



## Case report

## Bilateral sciatic hernias in an elderly woman successfully managed with robotic surgery: A case report and literature review

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## ABSTRACT

**Introduction:** Sciatic hernias are the rarest form of pelvic floor hernias as well as an uncommon cause of sciatica. A high index of suspicion is required to make the diagnosis due to its variable clinical presentation. This is the first case describing bilateral intestinal sciatic hernia, diagnosis, and robotic surgical repair.

**Presentation of case:** A 77-year-old female with history of chronic back pain and diverticulitis presented with three weeks of abdominal pain, radiating down her legs bilaterally. Computed tomography (CT) revealed bilateral sciatic notch hernias without evidence of bowel obstruction. Magnetic resonance imaging (MRI) confirmed compression of the sciatic nerves within the sciatic notch bilaterally. She underwent robotic bilateral retroperitoneal sciatic notch hernia repair successfully.

**Discussion:** There are several independent causes of abdominal pain and bilateral radiating leg pain. Sciatic hernias are an unusual cause of both. Aside from bowel, the hernia can involve other structures, such as the bladder, ureters, or ovaries, potentially creating drastically different clinical pictures. Laparoscopic or robotic repair have been proven superior to open surgery in the literature.

**Conclusion:** This case demonstrates that bilateral sciatic hernias can present as uncomplicated sciatica in an elderly patient, but the addition of seemingly unrelated abdominal pain should warrant further investigation. Minimally invasive robotic repair can successfully treat sciatic hernias.

## 1. Introduction

Although sciatica is a common condition in adult medicine, a sciatic hernia is an extremely rare cause. They are often difficult to diagnose and may be asymptomatic. Sciatic hernias are considered the rarest type of pelvic floor hernias, with a limited number of cases reported worldwide [1]. Its clinical presentation can vary and duration of symptoms can range from several hours to greater than 30 years [1]. We describe the successful diagnosis and robotic surgical repair in an elderly woman found to have bilateral sciatic hernias impinging her sciatic nerves. This report has been written in line with the SCARE criteria [2].

## 2. Presentation of case

A 77-year-old female with a past medical history significant for chronic lower back pain and diverticulitis presented to her physician

with 3 weeks of progressive, nonspecific left lower quadrant (LLQ) abdominal pain radiating down her anterior thighs and legs bilaterally. She denied associated trauma, fever, nausea, or vomiting, but endorsed new-onset constipation. Exam revealed an overweight woman (BMI = 26.8) whose abdominal exam was only remarkable for mild tenderness in the LLQ pain, without any obvious ventral or inguinal hernias. Originally, it was thought that her abdominal pain and radiculopathy were due to separate entities based on her medical history. Her other medical problems included depression, gastroesophageal reflux disorder (GERD), and hypercholesterolemia, all well managed medically. Her surgical history was significant for a cholecystectomy and hysterectomy performed over 15 years prior to presentation. She had vaginally delivered two children previously. Her family history is significant for colon cancer in her daughter but she herself was up to date with colonoscopy screenings. She was a former smoker but had quit several years prior to presentation.

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A CT of the abdomen and pelvis revealed mid-sigmoid colon adhered to the left posterior pelvic wall, partially protruding into the greater sciatic notch. A small right-sided sciatic notch hernia involving small intestine was also noted. There were no signs of bowel obstruction, free intraperitoneal gas, or pericolonic fat stranding. Follow-up MRI confirmed bilateral sciatic notch hernias slightly compressing both sciatic nerves, without significant changes in nerve enhancement (Figs. 1, 2). An MRI of the spine revealed mild degenerative changes without evidence of disc herniation or nerve compression. With the patient lying on her stomach and coughing, bulges were felt bilaterally in the areas of the sciatic notches. This indicated that the patient's symptoms were most likely caused by the sciatic hernias and surgical intervention was agreed upon. She was referred to a general surgeon for surgical repair.

The patient consented to undergo robotic bilateral retroperitoneal sciatic notch hernia repair. An initial supraumbilical vertical incision was made to the linea alba, where no intra-abdominal abnormalities were visualized. Then 8 mm robotic trocar ports were placed in the right upper quadrant and right lower quadrant, followed by placement of an assist port in the left mid-abdomen. The patient was then placed in Trendelenburg position with her left side down, and the robot was docked on the three trocar sites. The right sciatic hernia was already reduced. An incision was made at the peritoneum medial to the right external iliac artery, and extended inferomedially until access into the retroperitoneum of the right pelvis was obtained. The retroperitoneal space was then extended medially with care not to injure the ureter. The patient was transitioned to right-side-down as the left hernia was approached. The sigmoid colon was attached to the pelvic sidewall and this was brought down. Another incision was created at the most inferior point of the white line of Toldt, allowing entry in the retroperitoneum on the left pelvis. The total space created in the retroperitoneum measured to be 4x6cm and a Ventralight coated mesh was cut roughly to size then placed in the cavity. The peritoneum was then closed while ensuring the mesh remained flat during. On the right side, another mesh of similar size was placed into the operative site to cover the sciatic hernias. Neuro-monitoring was performed throughout the procedure to ensure the sciatic nerve remained intact (Figs. 3-5).

Approximately 3 weeks post-op, that patient stated that her lower back and pelvic pain was completely gone. Approximately a year and a half after her surgery, she underwent a successful incisional hernia repair at one port site and remains symptoms free. She is happy with her

results and the care she has received. Although her sciatic hernias were small in size, the lack of other areas of nerve compression on imaging and resolution of sciatica-like symptoms post-operatively strongly support that these were the cause of her radicular symptoms.

### 3. Discussion

Sciatic hernia is defined as a protrusion of the peritoneal sac and its contents through either the greater or lesser sciatic foramen [1]. It can present with nonspecific abdominopelvic pain, intestinal obstruction, gluteal abscess formation, or as an asymptomatic, reducible mass in the area of the sciatic notch [1,3,4]. Small sciatic hernias are often not palpable because they are covered by the gluteus maximus muscle [5]. The sciatic notch itself is located in the posterior aspect of the pelvis. The greater sciatic foramen, where the majority of sciatic notch herniates are located, is separated from the lesser sciatic foramen via the sacrospinous ligament [6]. The greater sciatic foramen is further divided into the suprapiriform and infrapiriform foramina via the piriformis muscle [6]. The sciatic nerve travels within the infrapiriform foramen of the greater sciatic foramen [6]. In our patient, herniation through the greater sciatic foramen and compression of the sciatic nerve created an unusual cause of sciatica [4,7,8].

Sciatic hernias can occur in adults and children. The majority of cases are seen in women over the age of 60 [1]. Women are at greater risk because they have wider pelvic bones and sciatic foramen, with the pelvis widening with age [9].

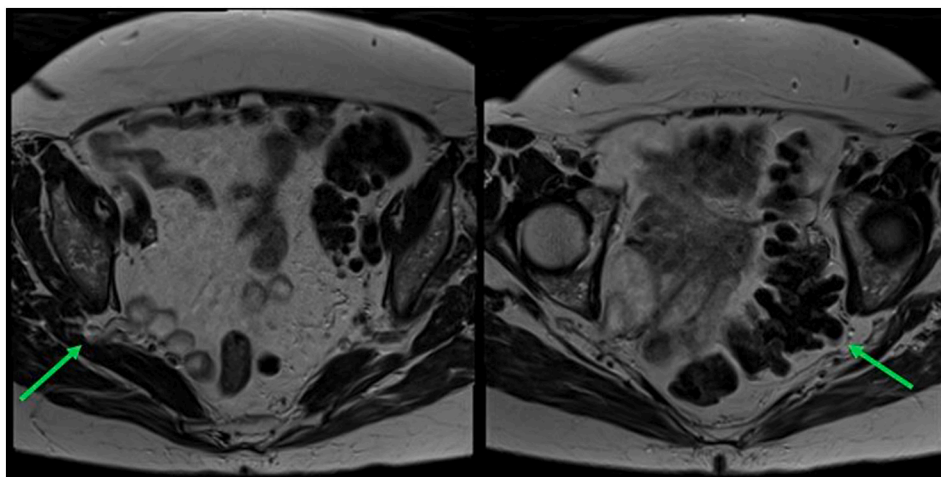
The exact cause for sciatic hernias has not been extensively studied. The risk of developing a sciatic hernia in women is increased with age, multiparity, and chronic illnesses that lead to persistent increases in intra-abdominal pressure, such as coughing or vomiting [9]. Because 20% of cases are reported in children younger than 6 years old, there have been theories that congenital defects related to the piriformis muscle or pelvic bone development can cause sciatic hernias [1,9,10]. However, the anatomy of the sciatic region is complex, involving many bony borders, muscles, ligaments, and neurovascular bundles, indicating that there may be many different mechanisms in the formation of a sciatic hernia [1].

The clinical symptoms of a sciatic hernia can vary depending on the structure that is entrapped in the sciatic notch, potentially consisting of various structures including ovaries, ureters, bladder, small and large intestine [1,3-13]. However, approximately half of patients complain of non-specific abdominal and pelvic pain and only one-third have a mass appreciated on physical exam [3]. Feeling for a small hernia in the location of the sciatic notch may not be intuitive in a patient presenting with nonspecific complaints. Similar to our patient, the only indication to palpate for the bilateral sciatic hernias was their presence on imaging. There have been cases of large visible sciatic hernias [3,8]. In the absence of strangulation, the mass is reducible and audible bowel sounds have been reported [7,8]. If the ureter is involved, patient can develop associated hydronephrosis and hydroureter, causing obstructive renal disease [1,11,12]. Involvement of the urinary bladder has been associated with increasing abdominal pain, urinary urgency, and inability to fully void, especially after bouts of coughing [11]. Herniation of the ovary or fallopian tube has been shown to cause chronic pelvic pain syndrome in females [9]. Strangulation of herniated intestinal bowel can cause an intestinal obstruction and would present as a medical emergency [1,13]. Small bowel obstructions caused by sciatic hernias can present identically to other more common causes of mechanical obstruction, however concomitant pelvic and gluteal pain or swelling can indicate sciatic hernia [7,13]. Entrapment of the sciatic nerve within the greater sciatic foramen can also cause signs of sciatica [4] and radiculopathy, as seen in our patient. Due to the commonality of sciatica secondary to disc herniation and other benign conditions, it can be difficult to remember sciatic hernia as a component of the differential.

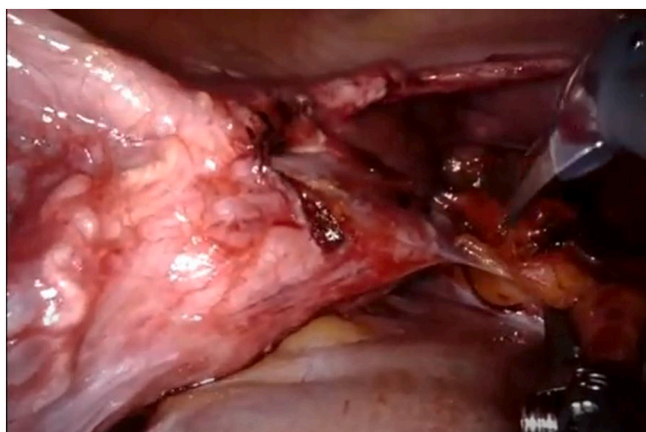
Due to the varying clinical presentations, diagnosis of sciatic hernia



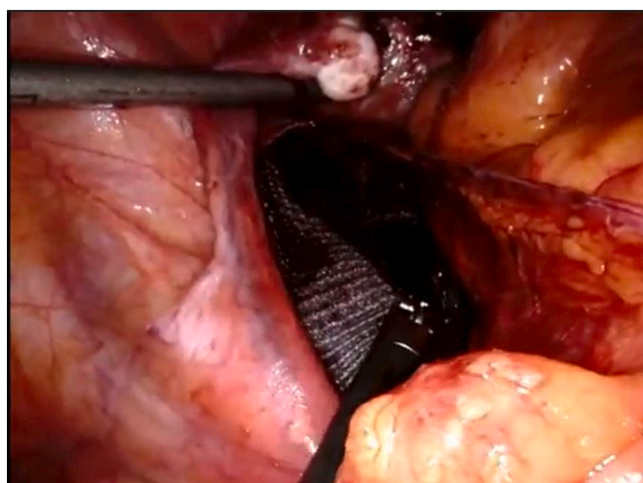
Fig. 1. CT abdomen and pelvis without contrast depicting bilateral sciatic hernias (dotted arrows).



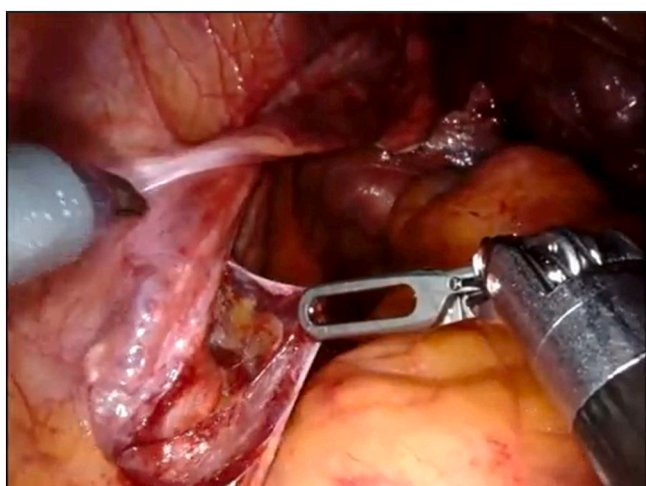
**Fig. 2.** MRI abdomen and pelvis demonstrating compression of sciatic nerves by sciatic hernias bilaterally (green arrows). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)



**Fig. 3.** Intraoperative image depicting site of left sciatic hernia with adhered sigmoid colon visualized at bottom of image.



**Fig. 5.** Intraoperative image of mesh placement.



**Fig. 4.** Intraoperative image demonstrating entrance into retroperitoneum.

requires confirmation on imaging [8]. Ultrasonography and CT scan are the imaging modalities most commonly used to diagnose sciatic hernia [4]. Ultrasound is the preferred imaging modality when congenital

sciatic hernias are suspected and a Color Doppler study can be useful in studying the viability of herniated bowel [4,13]. MRI is the modality of choice to evaluate the sciatic nerve in cases of sciatica and can highlight changes in the nerve due to chronic compression [4].

The mainstay treatment of sciatic hernias, regardless of incarceration, is surgical reduction and repair because the risk of strangulation is high [1,4,5]. A notable exception is when the ureter is the structure involved, which has been repaired solely with stent placements [11,12]. With intestinal involvement, there have been reports of transabdominal and transgluteal operative approaches via laparoscopic repair [14]. A transperitoneal repair should be performed in cases of bowel obstruction [5]. There have been few cases reported of an open approach through the gluteus maximus muscle, however this is associated with significant risk of neurovascular damage. Furthermore, minimally invasive approaches have proven to be successful with less risk of iatrogenic injury [1]. The hernia defect can be repaired with a mesh, non-absorbable sutures, and reinforced with a peritoneal flap or omentum [5,13–15]. The first robot-assisted sciatica hernia repair was done in 2011 successfully [5], and our patient represents another successful case.

#### 4. Conclusion

In summary, a high index of suspicion is required to make the



diagnosis of sciatic hernia, especially in patients with vague complaints and initially unremarkable physical exam. It should be included in the differential in an elderly woman who develops acute bilateral sciatica without a history of trauma, especially with concomitant pelvic and abdominal pain. Sciatica is an infrequent surgical emergency but sciatic hernias are due to the high risk of bowel incarceration and in prevention of permanent degeneration of the nerves.

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#### Research registration

Not applicable.

#### Guarantor

Narinder Maheshwari, MD.

#### ORCID iD authorship contribution statement

**Francine Zeng:** Conceptualization, Data collection, Data analysis, Writing-Original draft preparation.

**Narinder Maheshwari:** Conceptualization, Supervision, Project

administration, Funding acquisition.

**Brian Shames:** Investigation, Writing-review and editing.

**Elizabeth Appel:** Investigation, Writing-review and editing.

**Niranjan Varalakshmi:** Review and proof reading of the article.

**Eric Mortensen:** Proof reading of the article

#### Declaration of competing interest

No authors have any conflicts of interest in this case report.

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