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Simultaneous laparoscopic and arthroscopic excision of juxta-articular ganglionic cyst compressing the sciatic nerve: A case report

Choi W-K *et al.* Extra-and intra- pelvic ganglionic cyst compressing the sciatic nerve

Won-Ku Choi, Jong-Sung Oh, Sun-Jung Yoon

Abstract

BACKGROUND

A large ganglionic cyst extending from the hip joint to the intrapelvic cavity through the sciatic notch is a rare space-occupying lesion associated with compressive lower-extremity neuropathy. A cyst in the pelvic cavity compressing the intrapelvic–sciatic nerve is easily missed in the diagnosis process since it usually presents as atypical symptoms of an extraperitoneal–intrapelvic tumor. Here we present a rare case of a ganglionic cyst that was successfully excised laparoscopically and endoscopically by a gynecologist and orthopedic surgeon.

CASE SUMMARY

A 52-year-old woman visited our hospital complaining of pain and numbness in her left buttock while sitting. The pain began 3 years prior and worsened, while the left lower-extremity numbness had lasted 1 mo. She was diagnosed and unsuccessfully treated at several tertiary referral centers many years prior. Magnetic resonance imaging showed a suspected paralabral cyst (5×5×4.6 cm) in the left hip joint stretching to the pelvic cavity through the greater sciatic notch. The CA-125 and CA19-9 tumor marker levels were within normal limits. However, the cyst compressed the sciatic nerve. Accordingly, endoscopic neural decompression and excision were performed. A positive tumor resection test and left hip biopsy confirmed that it was a ganglion. A subsequent laparoscopic examination revealed a tennis ball-sized cyst filled with gelatinous liquid stretching deep into the hip.

CONCLUSION

In cases of sitting pain radiating down the ipsilateral lower extremity, a sciatic nerve–compressing lesion should be considered. This huge juxta-articular ganglionic cyst was successfully treated using laparoscopy and arthroscopy simultaneously.

Key Words: Paralabral cyst; Ganglion cyst; Intrapelvic sciatic nerve compression syndrome; Deep gluteal syndrome; Hip joint; Laparoscopy; Case report

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Core Tip: A huge juxta-articular ganglionic cyst originating from the hip joint, passing through the sciatic notch and growing in the intrapelvic cavity, is likely to exhibit sciatic notch and growing in the intrapelvic cavity, is likely to exhibit sciatic nerve compression symptoms. The authors would like to report a case in which laparoscopic and arthroscopy were performed simultaneously.

INTRODUCTION

Ganglion cysts are the most common type of mass lesion around the hip joint^[1]. However, a large ganglionic cyst extending from the hip joint to the intrapelvic cavity through the sciatic notch is a rare cystic form associated with buttock pain in musculoskeletal disorders^[2, 3].

Sciatica secondary to intrapelvic cystic lesions is a rare symptom. A cystic lesion in the pelvic cavity compressing the intrapelvic portion of the sciatic nerve is easily misdiagnosed because it usually presents as atypical symptoms associated with ipsilateral lower-extremity pain. Recently, as interest in sciatic nerve compression syndromes such as deep gluteal syndrome has increased, research on intra- and extra-sciatic nerve compressive neuropathy has been actively conducted^[4-7].

Here we present a case of a 52-year-old woman with sciatica caused by a large ganglionic cyst treated cooperatively with simultaneous laparoscopic and endoscopic approaches by an orthopedic surgeon and gynecologist. **To our knowledge, this is the first report of concomitant removal of a huge ganglion cyst extending the hip joint to the pelvic cavity using laparoscopy and arthroscopy.**

CASE PRESENTATION

Chief complaints

A 52-year-old woman presented with pain in her left buttock and numbness in her lower extremity while seated and walking.

History of present illness

The left pelvic and posterior hip pain began 3 years ago and worsened, while the radiating pain to the entire ipsilateral lower extremity increased in intensity over 3 mo.

History of past illness

She was previously diagnosed with a paraovarian cyst and continuously followed up in the gynaecologic department at a tertiary referral hospital, but her symptoms did not improve. Her condition did not improve despite various conservative treatments; therefore, she was referred to another tertiary university hospital's obstetrics and gynecology department for operative treatment.

Diagnostic pelviscopy and laparoscopic adnexectomy were planned. However, no specific findings that could cause pain in the female organs were observed during the former; therefore, the operation was terminated. She was told that the current symptoms were not seemingly related to gynecologic problems, so she visited our orthopedic surgery department.

Personal and family history

She had no remarkable medical history. No specific genetic disease was found in the family history.

Physical examination

Bimanual pelvic examination revealed a fixed mass of 5×5×4 cm adherent to the left pelvic wall. An orthopedic physical examination revealed severe tenderness of the left

buttock. She complained that she could not sit for 5 min because of intense pain and tenderness in the area. However, she experienced no sensation.

Laboratory examinations

Levels of serum tumor markers were normal (cancer antigen 125, 11.7U/mL; cancer antigen 19-9, 30 U/mL). No abnormality was found in routine blood and urine analysis.

Imaging examinations

Magnetic resonance imaging (MRI) revealed a huge paralabral cyst 5×5×4.6 cm stretched to the greater sciatic notch from the left hip joint. However, the cyst was located close to the sciatic nerve and adherent to the intrapelvic portion of the piriformis muscle. After admission, she was referred to our hospital's gynecology and neurology departments to ensure a multidisciplinary approach.

Further diagnostic work-up

We decided to consult the neurology department for electromyography and nerve conduction studies. The study showed a mild left sciatic nerve lesion, and the physician recommended a clinical correlation. Accordingly, a laparoscopic examination revealed a tennis ball-sized cystic mass filled with gelatinous liquid stretching deep into the hips, with internal and external iliac vessels. The mass was located below the obturator nerve in the left retroperitoneal space. The mass contained yellowish, sticky, and gelatinous components and was firmly adherent to surrounding tissues.

FINAL DIAGNOSIS

Juxatarticular ganglionic cyst origination from the hip joint passing through the sciatic notch and growing in the intrapelvic cavity

TREATMENT

Diagnostic laparoscopy combined with arthroscopy was performed to decompress the sciatic nerve from the intrapelvic cavity to the extra-pelvic deep gluteal space. Incomplete decompression of only one space leads to symptom relief. The ganglionic materials were aspirated, the cyst decompressed, and the cyst capsule excised for histologic examination. A tennis ball-sized cystic lesion with yellowish thick gelatinous fluid was densely adherent to the adjacent nerve (**Figure 2**).

Laparoscopic findings revealed no visible intraperitoneal cyst; however, cystic bulging was observed in the left ovarian fossa. We opened a broad ligament to approach the retroperitoneal space and identified a tennis ball-sized cystic mass below the obturator nerve. We identified the boundary of the cystic mass by excising the connective tissue around it and found that it was densely adherent to the sciatic nerve below the cyst.

A frozen biopsy was performed intraoperatively to confirm the ganglionic cyst (**Figure 3**). Postoperative pathology confirmed the diagnosis of a ganglionic cyst. Diagnostic arthroscopy and endoscopic sciatic nerve decompression were simultaneously performed. A huge ganglionic cyst was observed between the greater sciatic notch and the acetabulum posterior wall near the left sciatic nerve. The cystic lesion mildly compressed the sciatic nerve, but its continuity was intact (**Figure 4**).

OUTCOME AND FOLLOW-UP

The patient's sitting pain and numbness improved immediately after surgery. Postoperative MRI also showed that the cyst was nearly completely resected, but mild edematous change persisted due to chronic compression (**Figure 5**). Long-term follow-up observation showed persistent pain relief and neurological recovery.

DISCUSSION

In this study, as levels of both cancer markers CA 125 and CA 19-9 were within normal range, we were able to outweigh the possibility of adnexal or ovarian malignancy. We performed two cancer marker tests in this study: CA 125 and 19-9. CA 125 is the most

commonly used serum biomarker for epithelial ovarian cancer (EOC) for monitoring treatment response in patients with known EOC. It is also used alone or in combination with other serum biomarkers and/or intra-pelvic ultrasound to evaluate an adnexal mass. A mucin protein that is usually used to monitor treatment response of pancreatic cancer, gallbladder cancer, cholangiocarcinoma, or ampulla of Vater cancer, CA 19-9 is used additionally in ovarian cancer management and might be elevated in adnexal tumor.

A ganglion cyst is typically found near large joints, including the hip, shoulder, and knee. Only a few reports described the compression of neurovascular structures caused by pelvic cavity cysts, with the hip joint less commonly affected than the others^[8].

Elevated intra-articular pressure is required in the hip joint to force synovial fluid into the acetabulum or surrounding soft tissue, which can cause a paralabral ganglion cyst^[9, 10]. The initial chief complaint of this patient with hypesthesia in the left buttock and numbness in the left lower suggestive of sciatica was the first impression. This case emphasizes that the presentation of symptoms attributable to peripheral neuropathy should raise suspicion of another cause of these symptoms.

As the cyst grew larger 2 years prior, compressing the sciatic nerve progressively, the patient's symptoms became more intense. The patient visited the gynecology department of another hospital but was told only that she was not of gynecologic cause. She then visited other local orthopedic clinics and received a probable diagnosis through MRI. She was referred to the gynecologic department of our hospital for treatment by an orthopedic surgeon, gynecologist, or general surgeon.

Ultrasonography-guided cyst aspiration could help manage the mass effect of the cyst. However, considering the risk of incomplete evacuation and recurrence, Javahir *et al* suggested that it should be considered only in patients who underwent minimally invasive procedures and refused any surgical intervention. Given the high the recurrence rate after conservative treatment, complete excision is recommended to eliminate the possibility of recurrence^[11].

On hip arthroscopy, the proximity was up to the sciatic notch during sciatic nerve decompression in the deep gluteal space. In addition, if the operation time for arthroscopic sciatic nerve decompression is prolonged, abdominal compartment syndrome may occur due to fluid extravasation. Therefore, simultaneous laparoscopic decompression was required for the intrapelvic ganglionic cyst in this patient, justifying the combined approach.

The orthopedic surgeon and gynecologist believed that surgical cyst resection was necessary. Therefore, complete excision of the cystic mass and neurolysis of the sciatic nerve were performed laparoscopically by a gynecologist and arthroscopically by an orthopedic surgeon. Diagnostic pelviscopy and laparoscopy-assisted cyst resection were performed by a gynecologist familiar with intrapelvic laparoscopic anatomy. An orthopedic surgeon performed the extra-pelvic cyst removal, including sciatic nerve decompression, *via* transgluteal laparoscopy. This cooperation provided good results and a prognosis for the patient.

³ Chronic pelvic pain is generally defined as non-cyclic pelvic pain that persists for more than 6 mo^[12]. Its causes are extensive, including urogenital, gastrointestinal, neuromusculoskeletal, and psychosocial aetiologies, and may occur in combination. In patients with chronic pelvic pain accompanying hip pain, visceral pathologies such as uterine fibroids, ovarian tumors, endometriosis, or pelvic congestion syndrome should be differentiated using imaging tests. If no pelvic abnormalities are identified, an accurate history taking and physical examination, including examination of the pelvic floor musculature, can help diagnose the etiology. However, even if a visceral pathology is identified, a neuromusculoskeletal etiology should not be excluded if the pattern of chronic pelvic pain does not match its course.

A space-occupying lesion leading to sciatic nerve compression should be considered a potential etiology when a woman complains of unexplained sitting pain, especially pain that radiates to the ipsilateral lower extremity. If a patient has a gynecological history, the physician should suspect this type of disease entity.

We reviewed two case reports on juxta-articular ganglion cysts conducted in South Korea^[13,14]. All patients had radiating pain in the lower extremities, a common symptom of sciatica. Park *et al* presented 2 patients with radiating pain in the ipsilateral lower leg^[13]. Lee *et al* presented 3 patients with pain radiating on the posterior aspect of the lower limb, soreness, and foot numbness^[14]. In both studies, the researchers treated the patients with arthroscopic cyst resection. None of these cases included ganglion cysts that communicated between the intra- and extra-pelvic cavities. International etiology is well described in the case report by Lee *et al*^[14].

CONCLUSION

The huge intra- and extra-pelvic ganglion involving the lumbosacral trunk could be misdiagnosed as sciatica. When a physician encounters a patient with a gynecologic history who complains of buttock pain, ipsilateral lower limb numbness, or radiating pain, the high suspicion of a space-occupying lesion compressing the adjacent nerve is recommended. This huge juxta-articular was successfully treated using laparoscopy and arthroscopy simultaneously.

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