



Case report

One case report of laparoscopic biological patch repair for the ureterosciatic hernia and literature review

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ABSTRACT

Ureterosciatic hernia is a very rare disease worldwide. We report a successful case of laparoscopic biological repair of large ureteral hernia. Preoperative CT examination showed ureterosciatic hernia with incarceration and proximal ureteral dilatation. Laparoscopic ureteral incarceration release, ureteral stent placement and biological patch repair of sciatic foramen hernia were performed. Under the observation of laparoscope, the stent was placed through urethra with cystoscope to restore the course of ureter. A biological patch was placed behind the ureter to cover the closed hernia ring. We have been followed up for 2 months after operation. According to the reexamination, the effect is obvious. Laparoscopic biological patch repair for ureteral sciatic foramen hernia has the advantages of less trauma, convenient operation and ideal prognosis in theory.

1. Introduction

The sciatic foramen hernia is a very rare disease among pelvic floor hernia [1], and herniations of ureter into sciatic foramen are extremely rare condition. Due to ureteral herniation, the complete or incomplete ureteral obstruction may lead to ureteral dilatation and hydronephrosis, severe concurrent infection or renal insufficiency [2]. The treatment principle of which is to release the incarcerated ureter and repair the sciatic foramen hernia through a surgical procedure. Traditionally, most of ureterosciatic foramen hernias are repaired by an open surgical procedure. Since the reports of laparoscopic hernia repair were published by Gee et al. in 1999, 5 cases of laparoscopic ureterosciatic foramen hernia repair have been reported [2, 3, 4, 5, 6]. Here, we report a successful case of laparoscopic biological patch repair in the treatment of ureterosciatic foramen hernia.

2. Case report

2.1. Preoperative management and work up

A 72-year-old female with a BMI of 19.23 had intermittent pain in right lumbar and abdomen with chills and fever for 1 year, diagnosed with a urinary tract infection by the local hospital, and given anti-inflammatory therapies. The pain relived, but recurred repeatedly. She was previously physically fit, denied history of coronary disease,

hypertension, diabetes, chronic bronchitis, etc. The physical examination showed no obvious positive signs. CT examination revealed: ureteral greater sciatic foramen hernia and incarceration, proximal ureter dilation and hydronephrosis (Figures 1 and 2). She was diagnosed with ureterosciatic foramen hernia and incarceration. There were no contraindications in preoperative examination. After preoperative discussion, it was decided to perform laparoscopic ureteral incarceration release, ureteral stent placement, and sciatic foramen hernia biological patch repair. After preoperative discussion and getting the patient's consent, it was decided to perform laparoscopic ureteral incarceration release, ureteral stent placement, and sciatic foramen hernia biological patch repair.

Written informed consent from the patient has been obtained for the publication of the case details and associated images.

2.2. Operation management

The patient received a general anesthesia through a tracheal intubation, remained the lithotomy position with the head low and the right side high. A 10mm trocar was placed through the umbilical incision as the observation hole. The 10, 5, and 5mm trocars were placed respectively into the outer edge of the rectus abdominis on the left side of umbilical level, the Left lower quadrant, and the outer edge of the rectus abdominis on the right side of umbilical level as the 1st, 2nd, and 3rd operation holes. The peritoneum was opened along the upper side of the right ureter to expose the right ureter. The ureterosciatic foramen hernia

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Figure 1. Preoperative ureteral imaging.

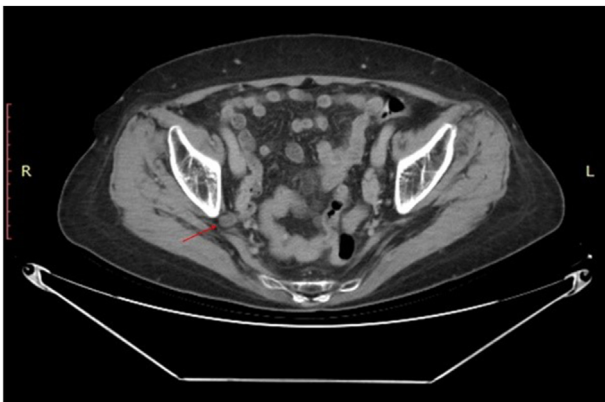


Figure 2. Preoperative CT showed that the ureter herniated into the greater sciatic foramen.

and incarceration could be found (see Figure 3). Release the herniated ureter (see Figure 4), reveal the hernia ring (see Figure 5), under laparoscopy, use the cystoscope to place a ureteral stent through the urethra to restore the running of ureter (see Figure 6), suture and close the hernia ring with 3-0 absorbable barbed thread, place a biological patch (Beijing Datsing Bio-Tech Co., Ltd., SIS patch, model: 10 × 15cm) behind the ureter, cover the closed hernia ring (see Figure 7), continuously suture and close the peritoneum with 3-0 absorbable suture (see Figure 8), end the procedure.

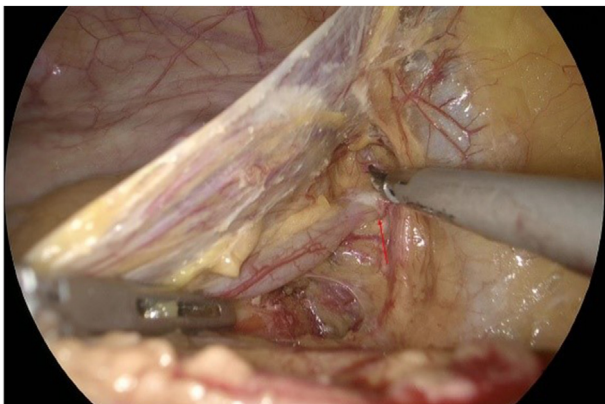


Figure 3. The site of ureteral hernia seen during the operation.

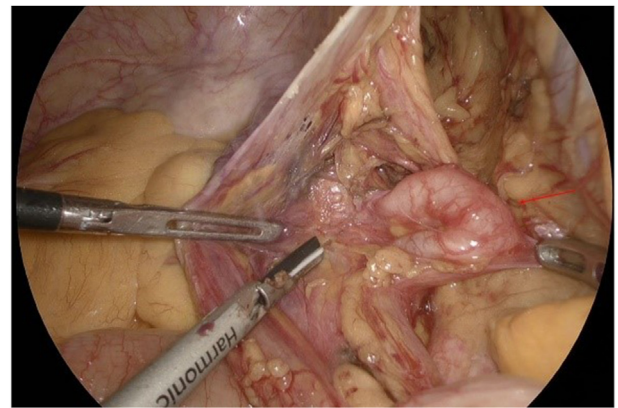


Figure 4. Releasing the twisted ureter during the operation.

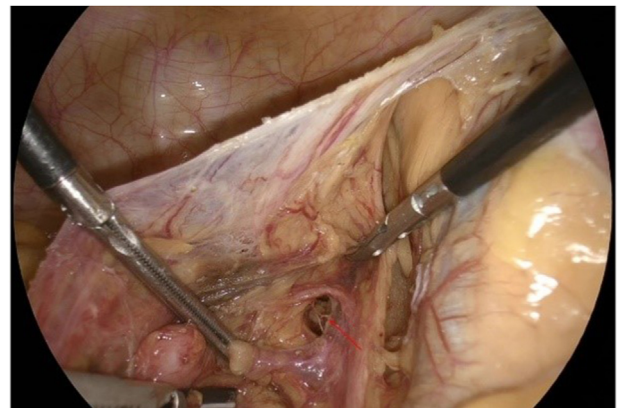


Figure 5. The ureter herniated from here.

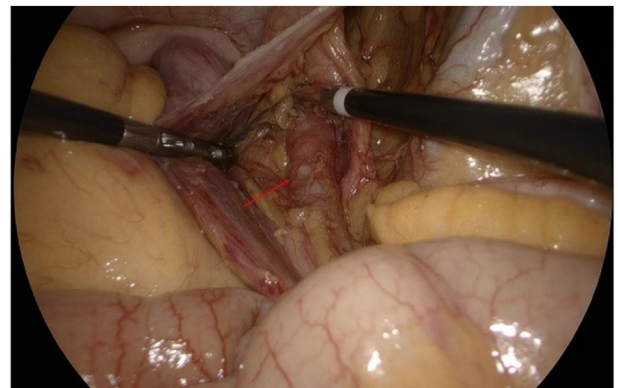


Figure 6. The ureter after the stent was placed.

2.3. Postoperative treatment and follow-up

On the first day after the surgery, the patient got out of bed and resumed oral intake. There was no lumbago, chills or fever for 2 months after the surgery. Abdominal CT scan showed that the ureter ran normally, and there was no sign of hydronephrosis or ureterectasia (see Figure 9). Two months after operation, ureteral stent was removed through cystoscope in outpatient department.

3. Discussion

The greater sciatic foramen refers to the space between the incisura ischiadica major, the sacrospinous ligament and the sacrotuberous

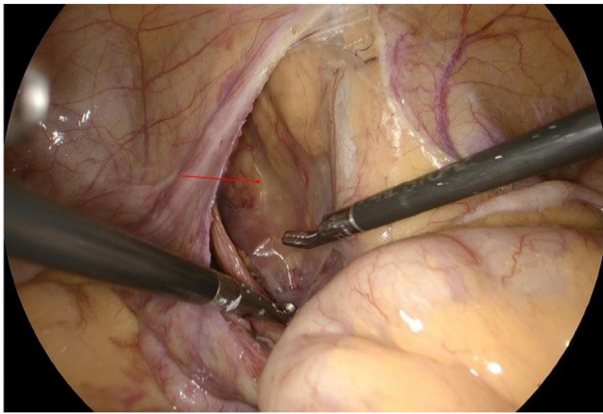


Figure 7. Laying the biological patch.



Figure 8. Closing the peritoneum.

ligament. The main structure of the foramen is the piriformis. The piriformis separates the foramen into the suprapiriform foramina and infrapiriform foramina, in which blood vessels and nerves run. When there is a weakened area in the muscles around the greater sciatic foramen, under the condition of increased intra-abdominal pressure, the lower abdomen and pelvic organs may herniate, which is called sciatic foramen hernia. Although the sciatic foramen hernia of various organs in pelvic cavity has been reported, the ureterosciatic hernia is still very rare worldwide, and often cannot be diagnosed through physical examination alone, while CT and urography are meaningful diagnosis methods [7, 8, 9]. Where there is a ureterosciatic hernia, the obstruction of the discharge of urine leads to ureterectasia, hydronephrosis, and secondary infections. In severe cases, it can lead to renal insufficiency on the affected side. Some of cases can be repaired or relieved by the

ureteroscope or ureteral stent [10, 11], but there are still some of unsuccessful cases which require surgical treatments. Most of the ureterosciatic hernias reported in the past are repaired through open surgery, but the surgical trauma is relatively large and the surgical procedure is quite difficult. With the development of laparoscopic technology, laparoscopic ureterosciatic hernia repair is a more minimally invasive procedure, and the enlarged field of view and good spatial exposure make the operation more convenient. The SIS biological patch is mainly derived from the porcine small intestine submucosa, after removing various cells and antigen components contained in the tissue, retains the 3D fiber framework rich in collagen, which can be used for host cell proliferation, the tissue remodeling and vascular regeneration, as well as supporting and strengthening tissue repair [12]. Moreover, it has the advantages of good biocompatibility, no excessive scar tissue, and no chronic pain. Its safety and efficacy, including long-term efficacy, have been recognized [13]. On the basis of addressing the ureteral obstruction, we suture and use biological patch to repair the weakness areas and defects of the greater sciatic foramen, thereby reducing the recurrence rate. The use of a ureteral stent can restore the ureteral running and make the ureter unobstructed, so as to relieve the hydronephrosis and the proximal ureterectasia as soon as possible.

The ureterosciatic hernia is a rare disease. We successfully released the ureteral incarceration through laparoscopy and repaired the sciatic foramen hernia with a biological patch. This method is less traumatic, easy to operate, and theoretically has an ideal prognosis. The patient has been followed up for 2 months after the operation. From the re-examination results, the effect is obvious, but we still need to observe the long-term effect. We recommend laparoscopic surgery for the treatment of ureterosciatic hernia.

Declarations

Author contribution statement

All authors listed have significantly contributed to the investigation, development and writing of this article.

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Data availability statement

No data was used for the research described in the article.

Declaration of interest's statement

The authors declare no conflict of interest.

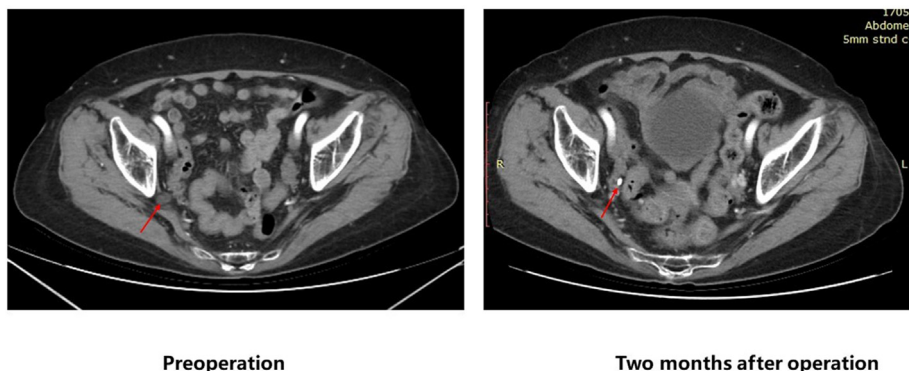


Figure 9. Comparison between preoperation and 2 months after operation.

Additional information

No additional information is available for this paper.

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