

Bilateral Hydronephrosis and Severe Renal Dysfunction Associated with Large Uterine Leiomyoma: A Case of Delayed Presentation, Diagnosis and Management

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DOI: <https://doi.org/10.36347/sasjm.2025.v1i1i10.018>

| Received: 12.09.2025 | Accepted: 23.10.2025 | Published: 27.10.2025

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Abstract

Case Report

Background: Uterine leiomyomas (fibroids) are the most common benign gynaecological tumours, often asymptomatic but capable of causing significant complications depending on their size and location. Although rare, large fibroids can cause obstructive uropathy, leading to severe renal dysfunction. **Case Presentation:** In this study, we report the case of a 39-year-old Black-British female who presented with a 6-month history of lower abdominal pain and menorrhagia. Her initial blood tests revealed severe renal impairment (eGFR 17 mL/min/1.73m²), because of which she was admitted to emergency department, but no imaging was performed. She was discharged home and was lost to follow-up for 4 months. Upon re-presentation, a CT scan revealed marked bilateral hydronephrosis secondary to a significantly enlarged fibroid uterus (12.6 × 11.8 × 18.1 cm). She underwent urgent bilateral nephrostomy followed by myomectomy. Despite clinical improvement, she remained under nephrology care for chronic kidney disease. This case highlights the potential for uterine fibroids to cause significant renal impairment through mechanical ureteric obstruction. **Conclusion:** Clinicians should maintain a high index of suspicion for structural causes of unexplained renal impairment in women presenting with pelvic symptoms. Prompt imaging, timely diagnosis, and multidisciplinary management are critical to improving outcomes and preventing long-term renal sequelae.

Keywords: Uterine leiomyomas, fibroids, renal impairment, hydronephrosis, Black women, myomectomy.

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INTRODUCTION

Uterine leiomyomas, more commonly referred to as fibroids, are the most common benign gynaecological tumours to date, with their incidence increasing with advancing age [1, 2]. About 70% of white women and more than 80% of black women between the ages 35 to 49 years have had at least one fibroid by the age of 50 years [2]. Although the cause of uterine leiomyoma still remains unclear, several risk factors have been recognised, which include Black or Asian race, genetic influence, early menarche, being of reproductive age, nulliparity, obesity, diabetes and hypertension [2,3]. Uterine leiomyomas may grow from few millimetres to more than 30cm and could occur either as solitary or multiple tumours with minimal malignant potential [2,4]. Whilst majority of uterine leiomyomas are asymptomatic and require no treatment, some of them, depending on their size and location (intramural, submucosal, subserosal, pedunculated and

cervical), cause menorrhagia (the most common symptom), pelvic pressure symptoms including hydronephrosis and pain, and reproductive dysfunction [4,5,6].

The case described in this study underscores the rare but significant bilateral hydronephrosis and severe renal dysfunction resulting from delayed diagnosis of a large uterine leiomyoma mechanically compressing the pelvic ureters. Simultaneously, it emphasizes the need for early and effective surgical intervention to prevent permanent damage to the renal parenchyma.

CASE STUDY

The present study describes the case of a 39-year-old Black-British female, with background history of anxiety and depression, who presented to her medical practice in United Kingdom (UK) in January 2025 due to six [6] months history of intermittent lower abdominal pain and heavy painful menstrual periods that became

Citation: Abdulla Saleh Abdulla Hassan & Nasir Muhammad Bashir. Bilateral Hydronephrosis and Severe Renal Dysfunction Associated with Large Uterine Leiomyoma: A Case of Delayed Presentation, Diagnosis and Management. SAS J Med, 2025 Oct 11(10): 1039-1042.

worse three [3] days prior to her presentation. She also complained of difficulty in passing urine with sensation of pressure in the lower abdominal area. She had no history of dysuria, visible haematuria, change in urine colour or loin pain. She had no fever, nausea or vomiting, and no bowel symptoms. She also had no history of weight loss or any other systemic symptoms. Though she has menorrhagia, her menstrual cycles were regular. She reported that she has been self-medicating by taking ibuprofen tablet, a non-steroidal anti-inflammatory drug (NSAID), regularly for the past six [6] months to alleviate her pain. On examination, she appeared generally well, with vital signs within normal range. Her abdomen was soft and non-tender, and there was no palpable abdominal mass or organ enlargement. Following the assessment, the General Practitioner (GP) requested blood tests, namely full blood count, kidney, liver and thyroid function tests, coagulation studies and ferritin, with a plan to review her and consider further investigations after receipt of the blood test results.

Her blood test results, which were received a day after the consultation, revealed significantly low eGFR of 17 mL/min/1.73m², but there were no previous results for comparison. Thus, an urgent referral to the Emergency Department (ED) was made for further assessment and management of presumed severe acute kidney injury (AKI). She was admitted to the ED where she was given intravenous fluids and discharged home following slight improvement in her eGFR to 24 mL/min/1.73m² without any investigation to identify the underlying cause of the severe decline in renal function and chronic pelvic pain, or assessment by nephrology/urology teams during the admission. She was advised to increase her oral fluids intake and to have a follow up blood test by GP to monitor her renal function. Unfortunately, she was missed to follow up for 4 months until she presented again to the medical practice due to chronic lower abdominal pain where she was seen by another GP who immediately requested urgent computed tomography (CT) scan of her abdomen and pelvic and repeat of her blood tests.

Her renal function test revealed persistently low eGFR of 28 mL/min/1.73m², raised urea and creatinine levels, low haemoglobin, haematocrit and red blood cell count. She had CT scan of her abdomen and pelvis with contrast in the same week which revealed marked bilateral hydronephrosis to the level of the uterus. The renal pelvis measured 3.3cm on right and 4.2cm on the left. The uterus was markedly enlarged measuring 12.6 x 11.8 x 18.1cm due to multiple intramural fibroids. The liver enhances uniformly with no focal masses demonstrated but there was a 11mm simple cyst in segment 4B. The gallbladder appeared thin-walled and contained no calcified gallstones. The pancreas, spleen and both adrenal glands were normal in appearance. There was no free fluid within the abdomen. The aorta had normal calibre, and there were no enlarged lymph nodes seen within the

abdomen or pelvis. There were no stenosing colonic lesion demonstrated and no suspicious bone lesion demonstrated. The reporting Radiologist recommended urgent urology referral in view of her marked bilateral hydronephrosis likely secondary to a large fibroid uterus. Additionally, recommendation was made to reassess her renal function within 48 hours due to use of intravenous contrast.

Upon receipt of the report of the CT scan report on the same day, she was referred urgently to the surgical assessment unit (SAU) where she was seen by Urologist who advised urgent decompression of kidneys to preserve her renal function. She was presented with options of nephrostomy and ureteral stent insertion, but nephrostomy was agreed upon as stents often get compressed by external pressure. Following her successful bilateral nephrostomies and improvement in her renal function, she was discharged home with nephrostomies in situ, with plan for urgent out-patient gynaecology review within two [2] weeks to plan for myomectomy. She was subsequently reviewed by gynaecologist, and she underwent successful myomectomy. Although the underlying cause of her lower abdominal pain, menorrhagia and severe renal dysfunction was eventually addressed, she remained under the care of nephrologist due to chronic kidney disease.

DISCUSSION

In the UK, approximately 22% of premenopausal women aged over 35 years are affected by menorrhagia, with about 1 in 20 women aged between 30- and 49-years having consultations with their GP because of heavy menstrual bleeding that interferes with their physical, social, emotional, and/or material quality of life [8,9,10]. This patient presented to her GP with chronic lower abdominal pain and menorrhagia, the differential diagnosis of which include pelvic pathologies like uterine leiomyomas, pelvic endometriosis, pelvic inflammatory disease and endometrial hyperplasia [9]. During her evaluation in a primary care setting, the most crucial task was to identify the underlying cause of her symptoms and to rule out any alarming symptoms, of which there were none at presentation. Although her GP requested blood tests as part of her initial assessment, a confirmed diagnosis of the structural cause of her symptoms, such as uterine leiomyoma, can only be made radiologically. Thus, imaging by ultrasonography at the very least should have been part of the investigations requested during her initial presentation.

The incidental finding of severe renal impairment in this young otherwise healthy patient prompted urgent referral to the Emergency Department to identify the underlying cause and manage appropriately. However, she was only given intravenous fluids that resulted in slight improvement in her eGFR, after which she was discharged back to the care of her

GP. Unfortunately, she was lost to follow up for 4 months without identifying and managing the underlying cause of her severe renal impairment, chronic lower abdominal pain and menorrhagia. Whilst her 6 months history of regular intake of NSAIDs could have contributed to her renal impairment, it was only after a CT scan was done 4 months after her initial presentation that multiple large intramural uterine leiomyomas compressing her ureters resulting in marked bilateral hydronephrosis were identified, necessitating urgent surgical intervention.

Upon reviewing the literature, we recognised that although the true incidence of hydronephrosis and renal impairment due to uterine leiomyomas remains unknown, patients with obstructive renal impairment caused by uterine leiomyomas are frequently seen by gynaecologists [6]. A review of female patients diagnosed with renal impairment managed at the University Hospital of the West Indies from 2000 to 2004 revealed an alarming 14.35% had mechanical ureteric obstruction due to uterine leiomyomas. They also had symptoms of urinary retention secondary to urethral obstruction by uterine fibroids [6], which this patient also had. Furthermore, longstanding obstruction can result in stone formation and hypertension, although these problems were not identified in this patient. However, the insidious nature of the ureteric obstruction with little or no pain and normal renal function in more than 60% of cases makes it difficult to suspect / diagnose without imaging [6]. Whilst most cases of hydronephrosis and hydronephrosis are identified incidentally during abdominal and pelvic ultrasonography, this patient's initial presentation with chronic lower abdominal pain and menorrhagia, and incidental finding of a severely low eGFR should have prompted urgent imaging during her initial hospitalization. As the literature shows, imaging plays a crucial role in the diagnosis of patients with uterine leiomyoma and identification of complications such as bilateral obstructive uropathy that result in severe renal dysfunction [11,12].

Though the patient went on to have bilateral nephrostomy, myomectomy and eventual reversal of the nephrostomy, we do not have any imaging report to show if the hydronephrosis and hydronephrosis were reversed post-treatment, or renal function test results to show significant improvement post-treatment. However, other studies suggest that the prognosis in patients with obstruction due to fibroids resulting in renal impairment is good as they tend to be younger and fitter when compared with patients with other causes of renal impairment such as hypertension, diabetes mellitus, cardiovascular and glomerular diseases [6]. Nonetheless, an early presentation and assessment, as well as prompt diagnosis and management will contribute towards improving treatment outcomes.

CONCLUSION

In conclusion, uterine leiomyomas are the most common benign gynaecological tumours, the majority of which are asymptomatic or may be noticed by the patient as a painless and non-tender abdominal swelling. However, they could also present with a variety of symptoms such as pelvic pain, pressure symptoms and abnormal uterine bleeding that warrant early assessment at presentation as obstruction of the urinary tract by uterine leiomyomas may occur and can lead to permanent kidney damage if longstanding. We present a case of delayed presentation with pain, pressure symptom and menorrhagia that was sent to emergency department due to incidental finding of severe renal impairment but was lost to follow up before the underlying cause was identified and managed. Although the risk of end-stage renal failure is lower in this patient when compared with other causes of kidney disease, the outcome is unpredictable, as there are no indicators to determine which patients will develop this complication. Therefore, as clinicians, we must always highlight the importance of patient education, early identification and comprehensive assessment, and instituting a system of follow up and appropriate management to prevent severe renal impairment. However, a limitation of this study is that we do not yet have data to show if there was a significant improvement in her renal function post-treatment.

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