

## Giant Renal Leiomyoma: A Case Report.

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**Abstract:** Renal leiomyoma is a rare benign mesenchymal tumor. It arises from the smooth muscle cells of the kidney and renal capsule is its most common location. Small tumor may be asymptomatic and usually appears as a well circumscribed peripherally located solid mass. Large tumor may manifest with pain, palpable flank mass or hematuria. Intersecting fascicles of spindle cells showing immunoreactivity to actin or desmin are characteristic histologic features.

**Keywords:** Leiomyoma, kidney, computed tomography (CT).

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### I. Introduction

Mesenchymal tumors of the kidney include both benign and malignant lesions and usually manifest as solid masses.<sup>1</sup> Renal leiomyoma is a rare benign mesenchymal tumor, seen in 5% of autopsy specimens and 0.3% of all treated tumors. It is detected incidentally in majority of cases secondary to the infrequency of clinical symptoms.<sup>2,3</sup> Typical imaging features are well defined margins, peripheral location and hyperattenuation on nonenhanced CT images. Diagnosis of renal leiomyoma is based on histopathologic assessment of nephrectomy specimen. In this case report, we present a case of giant renal leiomyoma with CT, histopathologic and surgical specimen images.

### II. Case Report

A 20-year-old female presented to the out patient department with chief complaints of abdominal discomfort for last 6 months and a lump in her left side of abdomen. On clinical examination, a single large spherical intraabdominal lump was palpated involving left hypochondrium, lumbar and iliac quadrants, bimanually palpable but not ballotable; margins clear, non tender, firm to hard in consistency with no visible pulsation or peristalsis. On percussion dull note was heard. No audible sound on auscultation. Routine laboratory investigations of blood and urinary examination were within normal limits.

A contrast enhanced CT scan revealed a massive well circumscribed complex solid cystic mass arising from upper pole of left kidney measuring 23.5cm x 14.5cm x 18.4cm in size (Figure 1). The tumor showed moderately enhancing solid component with a large nonenhancing area s/o necrosis. Multiple thin enhancing septae noted within. The mass extended superiorly from the level of gastric body (T11 vertebra) to the pelvis (S2 vertebra) inferiorly. The small bowel loops were displaced to the right side of the abdomen (Figure 1, Figure 2). Fat planes maintained with adjacent structures. No evidence of fatty attenuation or calcification noted within the tumor. No retroperitoneal lymphadenopathy was present.

During surgery there was a large encapsulated tumor in the left half of the abdominal cavity. A radical left nephrectomy was performed along with total resection of the tumor that measured 17cm x 15cm x 13cm and weighed 4.1kg (Figure 3).

On a cut section, the solid mass showed grey white soft to firm lobulations with few areas of congestion and necrosis. Microscopically, multiple sections examined showed smooth muscle tumor comprising of spindle cells arranged in intersecting fascicles and whorls displaying minimal pleomorphism, elongated blunt ended nuclei, inconspicuous nucleoli and tapering eosinophilic cytoplasm (Figure 4). Intervening areas of myxoid degeneration and collagen deposition also noted. Mitotic figures were not evident. Immunohistochemical studies demonstrated positive staining for smooth muscle actin and desmin; negative staining S-100 and CD117. Thus, a diagnosis of renal leiomyoma was confirmed.

### III. Discussion

On the basis of the histogenesis and histopathologic findings, primary renal tumors were categorized by the 2004 World Health Organization classification into the following types: renal cell, metanephric, mesenchymal, mixed mesenchymal and epithelial, neuroendocrine, and germ cell tumors.<sup>1,4</sup> Renal mesenchymal tumors are further classified into benign and malignant tumors. The benign tumors include lipoma, leiomyoma, angiomyolipoma, hemangioma, lymphangioma, juxtaglomerular cell tumor, renal medullary interstitial cell tumor,

solitary fibrous tumor, and schwannoma. The malignant tumors include leiomyosarcoma, rhabdomyosarcoma, angiosarcoma, osteosarcoma, synovial sarcoma, fibrosarcoma and malignant fibrous histiocytoma.

Renal leiomyoma occurs mostly in females (66%) in the second to fifth decades of life.<sup>2</sup> Only 11 cases have been reported in patients younger than 20 years.<sup>2,5</sup> The tumor is small and asymptomatic in majority of cases. However, it may cause symptoms when it continues to grow.

Steiner et al reviewed the literature in 1990 and collected 30 cases of clinically diagnosed leiomyomas. In his study, symptomatic lesions presented with palpable mass in 57% of cases, abdomen and/or flank pain in 53% of cases, or combination of both in 32% of cases. Microscopic hematuria occurred in 20% of the cases and macroscopic hematuria was also reported.<sup>2,6-8</sup> The tumor is most commonly seen in the lower pole of the kidney (74%) with equal incidence in both kidneys. It develops from the renal areas that contain smooth muscles such as renal capsule (37%), renal pelvis (17%), renal cortical vasculature (10%) and indeterminate areas.<sup>2</sup>

Renal leiomyoma appears as a well-circumscribed peripherally located hyperattenuating solid mass in nonenhanced CT images. The tumor shows homogeneous enhancement after the intravenous administration of iodinated contrast material.<sup>9,10</sup> Large tumors may show areas of hemorrhage or cystic degeneration.<sup>2,10</sup> Calcification is uncommon. The CT findings of renal leiomyoma may include cystic, complex solid cystic or purely solid lesion.<sup>2</sup>

When leiomyoma is large and the fat plane is lost with the adjacent structures, a radiological probability of its malignant counterpart i.e. leiomyosarcoma increases. The role of percutaneous biopsy to diagnose such tumors is limited as it is not always possible to differentiate between leiomyoma and leiomyosarcoma based on needle biopsy samples alone.<sup>11</sup>

#### **IV. Conclusion**

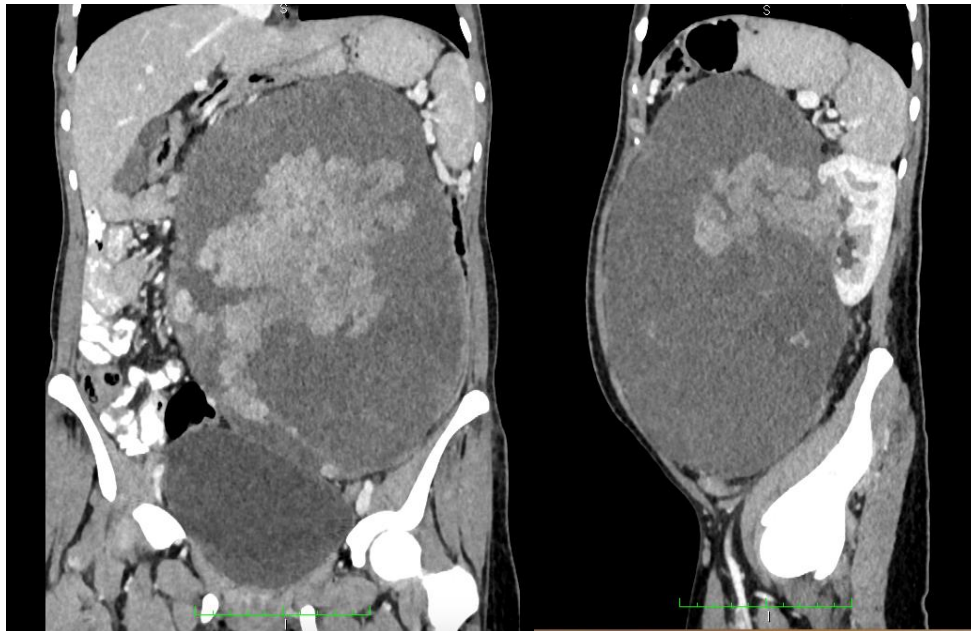
Renal leiomyoma is a rare, benign and nonmetastasizing mesenchymal tumor. Surgery is the only therapeutic option and the prognosis is excellent without recurrence or risk of metastatic spread.

#### **References**

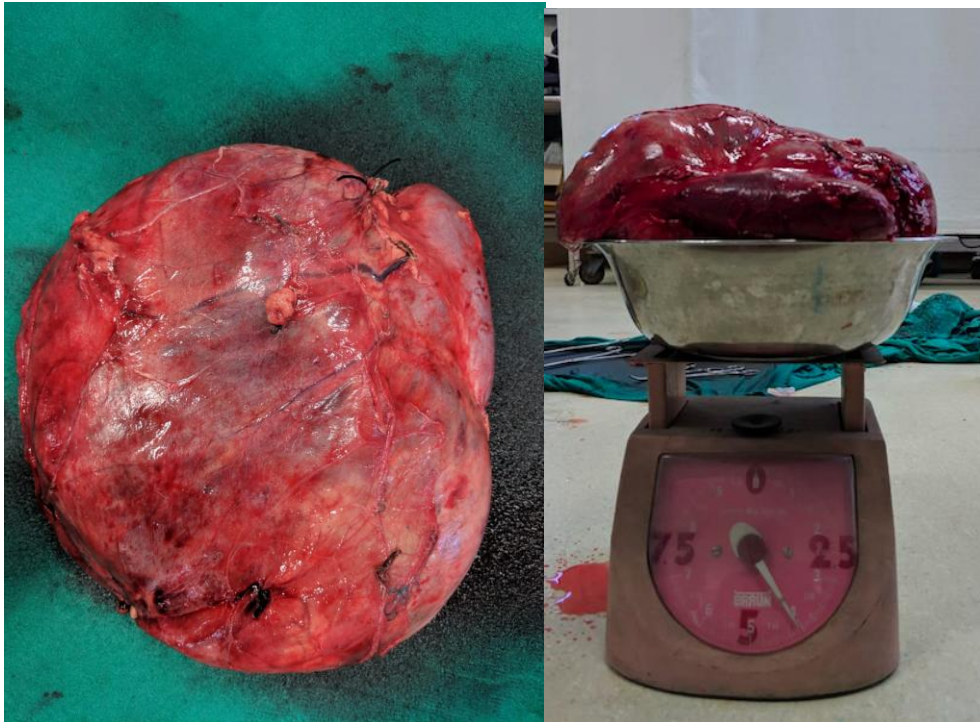
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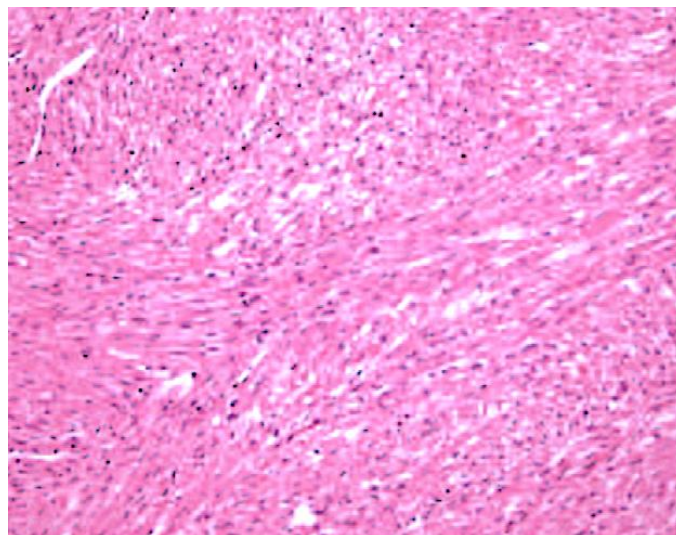
**Fig 1.** 20 year old female with giant renal leiomyoma. Axial CECT image showing complex solid cystic mass arising from left kidney and displacing small bowel loops to the right side of abdomen.



**Fig 2.** Coronal and sagittal reformations show the extension of the mass.



**Fig 3.**Resected surgical specimen.



**Fig 4.**Histopathology. Hematoxylin and Eosin staining show uniform, interlacing bundles of spindle smooth muscle cells.

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