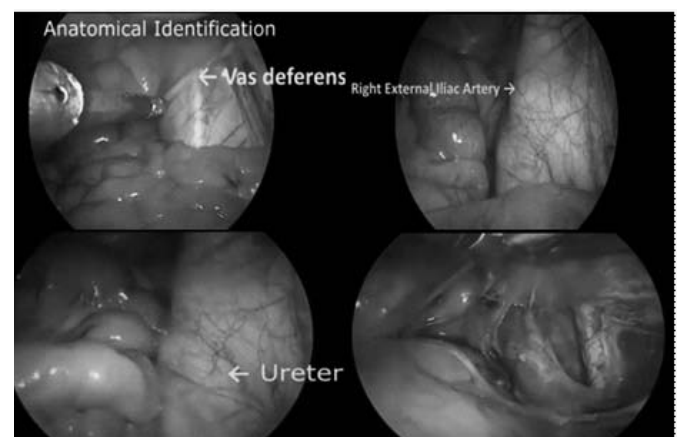


Fig 5. Anatomical identification: vas deferens, right external iliac artery and ureter

Insertion of nasogastric tube is to make sure there was no obstruction at distal stone and puposed to guidance while suturing the ureter. A 4-0 vicryl was used to close the ureterotomy with interrupted stitches and a tube drain was placed before closing the ports (figure 6). Operating time was 45 minute. Urethral catheter was removed on first day and drain on second day. We did not insert double J stent because no indication for this case.^{1,2,4,5}



Fig 6. The incision of the ureter over the stone, extraction of the stone and suturing of the ureter

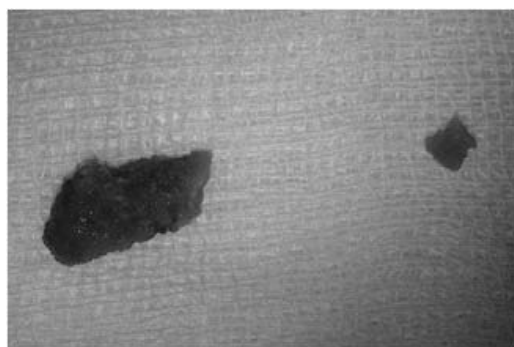


Fig 7. Stone of 25 x 9 mm

Discussion

Laparoscopic ureterolithotomy is a minimally invasive option to treat large ureteric stones not amenable to ureteroscopy. Transperitoneal approach gives better understanding of the anatomical landmarks particularly for the lower ureteric stone.

Port placement is the most crucial part of any laparoscopic surgery, more so for approaching lower ureteric stones located below the Sacroiliac joint (SI). We used an close technique for placement of the camera port in our laparoscopic surgeries. It is easy to enter the abdomen at the umbilicus as only rectus sheath is encountered. The ureter is identified at the iliac vessels it should be crossed with vascular tape and then dissection should be carried out distally.

Stone localization is an important step of this surgery. In case, when the ureter is not so dilated, stone could be seen bulging in the ureter but in cases where stone is not seen prominently due to proximal dilatation of the ureter, it would sometimes become difficult to localize the stone visually. Pinching with the Maryland forceps helps in localizing the stone. Incision of the ureter over the stone with hook diathermy. It has been shown that using diathermy to make ureteral incision does not affect the ureteric tissue healing adversely.² Once the stone is fished out, it should be bagged. Unlike in retroperitoneal approach it is always better to bag the stone to avoid the risk of losing it in the peritoneal cavity. In large stones with presence of inflammation it is always better to place a double J stent that is put in before or during the laparoscopy to avoid the complication of urinary extravasation and urinoma formation. In this case, there was no indication for inserting double J stent.^{1,2,4,5}

Abdominal access is fundamental for all laparoscopic

procedures. However, a variety of complications are associated with placement of trocars, the Veress needle, or the Hasson cannula. In reports published between 1999 and 2001, the incidence of access complications was 0.4–2.0%. The complications consisted of intraoperative (hollow viscus injury, air embolus, preperitoneal insufflation) and postoperative complications (wound infection, abdominal wall hematoma).⁶

Conclusion

A Transperitoneal laparoscopic ureterolithotomy for distal ureteric stone is a safe and feasible technique that should be an options on every patients who plan to undergo distal ureterolithotomy especially large stone.

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This operation was performed by dr. Sawkar Vijay Pramod, Sp.U

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