

INCIDENCE AND TREATMENT OF INTRA-ARTICULAR LESIONS ASSOCIATED WITH ANTERIOR CRUCIATE LIGAMENT TEARS

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Abstract

The aim of the study is to retrospectively review the patients admitted and treated in the “Alexandru Rădulescu” Orthopedics and Traumatology Clinic, Cluj-Napoca for an anterior cruciate ligament tear over a 2-year period and document the intra-articular lesions found at arthroscopy as well as the treatment used for these associated lesions.

Patients and methods. The case records of 88 patients operated for anterior cruciate ligament tear over a period of 2 years were reviewed. There were 67 males and 21 females with a mean age of 28.9 years, ranging from 14 to 49 years. After recording the patient demographics, we documented all the intra-articular lesions found during knee arthroscopy, as well as all procedures undertaken concomitant with the ACL reconstruction.

Results. 50 of the 88 patients (56.8%) had associated intra-articular lesions at the time of anterior cruciate ligament reconstruction. The most common injury found was a meniscus tear; 48 patients (54.5%) had a meniscal pathology at the time of ligament reconstruction, medial meniscus being the most frequent injured one, found in 37 patients. Meniscectomy and meniscus suture were the procedures performed for these lesions, meniscectomy being more frequent. Chondral defects were the next associated injuries found with an incidence of 15.9% of the cases. The medial side of the knee was the most common site of chondral pathology.

Conclusions. ACL tears are frequently associated with other intra-articular lesions, especially medial meniscus tears and chondral defects affecting the medial compartment. Such pathology most often needs surgical attention during the anterior cruciate ligament reconstruction.

Keywords: anterior cruciate ligament, associated lesions, meniscus tear, chondral defect.

Background and aims

Anterior cruciate ligament (ACL) tears are associated with meniscal and articular cartilage injuries, as well as other intra-articular pathology, either from the initial trauma to the knee or due to chronic instability secondary to the ACL tear [1]. The incidence of such lesions varies significantly and is related to many factors, including the mechanism of injury, time from injury to ACL reconstruction [2] and level of activity. Meniscal tears may be found in conjunction with ACL tears in 3.5% to 81% of the cases [1,3,4,5] and chondral injuries may be found in 17% to 43% [2,6]. Treatment of such associated lesions during ACL reconstruction can also vary

significantly depending on the tear characteristics, surgeon experience and patient needs. Some meniscal lesions may be left untreated [7,8], some may be repaired and some need a partial or total meniscectomy. It is well known the importance of the menisci for the normal function of the knee joint, therefore the preservation of the menisci is preferable to meniscectomy whenever possible. Chondral lesions may also be either left untreated or a microfracture type procedure may be performed to stimulate healing. Although widely accepted, such procedure stimulates the production of repair tissue with different properties and durability compared to normal cartilage [9].

The aim of this study is to retrospectively review the patients admitted and treated in the “Alexandru Radulescu” Orthopedics and Traumatology Clinic, Cluj Napoca, for an ACL tear over a 2-year period and document the

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Table I. Characteristics of associated meniscal pathology

	No.	Percentage
Total no. of patients	88	
Patients with associated meniscal tears	48	54.5% of all patients
Medial meniscus tears	35	72.9% of the 48 patients with meniscus tears
Lateral meniscus tears	7	14.5% of the 48 patients with meniscus tears
Both menisci tears	6	12.5% of the 48 patients with meniscus tears
Action taken for meniscus pathology		
Suture	15	31.2%
Meniscectomy	32	66.6%
No action	5	10.4%

intra-articular lesions found at arthroscopy as well as the treatment used for these associated lesions.

Patients and methods

We searched the Clinic's database between January 2012 and October 2013 and evaluated the patients records with the diagnosis of ACL tear.

Inclusion criteria were:

- Patients aged 14 years or more;
- Admitted and operated for an ACL tear with arthroscopic reconstruction.

Exclusion criteria were:

- Prior surgery on the knee;
- Revision ACL reconstruction;
- Open ACL reconstruction.

We studied the records and surgery documents for every patient that met the inclusion/exclusion criteria within the mentioned time frame. After recording the patient demographics, we documented all the intra-articular lesions found during knee arthroscopy, as well as all the procedures undertaken concomitant with the ACL reconstruction.

All patients had a positive clinical examination for ACL tear (anterior drawer and Lachman test) as well as MRI documentation. Surgical operations were performed under spinal anesthesia and routine arthroscopy was performed in every case. ACL tear was again confirmed during arthroscopy. In every case a single bundle anatomic ACL reconstruction was performed, either with hamstring tendons or with quadriceps free tendon. For meniscal lesions the site of the tear was recorded and the action taken, if any. For chondral injuries, the Outerbridge classification was used.

During the study period 88 patients met the inclusion/exclusion criteria. There were 67 males and 21 females with a mean age of 28.9 years, range 14 to 49

years. In 45 of the cases the right knee was involved and in the rest of the 43, the left knee was involved.

Results

From the total of 88 patients reviewed in this study, 50 (56.8%) had intra-articular associated lesions. From the total of 50 cases with associated lesions, there were 48 (96%) meniscal tears, meaning that 54.5% of the 88 patients with ACL tears had associated meniscal tears. The internal meniscus was affected in 35 cases (72.9%), the external meniscus in 7 (14.5%) and 6 patients (12.5%) had both menisci involved. Meniscus suturing was performed in 15 cases, partial or subtotal meniscectomy in 32 and no action was taken in 5 cases. The latter 5 cases were described either as stable meniscus lesions or incomplete tears and required no surgical attention and were left in situ. In some cases both meniscus suture and partial meniscectomy was performed (table I).

Chondral lesions were present in 14 cases (15.9%), either diffuse or focal defects. Table II shows the distribution of chondral lesions according to Outerbridge classification.

The site of the chondral pathology was represented by the medial compartment in 10 cases (71.4%), lateral compartment in 1 (7.1%), patello-femoral joint in 2 cases (14.2%) and 1 case (7.1%) had diffuse chondral pathology in all three compartments of the knee. Out of all 14 patients with chondral pathology, 13 (92.8%) had meniscus tears associated.

Table II. Distribution of chondral lesions according to Outerbridge classification

Outerbridge grade	No. of patients
Grade 1	2
Grade 2	4
Grade 3	4
Grade 4	4

Microfracture of the chondral defects was performed in 3 cases. For the rest of the 11 cases, debridement of the loose cartilage flaps was performed.

Other associated intra-articular lesions were represented by partial posterior cruciate tear in 1 case, intercondylar notch osteophytes in 1 case and diffuse synovitis in 1 case. The partial posterior cruciate tear did not require surgical intervention. The intercondylar notch osteophytes were removed to prevent graft impingement and the synovitis was debrided to allow proper intra-articular visualization.

Discussion

The most important finding of this retrospective study is that a high number of patients with ACL tears have associated intrarticular pathology and an important number of these associated lesions need surgical attention.

The most frequent associated pathology was represented by meniscal tears, with the medial meniscus being the most frequently involved. This is consistent with other studies that showed a high incidence of meniscal tears associated with ACL insufficiency, and medial meniscus involvement with a higher rate [1,4]. Another interesting aspect seen in the literature, which we could not investigate, is that the incidence of associated lesions becomes higher with the time lapsed between the injury and the surgical reconstruction of the ACL [1,2,3,4,10]. This aspect leads to a general recommendation to reconstruct the ACL as soon as possible after the acute phase to prevent further damage to the knee as much as possible.

With regard to meniscal tear treatment, in our group of patients meniscectomy was performed with a higher incidence than meniscus suturing. This can be explained by several aspects: first, the tear type and location. Some meniscal tears are complex, and/or in a so called white zone which is avascular and has no potential for healing. Then there is the financial aspect, some meniscus suturing devices are expensive and supported by the patient.

The incidence of chondral injuries in our study was 15.9%, which is similar to other studies [11]. The majority of lesions were located in the medial compartment of the knee, again consistent with other data from the literature [12]. The vast majority of the patients with chondral pathology had also meniscus tears. This is an interesting aspect, raising the question whether the chondral defect is secondary to the meniscus tear or due to the chronic instability of the knee, or both. Studies have shown that there is a positive correlation between the incidence of chondral lesions and time from injury of the ACL, suggesting that instability of the knee has an important role in the chondral defects etiology [1,2,3,13].

Conclusions

ACL tears are frequently associated with other intra-

articular lesions, especially medial meniscus tears and chondral defects affecting the medial compartment. The surgeon dealing with ACL reconstruction must be aware of the high possibility of such associated lesions and be able to address them accordingly.

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