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CASE REPORT CRSLS

Uterine Fibroid-Induced Compressive Neuropathy of Lumbar Plexus and Obturator Nerve

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ABSTRACT

Introduction: Uterine fibroids are the most common gynecologic tumors in reproductive-aged women with a prevalence of up to 80%. Symptoms can range from heavy vaginal bleeding and bulk symptoms to, less frequently, deep vein thrombosis and bowel obstruction.

Case Description: A 32-year-old female patient presented with acute-onset of right groin and knee pain, and difficulty ambulating. A large posterior uterine fibroid was found to be compressing branches of the lumbar plexus, including the obturator nerve. The patient underwent gynecologic evaluation and an urgent laparoscopic myomectomy. Postoperatively, she had significant improvement in neurologic symptoms. She continued physical therapy for residual mild paresthesia and pain with prolonged ambulation.

Discussion: Large pelvic masses such as uterine fibroids should be considered on the differential diagnosis for acute-onset non-gynecologic symptoms such as compressive neuropathy, which require urgent evaluation and possible surgical management.

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INTRODUCTION

Uterine fibroids are the most common benign tumors in reproductive-aged women, with a prevalence of up to 80%.[1] Often, uterine fibroids are asymptomatic but depending on their size and location can cause a variety of symptoms ranging from abnormal uterine bleeding to bulk symptoms including abdominal fullness, constipation, and urinary frequency. Pelvic ultrasound is considered the primary imaging modality to assess uterine fibroids, although pelvic magnetic resonance (MR) imaging can be considered for additional evaluation or surgical planning.[2] Depending on the presenting symptoms, there are a variety of fertility-sparing and nonsparing treatment options available to patients.

Rarely, uterine fibroids can cause mass effect compromising function of nearby organs or structures. Deep vein thrombosis is frequently reported due to venous compression and stasis.[3] Less frequently, mass effect from uterine fibroids can cause issues such as urinary retention, bowel obstruction, or neuropathy.[4–5]

A search of PubMed and Google Scholar was conducted February 6, 2023 to review the literature on presenting symptoms and outcomes of uterine fibroids causing neuropathy from mass effect. MeSH terms included leiomyoma, radiculopathy, lumbosacral plexus, spinal cord compression, neuralgia, sciatic neuropathy, nerve compression syndromes, peripheral nervous system disease, and obturator nerve. Additional search terms included uterine fibroid(s), uterine fibroma(s), uterine mass, pelvic mass, lumbar plexus, myelopathy, compressive, neuropathy, sciatica, and/or gait disturbance. Results were limited to English and all publication years available were included. Based on the literature, only case reports were identified illustrating acute, subacute, or acute on chronic lower extremity neuropathy from the compressive effect of uterine fibroids and/or enlarged uteri.

This report adds to the scarce data published on uterine fibroids causing compressive neuropathy. We describe a minimally invasive approach to treat a large fibroid causing lumbar plexus and obturator nerve compression.

Case Description

A 32-year-old gravida 0 female presented to the Emergency Department for new onset severe right groin and knee pain and inability to ambulate independently. Over the past several months, she noted paresthesia in her right anteromedial thigh and frequent knee buckling that was worse during menses. Her past gynecologic history is notable for irregular menses lasting three to seven days with heavy flow. Past medical history includes chronic back pain, mild scoliosis, and colitis. She had no prior surgical history and no medication use.

Physical examination revealed a well-appearing female in no acute distress, with right lower extremity edema and adductor muscle weakness, hyperesthesia of the right anteromedial thigh, and an abnormal gait. Pelvic examination revealed a large immobile uterine mass filling the posterior cul-de-sac and extending to the pelvic sidewall. Her labs were normal except for a mild leukocytosis with a white blood cell count of 10.9, and a urine pregnancy test was negative. She was admitted to the Gynecology service for further evaluation and pain management. The Neurology and Orthopedic Surgery departments were also consulted.

During the evaluation of her lower extremity pain, a computed tomography (CT) thigh/femur showed a large pelvic mass. Follow up pelvic ultrasound confirmed a multifibroid uterus, with a dominant 13.9 cm posterior fibroid. Lower extremity venous duplex was negative for deep vein thrombosis. Follow-up MR imaging of hip/pelvis, thigh/femur, and lumbar spine was performed. Imaging revealed multiple findings including (1) mild spinal canal stenosis at L4-L5, (2) hip joint distension consistent with synovial thickening, (3) a low grade femoral chondroid lesion that was noted to be benign and unlikely the source of pain per Orthopedic Surgery, and (4) a large fibroid measuring 12.5 cm × 13 cm × 12.5 cm compressing the bladder and the iliac veins in proximity of multiple branches of the lumbar plexus, including the bilateral obturator nerves (**Figure 1**).

Consequently, as there was no other identifiable cause of her symptoms, it was thought that the mass effect from the fibroid was resulting in lumbar plexus and obturator nerve compression. The patient underwent an uncomplicated laparoscopic myomectomy of the posterior dominant fibroid and additional smaller anterior uterine fibroids (**Figure 1**).

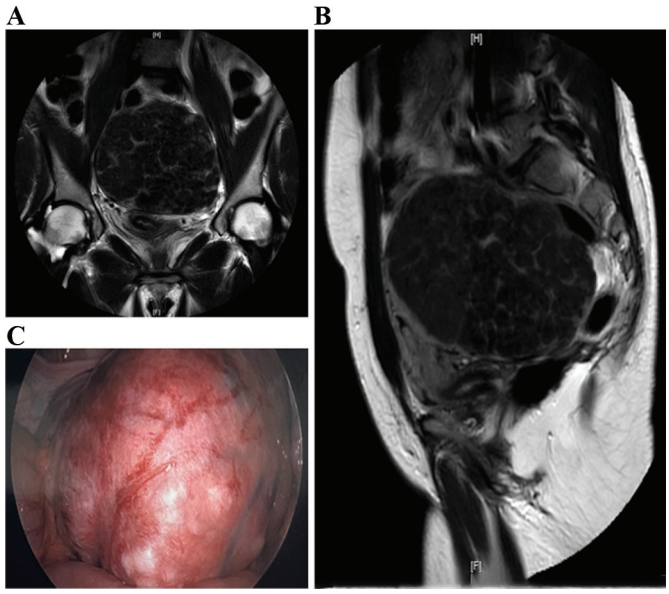

Figure 1. A) Magnetic resonance image showing large fibroid measuring 12.5 centimeters by 13 centimeters by 12.5 centimeters and extending to the pelvic side wall bilaterally where it is impinging on the psoas muscles and obturator nerves laterally, coronal view. **B**) Magnetic resonance image showing large fibroid measuring 12.5 centimeters by 13 centimeters by 12.5 centimeters and compressing the bladder anteriorly and rectum posteriorly, sagittal view. **C**) Intra-operative image of dominant subserosal posterior fibroid arising from the posterior surface of the uterus occupying the entire posterior cul-de-sac up to the level of the sacral promontory.

Laparoscopy was performed with four trocars: one 5-mm at the umbilicus, two 5-mm on the right side, and one 5-mm in the left lower quadrant. The umbilical incision was later extended to 3 cm to allow for contained hand morcellation. 800 mcg of rectal misoprostol, 1 g of intravenous tranexamic acid, and uterine subserosal injection of dilute vasopressin were used to minimize blood loss.

Using an ultrasonic energy device, the uterine serosa was incised until the fibroid was identified. There was minimal myometrial tissue between the uterine serosa and the fibroid. With blunt and sharp dissection, the uterine serosa overlying the fibroid was incised circumferentially, and the fibroid was separated from the uterus in its entirety.

A 2-0 barbed suture was used to close the myometrial defect and reapproximate the serosal layer to achieve hemostasis. Sodium hyaluronate/carboxymethylcellulose (Seprafilm®) was applied over the hysterotomy site to

minimize the risk of adhesion formation. The same technique was applied to remove the other three smaller fibroids. The specimen was placed in an Alexis® Contained Extraction System and morcellated with an 11-blade scalpel through the umbilical incision. In total, the fibroids weighed 1,015 g.

Postoperatively, her pain improved significantly, and she was able to ambulate independently. She was discharged on postoperative day two. Three months postoperatively, the patient noted an improvement in neurologic symptoms with normal gait and significant improvement of pain, although paresthesia and pain with prolonged ambulation over the anteromedial right thigh persisted. The patient was followed by physical therapy and physical medicine and rehabilitation services for continued management of her symptoms.

DISCUSSION

Uterine fibroids are common, benign tumors in reproductive-aged women that can cause a range of symptoms. While rare, compressive mass effects can cause both acute and chronic symptoms. The acute nature of some of the symptoms may be attributed to the size and location of the fibroid(s) eventually rendering them immobile in the pelvis compressing on critical structures.

Compressive neuropathy from a large uterine fibroid is extremely rare with few case reports previously published. The first case report was published in 1979 of a fibroid uterus causing compression of the lateral cutaneous femoral nerve and demonstrated resolution of symptoms after a hysterectomy.[6] In each of the eight case reports published, patients presented with lower extremity pain, numbness, tingling, or limited mobility. In all of these cases, there was resolution or near-resolution in neurologic and/or motor symptoms after surgical treatment with a hysterectomy or myomectomy.[7–11]

Intermittent nerve compression can result in reversible ischemia of the nerve, but as the compression becomes more prolonged, there is increased risk of demyelination and Wallerian degeneration of the nerve fibers.[12] In severe cases, the nerve can degenerate resulting in permanent neuropathy, similar to what is seen with nerve transection. In the absence of another identifiable etiology, a pelvic mass, if present, should be considered as the leading cause of neuropathic symptoms. Once this is established, urgent surgical management should be considered to relieve the neuropathy and prevent permanent or prolonged damage. Although the exact timing of surgical intervention needed to prevent permanent damage is not clear, one can infer the sooner the surgical intervention by hysterectomy or myomectomy, the better for preventing long-term sequelae. We also suggest that due to the acuity and severity of symptoms and importance of timing for treatment to prevent long-term neurologic dysfunction, other nonsurgical interventions such as uterine artery embolization or medical management to decrease the size would not be prudent, unless strong contraindications to surgery were present.

The patient who presented with acute right lower extremity leg pain, difficulty ambulating, and subacute paresthesia, a thorough evaluation was performed. Fortunately, the CT scan of her femur and leg revealed a partially-imaged enlarged pelvic mass. Urgent gynecologic evaluation and multidisciplinary discussions between gynecology, neurology, and orthopedic surgery in these instances are critical.

While her right lower extremity leg pain and gait disturbance was acute, the paresthesia's along the distribution of her lumbar plexus had been progressively worsening over several months, which is concerning for prolonged compression of the nerves. She underwent a laparoscopic myomectomy within 120 hours of gynecologic consultation and within 144 hours of presentation to the hospital with resolution of her gait disturbance and pain. Given the subacute nature of the paresthesia that persisted for several months postoperatively, ongoing management was required.

This case also demonstrates the importance of a thorough history, physical examination, and broad differential diagnosis of all patients. In the initial presentation, there was concern for acute-onset severe neurologic and motor dysfunction, and subacute paresthesia. Not until her postoperative state was it revealed that this patient has had chronic back pain since childhood likely due in part to L5 radiculopathy and spondylolisthesis.

Furthermore, while uterine fibroids are typically slow-growing, a thorough abdominal examination and ideally an annual pelvic examination could have revealed this pelvic mass and allowed for earlier intervention. This patient was not seen by a healthcare provider for almost four years prior to her presentation in the Emergency Department. While beyond the scope of this case report, the importance of access to care and consistent care cannot be overstated. When patients do engage with the healthcare system, a comprehensive history, physical examination, and having a broad differential diagnosis are key to understanding the etiology of their symptoms.

CONCLUSION

Compressive neuropathy from uterine fibroids should be considered in patients who present with acute or subacute paresthesia, muscle weakness, or motor impairment. Urgent gynecologic evaluation and surgical management are necessary to improve symptoms and prevent long-term neuropathic complications. Due to the rarity of this presentation and the need for timely intervention, gynecologists need to have a high suspicion that a mass of gynecologic origin can cause varying symptoms due to mass effect.

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