

Hip Int 2017; 27 (3): e3-e5 DOI: 10.5301/hipint.5000495

CASE REPORT



Medial hip arthroscopy portals: a novel approach for hip pathologies. Is it feasible?

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ABSTRACT

Purpose: To report 3 patients operated on using medial hip arthroscopic portals, describe the surgical technique and clinical outcomes.

Methods: Three medial portals were made, the first one at the posterior edge of the adductor longus muscle (posterior medial portal), the second one at the anterior (anterior medial portal) and the third at the posterior border of the adductor longus, 5 cm distal to the inguinal crease (distal posterior medial portal). The first case was an 8-year-old boy with a lytic lesion at the posteromedial region of the femoral neck suggestive of sub-acute osteomyelitis. The second patient was a 21-year-old male with a posteromedial femoral neck nidus. The third patient was a 42-year-old male with a posteromedial femoral neck cystic lesion.

Conclusions: The described portals allowed successful access to posteromedial femoral neck. There were no neurovascular lesions, infection, femoral head osteonecrosis, skin retraction or functional limitation related to the portals.

Keywords: Arthroscopy, Hip, Portal, Safety

Introduction

Several hip arthroscopy portals have been described in hip arthroscopy (1). Most of them are located in the anterolateral portion of the hip, allowing access to the central, peripheral and peritrochanteric compartments. However, despite good access to the anterolateral portion of the acetabulum and femoral neck, where most of the lesions are located, medial and posterior access are difficult. Therefore, medial and posterior hip pathology have been considered a relative contraindication for hip arthroscopy due to the difficulty of accessing it using the portals usually described.

Polesello et al (2) have recently described medial arthroscopic hip portals in an anatomical study, which are in close relationship to the obturator nerve and profundafemoris artery, but which could be useful in selected clinical cases.

The purpose of this study was to report on 3 patients who were operated on using medial hip arthroscopic portals, to describe the surgical technique and 2-year follow-up complications.

Accepted: January 11, 2017 Published online: May 5, 2017

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Surgical technique

Patients were positioned on an orthopaedic radiolucent table, without traction, under general anaesthesia, in a supine position. The hip was positioned with maximum flexion, abduction and external rotation and draped. The hip could be moved during surgery. The following landmarks were marked on the skin: pubic symphysis, anterior superior iliac spine (ASIS), adductor longus tendon and muscle, and femoral neurovascular bundle. 2 portals were positioned in the groin; 1 in the anterior edge of the adductor longus tendon, named the anterior medial portal (AMP) and another in the posterior edge, named the posterior medial portal (PMP). A third portal was placed in the posterior border of the adductor longus, 5 cm distal to the inguinal crease, named the distal posterior medial portal (DPMP).

The first portal was the PMP, where a needle was inserted using fluoroscopy aiming at the femoral neck junction. A guide wire was inserted, the needle removed and an arthroscopic 4.5 mm cannula was introduced. In the 8-year-old patient, it was possible to insert the needle inside the capsule, in the adults it was inserted outside the capsule. A 70° scope was introduced through the cannula and saline solution was infused with low pressure. Subsequently, a needle was inserted through the AMP, aiming at the femoral neck junction through arthroscopic visualisation. The DPMP was done in the same way. An inside-out approach was used for the child and an outside-in for the adults. The use of the described portals allowed successful access to the posteromedial femoral and pertinent procedures to each case were carried out.

The first patient operated on was an 8-year-old boy who had had hip pain for 2 months; he had a previous history





Fig. 1 - (**A**) Right hip with lytic lesion at the posteromedial region of the femoral neck. (**B**) Patient with right hip flexed, abducted and externally rotated. Femoral bundle (FB), pubic symphysis (PS), adductor longus (AL), anterior medial portal (AMP), posterior medial portal (PMP) and distal posterior medial portal (DPMP). (**C**) Right hip draped, flexed, abducted and externally rotated. Scope in the PMP and shaver in the AMP.

of open drainage of this hip and antibiotic therapy without improvement in another hospital and had been referred to our service. Radiological investigation showed a lytic lesion at the posteromedial region of the femoral neck suggestive of sub-acute osteomyelitis. Surgery was carried out due to a lack of clinical response to antibiotics. The lesion was identified arthroscopically, biopsied and debrided with a 5.5 mm burr until no suspicious tissue was left (Fig. 1).

The second patient was a 21-year-old male who had had hip pain for the last 2 years. He had had a previous hip arthroscopy for femoroacetabular impingement somewhere else, without pain improvement. Investigation showed images of a posteromedial femoral neck nidus. The lesion was identified arthroscopically and the nidus resected with a 5.5 mm burr until no suspicious tissue was left (Fig. 2).

The third patient was a 42-year-old male who had had hip pain for the last 4 years. He had images of a posteromedial femoral neck cystic lesion and limited range of motion due to pain. The lesion was identified arthroscopically, a curved shaver was used to resect a panus tissue that was inside the cyst and a 5.5 burr was used to debride its boundaries until no pathologic tissue was seen (Fig. 3).

The 3 patients operated on had pain relief and there were no neurovascular lesions, infection, femoral head osteonecrosis, skin retraction or functional limitation related to the portals. The child had no recurrence of the lesion.

Discussion

Medial access to the hip is rare because of the danger of iatrogenic lesion of the obturator nerve and the medial circumflex artery (3), osteonecrosis and loss of range of motion (4, 5).

The obturator nerve anterior branch passes from anterior to adductor muscle and the posterior branch pierces the obturator externus muscle, runs between the adductor magnus and brevis muscles and finally divides into a motor and a sensory branch. Both PMP and DPMP can damage the anterior branch of the obturator nerve; therefore they



Fig. 2 - (**A**) Left hip CT with a posteromedial femoral neck nidus. (**B**) Left hip draped flexed, abducted and externally rotated. Scope in the anterior medial portal (AMP) and shaver in the posterior medial portal (PMP). (**C**) Fluoroscopy view of scope in the AMP and burr in the distal posterior medial portal (DPMP). (**D**) Final aspect of the placed portals.

should be positioned at the posterior edge of the adductor longus.

The profundafemoris artery emits the medial circunflex artery and is usually 35 mm to 50 mm distant from the inguinal ligament; therefore the AMP should be carried out close to the inguinal crease to avoid damage to the profundafemoris artery. The proximity of the emergence of the medial and lateral circumflex arteries from the origin of the profundafemoris artery should be heeded during insertion of the portals.



Fig. 3 - (A) Left hip x-ray anteroposterior view with a posteromedial femoral neck cystic lesion. (B) Left hip x-ray profile view with a posteromedial femoral neck cystic lesion. (C) Fluoroscopy view of scope in the anterior medial portal (AMP) and burr in the posterior medial portal (PMP) working inside the cyst.

Similar location to the PMP has been described for septic arthritis drainage (6), removal of loose bodies (7) and congenital hip dislocation treatment (8). Polesello et al (2) have described medial portals and their relation to deep structures. The main structure at risk for the posterior portals is the obturator nerve and for the AMP the profundafemoris bundle. To minimise the risk of damaging the anterior branch of the obturator nerve, posterior portals should be positioned at the posterior border of the adductor longus (PMP and DPMP). To minimise the risk to the profundafemoris, the AMP should be placed close to the inguinal crease. All portals should be directed towards the femoral neck junction to avoid the profundafemoris and medial circumflex artery.

The main indication for using these portals would be medial femoral neck affection requiring surgery. An alternative open surgery would be a surgical hip dislocation with trochanteric flip osteotomy or a Ludloff approach, but both would be much more invasive than an arthroscopy.

The limitation of this paper is the small number of cases, which is the result of strict case selection and the rarity of isolated hip pathology manageable through hip arthroscopy.

Conclusion

The medial portals described were safe and useful for medial hip pathology, especially at the peripheral compartment.

Disclosures

Financial support: None. Conflict of interest: None.

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