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Concomitant existence of malignant pathology in one kidney and benign pathology in the contralateral kidney, staged management to preserve maximum kidney function: An unusual case report

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ABSTRACT

Patients may have benign disorders such pelvic ureteric junction blockage, renal stone, angiomyolipoma, or renal cyst as well as unilaterally or bilaterally symmetrical malignant conditions like renal cell carcinoma sarcoma. But it is an uncommon occurrence to be presented when malignant pathology occurs in one kidney and benign pathology in the opposite kidney in the same patient. Since the presentation is uncommon, each kidney pathology must be managed stage-by-stage in order to maintain optimum renal function. Our patient, a 40-year-old woman, complained of stomach pain and frequent vomiting for seven to ten days when she first came in. Upon clinical examination, a palpable, non-tender mass was seen in the left lumbar area. An abdominal and pelvic ultrasound (USG) reveals a solid mass measuring 6.8 × 6 cm in the right kidney's upper pole with doppler vascularity indicative of a renal tumour and a left kidney pelvic ureteric junction blockage with extensive hydronephrosis. CECT Abdomen: A right-sided heterogeneously enhancing soft tissue renal mass measuring 72 x 63 x 62 mm (trans x ap x cc) arising from the upper pole on the CECT scan, along with pelvic-ureteric junction obstruction in the left kidney (UPJO). To retain the maximum amount of kidney function, the patient underwent staged surgical treatment. The main reason to report this case is as we have a patient with a malignant condition in one kidney and with a benign condition in the contralateral kidney. It is an unusual presentation and such a patient requires staged surgical management for the better preservation of both kidneys' functions.

Keywords: Renal Tumor, PUJO, Partial Nephrectomy, Anderson-Hynes dysmembered pyeloplasty, DJ stent

1. INTRODUCTION

Patients may have either unilateral or bilateral malignant conditions like renal cell carcinoma, sarcoma, or neuroendocrine tumor and benign conditions like pelvic ureteric obstruction, renal stone, angiomyolipoma, or renal cyst. But the concomitant existence of malignant pathology in one kidney and benign pathology in the contralateral in the same patient is a rare occurrence to be presented with.

The incidence of RCC ranges from 5 to 10 cases per 100,000 people, with men having a rate that is 1.6 times higher than women (Bonsib, 2009; Mandel et al., 1995). The three most common types of RCCs that comprise 95% of cases; include, Clear cell renal cell carcinoma accounts for 70-80% with a 5-year survival rate in 55-60% of cases, Papillary renal cell carcinoma accounts for 10-15% with a 5-year survival rate in 70-90% of cases and Chromophobe renal cell carcinoma accounts for 3-5% with a 5-year survival rate in 95% of cases (Cheng et al., 2009).

The primary goals of partial nephrectomy are to 1) preserve renal parenchyma, 2) optimize pre-operative eGFR and 3) shorten the time spent in global warm ischemia (WIT). All three are strong predictors of postoperative renal function (Malthouse et al., 2016). Bilateral tumors and tumors in a single kidney are the established 'absolute' indications for partial nephrectomy. Preoperative renal function, the volume of renal mass preserved and surgical renal ischemia are the three most important factors influencing postoperative renal function (Leslie et al., 2013). Ureteropelvic junction obstruction is the most common cause of hydronephrosis (UPJO). The following conditions indicate the need for UPJO surgery: A difference in renal function (DRF) of less than 40% on the affected side, as well as a dynamic decrease in DRF documented in more than one examination, such as a renal scintigram (Szavay and Zundel, 2021).

Tumors in a single kidney, as well as a faulty contralateral renal unit, are absolute indications for nephron-sparing surgery (NSS). The latter scenario could occur if there is unilateral renal cell carcinoma (RCC) and a contralateral kidney with disease processes (e.g., chronic pyelonephritis, renal arterial disease, calculus disease) or if systemic diseases are present (eg, diabetes). Even when the contralateral kidney is normal, NSS indications have recently been expanded to include all T1 lesions (up to 7 cm in the 1997 TNM staging system). Hereditary papillary RCC and RCC associated with von Hippel-Lindau (VHL) syndrome are also indications for NSS (Belldegrun et al., 1999).

So, the reason behind presenting this case is we have an unusual case having renal mass in one kidney that is malignant and the other kidney has a benign condition that is pelvic ureteric junction obstruction. This patient underwent staged surgical management. In the first stage, malignancy was operated and in the second stage, the non malignant condition was operated on. Such type of staged surgical management helped in preserving patient post-op kidney function.

2. CASE PRESENTATION

A 40 years old female patient came to a tertiary care hospital from a rural area in central Maharashtra with chief complaints of abdominal pain and recurrent episodes of vomiting for 7 to 10 days. The patient was admitted, stabilized and resuscitated with intravenous fluids and supportive care. Later on, the patient underwent investigations. All her blood reports and kidney function tests were within normal range with a serum creatinine of 1.1 mg/dl. USG abdomen and pelvis show a solid lesion of size 6.8 x 6 cm in the upper pole of the Right kidney showing vascularity on doppler suggestive of renal mass and Left pelvic ureteric junction obstruction with gross hydronephrosis with dilatation of pelvicalyceal system with no free fluid in the pelvis.

CECT abdomen and pelvis on suggestive of Right kidney - measures 13 x 5.3 cm - There is evidence of a well-defined heterogeneously enhancing soft tissue density lesion in the upper pole of the right kidney of size 72 x 63 x 62 mm (trans x ap x cc) showing few hypodense areas in arterial phase suggesting necrotic areas. The lesion is displacing the upper pole calyx inferiorly. The lesion is abutting the lower surface of the liver. Fat planes between the lesion surrounding structures appear maintained. There is no extension into renal vessels. No evidence of calcification or pelvicalyceal dilatation s/o Malignancy.

Left kidney - Measures 13 x 5.9 cm - enlarged. There is e/o gross ballooning of the left renal pelvis with severe hydronephrosis with abrupt narrowing at the pelvic-ureteric junction and non-visualization of ureter s/o Pelvi-ureteric junction obstruction. The maximum cortical thickness of the left kidney is 8 mm at the postero-lateral aspect of the midsole, 3.4 mm at the upper pole and 6.7 mm at the lower pole, suggestive of UPJ obstruction.

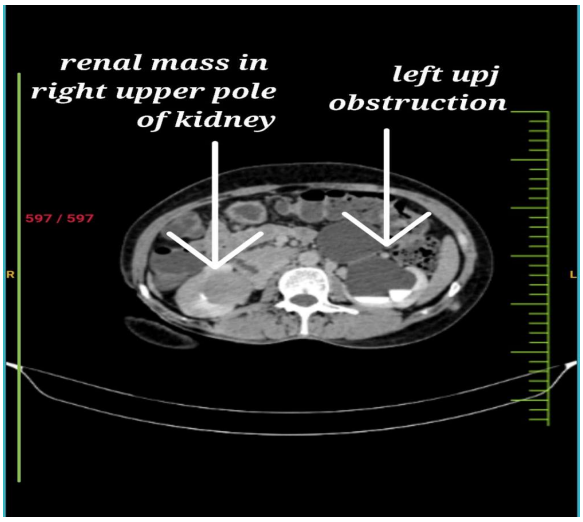

Figure 1 CECT image showing right renal mass with severe left-sided UPJ obstruction

After stabilization and optimization, the patient was planned for staged surgical management, first for Right renal mass and then for Left UPJ obstruction. The patient underwent Right-sided upper polar partial nephrectomy with DJ stent for renal mass and Left-sided DJ stenting for UPJ obstruction, as First-stage management.

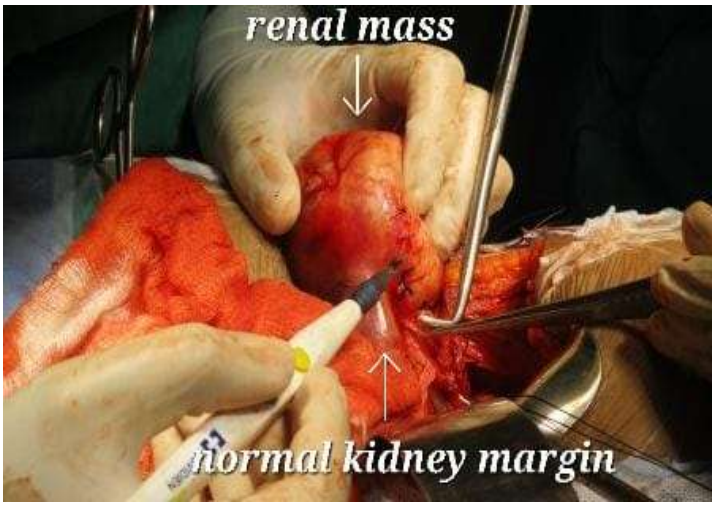

Figure 2 Intraoperative photo of the right kidney: Upper polar mass with normal kidney margin.

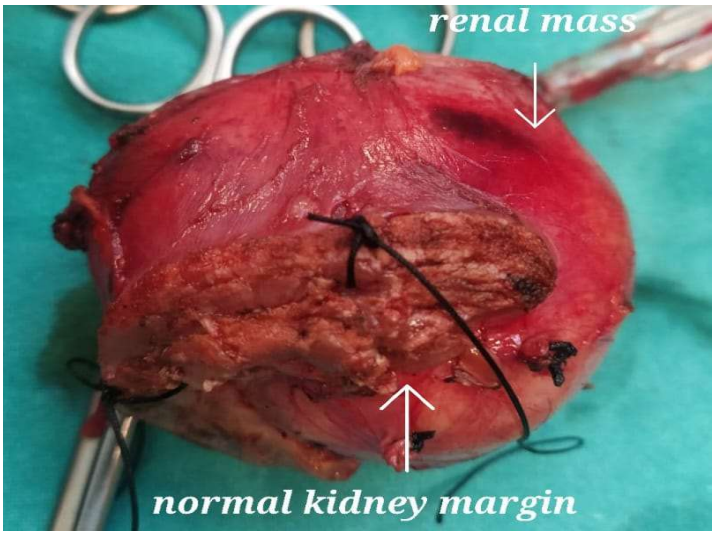

Figure 3 Right partial nephrectomy specimen: Resected tumour with normal kidney margin

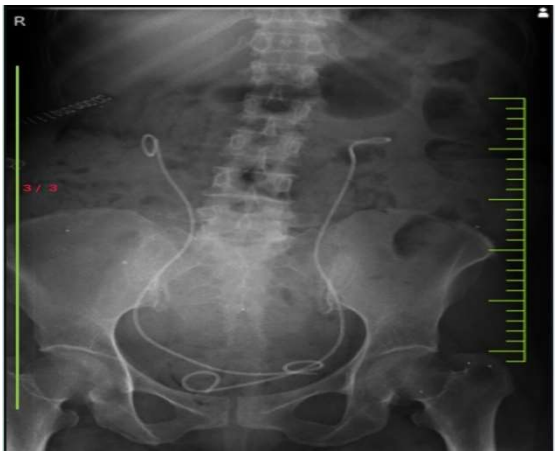

Figure 4 Bilateral DJ stent in situ

Final Histopathology report suggestive of Right partial nephrectomy specimen: Suggestive of renal cell carcinoma, papillary type, type-1. The capsule is intact and is negative for infiltration by malignant epithelial cells. Lymph node from the perinephric region: negative. Pathologic stage classification (ptnm): pt2 pn0 pax stage: ii. The patient was discharged and asked to follow up after 1 month with DTPA renal scan to assess preserved renal function DTPA report showed good function in the right kidney and preserved function in the left kidney with a total GFR: Of 72ml/min, Split renal function Right kidney at 52.5% and the Left kidney at 47.5%. She underwent Left-sided Andersons-Hynes dismembered pyeloplasty with right DJ stent removal as a Second stage management (Figure 5, 6). On post-operative follow-up after 4 weeks, the Patients kidney function reports were normal. Left DJ stent removal was done.

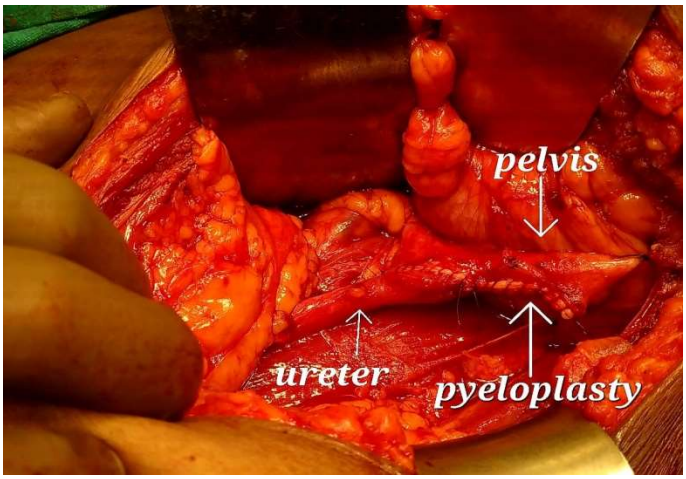

Figure 5 Left-sided anderson-hynes dysmembered pyeloplasty.

Figure 6 Left sided DJ stent in situ

3. DISCUSSION

Among the possible causes of UPJ obstruction are: Intrinsic obstruction can occur as a result of ureteral valve stenosis caused by scarring. Because of ureteral hypoplasia, peristalsis through the UPJ may be abnormal (Jacobs et al., 2018). Chronic dialysis patients are at risk of developing acquired cystic kidney disease (ACKD), which can progress to renal cell carcinoma (RCC). Ramon Peces and Jorge Mart'nez-ara discovered that ACKD develops not only in dialysis patients but also in those who have the pre-existing renal disease before starting RRT. ACKD in patients with chronic renal disease may predispose them to RCC both before and after RRT (Peces, 2022).

Renal cell carcinoma with contralateral renal artery aneurysm is a rare condition described in a study. Aneurysmectomy was performed in one session, followed by simple arteriography with termino-lateral anastomosis and then radical nephrectomy, according to the study (Ichiyanagi et al., 1998).

In a study they reveal that a patient with discordant pathology had an oncocytoma in one renal unit and a chromophobe RCC on the contralateral side. According to the data, in the vast majority of patients, when RCC of any type is present on one side, RCC will be present on the contralateral side; however, when the benign disease is present, there is a lower chance of only benign disease on the contralateral side (Rothman et al., 2008).

4. CONCLUSION

A patient having renal malignancy in one kidney with a contralateral benign condition requires surgical management in a staged manner. The major intention is to focus on malignant conditions to treat first and then contralateral benign conditions. Patient having renal cancer with a contralateral benign condition needs nephron-sparing protocols so that maximum renal function can be preserved and prevent the development of end-stage renal disease. In our patient, we did a right-sided partial nephrectomy with contralateral DJ stent for UPJ obstruction to preserve the renal function and in the latter dater, we performed left-sided Anderson Hynes pyeloplasty for UPJ obstruction. Patient doing well in follow-up after the removal of the DJ stent.

Informed consent

Written & Oral informed consent was obtained.

Authors' contributions

Anil Reddy has collected information and prepared the manuscript, Dr Jay D Dharmashi operated this patient, this article has been thoroughly reviewed by Dr Abhijit Dhale, Dr Suhas Jajoo, Dr Chandrashekhar Mahakalkar. Dr Garima Saxena also helped in preparing the case report. All the authors have read and agreed to the final manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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