

# Primary Renal Pelvis Squamous Cell Carcinoma: A Case Report

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## Case report

**Keywords:** Squamous cell carcinoma, renal pelvis, Radical Nephrostomy

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# Abstract

**Background:** Primary renal pelvic squamous cell carcinoma (SCC) is exceedingly rare neoplasm and poor prognosis. We reported a patient who underwent surgery for radical nephrectomy.

**Methods and results:** The patient was a 72-year old man, who visited doctors with complaints of dull aching in right flank region and occasional gross hematuria. Abdominal contrast-enhanced magnetic resonance imaging (MRI) revealed a neoplasm and hydronephrosis in the right kidney. The preoperative diagnosis of malignant tumor in right kidney was made by urologist, and open radical nephrostomy was performed. The resected tumor was shown histologically to be squamous cell carcinoma of right renal pelvis.

**Conclusions:** Renal SCC is a rare tumor usually presented in advanced stage with poor prognosis. Early diagnosis and surgical treatment are beneficial for patients' survival. Most patients are associated with risk factors of Renal SCC such as renal calculi and infection, but patient with no risk factors shouldn't be ignored. We encountered a rare case with no risk factors.

## Background

SCC of renal pelvis is a rare neoplasm which accounts only for 0.5%-0.8% of malignant renal tumors<sup>[1]</sup>. SCC of the upper tracts is diagnosed at a later clinical stage, and appears to be more aggressive than other more common histologic types. Since renal SCC is usually found in advanced stage, the prognosis is usually poor with a mean survival period of 7 months<sup>[2]</sup>. The risk factors of renal SCC include renal calculi, infection, endogenous and exogenous chemicals, hormonal imbalance, radiotherapy and vitamin A deficiency<sup>[3]</sup>. But, there were few renal pelvis SCC cases without risk factors<sup>[3, 4]</sup>. Here we report a patient with SCC lacking these antecedent risk factors, which occurred in the right renal pelvis of a 72-year-old male.

## Case Presentation

A 72-year old male patient presented with dull aching in right flank region and occasional gross hematuria for five months. The patient didn't show history of renal calculi, chronic infections or pyelonephritis. Physical examination revealed percussive pain in the right kidney area, mild tenderness occurred at the right upper ureter point of the patient.

Abdominal MRI showed slight hydronephrosis and a neoplasm occupying most part of the right kidney (Figure.1A none contrast-enhanced), (Figure.1B: T2 weighted phase), and without evidence of calculi and vascular invasion.

After careful preoperative examination, radical nephrectomy was performed (Fig. 2). Then, microscopic sections were prepared and stained with Hematoxylin and Eosin. Squamous cell carcinoma in right renal pelvis was confirmed by microscopic examination (Figure.3A-C). The patient refused further adjuvant

radiation therapy, and he was conservatively followed-up monthly. After follow-up for 7 months, the patient died of pulmonary metastasis.

## Discussion

SCC of the upper urinary tracts is very rare, counting for 10% of all renal pelvic tumors and 0.5% of all renal malignancies<sup>[1]</sup>. Clinical signs and symptoms in these patients with SCC are obscure, as they often present with vague abdominal pain and gross hematuria. We reported this case with SCC saw doctors because of dull aching in right flank region and occasional gross hematuria, these presents were not specific.

High invasiveness is a key characteristic of SCC in upper urinary tracts, and compared with other common malignancies, SCC of renal pelvis is diagnosed at an advanced stage. To diagnose the SCC, urologists have always faced many difficulties, due to the presentation of SCC is non-specific and locally advanced even metastatic disease is common. Radical surgical resection is the foremost treatment option, as alternative treatments are of limited efficacy. Despite aggressive surgical efforts, prognosis remains poor as most patients die within one year of surgery. SCC should be suspected in a patient with mass in kidney.

Renal SCC is a rare neoplasm that usually associated with renal calculi and chronic infection. Comparing with other renal malignancies, renal SCC is a more aggressive tumor usually presented in an advanced stage-pT3 or higher<sup>[5, 6]</sup>. The prognosis is poor with a mean survival period of 7 months and five-year survival rate under 10%<sup>[2, 7]</sup>. Symptoms of patients with renal SCC include dull aching flank pain, hematuria, fever, weight loss or with paraneoplastic syndrome<sup>[3]</sup>. In our case, the patient presented with dull pain in right flank pain and hematuria. Radiological findings such as hydronephrosis, stone, and solid mass are usually not specific for renal SCC<sup>[8]</sup>. Therefore, the diagnosis of renal SCC is difficult before biopsy or surgery and is mostly based on histopathological examination as seen in the present case<sup>[2, 9]</sup>. The main treatment of renal SCC is surgery and patient in low stage may be cured. Adjuvant chemotherapy and radiotherapy are usually given to cases diagnosis in advanced stage but have shown margin benefit, so early diagnosis is important<sup>[10]</sup>.

## Conclusion

Renal SCC is a rare tumor usually presented in advanced stage with poor prognosis. Early diagnosis and surgical treatment are beneficial for patients' survival. Most patients are associated with risk factors of Renal SCC such as renal calculi and infection, but patient with no risk factors shouldn't be ignored. We encountered a rare case with no risk factors.

## Abbreviations

SCC: squamous cell carcinoma; MRI: magnetic resonance imaging;

# Declarations

## Ethics approval and consent to participate

We declare that our study was approved by the ethics committee of Zunyi Medical University, Zunyi, China.

## Consent for publication

Written informed consent was obtained and the patient permitted us to publish the case details and any related figures.

## Availability of data and materials

Not applicable.

## Funding

None.

## Competing interests

The authors declare that they have no competing interest.

## Authors' contributions

WX drafted the manuscript. NZ and WX provided imaging description and figures. HC and XW assisted with manuscript preparation and literatures collection. NZ revised the manuscript. All authors have read and approved the final manuscript.

## Acknowledgements

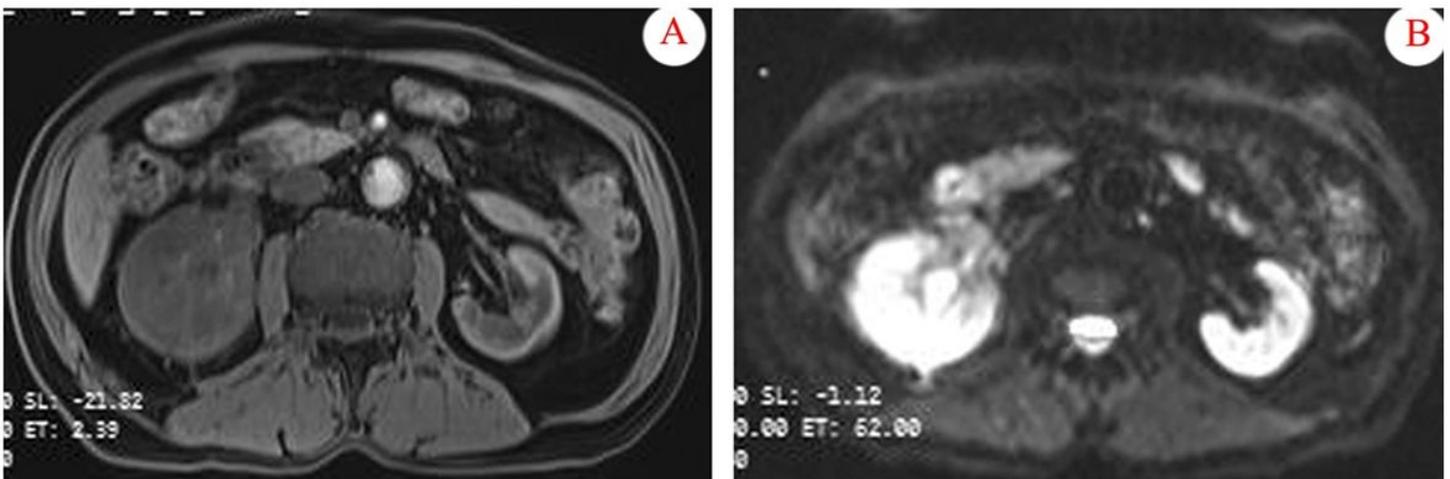
Not applicable.

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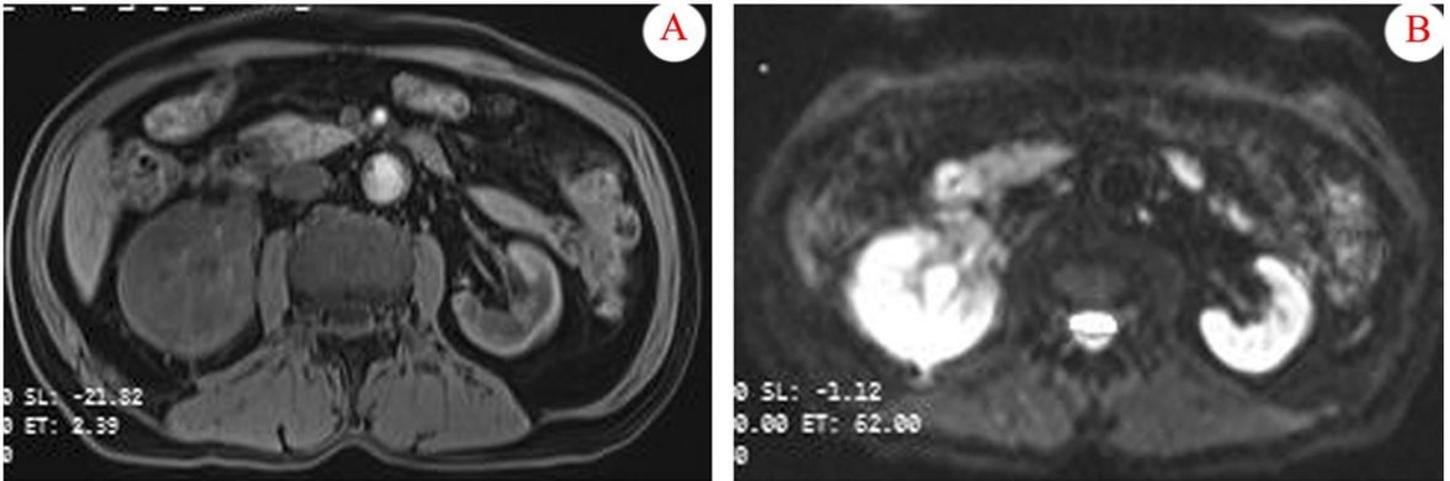
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## Figures



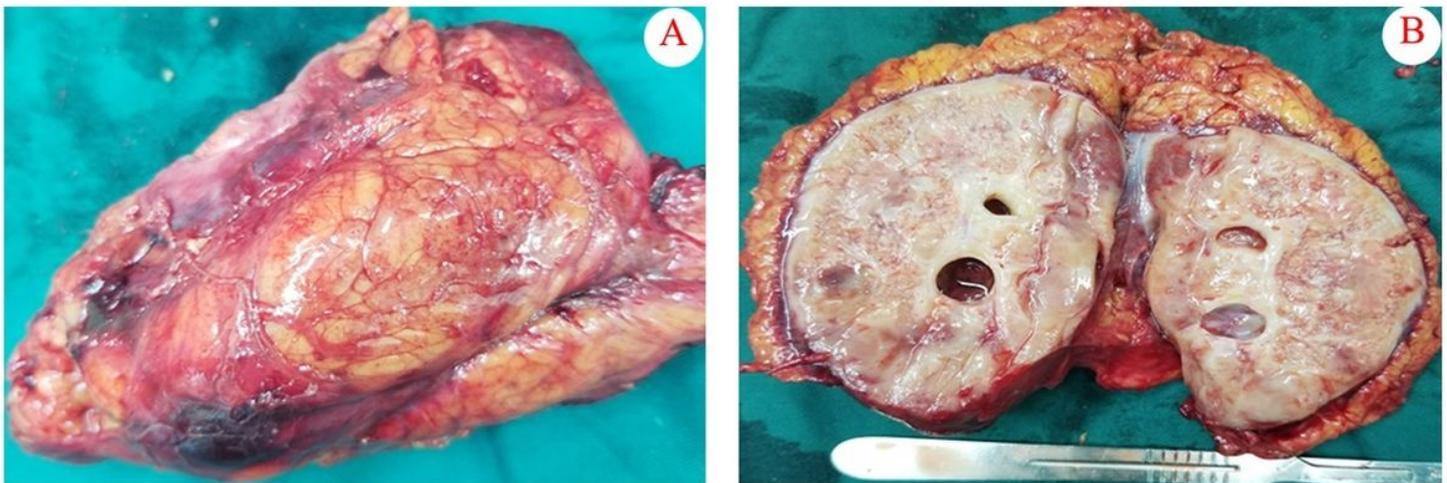
**Figure 1**

MRI of the abdomen showed slight hydronephrosis and a neoplasm occupying most of the right kidney. Fig. A: none contrast-enhanced, Fig. B: T2 weighted phase.



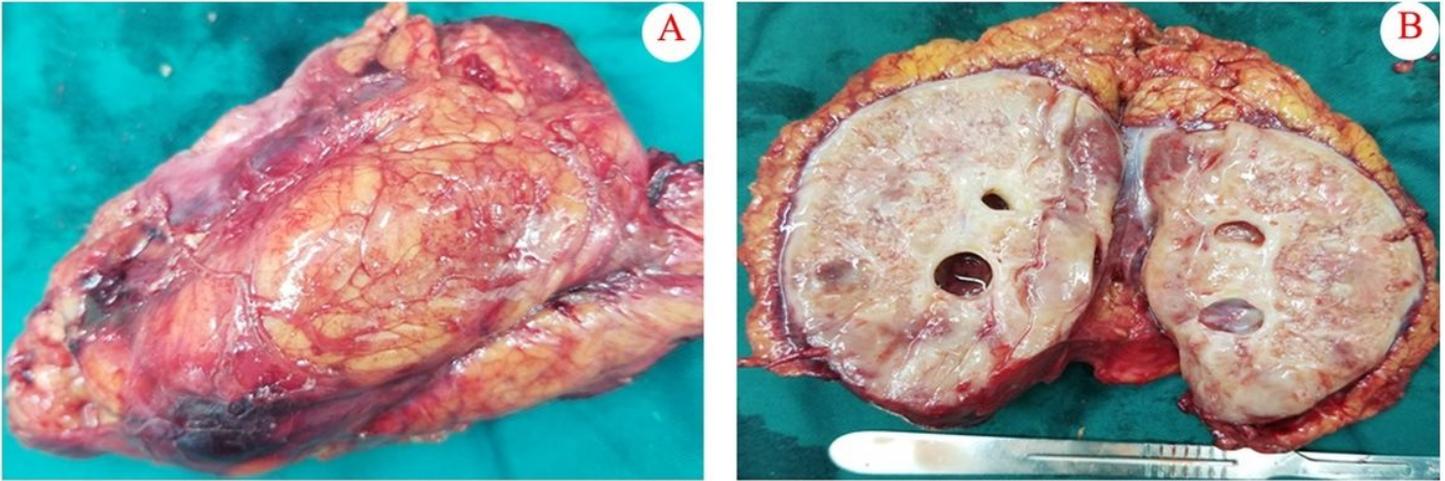
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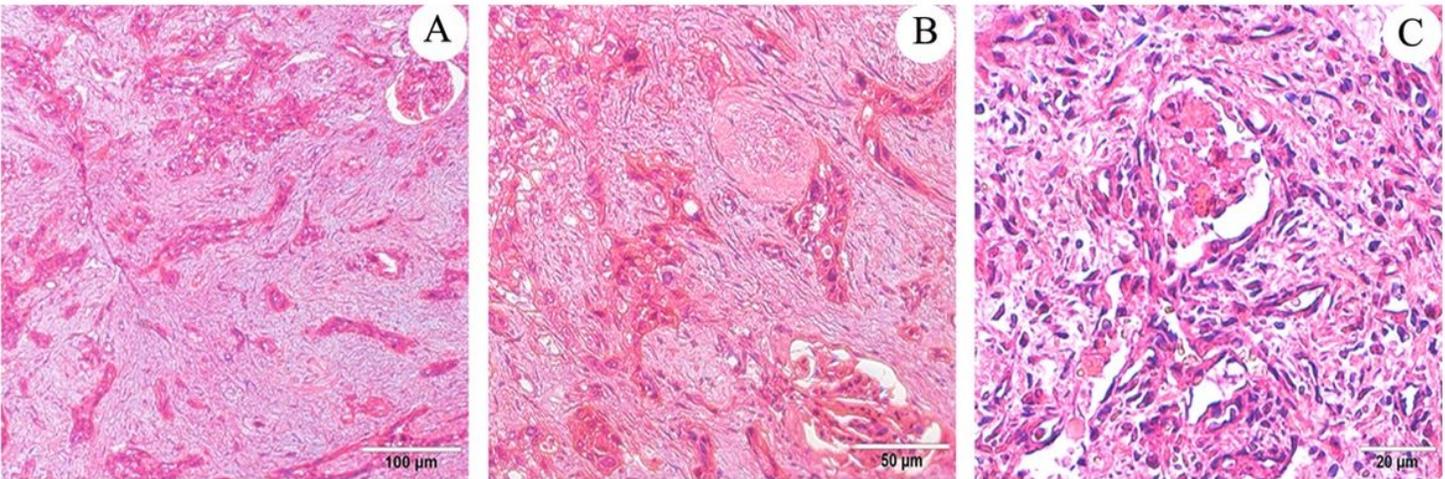
**Figure 2**

Radical nephrectomy was performed. The right kidney is obviously enlarged (A), and the renal pelvis is not significantly expanded, no stone (B).



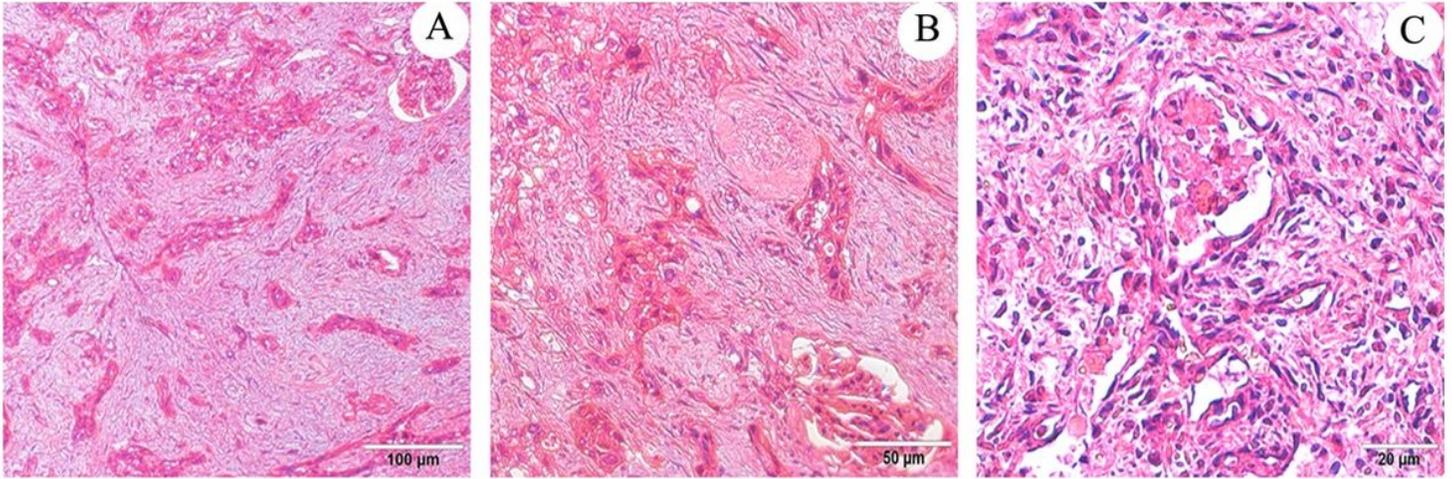
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**Figure 3**

Microscopic examination showed (A) squamous cell carcinoma of renal pelvis H&E,  $\times 100$ . (B) squamous cell carcinoma invading glomeruli H&E,  $\times 100$ . (C) squamous cell carcinoma with keratin pearls (H&E,  $\times 200$ ).



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