Laparoscopic excision of a schwannoma arising in the psoas muscle

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Abstract

Schwannoma occurring in the psoas muscle is rare. We report a 49-year-old male who presented to the orthopaedic oncosurgery team with persistent lower back pain radiating to the right lower limb following a fall on the back a few months ago. Magnetic resonance imaging revealed a well-defined lesion in the right psoas muscle at the level of third lumbar vertebra (L3). He underwent a laparoscopic excision of this mass using one 10 mm and two 5 mm ports. Intraoperative frozen section after a complete excision showed this to be a benign schwannoma. He was discharged the day after surgery. His symptoms gradually reduced over a period of time and he remains well 3 years after surgery. This case highlights the feasibility and safety of minimally invasive treatment of this rare tumour.

Keywords: Excision, laparoscopic, psoas muscle, schwannoma

INTRODUCTION

Schwannomas are uncommon benign nerve sheath tumours which occur either singly or in association with neurofibromatosis. These are slow-growing and rarely undergo malignant change. Schwannomas are usually found in peripheral nerve fibres in the extremities, head and neck.[1] Around 0.7% to 3% of schwannomas are retroperitoneal,[2] they may occur in proximity to major organs, arise from a named nerve or rarely manifest within the psoas muscle. We describe a patient who underwent laparoscopic excision of a schwannoma embedded in the right psoas muscle.

CASE REPORT

A 49-year-old male presented to the orthopaedic oncosurgeon (MA) with persistent low back pain radiating to the right lower limb following a fall on the back he had sustained a few months earlier. Physical examination revealed mild lower lumbar paraspinal tenderness, but muscle strength, sensations and reflexes in the lower limbs were normal. Magnetic resonance imaging showed a diffuse bulge of L3–L4 disc indenting thecal sac (considered not to be responsible for his symptoms) and picked up a well-defined 3 cm × 2 cm × 2 cm lesion in the right psoas muscle at the level of third lumbar vertebra with a ‘target’ sign on T2 sequence [Figure 1]. Haematological and biochemical investigations were normal.

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A laparoscopic excision with intraoperative frozen section examination was planned. The patient was positioned in the left lateral decubitus position and a 10 mm trocar for the telescope was placed in the suprapubic midline using an open technique. Two 5 mm trocars were placed on either side of the primary trocar. The right colon and hepatic flexure were mobilised using an ultrasonic shears (Harmonic Scalpel, Ethicon, Mumbai, India). This exposed the right psoas muscle and allowed ready identification of the tumour as a bulge. The mobilised right colon was retracted with a flexible retractor. A nerve running anterior to the tumour was dissected free and safeguarded by encircling it with a vascular loop [Figure 2a]. The tumour was excised with a cuff of healthy muscle all around [Figure 2b]. Frozen section revealed it to be a benign schwannoma and the margins were uninvolved. The specimen was extracted via a minimally extended 10 mm trocar site in a plastic bag. The operative time was 45 min and blood loss <10 ml. He required minimal postoperative analgesia and was discharged the day after surgery. Final histopathology confirmed a benign schwannoma [Figure 3] with areas of degeneration and immunohistochemistry found the tumour cells to express S-100. The patient's symptoms gradually reduced over a period of time and he remains well 3 years later.

DISCUSSION

The common conditions involving the iliopsoas compartment include abscesses, haematomas and neoplasms such as liposarcoma, fibrosarcoma, leiomyosarcoma or haemangiopericytoma.[3] Only around 4% of the retroperitoneal tumours are schwannomas.[4] Psoas muscle is a rare site for a schwannoma. Patients with retroperitoneal or psoas schwannomas may present with pain in the abdomen, back or limb, but mostly the symptoms are nonspecific. Uncommon nature of these tumours coupled with the absence of specific symptoms often delays the diagnosis.

Although imaging investigations diagnose the ilio-psoas masses accurately, differentiation between infective and neoplastic pathology is often difficult. In our patient, too, imaging did not suggest a specific diagnosis for the mass seen within the psoas muscle. The optimal diagnostic and therapeutic option for the most lesions within the psoas considered neoplastic is surgical excision.

Schwannomas in the retroperitoneum require individualised surgical approach. The large retroperitoneal schwannomas abutting vital organs have been traditionally dealt with by open surgery. However, more recently laparoscopic resection of schwannomas from locations such as pelvis,[5] retro-pancreatic area[6] and near the IVC[7] have
been described. The main technical challenge in resecting schwannomas involving a named nerve is preservation of the nerve which may either be flattened along the capsule at the periphery or traversing the tumour. Ningshu et al. managed six schwannomas arising from obturator nerve laparoscopically, including enucleation of the tumour in two patients. Two of these patients developed permanent neurological deficit and two had transient neuropathy which resolved in 8 weeks. Freitas et al. performed a retroperitoneoscopic excision of a 2-cm schwannoma arising in the ilio-inguinal nerve. However, as this approach provides a restricted operative field, most general surgeons, including ourselves, are more comfortable with the laparoscopic (transperitoneal) approach.

Apart from the case presented here, the only other report of a schwannoma protruding from the psoas muscle treated laparoscopically came from Seo et al. As was done in our patient, excision with a 1 cm margin of the muscle is an appropriate treatment for such tumours. Minimally invasive surgery offers the benefits of easy access to these deep-seated lesions and excellent magnification. Although the likelihood of a malignancy in these tumours is negligible, an intraoperative frozen section is a prudent precaution. This will ensure a negative margin even if the tumour is malignant.

CONCLUSION

Laparoscopic resection of the rare tumour, psoas schwannoma, is safe, feasible and allows the patient to recover rapidly.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given his consent for images and other clinical information to be reported in the journal. The guardian understands that names and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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