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Meralgia paresthetica after “all-in-one” appendectomy

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ABSTRACT

Minimally invasive approaches have become standard for pediatric appendectomy. The laparoscopic assisted single port approach, also known as the “all-in-one” appendectomy, has gained recent popularity [1]. We describe a child who suffered meralgia paresthetica (a neuropathy in the distribution of the lateral femoral cutaneous nerve) after a laparoscopic assisted single port appendectomy, perhaps secondary to mobilization of the cecum.

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1. Case report

A 12 year old female presented to the emergency room 6 days after undergoing an uneventful “all-in-one” appendectomy for uncomplicated appendicitis, a diagnosis confirmed by histopathology. The patient complained after discharge of persistent pain in the right lower quadrant associated with nausea. She also was suffering numbness over the anterior and lateral right thigh. The patient's mother stated that her daughter's gait had been limited by pain when she bore weight on the right leg. The patient denied fevers, sick contacts, and vomiting. She had been tolerating a regular diet, passing flatus, and having bowel movements. She had been generally well prior to the episode of appendicitis.

Initial abdominal exam was normal except for mild tenderness in the right lower quadrant without signs of peritonitis. The single umbilical trocar site was healing without infection. The patient demonstrated limited right lower extremity strength on flexion and decreased sensation to light touch over the lateral and anterior right thigh.

Laboratory studies revealed a normal complete blood count, basic metabolic panel and urinalysis. Abdominal and hip

ultrasounds were normal, with no evidence of intra-abdominal abscess or hip joint effusion, respectively. An abdomen and pelvis CT scan was also negative. An MRI of the lumbosacral plexus and pelvis revealed post surgical inflammation with no collection.

Based on the clinical findings, meralgia paresthetica was suspected. A lateral femoral cutaneous nerve block was performed using 10 cc of .25% ropivacaine by the anesthesia pain service with pain relief for 12–16 h. The pain and paresthesia then returned. The patient was evaluated and treated by physical therapy throughout her hospital course and was able to ambulate independently with a walker at discharge. Two months later, the patient reported the ability to ambulate independently but continued to experience groin and hip pain, subjective right leg weakness and right lateral lower thigh numbness despite twice week therapy. At six months, the sensory deficit in the anterolateral thigh was improving and there were no motor findings.

2. Discussion

Meralgia paresthetica (MP) is a mononeuropathy of the lateral femoral cutaneous nerve, a sensory branch of the lumbar plexus originating from the dorsal roots of the second and third lumbar ventral rami [1,2]. The nerve then emerges from the lateral border of the psoas major muscle and crosses the iliac muscle toward the anterior superior iliac spine (ASIS) [3]. MP has a reported incidence

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of 4.3 per 10,000 person years [4]. MP is classically caused by compression of the nerve as it passes through or under the inguinal ligament [5]. The occurrence is typically idiopathic, but can be secondary to trauma or surgical procedures, most commonly hip joint replacement and spine operations [6]. Moritz et al. demonstrated that a shorter distance between the lateral femoral cutaneous nerve and the ASIS is associated with development of MP, mostly secondary to mechanical stress [7]. MP has been reported in the literature as a rare complication of laparoscopic appendectomy, in which the lateral femoral cutaneous nerve was injured secondary to the insertion of a trocar in the right abdominal quadrant [8]. Since our patient underwent placement of a single umbilical trocar that mechanism is not pertinent to this case. We speculate that injury to the nerve did not occur in the typical location at the inguinal ligament, but occurred in the retroperitoneum during the mobilization of the cecum, a routine feature of the “all-in-one” appendectomy [9]. However, we have not found examples in the literature of meralgia paresthetica attributed to this mechanism. While obesity is a contributing factor to the development of MP, our patient had a BMI of 16.6 kg/m². Other etiologies seen in the adult population include positioning or compression by safety belt; the later may be related to seat belt trauma seen in the literature [10].

MP presents with a sensory deficit in the distribution of the lateral femoral cutaneous nerve, specifically the anterolateral aspect of the thigh and does not extend below the knee. Patients typically complain of sharp pain, numbness, burning, and even a sensation similar to a cell phone vibrating. In idiopathic cases, MP can present with the tenderness over the lateral femoral cutaneous nerve at the origin of the inguinal ligament at the anterior superior iliac spine [11]. There are no motor deficits as this nerve contains purely sensory nerve fibers.

There are various conditions that present similarly to MP, including lumbar radiculopathy, trochanteric bursitis, and primary hip disease. Patients with lumbar radiculopathy have back pain associated with reflex, motor and sensory changes. On the other hand, patients with MP do not complain of back pain and do not have motor or reflex changes. We speculate that this child's weakness was secondary to pain. In order to rule out more common pathologies, various clinical tests can also be performed to narrow the differential diagnosis. A pelvic compression test involves positioning a patient in lateral decubitus with the symptomatic side facing up. A downward force is applied and sustained to the pelvis for 45 s. Alleviation of pain is considered positive [12]. In addition, a Tinel sign may be present, which can be elicited over the lateral femoral cutaneous nerve as it passes under the inguinal ligament. Lastly, a nerve block can be utilized, which is both diagnostic and therapeutic [13].

Laboratory tests and studies can help diagnose MP. Electromyography can distinguish between lumbar radiculopathy, diabetic femoral neuropathy and MP. Plain radiographs of the back, hip and pelvis can help rule out bony disease. Blood tests like a complete blood cell count, uric acid, sedimentation rate, and antinuclear antibody testing may be performed in order to determine a primary cause.

MP can be initially treated with a short course of analgesics. If the pain and other symptoms persist, nerve-block can be employed [14]. The injection technique involves a local anesthetic at times coupled with a steroid medial to the anterior superior iliac spine, just inferior to the inguinal ligament [15]. MP can also be treated surgically when other steps fail. Neurolysis may provide relief, but has a probability of recurrence. According to one study, symptoms can recur within 1–9 months [16]. In those cases, a resection can be performed.

MP is a rare complication of laparoscopic appendectomy. This case represents the first reported case after “all-in-one” appendectomy. Because the nerve is not visible during the operation, it may be quite susceptible to injury. The diagnosis should be suspected in patients with post-operative symptoms similar to our patient. Of course, other etiologies must first be ruled out. But if suspected, a nerve block is both diagnostic and therapeutic. First-line treatment should be conservative, with neurolysis and nerve resection as options if non-surgical management fails.

Conflicts of interest statement

The authors report no conflict of interests.

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