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CASE REPORT – OPEN ACCESS

A Giant Pelvic Schwannoma Resected Without Blood Transfusion Following Endovascular Embolization

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ABSTRACT

Background: Sporadic tumors called pelvic schwannomas are typically not diagnosed until they are large enough to squeeze nearby organs. Since the radiological findings are vague, a histopathological examination is necessary for the final diagnosis. The basis of treatment for these tumors is surgical resection, which is difficult due to their large size and retroperitoneal origin.

Case Report: In this article, a case study of a 25-year-old male who underwent two-stage management for an incidental 15 cm pelvic mass is given. The lump was first endovascularly embolized in the patient before being completely removed without any complications. The patient did not need a blood transfusion, and the postoperative phase went smoothly. Additionally, at 4 months following surgery, the control CT scan revealed no signs of recurrence.

Conclusion: Patients with hypervascular pelvic tumors benefit from preoperative embolization, which enables a less bloody surgical resection.

Keywords: Schwannoma, pelvic mass, treatment, surgery, embolization

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INTRODUCTION

Schwannomas make up about 5% of all benign soft-tissue neoplasms, and only 1%–3% of all of them are detected in the pelvis (1, 2). The hypogastric plexus and sacral nerve are the primary sources of pelvic schwannomas (3, 4). Most of them are benign; however, they raise the possibility of malignant change in those with type 1 neurofibromatosis (5, 6). Further complicating and prolonging the diagnosis and treatment is the lack of pathognomonic clinical or radiological signs for pelvic schwannomas (7). Surgical excision is the preferred method of treatment by which the diagnosis can be definitively established or excluded (3). Herein, we provide a case of large pelvic schwannoma that underwent uneventful radical resection after endovascular embolization in view of the pertinent literature.

CASE REPORT

A healthy 25-year-old man was admitted because of a giant pelvic mass with a typical delayed symptom. The cause for his initial admission to another hospital 3 months prior was his elevated blood pressure. A renal ultrasound ordered to determine the etiology for hypertension discovered an inadvertent massive solid pelvic mass with mild bilateral hydronephrosis. He underwent bilateral percutaneous nephrostomy to restore his decreased renal function. The MRI examination performed therein revealed a heterogeneous encapsulated 15×10×10.5 cm pelvic mass arising from the right-sided upper sacral foramina displacing and compressing the bladder, right common and external iliac artery, and vein as well as the rectosigmoid colon (Fig. 1a–d). Pathological evaluation of the biopsy taken during the laparotomy at the second hospital was consistent with schwannoma. However, the operation had to be stopped because of the significant danger of major intraoperative bleeding and procedure-related complications of pelvic dissection. The patient was eventually hospitalized to our hospital with the findings of anemia and minor renal insufficiency. During physical examination, a complicated, immovable mass with a smooth surface may be felt in the suprapubic area. There was no symptom indicative of pelvic vascular compression such as swelling or edema of the lower extremities. Given the enormous size and high mass vascularity, surgical removal following preoperative embolization was planned, informing the patient of the risk of either embolization or surgery.

Abdominal aortography was first carried out via the right femoral arterial route to determine the embolization plan, showing a slight tumoral blush within the pelvis. Bilateral selective internal iliac arteriograms discovered a tumor primarily fed by the right internal iliac artery (IIA) without a venous shunt. After its blockage with detachable coils, a second angiogram revealed the reflux making the median sacral artery visible. Then, this was selectively catheterized and embolized using microspheres (Embosphere Microspheres; Merit Medical, Utah, USA),

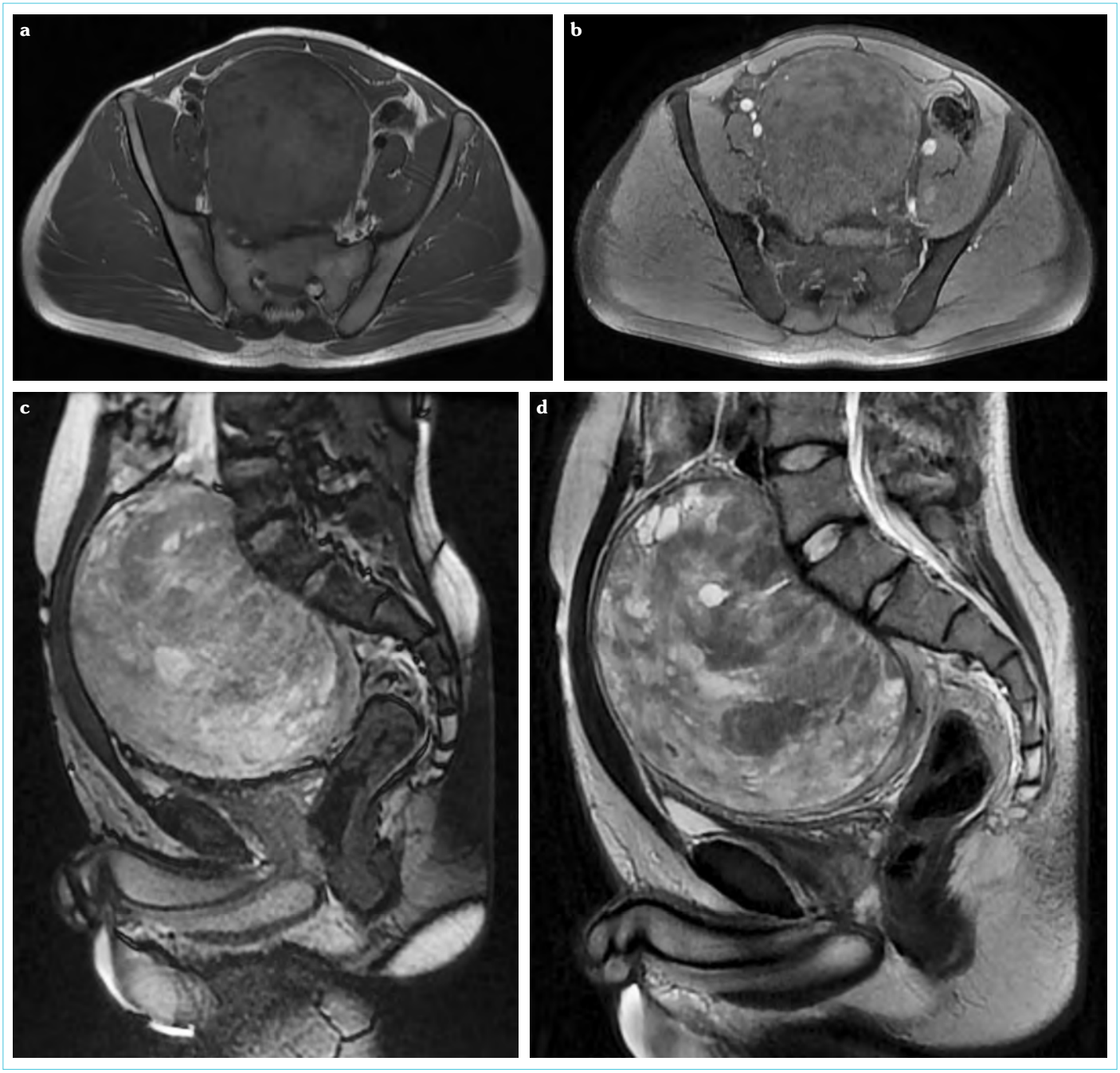

Figure 1. Preoperative MRI characteristics of the pelvic tumor. (a) The T1-weighted axial image shows an expansile mass filling the entire pelvis displacing the surrounding structures. The tumor is connected to the upper sacral foramina on the right side. (b, c) Axial and sagittal planes of T1-weighted contrast-enhanced fat-saturated images of the pelvis demonstrating heterogeneous contrast enhancement within the tumor. (d) The T2-weighted sagittal image exhibits the exponential development of the mass outward the pelvis. Observe the huge areas of cystic/necrotic degeneration are dispersed randomly throughout the tumor

300–500 microns in size, following proximal coil embolization of its branch supplying the rectum to allow collateral circulation to form. The embolization was completed by injecting 1 mL of a mixture of monomeric n-butyl-2-cyanoacrylate glue/iodized oil (Histoacryl; Braun, Tuttlingen, Germany/Lipiodol; Guerbet, Villepinte, France) at a 1:8 ratio. The final angiogram showed complete tumoral devascularization (Fig. 2a–d). The post-embolization course was uneventful, except for the right-sided gluteal pain due to ischemia, which was alleviated with analgesic therapy. Although the blood creatinine level elevated up to 1.78 mg/dl from a baseline level of 1.53 mg/dl, this increase was not sufficient to confirm contrast-induced nephropathy. Two weeks later, the patient underwent open surgery performed by a group including general surgeons, urologists, and vascular surgeons. Beforehand, double J stents were inserted in both ureters. After having uncovered the mass encompassing the whole pelvis, displacing the bladder, semi-

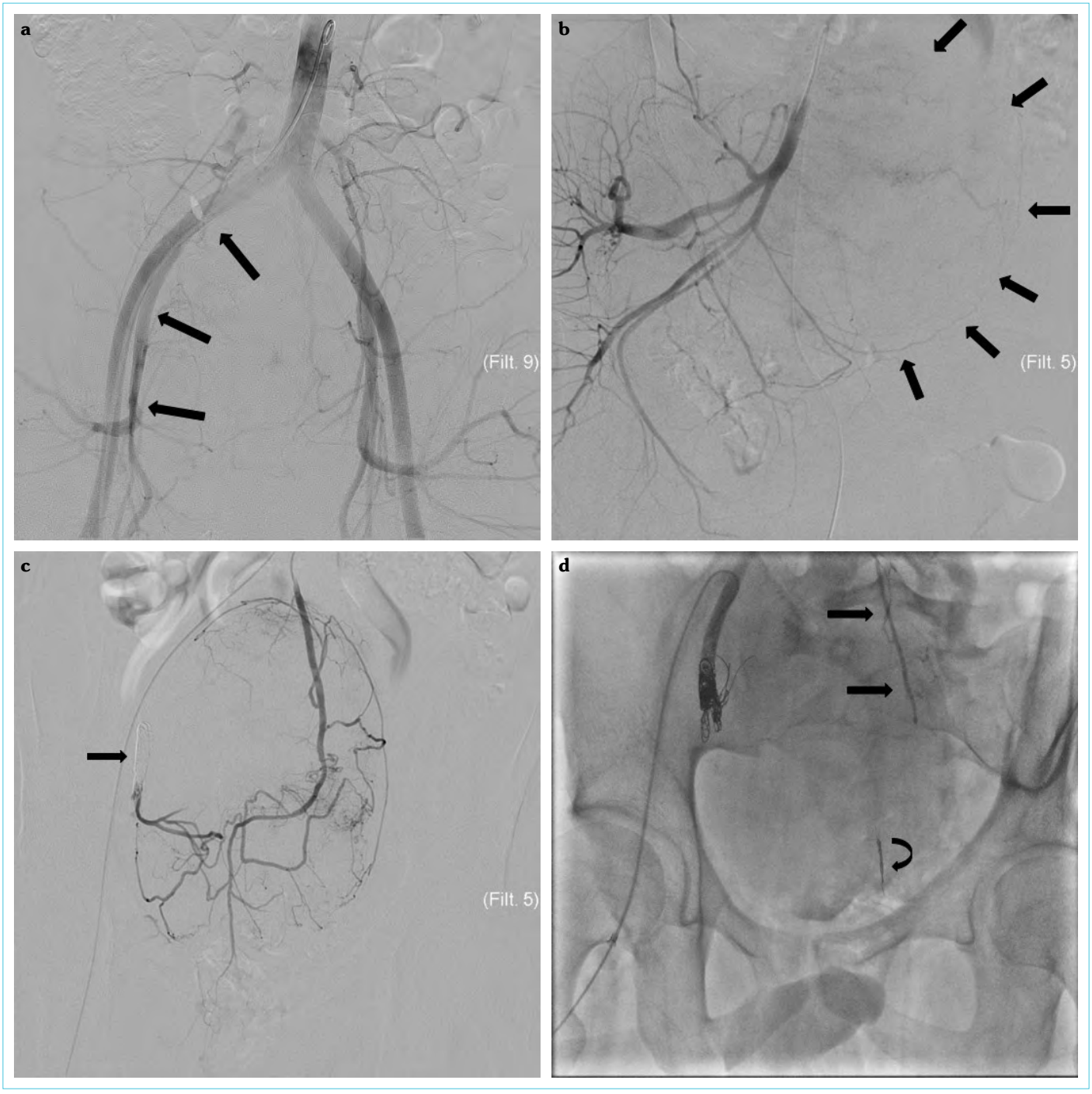

Figure 2. Digital subtraction angiography images obtained during the embolization operation. (a) The nonselective abdominal aortogram shows a slight tumoral blush within the pelvis. The right iliac arteries are displaced laterally and narrowed by the mass (arrows). (b) The selective right internal iliac artery angiogram shows uneven contrast uptake within the tumor (arrows). (c) The selective median sacral artery angiogram clearly depicts the vasculature of the egg-shaped ostrich mass. Keep in mind the indwelling coils blocking the right IIA at its initial branch (arrow). (d) The last angiogram reveals complete devascularization of the tumor. Note the glue cast filing the proximal median sacral artery (straight arrows) and the indwelling coils inside the rectal branch (curved arrow)

nal vesicles, and rectosigmoid colon, the appendix attached to the tumor was removed firstly. Since the rectosigmoid colon was in close contact with the tumor, a low anterior resection of the rectum was done to allow dissection. The primary feeder of the tumor, the right IIA, was ligated together with the adjacent vein, following the removal of the previously inserted coils. The mass was freed of the surrounding soft tissues by a combination of blunt and sharp dissection and removed from the anterior aspect of the sacrum as it emerged through the second sacral foramen (Fig. 3). An end-to-end colorectal anastomosis completed the surgery.

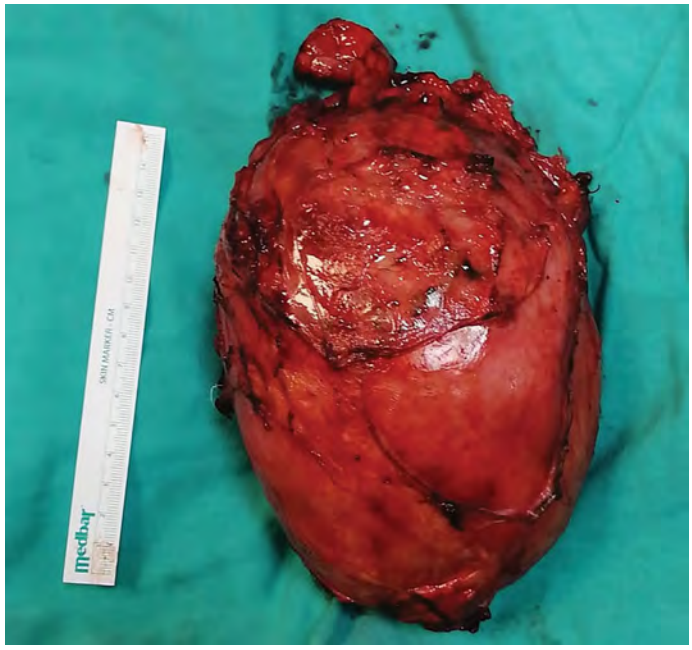

Figure 3. Gross pathological specimen

The histopathological analysis discovered a 15×11.5×8.8 cm solid mass composed of spindle cells grouped in high and low cellular regions with a thick fibrous capsule. There were numerous spots of necrosis, hyaline degeneration, and bleeding. A few unusual cells were found. Histological staining was strongly positive for S-100 but negative for CD-34.

The patient experienced no complications during the postoperative phase, and no blood transfusion was necessary. His kidney function returned to normal, and he was released 7 days after the surgery with an analgesic prescription for pain. Four-month follow-up CT showed no aberrant findings, apart from a small fluid accumulation at the resection site. Although his postoperative gluteal pain eventually subsided, the patient experienced numbness on the outside of his right ankle, most likely from nerve damage sustained during the procedure. Erectile dysfunction, a potential consequence brought on by the closure of IIAs, was not observed during follow-up.

DISCUSSION

Interventional radiologists are sometimes requested to embolize tumors which cause bleeding and are slated for excision. However, schwannomas are an extremely uncommon type of tumor that must be embolized. Our case is a typical illustration of those sufferers whose diagnosis delayed due to the insidious growing pattern of similar tumors, which typically do not cause any complaint unless they reach a considerable size to compress nearby structures (1–3). In fact, the majority of them are discovered by chance during imaging done for various reasons among those between 20 and 40 (2). Since they can mimic several etiologies, including fibrosarcoma, liposarcoma, ganglioneuroma, hydatid cyst, hematoma, and connective tissue diseases, making a differential diagnosis can be difficult (3, 6). Therefore, core needle biopsy, rather than fine needle aspiration, is advised for a definitive diagnosis of schwannomas when the imaging findings are inconclusive (2). Typical histological characteristics of schwannomas include a composition of hyper- (Antoni A) and hypocellular (Antoni B) areas of spindle cells that express S-100 protein (2), as seen in this example.

Surgical excision is the preferred treatment for pelvic schwannomas (3). However, the serious risk in such surgeries is the damage to nearby structures, such as the pelvic viscera, ureters, pertinent sacral nerves, and iliac vessels. Especially in the case of an iliac artery injury, a massive blood loss is unavoidable, which may leave no choice but to stop the operation too soon. Additionally, bleeding from the sacral vessels due to the dissection of a tumor from where it attaches to the presacral fascia may lead to life-threatening hemorrhage. In the event of significant bleeding, there are not many options available, except from packing the pelvis and administering huge transfusions. Therefore, it would make more sense to act before a bleeding turns into an emergency. Preoperative embolization has proven to be a helpful adjunct in treating patients with hypervascular tumors of the head, neck, and spinal column (8). Furthermore, preoperative embolization can also speed up the ability to resect a tumor totally by shrinking and softening it, thereby reducing the procedural time. However, interestingly, the literature analysis revealed us a number of reports presenting the use of preoperative embolization for pelvic schwannomas, most probably due to their low occurrence (9, 10).

CONCLUSION

In conclusion, even though it is large and hypervascular, surgical resection of a pelvic tumor can be less bloody and difficult with the administration of preoperative embolization. Additionally, it is important to remember that initial angiographic assessment has a significant impact on procedural effectiveness and safety. Another point is that one should be familiar with various types of embolic agents to enable a secure and efficient devascularization.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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Conflict of Interest: The authors have no conflict of interest to declare.

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