Femoral nerve palsy secondary to traumatic pseudoaneurysm and iliakus hematoma

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Femoral nerve palsy caused by iliakus hematoma is a rare entity most often occurring in individuals receiving anticoagulation therapy, patients with blood dyscrasias such as hemophilia, and patients in whom an anterior iliak crest graft has been harvested. Fewer cases have been reported following trauma, and most of these were in teenage patients following hyperextension injuries to the hip.1,2,10,11-13 Our case illustrates an unusual source of this type of injury, a traumatic pseudoaneurysm. The management and timing of interventions in this injury are critical to prevent further bleeding of the aneurysm as well as treat the underlying nerve palsy.

Case Report

History. This 20-year-old man fell to the ground on his left side after being assaulted and losing consciousness. Approximately 1 hour after the assault, the patient began to experience a pressurelike pain over his left anterior thigh and groin. Throughout the following week, he noted increasing pain in his thigh and groin, as well as paresthesias in the groin. Throughout the following week, he noted increasing pain in his thigh and groin, as well as paresthesias in the groin. This patient presented to us 1 week after the initial injury with persistent weakness and severe pain.

Examination and Initial Treatment. The patient’s left hip flexed approximately 30°. We found Grade 3/5 weakness in the left hip flexor and Grade 0/5 weakness in the left quadriceps muscles, decreased light touch and pinprick sensations in the femoral nerve distribution (including both the anterior or femoral cutaneous nerve and the saphenous component), and an absent left patella reflex. Studies, including ultrasonography, computed tomography scanning, and MR imaging, demonstrated a large, 9.4 x 6.4 x 5.2-cm iliakus hematoma located under the fascia of the left iliakus muscle as well as a pseudoaneurysm originating from the left iliolumbar artery. The patient underwent angiographic embolization of the pseudoaneurysm followed by surgical evacuation of the hematoma. The embolization was performed before surgery to prevent any possible rebleeding from the pseudoaneurysm during evacuation of the hematoma.

Femoral nerve palsy caused by traumatic iliakus hematoma is an infrequent diagnosis often missed because of its insidious presentation. In this case, embolization of the iliolumbar artery pseudoaneurysm followed by surgical evacuation of the hematoma resulted in a nearly full recovery of the femoral nerve as of the last follow-up examination.

Key Words • femoral nerve palsy • iliakus hematoma • pseudoaneurysm

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Discussion

Anatomy of the Femoral Nerve

The femoral nerve arises from the dorsal divisions of the ventral primary rami of L2–4. It immediately gives off branches to the psoas muscle, travels through that muscle and courses through the pelvis between the psoas muscle anteromedially and the iliacus muscle posterolaterally. The femoral nerve exits the pelvis under the inguinal ligament to an iliacus hematoeurysm (Fig. 2). The left iliolumbar artery and pseudoaneurysm (Fig. 2) demonstrated a saccular arch covering the femoral nerve, iliacus muscle, and psoas muscle as they course through the pelvis between the psoas muscle anteromedially and the iliacus muscle posterolaterally. The femoral nerve exits the pelvis under the inguinal ligament to an iliacus hematoeurysm (Fig. 2), where it produces sensory innervation to the anterior thigh (via the anterior femoral cutaneous nerve) and medial leg (via the saphenous nerve), and sends off motor branches to the quadriceps and sartorius muscles.

Pathogenesis of Femoral Nerve Palsy

The pathogenesis of femoral nerve palsy is thought to derive from the anatomical location of the nerve between the psoas and iliacus muscles. Using cadavers, Goodfellow, et al., demonstrated a rigid fibrous arc covering the femoral nerve, iliacus muscle, and psoas muscle as they course through the pelvis between the psoas muscle anteromedially and the iliacus muscle posterolaterally. The femoral nerve exits the pelvis under the inguinal ligament to an iliacus hematoeurysm (Fig. 2), where it produces sensory innervation to the anterior thigh (via the anterior femoral cutaneous nerve) and medial leg (via the saphenous nerve), and sends off motor branches to the quadriceps and sartorius muscles.

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Femoral nerve palsy secondary to traumatic iliopsoas hematoma is an infrequent diagnosis often missed because of its insidious presentation. We report on our experiences in patients with iliopsoas hematoma caused by anticoagulation therapy. Both Holscher, et al., 8 and Merrick and colleagues 10 reported good recovery of nerve function following percutaneous drainage in their three patients and present this procedure as an alternative to open surgical drainage. Of note, this treatment can be only used in liquid hematomas and would not be useful in patients whose diagnosis is delayed until they already have organized hematomas.

Several studies provide descriptions of excellent results following nonsurgical treatment and claim that surgery is indicated only under certain conditions.2,3,5 Fealy and Palettta 1 reported a case of incomplete femoral nerve palsy in a young boy with a large hematoma, whose lesion was managed conservatively and who had a full nerve recovery after 6 weeks time. They conclude that nonsurgical treatment is indicated when patients are hemodynamically stable, there is no suspicion of further bleeding, and follow-up neurological examinations yield stable findings. The authors recommend decompression of the hematoma if the lesion progresses or there is evidence of neurological worsening.

In our case, we believed that surgical evacuation of the hematoma was necessary due to the completeness of the femoral nerve palsy and the lack of improvement over the 1st week postinjury. It is our opinion that surgical decompression following injury helps prevent permanent damage to the nerve and allows for a more optimal recovery of function. Surgical decompression of the hematoma was undertaken only after embolization of the iliolumbar pseudoaneurysm had been performed. We believe this was necessary to minimize the possibility of rebleeding from the aneurysm. If hematoma evacuation had taken place first, a rapid reduction of pressure on the aneurysmal wall may have resulted in uncontrollable hemorrhage from the parent artery.

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Up ultrasonography confirmed the absence of the pseudoaneurysm, and only then was the hematoma evacuated.

Patient Outcomes

Fortunately, the prognosis for a full or nearly full recovery of the nerve for patients with femoral nerve palsy secondary to traumatic iliacus hematoma is very good. In an excellent review of the literature, Tamai, et al., reported on outcomes in 24 cases found in literature in the English and Japanese languages. Of these 24 cases, 19 were treated surgically and five conservatively. In the 19 surgically treated patients a complete neurological recovery of the femoral nerve was obtained in 14 (74%). In the remaining five patients (26%), incomplete and variable recovery of the nerve was noted. Similar findings were seen in the nonsurgically treated group in which three (60%) of five patients had a complete neurological recovery and two (40%) had an incomplete recovery. The time to recovery varies from months to years, but generally some return of function is seen during the first 6 months.

Conclusions

Femoral nerve palsy secondary to traumatic iliacus hematoma is an infrequent diagnosis often missed because of its insidious presentation. Our case report details the classic history and findings of a physical examination in a typical patient with this type of condition in whom the source of bleeding was unusual. The patient underwent angiographic embolization of the pseudoaneurysm followed by surgical evacuation of the hematoma. The embolization was performed before surgery to prevent possible rebleeding from the pseudoaneurysm during evacuation of the hematoma.

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References


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