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EVALUATION OF COMPLICATIONS IN A SERIES OF HIP ARTHROSCOPY CASES[1]

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1. Study conducted at the Institute of Orthopedics and Traumatology, Vitória Apart Hospital – VAH, Serra, ES, Brazil

Abstract: Objectives: This is a series of cases (level of evidence IV) whose objective is to evaluate the clinical results/postoperative complications of patients who underwent hip arthroscopy for the treatment of various pathologies. **Methods:** Based on a series of cases of arthroscopies performed at Vitória Apart Hospital (VAH). Medical records were collected from the Service from 2020 to 2022 for 76 patients with various diagnoses, including mainly femoroacetabular impingement and chondrolabral lesions, with a minimum postoperative follow-up of 24 months. Data regarding patient age, sex, laterality, traction time, number of portals, post-procedure anesthetic block complications, number of anchors, reoperation rate, and conversion time to arthroplasty were analyzed. **Results:** A predominance of males was observed, with a mean age of 42 years at the date of surgery. There was no predominance of laterality. The average traction time was 54 min. The most frequent surgical indication was due to chondrolabral injury and femoroacetabular impingement. There was an average of three portals used during the surgical procedure, and most patients received post-procedure anesthetic block. Of the 76 cases analyzed, 24 cases presented some type of complication, with residual myofascial pain being the most common. Of the cases followed up, only 3 cases required arthroscopic re-approach in the postoperative period, and another 3 cases were converted to total hip arthroplasty. **Conclusion:** Hip arthroscopy is an excellent diagnostic and treatment method when properly indicated and performed, taking the necessary precautions. It was found that in the group analyzed, there was a low complication rate, with excellent clinical results.

Keywords: hip arthroscopy, epidemiology, complications, femoroacetabular impingement, hip chondral lesion, hip labral lesion, traction techniques, hip arthroscopy.

INTRODUCTION

In 1931, Michael Samuel Burman published the first report of 20 hip arthroscopies on cadaver specimens, without joint traction, observing the anterior intracapsular space of the joint, without being able to see the acetabulum, acetabular fossa, or round ligament.

Currently, arthroscopic surgery is the most commonly performed orthopedic surgical procedure in the US[1]. Hip arthroscopy is indicated as a diagnostic and therapeutic method, and its indications include labral injury, chondral injury, removal of intra-articular loose bodies, treatment of femoroacetabular impingement, and hip snapping([2-5]).Contraindications mainly include obesity, trauma, and active infection.

Reviews described in the literature cite varying complication rates. Some authors cite rates ranging from 0.5 to 6.4%[2,3] . Most studies attribute the occurrence of postoperative complications to joint traction[4,5] . The arthroscopic hip procedure involved a combination of up to four access portals, described by Byrd([6]):anterior, anterolateral, posterolateral, and intermediate. In most cases, it was necessary to use only two portals (anterior and anterolateral).

The objective of this study is to determine the prevalence of complications in the various arthroscopic procedures performed using the hip arthroscopy technique, through a retrospective case series study, and to evaluate the associated variables, since the procedure has a slow learning curve, in addition to the traction time and the success of the procedure based on clinical indication.

The service currently performs an average of 50 hip arthroscopies per year, with a cumulative history of approximately 1,200 hip arthroscopy procedures performed since 2005, making it one of the pioneers in the state of Espírito Santo.

METHODS

This is a retrospective case series study conducted at Vitória Apart Hospital in Serra/ES.

The information necessary for the research was obtained from the MV SOUL electronic medical record system database – PEP HTML5 database, using the TUSS codes for femoroacetabular impingement treatment (30738040) and chondroplasty with labral suture (30738059) as a reference for locating patients in the period between 2020 and 2022. After the survey, 76 patients were obtained.

The inclusion criteria were: positive clinical examination and specific tests for femoroacetabular impingement in the medical evaluation, evidence of confirmation of injuries by magnetic resonance imaging, refractoriness to conservative treatment after 3 months, agreement with the Informed Consent Form, minimum follow-up period of 24 months, and age over 18 years on the day of the interview. Patients with associated pathologies in other joint segments, such as the lumbar spine and knee, those with a minimum follow-up loss of 24 months, and those who did not meet the study inclusion criteria were excluded.

The following variables were analyzed: gender, age, laterality, traction time, surgical indication, post-procedure anesthetic block, number of portals used, late postoperative reoperation rate, conversion rate to total hip arthroplasty, presence of postoperative complications, and number of anchors used.

Patients who underwent the technique exclusively via arthroscopic hip surgery through two or more portals described by Byrd (anterior, anterolateral, and intermediate) were evaluated. Patients usually undergo controlled joint traction for joint distraction.

As the main complications described correlate with intraoperative traction time, the service uses the intermittent traction method. Once the capsulotomy is performed, traction is applied as needed. The main pathologies treated were chondrolabral lesions and femoroacetabular impingement. Chondral lesions, of varying degrees, were treated using the microdrilling and debridement technique. Labral lesions were treated by suturing with bone anchors and debridement. Acetabular and femoral bone deformities were treated using the osteoplasty technique. The postoperative period is conducted with early ambulation and partial weight bearing on the operated limb, avoiding hip flexion greater than 90 degrees. Postoperative physical therapy begins immediately to ensure analgesia and movement recovery. Prophylaxis of heterotopic ossification with nonsteroidal anti-inflammatory drugs is recommended for up to 30 days, in addition to the use of non-hydrolyzed type II collagen.

Surgical stitches are removed within 2 weeks. Four weeks after surgery, full weight-bearing on the operated limb is allowed, in addition to targeted muscle strengthening exercises. High-impact physical activities are allowed 6 months after surgery.

The objectives of the study were explained and clarified by reading the Informed Consent Form. All study participants were followed up for at least 24 months, with complaints, postoperative complications, and the need for surgical reintervention being evaluated.

CASE SERIES AND RESULTS

From 2020 to 2022, 85 patients underwent hip arthroscopic surgery at this service.

After applying the inclusion and exclusion criteria, 76 patients were included in the sample. One of the patients analyzed underwent bilateral surgery.

The series analyzed consisted of 30 female and 46 male patients, ranging in age from 19 to 63 years (mean age 42 years) at the date of surgery. There was a predominance of males, corresponding to 60.5% of the sample.

Regarding the affected side, there was no predominance in terms of laterality.

The average traction time was 54 minutes, ranging from 5 to 104 minutes in the study population.

Intermittent traction was applied an average of 5 times during the procedures, with variability between 1 and 9 applications in the sample analyzed.

The most frequent surgical pathology identified was chondrolabral lesion, occurring in 50 of the cases analyzed (65.79%). Of the cases with surgical indication due to femoroacetabular impingement, mixed-type impingement (PINCER + CAM) was the most frequently identified, in 35 cases (46.05%). In most cases, 3 arthroscopic portals were used during the surgical procedure, representing 44 cases (57.89%). Most patients underwent postoperative anesthetic block, occurring in 65 patients (85.5%).

In 23 cases, the use of two anchors was observed, which corresponds to 30.26% of the sample, representing the predominant number.

Regarding complications, 10 patients (13.16%) presented some type of complication, among which the most frequent was postoperative myofascial pain, present in 5 cases (6.58%). We consider residual myofascial pain to be deep gluteal pain or lateral pain that persists for more than 6 months postoperatively, mostly resolved with injections and motor physiotherapy.

Of the cases analyzed, three required conversion to total hip arthroplasty, occurring on average 1.5 years after the arthroscopic procedure. The rate of late postoperative surgical reintervention represented 3.95% of cases (3 patients).

The analog pain scale was used as a parameter for evaluating patient improvement. It was applied preoperatively, immediately postoperatively, and at follow-up appointments that occurred at 2 weeks, 4 weeks, 8 weeks, 4 months, 6 months, 1 year, and 2 years. The range of motion of the hip was also measured both preoperatively and in the late postoperative period, in addition to the assessment of muscle strength.

All patients used partial-weight-bearing crutches in the immediate postoperative period, which were maintained for 30 days. All patients began physical therapy rehabilitation in the immediate postoperative period, while still hospitalized, following the protocol for partial weight-bearing removal in conjunction with physical therapy evaluation.

DISCUSSION

The objective of this study was to evaluate the effectiveness of arthroscopic surgical treatment for hip pathologies, as well as possible related complications. In addition, to demonstrate the effectiveness of the intermittent traction technique and the possible variables that may influence the occurrence of complications.

It is known that the main pathologies indicated for arthroscopic surgical treatment are femoroacetabular impingement and chondrolabral lesions. These pathologies can be identified through clinical orthopedic examination and confirmed through complementary imaging tests such as X-rays, computed tomography, and magnetic resonance imaging. Labral and chondral lesions present certain limitations in imaging diagnosis, with diagnostic arthroscopy also being an important pillar in their evaluation.

With regard to femoroacetabular impingement, treatment begins conservatively. although controversial, activities that require movement above 90° should be avoided, patients who need muscle strengthening should do so in combination with analgesia, failure of early conservative treatment (12 weeks) should be identified and a possible evaluation for surgical procedure should be performed, in order to avoid further complications and damage to the joint (7).

For isolated chondral and labral injuries, conservative treatment is indicated in most cases. This can be done through physical therapy, analgesia, and guided intervention procedures. The surgeon should be alert to unfavorable clinical progression in order to identify the right time for a surgical approach that will benefit the patient. The traditional surgical indication is arthroscopic technique, but it is also possible to perform it using open and minimally invasive techniques, depending on the characteristics of the injury and the surgeon's experience.

The age of the patients analyzed ranged from 19 to 63 years (mean of 42 years) on the date of surgery, a fact that was similar to the study by Kern (8). A predominance of males was observed ( ). With regard to complications, the mean age of the sample was 44 years, with these also being predominant in males.

The literature describes neurological injury and iatrogenic chondral injury as the main complications [9,10]. In the present study, the main complication was postoperative residual myofascial pain, present in 5 cases. Another complication identified in the study was pudendal nerve neuropraxia, occurring in 1 of the cases analyzed.

Regarding the traction time used, the study presented an average time of 54 minutes. This study demonstrates that the intermittent traction technique is a viable technique and enables a significant reduction in the number of postoperative complications.

In the present study, the need for conversion to total hip replacement was observed in three cases, occurring in an average period of approximately 1.5 years after the initial procedure.

The reoperation rate was also low, being necessary in only three patients (3.95% of the sample), which demonstrates that most cases progressed satisfactorily without the need for further interventions, which is consistent with what Gupta (11) states in his study.

Clinical results showed that patients with chondrolabral lesions associated with femoroacetabular impingement had more significant improvements in range of motion and pain. Patients with pure labral lesions had immediate postoperative improvement, but without significant improvements in range of motion, which may represent a bias in the patient's perception of improvement.

Because of this, we included residual myofascial pain as a complication standard, which refers to deep gluteal pain and lateral myofascial pain that may or may not be related to the surgical procedure, lasting more than 6 months after arthroscopic surgery. This complication was undoubtedly the biggest complaint by patients, since when they undergo the surgical procedure, they expect to improve exponentially.

Another important factor for patient improvement is their commitment to following guidelines and dedication to physical therapy. Both variables are directly related to the time/degree of improvement and the possibility of some type of residual pain. A simple example would be the removal of partial weight bearing with crutches before the stipulated time/return of adequate muscle strength, which can cause the stitches to come loose or generate muscle imbalances that cause pain.

This study shows that proper indication and the surgeon's experience are decisive factors in the outcome of the procedures, since no iatrogenic injuries or neuropraxia-type complications were observed. There was only one case of complex regional pain syndrome in the foot, associated with the use of traction. Furthermore, the intermittent traction technique can be considered an important resource for reducing complication rates in this type of procedure.

CONCLUSION

Hip arthroscopy is considered one of the main techniques that orthopedic surgeons can use. It is well known that the constant evolution of this procedure, in terms of the techniques employed and the technologies of the materials used, represents a significant factor in the effectiveness and occurrence of post--surgical complications.

This study demonstrates that hip arthroscopy is a safe surgical treatment technique with low complication rates when properly indicated and performed.

Variables such as gender, weight, age, associated injuries, intraoperative traction time, traction control, and, above all, the appropriate technique combined with the surgeon's experience can lead to more effective results and fewer complications.

Appropriate guidance on the surgical technique and expected postoperative results, as well as the need for motor rehabilitation and postoperative care, should be considered and clearly communicated to patients in order to balance expectations of results, enabling proper control of these and reducing possible complications.

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