

## Case Report

# Case Report of a Symptomatic Recurrent Parapelvic Simple Renal Cyst in a Solitary Functioning Kidney

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## Abstract

Simple renal cysts are rare in children. We report a case of a recurrent simple renal cortical cyst in a solitary-functioning right kidney in an adolescent, which was managed with laparoscopic deroofing. This is the first reported case of a pediatric simple renal cyst in a solitary functioning kidney.

**Keywords:** Simple renal cyst; Pediatric surgery; Laparoscopic deroofing; Parapelvic cyst

## Introduction

Simple renal cysts are unilateral and solitary lesions outside the renal parenchyma which do not communicate with the renal pelvis. Unlike the adult population, simple renal cysts in children are rare (incidence less than 1 %) [1]. We report a case of a recurrent, simple renal cyst in a solitary functioning kidney in an adolescent girl. The multidisciplinary evaluation, the treatment options available, and the successful laparoscopic management of the case have been discussed. The case is being reported to highlight that in the pediatric age group, parapelvic renal cortical cysts could lead to hydronephrosis requiring surgical intervention. There is no previously reported case in the English literature of a simple renal cyst in a solitary functioning kidney in the pediatric age group.

## Case Presentation

An adolescent girl presented with complaints of localized, intermittent right flank pain for five years. The child was worked up at a different center and diagnosed as a simple renal cortical cyst in a solitary-functioning right kidney. The cyst had recurred after being managed by open exploration with deroofing of the cyst, followed by ultrasound-guided aspiration of the cyst twice. The patient remained asymptomatic for some time after each intervention. However, the cyst recurred again, and the child was referred to us.

Clinical examination revealed the presence of a hypertrophied scar in the right flank of the previous surgery (Figure 1). There was no abdominal lump on palpation. Systemic examination was otherwise unremarkable. Hematological and renal function tests were within

normal range. Ultrasonography showed the presence of a 5 cm × 5 cm cystic lesion in the right kidney and the absence of the left kidney. Magnetic Resonance Urography (Figure 2A) and Computed Tomography (Figure 2B) revealed the cyst in the interpolar region of the right kidney and the left kidney to be dysplastic. It also showed that the right kidney had a duplex moiety, and the cyst compressed the outflow of the upper moiety. 99mTc-L, L, ethylenedicycysteine (99mTc-LLEC) Renal Dynamic Scan (Figure 2C) confirmed these findings and further showed that the upper moiety of the right kidney had obstructive hydronephrosis. The histopathology of the excised cyst wall from the previous surgery confirmed the cyst to be a benign renal cyst.

Despite the most likely diagnosis to be a simple renal cyst, the occurrence of localized flank pain despite oral analgesics and the presence of the cyst in a solitary functioning kidney compressing the outflow of and causing hydronephrosis of its upper moiety necessitated urgent intervention in the child. Given the previous history of open surgery and the tendency of the child to heal by hypertrophic scarring, a decision was made to proceed with laparoscopy. Laparoscopic exploration was performed through the transperitoneal approach, and the whole of the anterior wall of the cyst was excised, leaving only the epithelium in contact with the renal cortex intact (Figure 2D). This surface was taken care of by fulguration with diathermy. Omentum was then tacked into the residual cavity.

The postoperative course was uneventful, and the patient was discharged in stable condition. Histopathology of the cyst wall confirmed it as a benign cyst. She remains asymptomatic after six months of follow-up with no evidence of recurrence on ultrasonography.

## Discussion

We herein report a case of a simple renal cyst in a pediatric age group which has not been reported in a solitary functioning kidney to the best of our knowledge. Simple renal cysts are rare in children, and 95% are asymptomatic. Clinical features may include abdominal pain, hematuria, hypertension, recurrent urinary infection, urinary tract obstruction, palpable mass, or impaired renal function [1].

Diagnostic evaluation includes the use of ultrasonography which may be used to classify the cysts based on the modified Bosniak classification system proposed by Wallis et al. [2] in 2008. Computed

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**Figure 1:** Clinical photograph (frontal) showing the hypertrophic scar in the right flank of the patient (inset-showing the dead lateral view of the same).

Tomography or Magnetic Resonance Imaging is preferred in all children with ultrasound-indeterminate findings or consistent with a Stage III or Stage IV cyst [3].

Cystic lesions with thickened or irregular walls or septa on Ultrasonography or vascularity of the septa on color Doppler raise the suspicion of malignancy and should be further evaluated. Similarly, increased septation of the cyst, thick wall calcification, and wall/septa enhancement on Computed Tomography warrants further evaluation for possible malignancy. Simple cysts are hypointense on T1 weighted and hyperintense on T2 weighted Magnetic Resonance Imaging. Renal cystic lesions with postcontrast enhancement and/or restricted diffusion suggest neoplasms and should be viewed with suspicion [2].

Our case had presented with recurrence, with the additional

concern being in a solitary functioning kidney. She was symptomatic with intermittent localized flank pain despite being on analgesics. As the patient tended to heal by hypertrophic scarring and there were the additional advantages of adequate magnification to aid in intra-operative dissection, faster postoperative recovery, and reduced chances of recurrence, it was decided to proceed with laparoscopic rather than open surgery.

There is no consensus on the management of simple renal cysts in children. Conservative management of asymptomatic and simple SRC is preferred. The duration of follow-up varies from 2 to 5 years, with sonographic imaging repeated every 6 to 12 months. Furthermore, all Stages III-IV or symptomatic Stages I-II SRC should be treated [4].

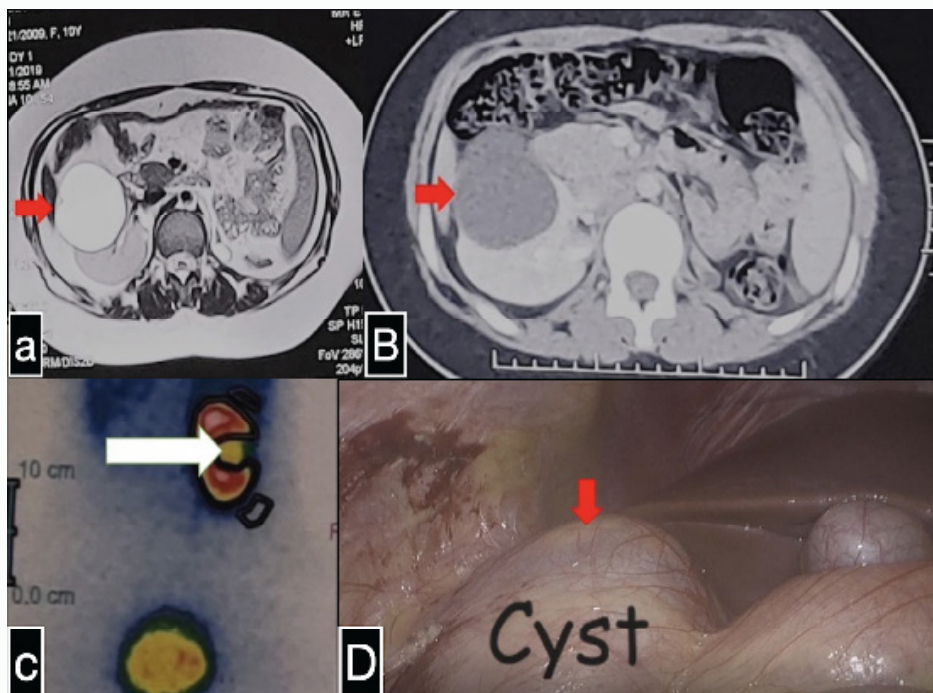
Treatment options include Ultrasound or Computed Tomography guided percutaneous cyst aspiration and deroofting by open, laparoscopy, or robotic surgery [4]. However, percutaneous aspiration of simple renal cysts has up to 90% recurrence rate that can be reduced to around 43% with the use of sclerosants. Laparoscopic deroofting of SRC has shown a lower recurrence rate (19%), minimal invasiveness, decreased morbidity, and faster recovery compared with percutaneous therapy in adults. Robotic deroofting has also been attempted, and its advantages over laparoscopy include precise and careful tissue dissection and optimum ergonomics [5]. Our case was managed by laparoscopic deroofting.

## Conclusion

The case highlights a rare scenario of a simple renal cyst recurring in a solitary kidney in a child and the advantages of laparoscopy in its management.

## References

1. Karmazyn B, Tawadros A, Delaney LR, Marine MB, Cain MP, Rink RC, et al. Ultrasound classification of solitary renal cysts in children. *J Pediatr Urol.* 2015;11(3):149.e1-6.



**Figure 2:** A) T2 weighted Magnetic Resonance Imaging; B) Computed Urography scan showing parapelvic cyst of Right Kidney (arrow) and dysplastic Left Kidney; C) Renal Dynamic Scintigraphy - cyst in interpolar region of Right Kidney (arrow); D) Laparoscopic view of the cyst (arrow).

2. Wallis MC, Lorenzo AJ, Farhat WA, Bägli DJ, Khoury AE, Pippi Salle JL. Risk assessment of incidentally detected complex renal cysts in children: potential role for a modification of the Bosniak classification. *J Urol.* 2008;180(1):317-21.
3. Peng Y, Jia L, Sun N, Li J, Fu L, Zeng J, et al. Assessment of cystic renal masses in children: comparison of multislice computed tomography and ultrasound imaging using the Bosniak classification system. *Eur J Radiol.* 2010;75(3):287-92.
4. Skolarikos A, Laguna MP, de la Rosette JJ. Conservative and radiological management of simple renal cysts: a comprehensive review. *BJU Int.* 2012;110(2):170-8.
5. Shiraishi K, Eguchi S, Mohri J, Kamiryo Y. Laparoscopic decortication of symptomatic simple renal cysts: 10-year experience from one institution. *BJU Int.* 2006;98(2):405-8.