

CASE REPORTS

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# Subcapsular hematoma following retrograde intrarenal surgery: a rare complication

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## 1 Introduction

Subcapsular hematoma after Retrograde intrarenal surgery (RIRS) is rare but serious complications. It is seen in less than 1% of cases as reported in previous series [1, 2]. Here, we reported a case of a middle-aged female with subcapsular hematoma following RIRS which was managed by image guide pigtail insertion.

## 2 Case report

A 46 years old lady with no known co-morbidity and history of urolithiasis followed by RIRS done outside hospital 3 years back came to us with complaints of left-sided off and on pain for 6 months with outside CT showing multiple renal calculi largest measuring 1.6 cm in left renal pelvis referred with doubtful left-sided lesion. CT scan was repeated here which suggested radiolucent shadow around a small stone-Matrix/laminated stone with a radiopaque focus (Fig. 1a, b). Patient was planned for RIRS, but lost to follow-up. She came now again with complaints of off and on lower abdominal pain. Urine routine showed numerous pus cells but urine culture was negative. Patient underwent left RIRS without access sheath, intraoperatively complete clearance of the calculi was achieved and a DJ stent was placed (Fig. 2a, b). Patients had uneventful postoperative period and was discharged on POD 2. Patient came to OPD after 1 week with severe left loin pain, screening USG showed subcapsular collection for which she was admitted and CT scan

done. Retrospectively studied intraoperative fluoroscopic images showed extravasation of dye in subcapsular space with crescent-shaped shadow (Fig. 2c). CT showed a 9.6 (CC) × 6.6 (AP) × 4.5 (Tr) cm (volume-148 cc) subcapsular collection deforming and buckling the left kidney with a 4.5 mm calcific density (HU of -935) within the lower part of collection with no hydronephrosis (Fig. 3a–c). Patient was managed with USG-guided pigtail insertion, antibiotic and analgesic. Pigtail was removed on day 6 and screening USG done after 2 days of pigtail removal showed very minimal collection (5 ml) with complete resolution of pain and she was discharged. DJ stent was removed after 3 weeks of pigtail removal.

## 3 Discussion

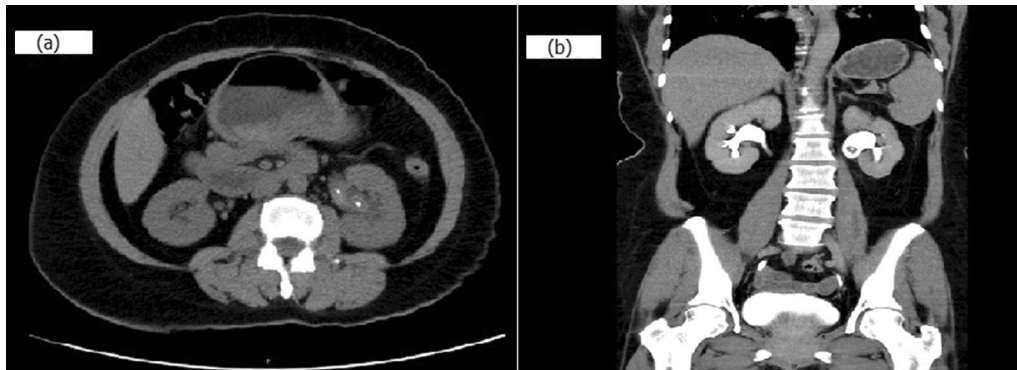
Subcapsular hematoma following RIRS is a very rare but serious complication comprising less than 1% of the cases in various series [1, 2]. Various risk factors identified for this complication are large stone ( $\geq 1.4$  cm), ipsilateral hydronephrosis, longer operative duration ( $> 45$  min), higher perfusion pressure of hydraulic irrigation and persistent positive urine culture [2, 3]. Patients age, sex, BMI, co-morbidities, presence of multiple stones, stone location and flow rate of hydraulic irrigation were not statistically associated with subcapsular hematoma [2]. In our case, risk factors which may lead to subcapsular hematoma are ipsilateral hydronephrosis, longer operative time (1 h) and without use of access sheath. Most patients with subcapsular hematoma following RIRS can be managed by medication or minimally invasive intervention as done in our case. Some cases may need open surgical drainage if there is associated infection and abscess formation [3].

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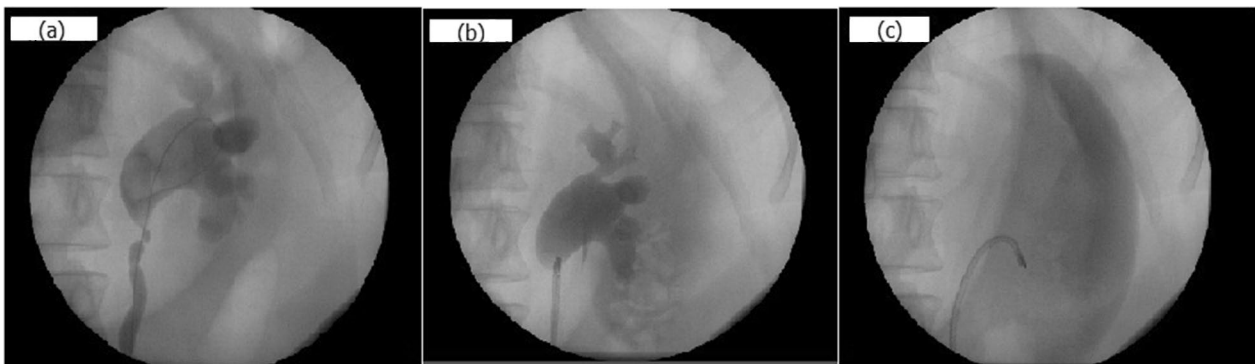
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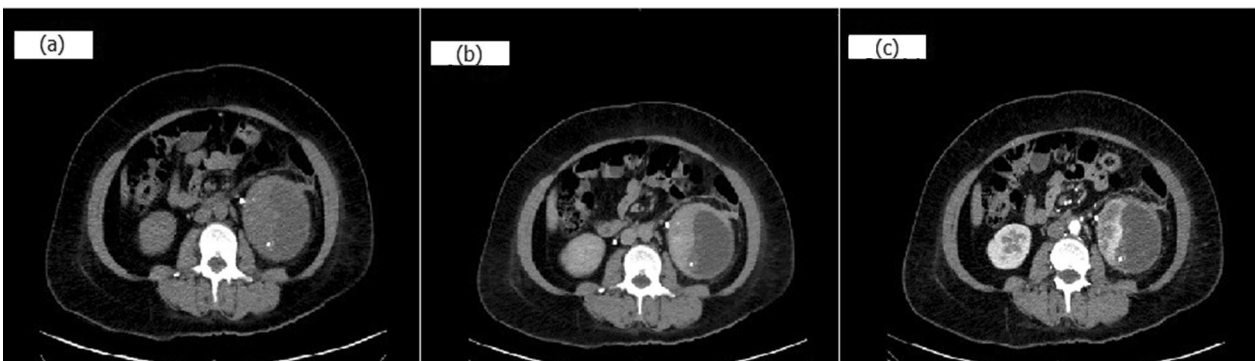
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**Fig. 1** a Plain CT scan showing calculus in renal pelvis with mild HUN, b IVP phase showing filling defect in renal pelvis with mild HUN



**Fig. 2** a Intraoperative RGP showing filling defect in renal pelvis, b Intraoperative RGP showing no filling defect after completion of the procedure, c Intraoperative RGP showing extravasation of dye in subcapsular space with crescent-shaped shadow



**Fig. 3** a Postoperative CT scan plain film showed subcapsular hematoma with small stone fragment in subcapsular space, b, c IVP and Arterial phase showing similar finding

#### 4 Conclusion

Subcapsular hematoma following RIRS is rare but serious complications. Early detection of the condition with high suspicion if the patient had risk factors and prompt treatment with medication or minimally invasive intervention can prevent further complications like sepsis or abscess formation and need for open surgical drainage.

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#### Author contributions

HD analyzed and interpreted the patient data and formulate the manuscript. GM and KVS perform the surgery and had major contribution in writing the manuscript. All authors read and approved the final manuscript.

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### Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

### Declarations

#### Ethics approval and consent to participate

Ethical approval was obtained from the Institutional Ethics Committee, AIMS, Kochi, Ref No: IEC-AIMS-2021-UROL. Consent to participate: informed written consent to participate in the study was provided by the participant.

#### Consent for publication

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

#### Competing interests

The authors declare that they have no competing interests.

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### References

1. Chiu PK, Chan CK, Ma WK, To KC, Cheung FK, Yiu MK (2013) Subcapsular hematoma after ureteroscopy and laser lithotripsy. *J Endourol* 27:1115–1119
2. Bai J, Li C, Wang S et al (2012) Subcapsular renal haematoma after holmium: Yttrium-aluminium-garnet laser ureterolithotripsy. *BJU Int* 109:1230–1234
3. Salvadó JA, Consigliere L, Gallegos H, Rojas F, Astroza G (2016) Subcapsular renal-infected hematoma after retrograde intrarenal surgery: A rare but serious complication. *J Endourol Case Rep* 2(1):52–54

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