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CASE REPORT

Painful total hip replacement due to sciatic nerve entrapment in scar tissue and lipoma

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Abstract Painful total hip replacement remains a challenging problem because of the large amount of possible diagnoses. We report about a 64-year-old female patient who was misdiagnosed during 4 years as psychiatric. She suffered of excruciating left retrotrochanteric pain after the implantation of a cementless total hip replacement and revision because of recurrent hip dislocations. Walking was limited to short distances using two crutches. The work-up at this time included the usual diagnoses and remained unsuccessful. No loosening, infection or malposition of the prosthesis could be found, and she had no neurologic deficits in her operated leg. An MRI was obtained to visualize the retrotrochanteric soft tissues and showed a tight scar surrounding the sciatic nerve, which was also compressed by an adjacent lipoma. Therefore, she was reoperated on to remove the lipoma and the scar tissue around the sciatic nerve. To decrease the risk of recurrent scarring around the sciatic nerve, an adhesion barrier was applied before closure. One year after the operation, the patient has no neurologic deficit, no more pain and is able to walk unlimited distances without crutches. Scar tissue around the sciatic nerve is frequently observed during revision surgery. However, we feel that sciatic nerve entrapment by scar tissue should be a part of the differential diagnosis of painful THR. MRI may be a useful tool to achieve this diagnosis.

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Introduction

Total hip replacement (THR) is one of the most common and successful orthopedic procedures. Despite its success for treatment of osteoarthritis of the hip, some patients may present with ongoing or recurrent pain after the operation. The painful THR is a very challenging problem in orthopedic surgery to evaluate and to treat.

Several diagnostic procedures have been recommended to exclude as well intrinsic as extrinsic causes [1–3] for pain. These causes open a wide range of diagnoses which has been described in the literature previously [4, 5].

This report describes an entrapment of the sciatic nerve without neurologic deficits due to scar tissue surrounding the sciatic nerve and additional compression by a benign lipoma, causing a painful total hip replacement. The work-up, including MRI, of the hip is presented.

The patient was informed that data concerning this case would be submitted for publication.

Case report

A 64-year-old female patient presented to the senior author's office with excruciating left buttock pain 4 years after the implantation of a custom-made total hip replacement (Symbios SA, CH-1400 Yverdon) for hip osteoarthritis secondary to a coxa profunda and re-operation 7 months later for recurrent hip dislocations. Since this second operation, she complained about severe pain behind the greater trochanter and in the buttock. Pain was

exacerbated when standing or walking as well as with weather changes and only slightly decreased when sitting. When laying, she was almost pain free. The patient was unable to walk without crutches due to pain. No symptoms corresponding to vascular or neurologic claudication were found.

During the 4 years since the operation, the patient was seen by several orthopedic surgeons without a diagnosis and without success of multiple treatments including vitamin B, gabapentin, non-steroidal and antidepressant drugs. Finally, she was referred to a psychiatrist as no underlying cause for pain could be found.

At this stage, the patient was referred to the senior author's practice for evaluation. At clinical examination, the surgical scar from a postero-lateral approach (Moore) was placed ~6 cm behind the greater trochanter. No inflammatory signs of the surrounding soft tissues were found. The retrotrochanteric area as well as the buttock was extremely painful to palpation. The mobility of the hip was symmetric, except a painful adduction limited to 10°. The operated left lower extremity was 10 mm longer than the right. The piriformis tests as well as the psoas tests were negative. All peripheral pulses were palpable.

X-Rays (Fig. 1) showed a length increase of 6.5 mm of the left hip compared to the right because of an extra-large head. No signs of loosening, osteolysis, instability or fracture were found.

Laboratory tests including erythrocyte sedimentation rate, C-reactive protein and aspiration of the hip remained negative. A specialized neurologic examination including electromyography (EMG) showed no deficits.

Because of the localization of pain and as no usual etiology for painful THR was found, we suspected a problem related to the external rotator muscles or surrounding tissues. To clarify such an etiology, an MRI with reducing of artifacts of the left hip was obtained. It showed an unusual tight scar tissue enclosing the sciatic nerve as well as an adjacent lipoma of 4 cm of diameter without radiological signs of malignancy. The tendons of the external rotators were replaced by scar tissue at the level of the hip joint, and the muscle bellies were retracted and severely atrophic (Fig. 2).

As several intrinsic and extrinsic causes were excluded and the origin of the pain was unlikely to be related to the lengthening of the leg or increased offset of the hip, which would have made a revision of the prosthesis necessary, the patient agreed for a surgical release of scar tissue, sciatic neurolysis and excision of the lipoma.

At surgery, all anatomic structures deep to the fascia lata were glued making dissection difficult. After exposure of the layer deep to the gluteus maximus, the sciatic nerve was exposed at the level of the gluteal tuberosity of the femur and progressively neurolyzed out of an enclosing tight scar tissue (Fig. 3). Thereafter, the lipoma was excised without problems as it was laying on the ventral part of the scar covering the sciatic nerve. Histologic examination revealed a benign fibrolipoma. A posterior capsulotomy allowed inspection of the joint, revealing no damage to the polyethylene and no instability, and microbiologic sampling of the synovium which remained sterile. To decrease the risk of recurrent scarring around the sciatic nerve, two syringes of Oxiplex®/SP Gel (polyethylene oxide and sodium carboxymethylcellulose; FzioMed Inc., San Luis Obispo, California, USA) were applied around the nerve before closure.

Fig. 1 AP pelvis radiograph 4 years after implantation of a press-fit acetabular cup and a cementless custom femoral stem (Symbios SA, CH-1400 Yverdon) without signs of loosening and osteolysis. The length of the *left lower* extremity is increased by 6.5 mm at the level of the hip

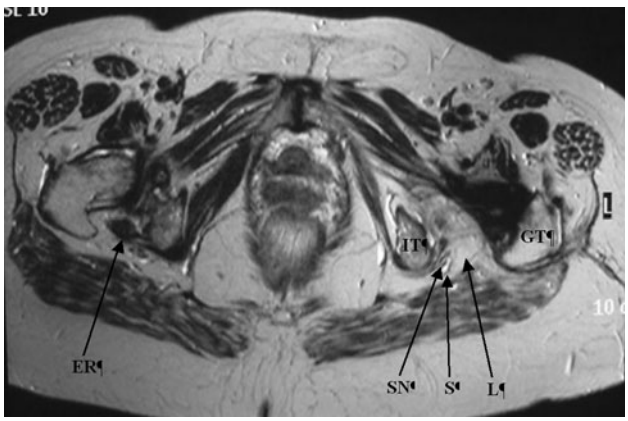

Fig. 2 Axial T1-weighted MR image at the level of the ischial tuberosity (*IT*). The sciatic nerve (*SN*) is entrapped by a tight fibrous scar (*S*) and a lipoma (*L*) between the ischial tuberosity and the greater trochanter (*GT*). External rotator (quadratus femoris) tendons (*ER*) are absent compared to the *right side*

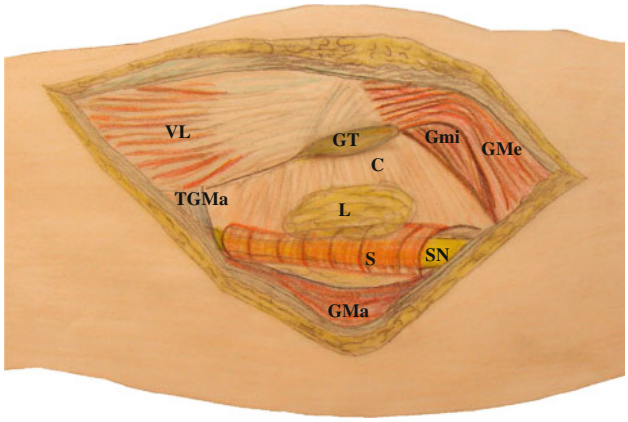

Fig. 3 Drawing of the operation situs: Behind the greater trochanter (*GT*), a 4 × 3 × 2 cm lipoma (*L*) covers a tight fibrous scar (*S*) enclosing the sciatic nerve (*SN*). No more external rotators are visible but only a fibrous capsular scar (*C*) expanding between the Gluteus minimus muscle (*GMi*) and the lesser trochanter. *GMe* gluteus medius muscle, *GMa* gluteus maximus muscle retracted posteriorly, *TGMa* tendon of gluteus maximus muscle, *VL* vastus lateralis muscle

After the operation, no new neurologic deficit was found despite the extensive neurolysis of the sciatic nerve. From the second postoperative day on, the patient was allowed to full weight-bearing as tolerated. Immediately after the operation, she had no more retrotrochanteric or buttock pain, lasting up to the last follow-up 12 months after the operation. She is able to walk unlimited distances without crutches and has no more psychiatric treatment.

Discussion

The presented case is illustrative for the difficulties which can be encountered when treating a patient with painful THR.

Scar tissue is quite frequent and may be also extensive in THR revisions. However, a scar tissue completely enclosing the sciatic nerve from the ischiatic foramen down to the gluteal tuberosity of the femur is not classical. This was clearly visible on the preoperative MRI images as was the immediately adjacent lipoma. It is not possible to state whether the lipoma or the scar entrapping the sciatic nerve was responsible for the symptoms. However, as these resolved completely after the operation, both probably were cumulative and should be considered as etiology for the disabling pain. Only few reports of sciatic neuropathy secondary to a lipoma have been published [6, 7], and except two recent reports [8, 9], no citation can be found about whether pain might be related to scar tissue. In their report, Schuh et al. [8] report about a patient with symptomatic sciatic compression between an acetabular reinforcement ring and scar tissue. The symptoms did not resolve completely after neurolysis. Montgomery et al. [9] did report on a patient with clinically and electrophysiologically evident neurologic lesions which resolved after sciatic neurolysis. In our patient, the diagnosis was less evident because the only symptom of compression was pain in absence of objective neurologic deficits. This also stresses the fact that pain may be the only symptom of sciatic nerve compression as it has been reported for instance by Bendszus et al [10].

In the current literature, as well intrinsic as extrinsic etiologies are seeked for, but no mention about scar tissue entrapping the sciatic nerve is found as etiology [1–5]. Even in absence of objective neurologic deficits, pain due to compression or traction on the sciatic nerve remains possible [10]. Therefore, due to the present and the previously mentioned reports, we think that sciatic nerve entrapment by scar tissue should be part of the differential diagnosis of the painful THR.

The use of an adhesion barrier in spine surgery is well known [11–13], but no clinical report exists about its use after sciatic neurolysis. Because of some successful experimental reports about the use of such adhesion barriers around sciatic nerves in rats [14, 15], we used Oxiplex/SP Gel to decrease the risk of recurrent scar formation around the sciatic nerve. The success of this treatment cannot be evaluated in our patient because of the lack of MRI imaging after the operation.

Several imaging procedures are used for the diagnostic work-up of painful THR [1–5, 16]. However, MRI is not currently used, and only three reports about using MRI were recently published [3, 17, 18]. Potter et al [17]. analyze the technique for image acquisition and the problems of artifacts due to the metallic prosthesis. They find that MRI can disclose unsuspected findings such as fractures, bursitis and osteolysis or precisely map the extent of infection and the localization of heterotopic ossifications close to neurovascular bundles. Pfirrmann et al. [18] analyze the postoperative evolution of periarticular muscles. No further report about MRI is found in the literature in correlation with painful THR. The unusual diagnosis of our patient was made thanks to MRI imaging which allowed to visualize the soft tissues around the prosthesis. Therefore and because of the latest computer technologies allowing to efficiently decrease artifacts, MRI will probably become an important part of the diagnostic work-up in patients with on-going pain and in whom the most frequent diagnoses such as infection, loosening, fracture and instability have been previously excluded.

Conflict of interest None.

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