

## Case Report

# Renal Ptosis: Case Literature Review

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## ABSTRACT

We report a fortuitously discovered case of renal ptosis in a 9-year-old girl. We take this opportunity to review literature on the embryological, clinical and therapeutic aspects of this malformation, which is the most common renal ectopia diagnosed in sub-Saharan Africa.

**KEY WORDS:** Kidney, Ptosis, Nephroptosis.

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## INTRODUCTION

Renal ptosis (or nephroposis) results in the downward movement of the kidney associated with abnormal mobility due to the relaxation of its fixity means. It corresponds to a descent of the kidney, from its normal position, of at least 5 cm or 2 vertebral bodies [1]. Renal ptosis is the most common of renal ectopies, its incidence is 14% [4].

Clinically, renal ptosis is often incidental; otherwise it is revealed by a pain of the right iliac fossa [3]. In case of associated pathology such as pyelo-ureteral junction syndrome, infection or giant hydronephrosis, surgical treatment should be discussed (pyeloplasty, nephrectomy, kidney transplant) [3].

We report a case of renal ptosis associated with pyelo-ureteral junction syndrome discovered in a young girl and conduct a literature review on embryological, epidemiological, clinical and therapeutic levels.

## OBSERVATIONS

The observation concerned a 9-year-old female subject who consulted at the Albert Royer Children's Hospital (HEAR) in Fann for acute, intense, intermittent abdominal pain, sitting at the level of the right iliac fossa radiating towards the thigh without signs of accompaniment.

Antecedents included adenoidectomy in 2008 and tonsillectomy in 2009. The clinical

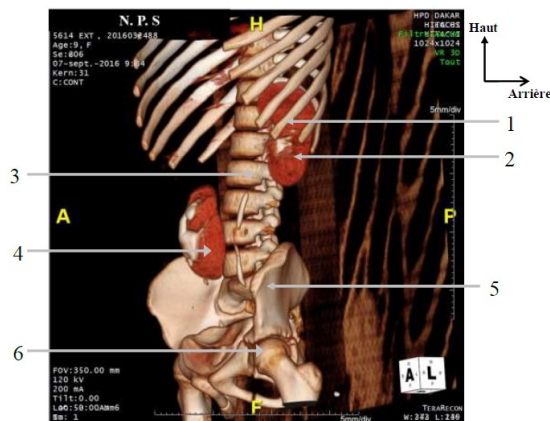
examination found a soft, painless abdomen without palpable mass, without mottling of the flanks or cries of the umbilicus. The rectal touch was painless. The CBC, ECU, bladder were normal and the CRP was 96 mg/l.

The abdominal-pelvic ultrasound objectified right renal ptosis associated with a discrete pyelic dilatation without obvious obstacle.

The abdominal pelvic computed tomography confirmed a polar pyelo-calicielle dilatation secondary to a pyelo-ureteral junction syndrome on a floating right kidney, hypotrophic with 7.5 cm of long axis (Figure 1 and 2).

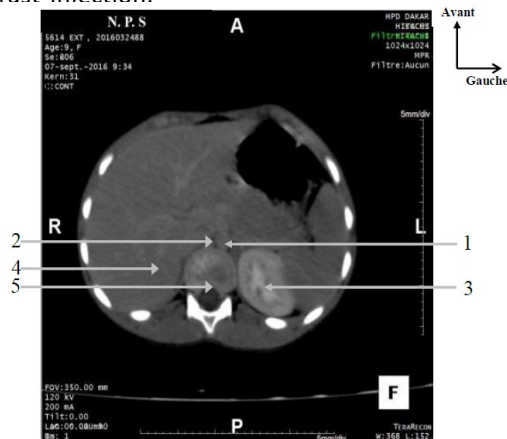
The indication of pyeloplasty was set but before the refusal of the parents, symptomatic treatment was instituted. In evolution, there were more and more diffuse painful recurrences, simulating a surgical abdomen.

**Fig. 1:** Left anterior-lateral view showing the thoracic-abdominal-pelvic skeleton with the kidneys.



- 1- K10
- 2- Left kidney
- 3- 2nd Lumbar Vertebra
- 4- Right kidney ptosis
- 5- Left Coxal Bone
- 6- Left femoral head

**Fig. 2:** Abdominal cross-section in Th12 without contrast injection.



- 1- Abdominal Aorta
- 2- Inferior vena cava
- 3- Left Kidney
- 4- Absence of right kidney in normal position
- 5- Lumbar vertebra

## DISCUSSION

In Senegal, the incidence of renal ptosis is not known. Dieulafoy's work shows an incidence of 14% ectopia [4], nephroposis affects 20% of women with a right predominance [2]; this is confirmed by Winfield [12]. Bilateral involvement is rare [4].

Embryologically, after the 8th week of intrauterine development, the mesoderm begins to disappear. The permanent kidney (mesonephritic) is in the pelvis, at the caudal part of the intermediate mesoderm. Then it goes up to the dorsal wall of the abdomen. The renal hilum is oriented forward. During their ascents, each of the 2 kidneys rotates 90° so that the hilum and the vessels of the hilum become medial as in adults. The kidneys remain in the retroperitoneal space throughout the process [6].

During this ascent, the kidneys cross the arterial fork of the umbilical arteries. In case of migration defect, the kidney remains in the pelvis in the vicinity of the primitive iliac artery: it is the pelvic ectopia of the kidney.

Ptosis is more common in adults with an average age of 33 years [11].

Anatomically, there are 3 different grades of nephroposis:

**Grade I:** the kidney descends laterally along the outer edge of the psoas muscle;

**Grade II:** the kidney has a more accentuated descent and rests on the psoas muscle accompanied by a tilt towards the anterior;

**Grade III:** The kidney makes a full tilt in the pelvis.

Grade I ptosis is not pathological. Grades II and III can be used and cause malfunction [7]. Our patient has grade II ptosis with a medial kidney at the height of the 3rd, 4th and 5th lumbar vertebrae.

According to Sebe [10], ptosis will allow vascularization of the kidney significantly because whatever the number of arteries, there is a branch coming from the aortic bifurcation. When the kidney is in the pelvic position, the frequency of multiple arteries is approximately 50% [10, 11].

Clinically, this malformation is often incidentally discovered by medical imaging. It can also be revealed by abdominal pain [1]. It varies according to its seat, its nature and its intensity. This typically localized pain in the right iliac fossa may radiate to the sides, to the hypochondrias seen in the thighs making walking difficult [1]; This is the case with our patient. In the face of this dubious form, peritonitis [9] and strangulation syndrome [4] must be eliminated.

In our observation, right renal ptosis is associated with pyelo-ureteral junction syndrome. However, the literature reports other associations of urinary tract infection, pyelo-calicielle dilatation, giant hydronephrosis, urinary lithiasis, and high blood pressure. Skeletal involvement in a poly malformative syndrome and tumours may be circumstances of discovery of renal ptosis [8, 13].

Abdominal-pelvic ultrasound is the first-line examination to diagnose renal ptosis associated with pyelo-urethral junction syndrome. The uro-scanner (Uro-CT) is used to locate the seat of the ptosed kidney [1]; Injected renal angio-scanner [3] allows vascular mapping; and furosemide-tested <sup>99m</sup>Tc-DTPA renal scintigraphy to assess the permeability of the excretory urinary tract of renal ptosis [5].

On the etiological level, the contusions of the lumbar region, the relaxation of the abdominal walls in women following repeated pregnancies as well as the rapid disappearance of cellular tissue kidney in obese individuals may cause the discovery of nephroposis [4, 9].

The indication of a surgical procedure is placed before a urinary tract infection or hydronephrosis. Surgery should take into account a first step to avoid the difficulties associated with vascular abnormalities [3]. Thus, Boujnah et al. [3] propose the extra peritoneal ilio-pelvic pathway for pyelo-ureteral junction syndrome and simple lithiasis, and the trans-peritoneal pathway in cases of condition requiring renal pedicle control. In any case, surgery will be reserved for complicated forms.

## CONCLUSION

Renal ptosis is the most common and usual renal ectopia. It is manifested by abdominal

pain and is most often observed in women. Its discovery is most often fortuitous during medical imaging such as ultrasound which makes it possible to make the diagnosis and computed tomography to detect the associated abnormalities. Therapeutic abstinence is the rule in the absence of complications and its monitoring is done with periodic ultrasounds.

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## Conflicts of Interests: None

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