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Successful Laparoscopic Management of Hydroperitoneum- A Rare Complication of Retrograde Intra Renal Surgery

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Although urolithiasis has many treatment options, every treatment has its own complications. In this case report, we discuss about a 36yr old female who was being treated for lower calyx stone by retrograde intrarenal surgery (RIRS) technique and developed hydroperitoneum post procedure. Patient developed abdominal compartment syndrome and it was managed immediately postoperatively by laparoscopic intraperitoneal drainage of the collection.

Keywords: Abdominal compartment syndrome; diagnostic laparoscopy; hydroperitoneum; intra-abdominal pressure.

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ABBREVATIONS

RIRS; CT KUB; OPD.

1. INTRODUCTION

Urolithiasis is one of the most common diseases with an increasing global incidence. The management of the renal and the proximal ureteral calculi has evolved during the last few decades.

With the advances in flexible endoscopy, reduction in scope size, improved scope durability, improved light transmission, extended field of vision, and efficacious lithotripsy technology, the RIRS has become widely accepted and employed as the first-line treatment for the upper urinary tract stones of less than 2 cm [1,2]

RIRS has lower complication rates and high stone-free rates [3,4,5]. Most of the RIRS complications were in the lower Clavien grades and major complications were uncommon [6]. Intraoperative and postoperative complications were observed in 5.9% and 7.3% of patients.

In this case report, we describe immediate successful laparoscopic management of hydroperitoneum, which is one of the rare postoperative complications following RIRS.

2. CASE REPORT

A 36-year-old female presented to urosurgery OPD with complaints of right flank pain. CT KUB was suggestive of right lower pole calculus of size 12.6 mm with Hounsfield unit of 900, with both kidneys functioning normally. Patient had no co-morbidities and no relevant family history.

She was posted for retrograde intrarenal surgery for the above findings. Intraoperatively, cystoscopy was done. Right ureteral cannulation with glide wire and dilated using Nottingham dilator. A 10/12Fr ureteric access sheath passed under C-arm guidance. 7.5fr flexi RIRS scope was passed under vision through access sheath to reach up to renal pelvis. Flexiscope was angled to visualize the lower calyx stone and with the help of holmium laser (0.85J, 10Hz), lithotripsy was done and pressure irrigation was done to remove stone fragments. There was no evidence of bleeding. A 6/26 DJ stent was placed.

Procedure was uneventful and patient was shifted to recovery postop.

Patient had acute severe pain in abdomen while in recovery. On examination patient had pulse rate-110bpm, decreased saturation of oxygen up to 80%, with ABG showed acidosis. Patient had abdominal tenderness and guarding. Patient had developed abdominal compartment syndrome and hence was immediately taken to operation theatre and decision was taken to go ahead with diagnostic laparoscopy to know the cause. After induction, 10 mm umbilical trocar was inserted with open technique, for camera with intra-abdominal pressure of 12 mmHg. Since patient had intra-abdominal pressure of 22 mm Hg hence insufflation was not possible. Hence the pressure was increased up to 22 mm Hg. Even with such high pressures, there was no space in intra-abdominal cavity hence blunt dissection done with the scope along the right paracolic gutter near the hepatic flexure following which water was seen seeping from the retroperitoneum into the intra-abdominal cavity which created some space. There was no blood in peritoneal or retroperitoneal cavity. With the same pressures, two 5mm trocar inserted in epigastrium and left iliac fossa and with forceps and suction all the fluid within the peritoneum, drained. The pressures lowered gradually to 12 mm Hg and approximately 2 L of fluid was drained. A Jackson Pratt drain was inserted in the right paracolic gutter and was kept for a period of 2 days which was draining 100-200 ml per day.

Postoperatively patient was stable and discharged on day 3 post-op after drain removal. On follow-up patient was stable.

3. DISCUSSION

Urolithiasis is one of the reasons for increased number of hospital visits. The lifetime risk of urolithiasis in the general population is 13% in men and 7% in women [7]. RIRS is the most popular treatment in patients with renal stones smaller than 2 cm. RIRS has shown stone-free rates comparable to other therapeutic modalities and with a lower risk of renal damage and bleeding [8,9]. After first treatment, stone-free rate achieved is 81.9% and is about 87.4% after a second procedure [5].

Breda et al. reported that the overall complication rate for RIRS was 8% and the rate of major complications was 1.9% [10]. Fever in the

postoperative period was the most common individual complication [11,12]. Sepsis was the most severe complication [13]. Hydroperitoneum is an unusual complication with only two cases reported so far [14]. Positioning of an abdominal drain under CT or ultrasound guidance was done which led to rapid resolution of symptoms in two days [14].

Our patient had lower calyx stone and, it is more difficultly accessible compared to middle and upper pole stones. Also, there is limited spontaneous drainage of stone fragments after lithotripsy due to the position of lower pole. The cause of hydroperitoneum is probably due to seepage of fluid from the lower calyx following high pressure irrigation with eventual perforation of the calyx. Patient was treated immediately post-operative due to development of abdominal compartment, with laparoscopic drainage of intra-abdominal fluid and placing an abdominal drain to drain any fluid that drains from the retroperitoneum into intraabdominal compartment.

Fig. 1. a: CT KUB axial view and b: CT KUB coronal view showing calculus in lower pole of right kidney

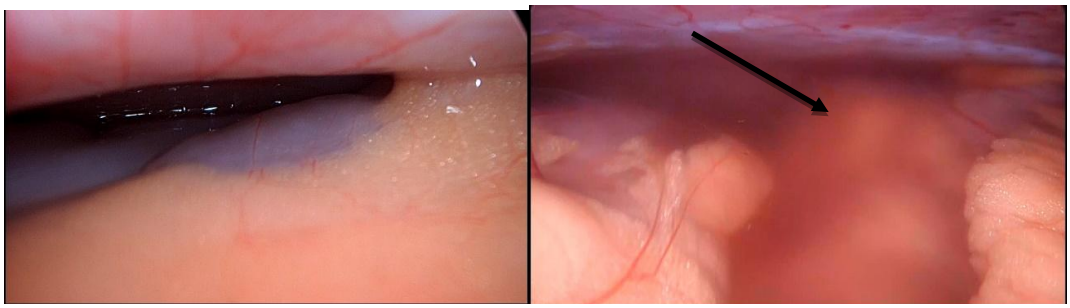

Fig. 2. a: showing pneumoperitoneum at intra-abdominal pressure of 22 mmHg; b: showing hydroperitoneum

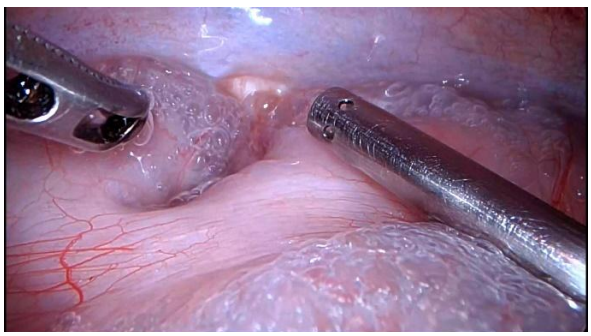

Fig. 3. Showing trocar insertion with suction draining of hydroperitoneum

4. CONCLUSION

Although retrograde intra-renal surgery is a minimal invasive procedure in the treatment of renal calculi, it is not free of complications. Early recognition of any postoperative complication and its immediate management is of crucial value.

CONSENT

Consent of the patient taken prior to surgery.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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