Case Report

Unilateral Giant Hydronephrosis Secondary to Ureteropelvic Junction Obstruction in a Middle-Aged Woman

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Background. Giant hydronephrosis is a rare urologic problem defined as a collection of more than one liter of urine in the collecting system. The radiologic appearance may mimic benign cystic disease of the kidney. We report a case of giant hydronephrosis in a 32-year-old female who presented with progressive abdominal swelling of two-year duration, caused by ureteropelvic junction obstruction with more than nine liters of urine in the collecting system. Conclusion. Giant hydronephrosis is a rare differential diagnosis for cystic intra-abdominal mass in adults with progressively increasing abdominal swelling. CT and MRI are important in confirming the diagnosis by localizing the origin of the swelling. Management depends on the underlying cause and appearance of the diseased kidney.

1. Introduction

Giant hydronephrosis is defined as the presence of more than one-liter urine or 1.6% of the bodyweight of urine in the collecting system [1–3]. The development of hydronephrosis is a gradual process, and most cases are reported to have less than two liters of fluid (urine) collection [3–6]. The common presentation of these patients mimics renal stone disease. Epidemiologically, the left kidney is commonly affected. The most common underlying causes include ureteropelvic junction (UPJ) obstruction and renal stone disease. The majority of this condition will be diagnosed during childhood and infancy (congenital). If not treated early, it may cause progressive and gradual complications like hypertension, kidney rupture, renal failure, and malignant transformation because of prolonged irritation [1–5].

Urolithiasis and tumors either in the renal system or in adjacent organs can cause a compressive disease. This compression leads to obstruction of the renal collecting system leading to hydronephrosis, which gradually grows to have a cystic appearance. There are wide ranges of differential diagnoses for cystic intra-abdominal mass which resemble giant hydronephrosis, including; ovarian cysts, hepatobiliary cysts, renal cell carcinoma (RCC), retroperitoneal tumor, pseudomyxoma, splenomegaly, and ascites [6].

We present a rare case of a 32-year-old woman with long-standing abdominal pain and swelling and who was diagnosed and treated for giant hydronephrosis secondary to UPJ obstruction.

2. Case Report

A thirty-two-year-old female patient presented with progressive abdominal swelling of two-year duration. The swelling started from the left side of the abdomen and progressed to involve the whole abdomen. The swelling became prominent since one year (Figure 1), with associated dull aching left flank pain. She had no hematuria or any other urinary symptoms. On physical examination, her vital signs were within the normal range with a pulse of 83 beats per
minute and blood pressure of 100/80 mmHg. On abdomi-
nal examination, she had visible abdominal swelling, 
which was prominent on the left side of the abdomen. 
The swelling was cystic with no attachment to the sur-
rounding structure.

Laboratory findings of the patient, including urine 
analysis, serum electrolyte, and hematologic profile, were 
all in the normal range (Table 1). During the initial eval-
uation, the ultrasound index of the left kidney showed a 
huge hydronephrosis passing the midline and filling 
almost the whole abdomen. Computerized tomography 
(CT) scan of the abdomen without contrast showed mas-
sive left kidney pelviccalyceal dilatation with a maximum 
cortical thickness of 3 mm. The dilatation spans seven ver-
tebral lengths with the inferior border reaching the pelvis 
(Figure 2). The left ureter and left renal arteries are not 
visible, and significant mass effects on other abdominal 
organs were also noted.

A diagnosis of giant left hydronephrosis was made and 
the patient was prepared for laparotomy. The abdomen 
was opened with a subcostal flank incision under general 
anesthesia. Upon entry, 9.5 liters of urine was drained, and 
a left nephrectomy was performed, which was sent for histo-
pathology. The left ureter was explored and showed severe 
stenosis at the level of ureteropelvic junction (Figure 3). 
An intra-abdominal drain was left in situ, and the abdominal 
wall closed in layers.

She had a smooth postoperative course following the 
surgery. Her postoperative hematocrit was 21.7%, for 
which she was transfused with one unit of crossmatched 
whole blood. Her postoperative serum electrolyte and 
renal function test were also in the normal range. The 
infra-abdominal drainage was removed on the 5th postop-
erative day, and the patient was discharged a day later 
with satisfactory clinical condition. Histopathologic exami-
nation of the biopsy showed a hydronephrotic kidney with 
no feature of malignant growth (Figure 4).

### 3. Discussion

Giant hydronephrosis with accumulation of more than 9 
liters of fluids is an uncommon phenomenon in adults. 
The first reported case of giant hydronephrosis was in 
1746, and etiologies include ureteric obstruction of vari-
ous causes congenital or acquired, intrinsic or extrinsic, 
including UPJ obstruction, both renal and ureteric stone 
disease, and malignancy [1–3]. Patients commonly pres-
ent with increasing abdominal girth and flank swelling. 
Other common symptoms include flank pain, hematuria, 
especially following trauma, and recurrent urinary tract 
infection. In rare circumstances, they may present with 
hypertension, obstructive jaundice, intestinal obstruction, 
respiratory distress, and contralateral hydronephrosis [3]. 
In our case, the patient presented with progressive 
abdominal swelling of two years, with associated dull ach-
ing sensation and discomfort in the flank area, which is 
consistent with findings in other literatures.

The first line imaging modality used was ultrasonogra-
phy as a standard, and the typical finding includes hydron-
ephrosis with a thinned out renal parenchyma. Other imaging 
modalities were needed to confirm the extension [5, 6]. In 
addition to accurately diagnosing hydronephrosis, CT and 
MRI are also used to exclude other causes of intra-
abdominal cysts in literature [3]. We had a CT scan done 
without contrast which confirmed a left hydronephrosis 
with loss of renal parenchyma. Generally, factors that guide 
the management of giant hydronephrosis include the follow-
ing: patient hemodynamic status, presence of functioning 
kidney, and associated comorbidities such as cardiac illness 
that can increase surgical morbidity and mortality [1–3]. 
Children and infants who are diagnosed with these condi-
tions are treated with pyeloplasty which is a rare scenario 
in adults because of late presentation.

In a patient with a nonfunctioning kidney with loss of 
renal parenchyma, the recommended treatment is a simple 
nephrectomy because of the anticipated complication [3]. 
Percutaneous drainage is an alternative management option 
in patients with poor clinical parameters. In our case, CT 
scan revealed a thinned out left renal parenchyma and 
displaced intra-abdominal organ due to compression by 
the giant hydronephrosis. Considering the overall clinical 
picture, performing a nephrectomy was an appropriate 
decision. Further surgical exploration revealed a narrow left 
ureter confirming the diagnosis of UPJ obstruction. The 
patient was followed up for four months postoperatively 
and had a smooth postoperative course and has resumed 
her normal activities.

### Table 1: Important laboratory investigation.

<table>
<thead>
<tr>
<th>Laboratory tests</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine analysis</td>
<td>Non revealing</td>
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<tr>
<td>WBC</td>
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<tr>
<td>Hct</td>
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<tr>
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<td>Sodium</td>
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<tr>
<td>Chlorine</td>
<td>101.2</td>
</tr>
</tbody>
</table>

**Figure 1:** Abdominal examination shows a distended abdomen with cystic appearance on palpation. The marking site is left flank.
**4. Conclusion**

Giant hydronephrosis secondary to ureteropelvic junction obstruction needs to be considered in adults presenting with huge intra-abdominal cystic mass, especially if they have long-standing pain and progressive abdominal swelling. Imaging studies like CT or MRI are sufficient for diagnosing origin of the mass, but malignancy must be ruled by a histopathologic examination. Treatment of giant hydronephrosis depends on the age, underlying cause, patient clinical condition, and presence or absence of renal parenchyma.

**Data Availability**

All data supporting the result are included within the manuscript.

**Ethical Approval**

Ethical clearance was obtained from the Institutional Research and Ethics Review Committee (IRB) of SPHMMC for the publication of the case report.

**Consent**

Informed and written consent was taken from the patient to publish the case report.

**Conflicts of Interest**

All authors declare no conflict of interest.
Authors’ Contributions

MSD was involved in patient care, conceived the study, and drafted the manuscript. SMH was involved in inpatient care and critically revised the manuscript. THT is responsible for the critical revision of the manuscript and overall supervision of the manuscript. All authors have read and approved the manuscript.

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References


