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Case Report

Debilitating genitofemoral neuralgia due to nerve entrapment after appendectomy: A case report ☆

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ABSTRACT

Genitofemoral (GF) neuralgia refers to pain and sensory complaints in the region innervated by the GF nerve. It is a rarely reported condition, often due to iatrogenic causes following inguinal surgeries. In refractory forms, diagnostic reassessment is required to look for possible entrapment of the GF nerve. Here we describe a patient who underwent appendectomy and subsequently developed severe debilitating pain in the region of the right GF nerve. Our patient underwent a second laparoscopic surgery with clip removal, resulting in rapid recovery.

Introduction

Genitofemoral (GF) neuralgia is defined as persistent or permanent pain and paresthesia along the cutaneous region innervated by the GF nerve. Debilitating GF neuralgia following laparoscopic appendectomy has rarely been reported. In general, the incidence of inguinal nerve injury after open or laparoscopic hernia repair is on the order of 0.5%-2% [1]. The inguinal nerves are the GF nerve, the iliohypogastric nerve, and the ilioinguinal nerve. However, the exact incidence of GF neuralgia after appendectomy is not well known.

The most common etiologies of GF neuralgia reported in the literature are iatrogenic, dominated by inguinal surgeries such as hernia repair, appendectomy, ureterectomy, and nephrectomy [2]. In the past, open appendectomy scars mainly affected the femoral branch of the nerve, resulting in the formation of fibrous tissue compressing the nerve branch [2]. However, the incidence of appendectomy-related GF neuralgia has decreased with the advent of the laparoscopic approach [2]. Here we report a case of GF neuralgia after laparoscopic appendectomy following intraoperative clip placement, with a good outcome after reoperation and clip removal.

Case report

A 26-year-old male patient underwent laparoscopic appendectomy for acute appendicitis 2 months previously. Seven

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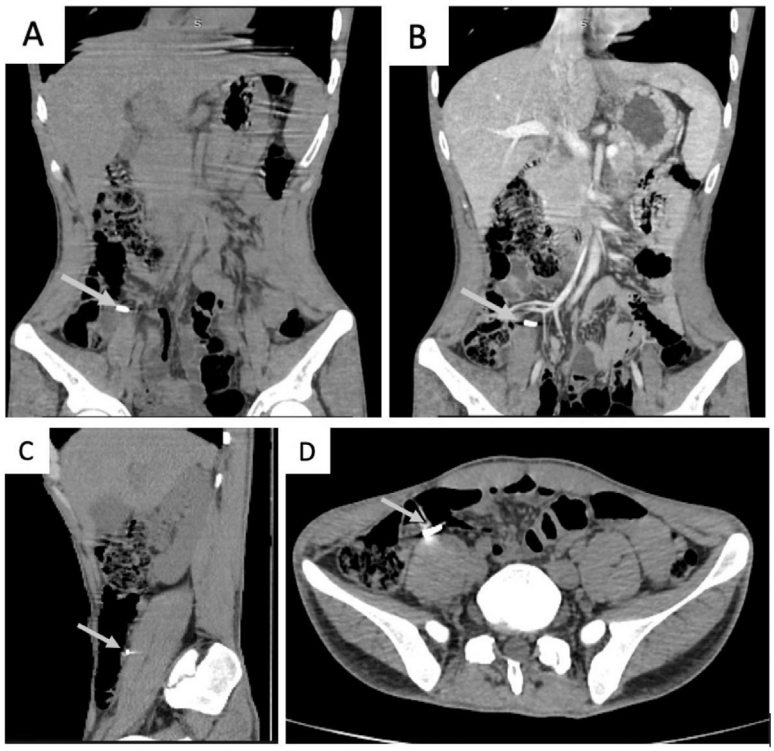

Fig. 1 – Abdominal CT scan without contrast injection (A, C and D) and with contrast injection (B) showing the clip disposition in coronal plane (A, B), sagittal plane (C), and in axial plane (D).

days later, the patient developed an acute onset of severe electrical discharge-like pain distributed over the right inguinal region, reaching the outer surface of the scrotum and the inner region of the right thigh. The pain was intense, persistent, debilitating, and refractory to first- and second-line analgesics. The distribution of neuralgic pain corresponded to the territory of the right GF nerve, and the patient had allodynia with a thigh flexion attitude. Thigh extension or abduction and walking provoked worsening pain. There were no symptoms or signs of infection or transit disorders. Clinical examination revealed a trigger point in the pubic tubercle. There was no motor deficit, and tendon reflexes were normal.

We performed an abdominal CT scan that showed no underlying lesions other than the clip used during the procedure (Fig. 1). This material appeared to be in contact with the right psoas major muscle on CT scan. Complete blood count, C-reactive protein, and glycemia were normal. Electromyography of the right femoral and saphenous nerves was unremarkable.

Given the nature and distribution of the pain, a clinical diagnosis of right GF neuralgia was made. Therefore, we decided that the patient should be reoperated because we suspected that the GF nerve might be entrapped by the clip. Endoscopic surgery was performed, and the surgeons found that the right GF nerve was attached to the clip. They were able to separate the clip from the GF nerve and then remove it. A spectacular improvement was observed the day after surgery, and the pain syndrome disappeared after 1 week.

Discussion

GF neuralgia is a poorly described condition resulting mainly from lesion of the GF nerve. This nerve is a primarily sensory type that arises from the ventral branches of the L1 and L2 lumbar plexus within the psoas major muscle. At the L3-L4 level, it emerges anterolaterally from the psoas major muscle and descends obliquely along its fascia. Before reaching the inguinal ligament, it divides into 2 branches: the femoral branch and the genital branch (Fig. 2) [2,3]. On our patient's abdominal CT scan, we observed that the clip was located anteriorly and laterally to the right psoas major muscle at the L4-L5 level (Fig. 3). This location was very close to the path of the right GF nerve, explaining possible nerve irritation by this material.

The femoral branch of the GF nerve is a purely sensory branch that passes under the inguinal ligament to provide sensation to a small area of the anterior and upper part of the thigh. The genital branch crosses the inguinal canal and provides motor innervation of the cremaster muscle and sensory innervation of the scrotum, spermatic cord, upper, and medial part of the thigh in males, whereas in females this branch innervates the pubis and labia majora [2,3]. The topography of the pain in our patient corresponded to the territory innervated by the GF nerve before its bifurcation.

Most GF nerve injuries occur during hernia repair and pelvic surgery, such as nephrectomy, appendectomy, ureterectomy, and blunt trauma [4]. Postoperative GF neuralgia may result from neuroma formation, inflammation, nerve entrap-

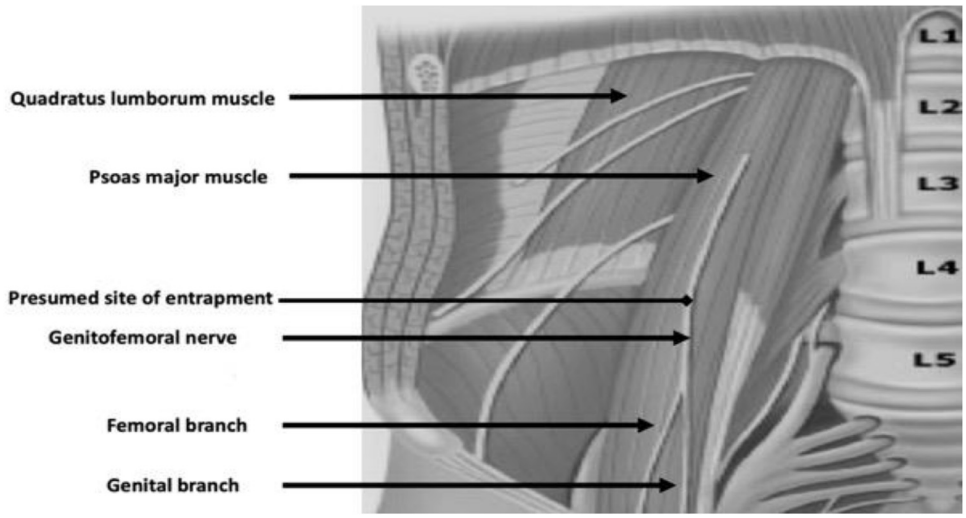

Fig. 2 – The anatomical course of the right genitofemoral nerve, including the presumed location of the nerve entrapment.

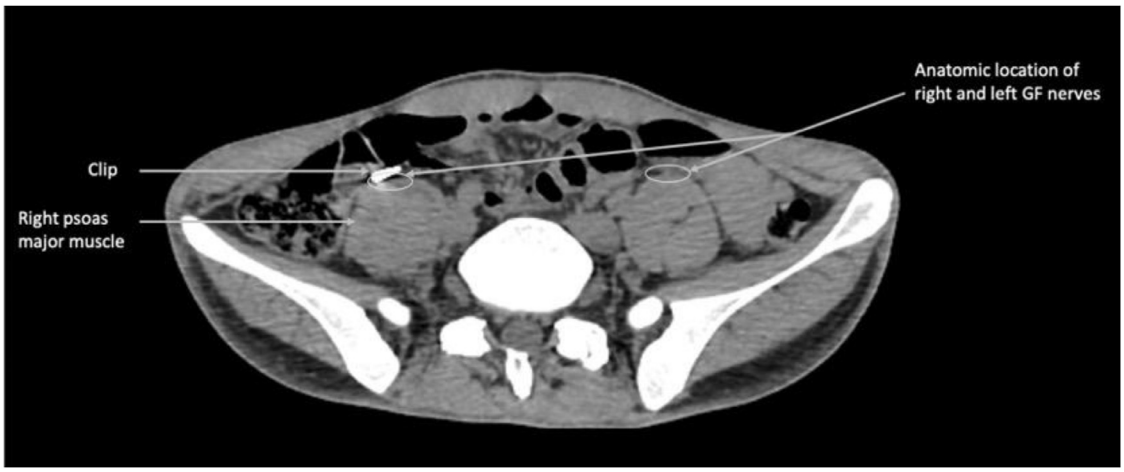

Fig. 3 – Axial view of the abdominal CT scan showing the location of the clip close to the course of the right GF nerve in our patient.

ment, or deafferentation at the surgical site [4]. There have also been reported cases of patients who underwent appendectomy and developed GF neuralgia secondary to an abscess of the psoas major and Pott's disease [2]. In our case, the absence of fever, normal C-reactive protein and complete blood count levels, and the absence of radiological signs of infection on the abdominal CT scan allowed us to rule out an infectious origin. Electrodiagnostic studies cannot directly test the GF nerve but may be valuable in ruling out high lumbar radiculopathy or plexopathy.

Generally, clips are used to secure the appendicular stump during appendectomy to reduce perioperative complications [5]. In our patient, this material was the cause of GF neuralgia. To the best of our knowledge, there is no comparable observation in the literature of GF nerve entrapment by a clip after appendectomy. Ramdhani et al. [6] reported the involvement of a clip in intractable GF neuralgia in a 50-year-old man who underwent a live transperitoneal laparoscopic donor nephrectomy of his left kidney. In our patient, unlike Ramdhani's case where the nerve was cut in addition to clip removal, we opted to remove the clip without cutting the nerve [6]. Complete remission was noted in our patient after clip removal, supporting the diagnosis of GF nerve entrapment.

The initial treatment of inguinal neuralgia is based on the use of nonsteroidal anti-inflammatory drugs and medicines for neuropathic pain [3]. In addition, chronic pain in GF neuralgia can be treated by various methods, including steroid injections, nerve stimulators, neurectomy, pain stimulators, nerve blocks, and botulinum toxin [7–9]. Forms that are resistant to analgesic treatment and require invasive methods to manage the pain syndrome should be re-evaluated, as demonstrated in this study.

Conclusion

Debilitating GF neuralgia is rarely reported after inguinal surgery, and there are many ways to treat this pain syndrome.

Patients with suspected entrapment of the GF nerve should be examined along the course of the nerve from the nerve root, especially if there is no obvious source of surgical or traumatic injury. If a clip has been placed along the GF nerve at the time of appendectomy, reintervention, and clip removal should be recommended in the event of refractory GF neuralgia with suspected involvement of this material.

Patient consent

The authors obtained a written consent for the submission and publication of this case report including images.

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