ABSTRACT

Objectives: Assess the worthiness of arthroscopy in investigating and treating knee pain after arthroplasty unexplained by clinical and subsidiary examinations. Methods: Among 402 patients submitted to total or unicompartimental arthroplasty between September 2001 and April 2007 at a public university hospital, 17 presented with pain on prosthetic articulation, without clear diagnosis by clinical, X-ray, laboratory, scintiscan, or nuclear magnetic resonance tests. All patients were submitted to arthroscopy and symptoms were assessed by using the Lysholm scale, comparing pre-and post-arthroscopy periods. Peroperative findings have been recorded. Results: The procedure was effective for pain relief in 14 of 17 patients (82.35%). The median for Lysholm scale climbed from 36 points before arthroscopy to 94 points after the procedure (p < 0.001). Most of the patients (12) were arthroscopically diagnosed with fibrosis known as “cyclop”; on the remaining five patients, anterior synovitis was found. All patients were treated by resection. Conclusions: Knee arthroscopy after arthroplasty in patients presenting unclear persistent pain shows localized arthrofibrosis (“cyclops”) or synovitis, which can be treated by using the same procedure, resulting in pain relief.

Keywords – Knee arthroplasty; Arthroscopy; Fibrosis; Synovitis; Arthralgia

INTRODUCTION

A large number of patients have undergone knee arthroplasty procedures in recent decades. The results have been favorable in the clinical improvement of pain and joint mobility, which has been limited prior to the procedure as a result of osteoarthritis, rheumatoid arthritis, and other abnormalities, at least for 10 to 15 years in 90% of procedures\(^1\). However, patients undergoing total or unicompartamental knee arthroplasty may experience pain in this joint due to the presence of a loose body, infection, poor positioning of the prosthetic components, loosening of one or more components, periprosthetic fracture, or in cases of unicompartamental prosthesis, meniscal injury in the non-prosthetic compartment\(^2-4\).

With an increasing amount of time and number of patients being monitored in recent years, diagnostic and therapeutic modalities have appeared. However, the large number of cases with pain and impaired mobility are difficult to diagnose, requiring extensive evaluation and experience from the orthopedic surgeon for the clinical and functional improvement of patients. In their study, Wasilewski and Frank\(^2\) concluded that knee arthroscopy is indicated for patients with pain, impaired mobility and synovitis, when routine screening tests are not illuminating.

The purpose of this study was to investigate the cause of pain in symptomatic patients after knee arthroplasty by means of arthroscopy in order to assess the value of the procedure as a method for the diagnosis and treatment of patients who do not benefit from other types of examinations.
MATERIALS AND METHODS

This is a prospective case series study, including patients from a public university hospital. Among all patients undergoing arthroplasty for the application of unicompartmental prostheses, total prostheses, or patellofemoral arthroplasty, those whose painful symptoms persisted even after the use of analgesics, non-steroidal anti-inflammatory drugs, and physical therapy (as individually prescribed), and whose cause of pain could not be clarified by imaging, laboratory, or clinical exams were selected for the study. All patients underwent exploratory and therapeutic arthroscopy. The study was approved by the ethics committee of the institution and all patients signed an informed consent form.

Between September 2001 and April 2007, 402 arthroplasties were performed by the same surgeon in the clinic. Of the total number of 402 arthroplasties, 114 patients received unicompartmental prostheses (UCP), 284 patients received a total knee prosthesis (TKP), and the remainder (four patients) underwent patellofemoral arthroplasty (PFA).

Among the 402 patients operated, 17 remained in pain, without a clinical, laboratory, or imaging diagnosis to establish the cause of the pain symptoms. Seven of these had received a UCP (42.10%), nine had received a TKP (52.63%), and one case (5.27%) had been submitted to PFA. All were submitted to arthroscopy indicated because of pain eight months, on average, after the arthroplasty. Most were women (15 patients, 88.24%) and the mean age was 65 years.

The pre-arthroscopy pain was assessed using the Lysholm scale, with results ranging from 0 to 100 points. Pain relief is considered poor when the result is < 68, fair when the result is 69-76, good when the result is 77-90, and excellent when the result is 91-100.

We adopted a significance level of 5% (0.05) for the statistical tests. We used SPSS (Statistical Package for the Social Sciences) version 13.0 to obtain the results. We applied the Wilcoxon signed rank and Spearman correlation analysis to the results for statistical evaluation of pain.

RESULTS

Patient evaluation by the Lysholm scale showed a significant difference between the pre- and post-arthroscopy measurements (Table 1). The procedure was effective for the relief of pain symptoms in 14 patients (82.35%), with poor results in two (11.76%), who remained in pain, and a fair result in one case (5.88%); results were therefore good or excellent in the other cases analyzed (Table 2).

Most patients (12 cases) had an arthroscopic diagnosis of a cyclops lesion (intra-articular fibrosis, Figure 1) and anterior synovitis was observed in five. All patients underwent arthroscopic resection and release of the knee (Figure 2).

DISCUSSION

For some time arthroscopy has been recommended as diagnostic and therapeutic method for pain symptoms after knee replacement surgery. Arthroscopy may lead to a more appropriate indication for revision of a component or the entire prosthesis in cases of diagnostic uncertainty, and is very useful for the detection of the loosening of prosthetic components.
components, intra-articular loose bodies, fractures or other abnormalities\(^{7-12}\). In international studies, it has been shown that arthroscopy can also be used as a method of specimen collection for suspected infections or for the intra-articular evacuation of hematoma\(^{6,7,13}\), which was not necessary in any of the cases in this study. However, no prospective studies had been conducted in this regard with a Brazilian sample population and this study serves to show that the procedure is also feasible in our country.

Several authors\(^{2,6,8,14-17}\) have demonstrated the importance of arthroscopy as a diagnostic and therapeutic method for arthrofibrosis of the knee, leading to significant improvement in the pain and function of the affected knee. Joint arthrofibrosis was not found in this study, only cases of localized fibrosis called a cyclops lesion\(^{2}\). It is the presence of fibrous tissue interposed between the components that are not joint adhesions (Figures 1 and 2).

As a complication of using this method, Diduch \textit{et al.}\(^{13}\) reported that 6% of patients had joint infection after the procedure, which has not been demonstrated in other studies\(^{2,7,8,14,15,18-22}\), in which infection was not reported or had low incidence levels. In this study no complications of the procedure were likewise observed. Klinger \textit{et al.}\(^{21}\) stated that preventive antibiotics are important in the perioperative period to minimize complications. There were no infections in the 17 patients in this study, despite not having performed antibiotic therapy.

Several authors\(^{12,14,16,17,23,24}\) have reserved open surgery only for cases of prosthetic components revision or in cases where their removal is essential for treatment. However, there are authors\(^{18}\) who have advocated conservative treatment involving joint manipulation under narcosis. But Lindenfeld \textit{et al.}\(^{13}\) report that these procedures can lead to patellar tendon rupture, intra-articular tissue injuries, or regional pain syndrome of the knee. There are also other options. Jerosch and Aldawouldy\(^{22}\) defend the great benefits of the triad: arthroscopic release, pain management, and intense physical therapy for patients with arthrofibrosis. The present study demonstrated good pain relief results in patients with only the use of diagnostic and therapeutic arthroscopy for resection of localized fibrosis or hypertrophied synovium.

Several international studies have spoken in favor of arthroscopic surgery for the treatment of pain post-arthroplasty\(^{2,6,7,8,14,15,18-22}\). The present study is the first case series evaluated in Brazil and shows that in our country an approach to pain management after knee replacement surgery can be performed by

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### Table 2 – Characteristics of the 17 patients with knee arthroplasty and painful symptomatology, submitted to arthroscopy

| Gender/Age | Symptom | Knee | Arthroplasty | Result | Lysholm pre/postoperatively | Arthroscopic diagnosis | Current complaint |
|------------|---------|------|-------------|--------|----------------------------|-----------------------|---------------------|
| 1 F/61     | Pain    | R    | UCP         | Excellent | 18/93                    | Cyclops               |                     |
| 2 M/54     | Pain    | L    | UCP         | Excellent | 26/95                    | Anterior synovitis    |                     |
| 3 M/55     | Pain    | R    | UCP         | Good     | 36/78                    | Cyclops               | Pain               |
| 4 F/69     | Pain    | R    | UCP         | Excellent | 55/100                   | Cyclops               |                     |
| 5 M/54     | Pain    | L    | UCP         | Good     | 34/83                    | Cyclops               |                     |
| 6 F/56     | Pain    | R    | UCP         | Good     | 47/92                    | Anterior synovitis    |                     |
| 7 F/59     | Pain    | R    | UCP         | Good     | 56/95                    | Cyclops               |                     |
| 8 F/67     | Pain    | R    | PFA         | Excellent | 42/94                    | Cyclops               |                     |
| 9 F/68     | Pain    | R    | TKP         | Excellent | 36/97                    | Anterior synovitis    |                     |
| 10 F/74    | Pain    | R    | TKP         | Good     | 36/47                    | Anterior synovitis    | Pain               |
| 11 F/68    | Pain    | L    | TKP         | Excellent | 39/97                    | Cyclops               |                     |
| 12 F/73    | Pain    | R    | TKP         | Excellent | 39/97                    | Anterior synovitis    |                     |
| 13 F/77    | Pain    | R    | TKP         | Poor      | 13/53                    | Cyclops               | Pain               |
| 14 F/76    | Pain    | L    | TKP         | Excellent | 30/97                    | Cyclops               |                     |
| 15 F/68    | Pain    | L    | TKP         | Excellent | 62/97                    | Cyclops               |                     |
| 16 F/60    | Pain    | L    | TKP         | Good      | 31/85                    | Cyclops               |                     |
| 17 F/63    | Pain    | L    | TKP         | Good      | 34/87                    | Cyclops               |                     |
arthroscopy with clinical advantages, evidenced by this procedure’s high resolution and the absence of complications in this number of cases.

CONCLUSION

Post-arthroplasty knee arthroscopy in patients with pain without a pre-established diagnosis who have already undergone conservative treatment without success was beneficial, demonstrating significant improvement of pain as measured by the Lysholm scale. Cyclops (localized arthrofibrosis) or synovitis was observed as the cause of symptoms in most patients, which were treatable within the same procedure.

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