RESEARCH ARTICLE

Iatrogenic ulcer and vulvar hematoma after hip arthroscopy

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Abstract:

Hip arthroscopy is rarely associated with complications such as neurovascular and perineal injury, both in relationship with the traction and compression exerted against the perineal support on which the patient is placed. Complications are largely transient and incidences between 0.5% and 6.4% have been reported. However, major complications can and do occur. In this paper are going to be described two cases of vulvar injury after hip arthroscopy associated with the pressure towards the perineal post of the traction table.

Keywords: Hip arthroscopy, Perineal injury, Perineal post

Introduction

The hip arthroscopy is a useful minimally invasive approach to the diagnosis and treatment of intra-articular hip pathology. It offers the benefits of being an outpatient procedure with short rehabilitation and few reported complications and does not hinder opportunities for future surgical interventions [1].

Current indications for hip arthroscopy include the presence of symptomatic acetabular labral tears, hip capsule laxity and instability, chondral lesions, osteochondritis dissecans, ligamentum injuries, snapping hip syndrome, iliopsoas bursitis, and loose bodies. Less common indications include management of osteonecrosis of the femoral head, bony impingement, synovial abnormalities, crystalline hip arthropathy, infection, and posttraumatic intraarticular debris [2].

The injuries associated with the compressive force, usually exerted by the perineal post, are localised in the groin where the pudendal nerve is primarily at risk. Other soft tissues may be affected, including the scrotum and the labia majora, with injury ranging from edema or haematoma formation to pressure necrosis [3].
This paper is going to describe two cases of vulvar injury after hip arthroscopy associated with the pressure towards the perineal post of the traction table.

**First Case**

40-year-old Woman precedent of two childbirths and an abortion, without medical history of interest.

She came for the first time in March 2015, referring inguinal right pain of mechanical type of six months of evolution that appeared without previous traumatism. After the physical exploration and the complementary tests, was diagnosed of femoroacetabular impingement. In October 2015, a right hip arthroscopy under rachidial and general anaesthesia was realized, being targeted a labral detachment, a chondral and acetabular injury and a chondral delamination in acetabular edge at the level of the injuries.

The surgery consisted of a femoroplasty and a labrum arthroscopic fixing and the operating time was about 6 hours. In the post operatory, the patient presented intense vulvar edema of 72 hours of evolution that was solved partially during the revenue.

One week later the patient came to Emergencies room with pain and intense inflammation in external genitalia. The exploration shows the vulvar minor right lip occupied by fibrin and incipient revascularization signs without purulent exudate. The minor left vulvar lip was increased of size at the expense of edema and a possible labial collection minor to 1 cm that might correspond to bruise or an abscess. She was presenting likewise regions ulcerated with signs of infection in the same area.

A surgical debridement was realized in both vulvar lips and the hood of the clitoris. During the postsurgical control, intravenous antibiotic therapy and the VAC system (Vacuum Assisted Closure) were performed as a negative pressure therapy to help to the scarred of the wounds.

After 96 hours, there was targeted a suitable formation of granulation tissue at the level of the vulvar wounds and was discharged from the hospital with antibiotic therapy up to completing 10 days and local priests.

Three months later, the patient was valued on the Traumatology Department with a complete recovery.

**Second Case**

39-year-old woman, with a thyroidectomy for papillary cancer and bilateral hip arthroplasty for a femoroacetabular impingement in 2012 and coxa saltans of left hip in 2013.

In September, 2013 the pain appears in right hip being diagnosed of acetabular retroversion and incipient coxarthrosis. One month later, a new arthroscopy of two hours of duration was realized, targeting an acetabular
contracture and a labral disinsertion. Regularization and re anchorage being carried out with acetabuloplasty and synovectomy without complications. Seven hours after the intervention the patient presented an important bruise and vulvar edema with later appearance of blebs (Figure 1). The patient was discharged with vesical sounding and clobetasol to avoid a possible urinary retention and local priest of the blebs.

One year later the patient requested a gynaecological exam because of a symptomatic scar in the vulvar region and vulvodynia. She presented an indurated area in corresponding vulva with a keloid scar of 3 cm in the right side of the mount of Venus and another scar of 2 cm in top third of minor right lip (Figure 2). Resection of hypertrophic scar was realized. Dressings of silicone were ruled to improve the scarring with satisfactory evolution and disappearance of the symptoms and without recurrence of the hypertrophic scars.
Discussion

Experienced hip arthroscopists have reported low rates of complications in large series, not exceeding 6.4%. During hip arthroscopy, mechanical traction is needed to separate the femoral head from the acetabulum and provide space for the introduction of the arthroscope and instruments. This can lead to soft tissue injuries associated with the traction, usually associated with prolonged procedures or use of excessive traction force, and injuries associated with the compressive force exerted by the perineal post used to provide counter traction. These injuries are the most commonly reported complications of hip arthroscopy [3].

For the accomplishment of a hip arthroscopy, the patient places in supine or lateral decubitus on the orthopaedic traction table, with perineal and ankles protection. The leg on which the surgery is realized must be placed in traction, minimal abduction, flexion and rotation. The perineal post is placed as far lateral as possible toward the surgical hip to maximize the distraction vector distally and laterally. The post should be well padded and should rest against the medial thigh [4].

The report rate of these complications is low (1.4%) and it is a relatively safe procedure [5]. Intra-operative complications include the small risk of bleeding and infection present with any invasive procedure and damage to the femoral head. There have been reports of direct damage to the lateral cutaneous nerve of thigh during the creation of portal sites though this is exceptionally rare [6]. Many of the remaining early complications are related to the requirement for traction. These complications include neuropraxia of the sciatic, femoral or pudendal
nerves. Other related complications are due to direct damage to the perineal area by the post; in local haematoma, vaginal tears and scrotal ischaemia [7].

The physiopathology of the perineal injuries are related to the perineal post and the suitable placement of the patient, because of this, is indispensable to realize a suitable distraction of the hip and that make possible the access for route arthroscopic [4].

In reference to the neurovascular injuries, Yang-Pin et al. presents a retrospective study with 73 patients being developed a hip arthroscopy. Five of them (7 %) presented a sciatic nerve transitory neuroapraxy that resolved in two weeks of her surgery [8].

Pailhé et al. reported an incident of 2 % of neuralgia of the pudendal nerve in a review of 150 patients produced of arthroscopy of hip. In order to prevent this complication they indicate the importance of using a pelvic major support of 8-10 cm of diameter and of limiting the force of the traction during the surgery provided that this one seems to be the principal causative factor of the injury neural [9]. In the same way, France and Aurori do not find a significant increase of the incident of neuralgia on having increased the operating time [10]. Yacub et al present the major retrospective study with 14.979 patients produced of hip or knee arthroplasty and arthroscopy. They bring only ten cases of neural postsurgical injury (0.07 %) [11].

Telleria et al. realized an intraoperative study with nervous monitoring with 60 patients. Of them, 35 (58 %) presented intraoperative nervous dysfunction, and 4 (7 %) nervous later injury. The weight exercised by traction in average was of 38 Kg, increasing 4 % the risk of nervous dysfunction for every 0.45 kg that was increasing the weight. On the other hand, the increase of the time of traction did not increase the incident of dysfunction neural [12].

Kocaoglu et al. described a total of 17 hips from 9 fresh-frozen cadavers. The pudendal nerves were dissected and 3 force sensors were implanted on the pudendal nerve where the inferior rectal nerve, perineal nerve, and dorsal nerve of the clitoris/penis emerge. A custom-made traction table in a supine position was used with a padded perineal post of 9 cm. The tuber ischiadicum (perineal nerve) and genital region had statistically higher pressure values when compared with the pudendal canal. There was a significant increase in forces acting on the pudendal nerve with increasing application of 0 to 40 kg of traction in steps of 10 kg. On the contrary, hip abduction angle had no statistically significant effect on pudendal nerve compression [13].

Funke and Munzinger published 3 complications in 19 patients; one of the patients presented a transitory neuroapraxy with complete recovery to 3 weeks, another a bruise of major lips and other one presented abdominal sharp pain during the intervention (regional anaesthesia) [14].

Genitoperineal skin necrosis attributed to the use of a traction table is also described in men by Ferreira Coelho et al. They reported six patients with perineal complications after orthopaedic surgery. All patients developed a partial-thickness necrotic area involving the perineum and scrotum in 2 days to 15 days after the surgery. Three patients developed infection of the necrotic tissue. All patients needed surgical debridement after the orthopaedic surgery. A primary wound closure was possible only in one case, in the other the wound healed completely by second intention [15]. Hammit Matthew D.et al described the case of a patient who sustained a right sacroiliac joint disruption, a right transectal
transverse with posterior wall acetabulum fracture, who developed massive perineal slough resulting from prolonged pressure against a pudendal post during operative fixation of these injuries [16].

A similar case to described in our review is exposed by Choudouri AH and Sharma H. There treats itself about a 18-year-old woman of 52 kg of weight that was controlled by a fracture of the femoral neck, an arthroscopy of hip being realized and presenting bruise vulvar with complete resolution after conservative managing in the term of one week [17].

Mei Dan et al. realized a prospective study in 170 patients to investigate the safety of a traction technique that avoids a perineal post. A supine position is used with the foot in a standard traction boot. The patient is moved down the table such that his or her perineum is located 7 to 10 cm proximal to the traction post. The post is also located 5 to 10 cm lateral to midline. The operative table is placed in 15° to 20° of Trendelenburg. With this position, enough friction is generated between the patient’s upper body and bed to allow successful hip distraction without the post contacting with the perineum. The patients were followed 14 days and 3 and 6 months postoperatively. Patients were examined at each visit. No significant complications related to traction [18]. Merrel G et al. also describe a technique without the perineal post using a deflated taped beanbag. The beanbag is contoured around the patient's flank and thorax. The distal aspect of the beanbag is placed no further than the iliac crest, and care is taken to avoid compression of the posterior aspect of the axillary region or the posterior humerus. This patient positioning provides sufficient stability for adequate traction and good visualization while minimizing the risk of pudendal nerve palsy [19].

The following recommendations have been reported to prevent complications in hip arthroscopy based on the available published literature [2, 4, 8 ]

- To reduce the operating time with perineal supported pressure. Continuous traction should not exceed two hours, with intermittent traction used in prolonged procedures
- To check the perineal condition during the intervention, as well as to diminish the traction exercised of intermittent form, especially in long time surgeries
- The distraction force should be minimal, using only that required to maintain sufficient space to maneuver instruments. The force should be limited in most cases to < 22.7 kg
- Adequate patient positioning is essential in avoiding neurologic injuries.
- The perineal post and foot plate/boot must be heavily padded and the perineal post should be > 9 cm in diameter.

A detailed understanding of the entire procedure and its limits before the surgery are critical to minimizing complications [4, 8].

Conclusion
The vulvo-perineal injuries for perineal pressure in the hip arthroscopies are slightly frequent but they can generate important morbidity to the patients. Both cases presented in this work needed surgical interventions derived from postsurgical perineal injuries. The main risk factors for these complications are the pressure exerted and the time of de traction in the low member; both have been proved and tested. Due to these reasons it is important to restore measures to control these variables and to minimize the associate morbidity.

References