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Case Report Open Access

Nephron Sparing Surgery for a Renal Mass: A Rare Surgical Surprise in the Era of Advanced Imaging

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Introduction

In the era of advanced imaging triphasic CT is considered the most sensitive and specific investigative modality to qualify renal masses as renal cell carcinoma. Although the sensitivity and specificity for CT are 98 and 99%, respectively but it can still misdiagnose other pathologies as tumor [1]. Despite standard operating protocols published by WHO and FDA to ensure the patient safety and to avoid foreign body being left within the abdomen during surgery gossypibomas or texlilommas are not uncommon. The condition may manifest as an exudative inflammatory reaction with formation of abscess or aseptic fibrotic reaction with formation of a mass [2]. The manifestations and complications of gossypibomas are so variable that diagnosis is difficult and patient morbidity is significant [3].We describes one such case where a renal tumor suspected to be renal cell carcinoma on preoperative imaging was operated by open nephron sparing surgery. The cut specimen was surprise pathology, of a surgical sponge with a thick walled pus filled cavity. The final histopathology of the wall revealed chronic inflammation only.

Case Report

47 years old man with no previous medical co-morbidities who had history of open pyelolithotomy 2 years back elsewhere presented with lower urinary tract symptoms since then and heaviness of right flank region since 6 months. On examination, a rounded smooth hard ballotable, bimanually palpable mass was found in the right lumbar region. On further evaluation he was found to have stricture urethra in the proximal penile, distal and mid bulbar urethra on uroflowmetery and retrograde urethrogram. Contrast enhanced computed tomography of abdomen showed a well-defined heterogeneous mass lesion of size 7.4 × 7.4 × 6.2 cm in the posterior aspect of lower pole of right kidney abutting the psoas muscle and ascending colon, containing fluid, soft tissue and fat component with a focal calcific focus (Figure 1a and 1b). His blood investigations were normal. He underwent right partial nephrectomy with adequate margins and optical internal urethrotomy for stricture urethra. A rounded encapsulated mass of 8x8x8 cm was found in the posterior aspect of lower pole of right kidney adherent to it and the psoas muscle. The tumor was resected in-toto with a margin of 5 to10 mm of renal parenchyma all around. Operative time was 120minutes and the warm ischemia time was 23 min. On cut section, the mass was filled with thick pus and a large sponge within it (Figure 2). He had uneventful post operative recovery and discharged on post operative day 6. Histopathology showed normal renal morphology of the partial nephrectomy specimen and inflammatory infiltrates in the wall of the mass.

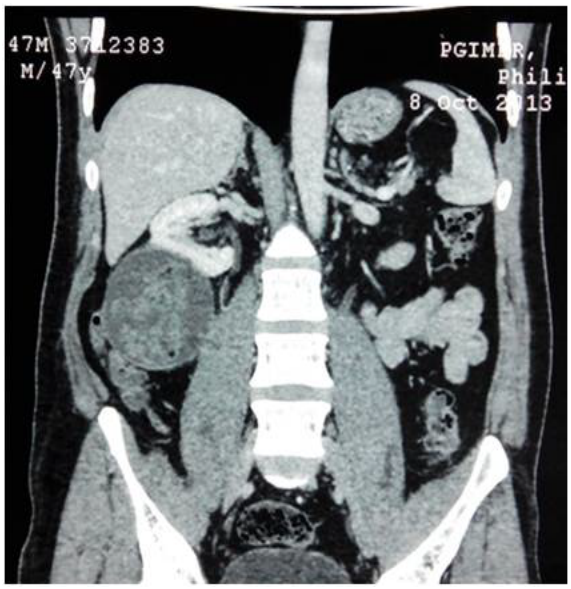

Figure 1a: Axial image of the contrast enhanced CT scan showing the enhancing renal mass in arterial phase.

Figure 1b: coronal reconstruction of the renal mass showing few areas of calcifications and few areas suspicious of fat and presence of two renal arteries.

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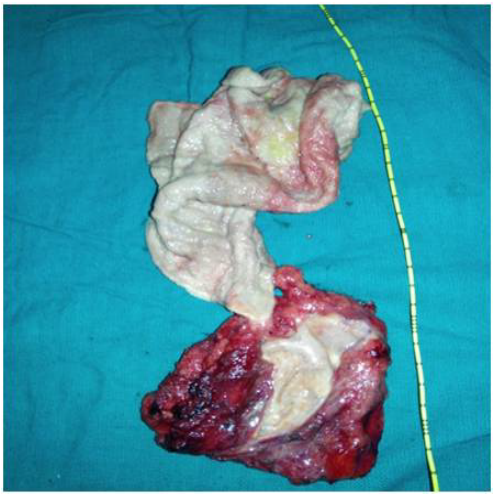

Figure 2: cut open specimen showing the abscess cavity with the sponge.

Discussion

Gossypiboma or a mass of cotton that is retained in the body following surgery is rarely seen in daily clinical practice. Although the real incidence is unknown, it has been reported as 1 in 100 to 3000 for all surgical interventions and 1 in 1000 to 1500 for intra-abdominal operations [3-5]. The first case of a gossypiboma was reported by Wilson in 1884 [6]. Gossypibomas are most frequently diagnosed in the intra-abdominal cavity. However, they can also be found in the chest, extremities, CNS, and breast [2]. Because of legal and ethical concerns, there have not been many publications on this topic. Delays in diagnosis could increase mortality and morbidity. Retained sponges are most frequently observed in patients with obesity, during emergency operations, and after laparoscopic interventions [7]. Gossypibomas may present at any time, from immediately postoperatively to several decades after initial surgery [2].

Gossypibomas cause two types of responses in the body: exudative and aseptic fibrous. The latter can have adhesions, encapsulation, and eventually, granuloma formation.

However, the former usually occurs early in the postoperative period and may involve secondary bacterial contamination, which results in various fistulas [2]. Longer the retention time, the higher the risk of fistulization. Foreign bodies may completely migrate into the ileum without any apparent opening in the intestinal wall. They usually cannot pass the ileocecal valve and cause complete intestinal obstruction at this level. However, if they can pass through this valve, they are easily discharged through the anus [7,8]. The clinical presentation and the time interval between the original operation and the diagnosis of gossypiboma are variable and depend upon the location and the type of reaction evoked. Some patients present acutely in the post-operative period with infection and sepsis. Others may remain asymptomatic for many years before causing a foreign body reaction in the surrounding tissue, with new clinical signs indicating significant mass effect or pseudo tumor, as in this case. Because, the symptoms of gossypiboma are usually nonspecific and may appear years after surgery, the diagnosis of gossypiboma usually comes from imaging studies and a high index of suspicion. The most impressive imaging finding of gossypiboma is the curved or banded radio-opaque lines on plain radiograph. The ultrasound feature is usually a well-defined mass containing wavy internal echogenic focus with a hypoechoic rim and a strong posterior shadow. However, this is often misinterpreted due to its clinical rarity [9,10]. On CT scan, a gossypiboma may manifest as a cystic lesion with internal spongiform appearance with mottled shadows as bubbles, hyperdense capsule, concentric layering, or mottled mural calcifications. When no radio-opaque marker is seen on X-ray or CT, the characteristic internal structure of the gauze granuloma is best visualized on magnetic resonance imaging. It may appear as a low-signal-intensity lesion on T2-weighted images with wavy, striped or spotted appearance [9,11]. Once gossypiboma is diagnosed, it should be removed. Surgery had been the mainstay of therapy for many years. Besides diagnostic and therapeutic difficulties, gossypiboma carries some medico-legal implications. The presence of a foreign body inside the patient can be easily proved and the patient may litigate the responsible surgeon because this is an avoidable problem. Moreover, gossypiboma may be misdiagnosed as a malignant tumor and lead to unnecessary invasive diagnostic procedures or extensive extirpative surgery which may result in further complications [3]. Prevention is the best treatment as in many other medical problems. Avoidance of leaving foreign bodies inside the patients could be possible by implementation of three measures: meticulous count of all surgical materials, thorough exploration of the surgical site at the conclusion of the procedures and routine use of surgical textile materials impregnated with a radio-opaque marker. Gawande et al. [5] published an article about risk factors of retained foreign bodies. Of the 8 risk factors, the authors identified only 3 were found to be statistically significant by multivariate logistic regression. The 3 significant risk factors were emergency surgery, unplanned change in the operation, and higher body mass index. The counting of sponges and instruments was not a significant predictor in the multivariate model. Although all 3 factors were significant, the 9-fold increase in risk associated with emergency surgery was impressive. Although human errors cannot be completely avoided, continuous medical training and strict adherence to rules of the operation room should reduce the incidence of gossypiboma to a minimum [3].

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