A prospective study comparing reconstruction of acute and chronic anterior cruciate ligament ruptures

CTJ Servant, N Bradbury, MD Holt, MJ Cross

ABSTRACT

We performed a prospective study of 114 patients who underwent a patellar tendon anterior cruciate ligament reconstruction and who returned for formal independent assessment at an average of 7 months post-operatively. 62 patients underwent acute reconstruction, within 3 weeks of injury, and 52 patients underwent chronic reconstruction, more than 2 months after injury. All patients were operated on by a single surgeon using a standardised arthroscopic technique and accelerated rehabilitation programme. There was no significant difference in the incidence of knee stiffness between the acute and chronic groups. Flexion of less than 125° or a loss of extension of more than 10° occurred in 8 (12.9%) of the acute group and in 9 (17.3%) of the chronic group. All knees were clinically stable, but the mean KT1000 difference was 1.21mm in the acute group and 1.89mm in the chronic group ($p<0.05$). There were also significantly more meniscal injuries (65% versus 31%) and chondral lesions (31% versus 18%) in the chronic group. There were no significant differences in muscle strength or functional scores between the two groups. This study suggests that the optimum time for anterior cruciate ligament reconstruction is within the first 3 weeks after injury.

INTRODUCTION

There is no consensus of opinion within the literature regarding the ideal timing of ACL reconstruction. The major concern with performing a reconstruction acutely (within the first few weeks after injury) has been that there may be a greater risk of developing early post-operative knee stiffness due to arthrofibrosis. Indeed several reports in the literature suggest that acute reconstruction is associated with an increased risk of arthrofibrosis [4, 6, 7, 15, 22, 23, 25, 26, 27]. On the other hand, a few reports suggest that the timing of surgery has no appreciable effect on the range of motion [2, 5, 13, 14, 18, 19].

Similarly, it is not clear whether quadriceps strength returns slower after acute reconstruction [24, 27], or whether there is no difference [5]. Also, some have shown that there is no difference in stability between acute and chronic reconstructions [5, 18], whereas others have found that acute reconstructions tend to be more stable [14, 23].

Unfortunately, nearly all of the studies concerning the timing of ACL reconstruction have fundamental methodological flaws. Most of the studies are retrospective [2, 4, 5, 6, 7, 13, 15, 22, 23, 24, 25, 26, 27] and they include confounding factors such as varying surgical techniques [4, 6, 7, 13, 14, 15, 19, 22, 26], assorted graft materials [7, 13, 14, 15, 19, 23, 26, 27], different surgeons [4, 7, 14], failure to mention the tensioning position [7, 13, 14, 25, 27], diverse rehabilitation protocols [4, 6, 7, 15, 22, 25, 26, 27], and a lack of an independent assessor [4, 6, 7, 13, 14, 15, 23, 25, 27]. The definition of an acute reconstruction varies widely, with one study including reconstructions performed up to 14 weeks after injury [18].

To help establish the optimum time to perform an ACL reconstruction, we performed a prospective study of patients operated on by a single surgeon using a standardised surgical technique and an identical accelerated rehabilitation programme. All patients were independently assessed at least 3 months post-operatively. Our main aim was to determine whether acute reconstruction (defined as reconstruction performed within 3 weeks of injury) was associated with an increased risk of arthrofibrosis compared with chronic reconstruction (defined as reconstruction performed more than 8 weeks after injury).

MATERIALS AND METHODS

Patient selection

Between October 1995 and September 1999 the senior author (MJC) performed ? ACL reconstructions. We conducted a prospective study of those patients who satisfied the following criteria: (1) a complete rupture of the ACL, (2) absence of any other major ligamentous rupture (such as complete ruptures of the medial collateral ligament, posterolateral complex or posterior cruciate ligament), (3) reconstruction performed either acutely (within 3 weeks of injury) or chronically (more than 8 weeks after injury), (4) use of a patellar tendon autograft, and (5) return of the patient for a formal independent assessment at a minimum of 3 months post-operatively.

According to these criteria, 114 patients were included in this study. 62 patients underwent acute reconstruction and 52 patients underwent chronic reconstruction. The median time from injury to reconstruction was 7 days in the acute group and 19 months in the chronic group (Table 1).

The allocation of a patient to either the acute group or the chronic group was determined largely by the time of presentation to our clinic. Those in the acute group presented to the clinic within the first three weeks after injury, and, after full informed consent, opted for an ACL reconstruction to be performed on the next available operating list. All patients in the chronic group had either failed a period of rehabilitation or had opted to delay surgery after presenting acutely.

There were no statistically significant differences between the two groups for the variables of age at operation, gender, and time elapsed before independent post-operative assessment (Table 1).

Operative technique

All operations were performed by the senior author (MJC) under general anaesthesia and using a thigh tourniquet inflated with the knee flexed. The same arthroscopic technique was used for all reconstructions.

A diagnostic arthroscopy was first performed using high anterolateral and low anteromedial portals. Any meniscal or chondral pathology was treated appropriately. Irreparable meniscal tears were excised and any repairable meniscal lesions were sutured using an inside-out technique. Unstable chondral lesions were debrided back to a stable margin. A good notch clearance (including a notchplasty if necessary) was then performed, prior to harvesting the patellar tendon graft.

Two longitudinal incisions of 2 cm were used to harvest the graft. The upper incision was placed at the distal aspect of the patella and the lower just medial to the tibial tubercle. A trapezoidal-shaped bone block, typically measuring 20 x 10 mm, was removed from the patella. The middle third of the patellar tendon was incised subcutaneously and a tibial bone block, typically measuring 25 x 10 mm, was removed. The graft was prepared in a standardised manner, fashioning bullet-shaped bone blocks prior to drilling two anteroposterior holes into each block to accept non-absorbable sutures. In the femoral block one suture was passed through its hole twice to form a loop, which was then tightened down on to the block; the other suture was left unlooped. This suture arrangement allowed the femoral bone block to be controlled during its passage into its tunnel. In the tibial block both sutures were looped, with the loops left untightened.

Following graft harvest, the arthroscope was inserted through a central portal in the infrapatellar incision. This gave a deeper view of the notch and facilitated placement of the femoral tunnel. Adequate clearance of soft tissue gave a view of the position of the femoral tunnel 5mm anterior to the true posterior capsular insertion and at the 11 o'clock (right) or 1 o'clock (left) position with respect to the apex of the notch. This position was marked using a bone awl. With the knee fully flexed, the femoral tunnel was started with a 2.5mm drill and then continued with a 3.2mm drill, inserted from the anteromedial portal and aimed approximately 30° lateral and 30° anterior to the femoral axis. A 2.4mm Beath pin was then passed into the drill hole, followed by a cannulated drill of appropriate diameter, inserted to the same depth as the length of the femoral bone block.

Next the tibial tunnel was created using a drill guide inserted through the anteromedial portal. The tip of the guide was placed within the remnants of the stump of the ACL at a position one-third of the distance from the medial end of a line joining the anterior horn of the lateral meniscus and the medial tibial spine. A 3.2mm drill hole was created into which a 2.4mm blunt pin was inserted. The tunnel was then started using a cannulated drill of appropriate diameter, after which the blunt pin was replaced with the obturator of a bone corer. The tunnel was completed using an appropriate-sized bone corer, with the bone core being kept for grafting into the patellar and tibial defects at the end of the procedure. The length of the tibial tunnel was usually 45 to 50 mm. Debris including any remaining stump of the ACL at the aperture of the tibial tunnel was removed to avoid impingement when the knee was fully extended (thus minimising formation of a 'cyclops' lesion).

The patellar tendon autograft was then passed into the knee using a pull-through suture and the bone blocks positioned in their tunnels and secured. The bone block in the femoral tunnel was placed with the cancellous side facing anterosuperiorly. With the knee fully flexed an interference screw, typically 7mm x 25mm in size, was inserted via the anteromedial portal into the interface between the bony tunnel and the cancellous area of the bone block to allow parallel placement of the interference screw with the bone block. Firm traction was then applied to the tibial bone block while the knee was taken through a full range of movement to pretension the graft and to observe full extension without impingement.

With the knee extended fully, a 5mm x 25mm post screw was then inserted into the anteromedial aspect of the proximal tibia, just below the tibial tunnel. The loop of the proximal suture of the tibial bone block was passed around the post screw, thus forming a block-and-tackle pulley system for tensioning. Once tensioned, the suture was tied. This was repeated using the distal suture, before tightening the post screw. An interference screw, typically 8mm x 20mm in size, was then inserted parallel and anterior to the tibial bone block. Finally, stability was checked by performing a Lachman test.

Bone graft (consisting of reamings and the tibial bone core) was inserted into the patellar and tibial defects, prior to routine wound closure. 10ml of 0.25% bupivacaine was instilled into the joint and around the arthroscopy portals.

Dressings were applied and a hinged knee brace was fitted to allow flexion from 0° to 90°.

Post-operative rehabilitation

A standardised accelerated rehabilitation regime was followed in all cases. The knee was braced from 0° to 90° for the first 2 weeks. Continuous passive motion from 30° to 60° was used for the duration of the patient's hospital stay. Patients began weight-bearing on crutches on the first post-operative day. After discharge simple analgesics were used for pain control and ice packs were used to control swelling. Active quadriceps and hamstring exercises were encouraged, aiming for full extension by 2 weeks.

Subsequent rehabilitation included closed-chain exercises and an emphasis on proprioceptive training. At 2 weeks, use of a stationary bicycle was permitted. At 6 weeks, patients were allowed to jog on the flat in straight lines, swim and use a normal bicycle. From 12 weeks general strengthening exercises were continued with agility work and sporting activities encouraged. Return to competitive sport involving jumping, pivoting or sidestepping was allowed 6 months after the reconstruction.

Patients were reviewed at 10 to 14 days for wound inspection and suture removal, with further review at 6 weeks, 6 months and then yearly. A formal independent assessment was carried out at least 3 months post-operatively.

Assessment

Pre-operatively, the date of injury and mechanism of injury were recorded. At the time of ACL reconstruction, any injury to ligamentous structures other than the ACL and any meniscal or chondral pathology was noted. Post-operatively, any complications, including further operations for arthrofibrosis, were recorded.

All patients were assessed independently by an experienced physiotherapist at a minimum of 3 months post-operatively. The assessor was blinded as to whether the patient had undergone an acute or chronic reconstruction. The median time to independent assessment was 7.0 months for all patients, 7.0 months in the acute group and 6.2 months in the chronic group (Table 1). Range of motion, stability and muscle strength were measured for both the operated knee and the contralateral normal knee. If surgery for arthrofibrosis was carried out, the last pre-surgery values were analysed.

Stability was measured clinically using the pivot shift test and objectively by using a KT-1000 knee ligament arthrometer (MEDmetric Corporation, San Diego, California) with a displacement force of 13.6kg (30lbs). The pivot shift test was graded as 0 (negative), 1 (glide), or 2 (jerk). Quadriceps and hamstring muscle strength was measured using a Cybex II+ Isokinetic dynamometer (Lumex Inc., Ronkonkoma, New York) at 180°/sec.

Two functional scores were also calculated: the Lysholm knee score [12] and a self-evaluation knee score, which was a subjective assessment by the patient of their level of satisfaction with their functional recovery.

Statistical analysis

Statistical analysis of the results was carried out using a standard statistical software package (SPSS 10.0 for Windows, SPSS Inc., 1999). Parametric variables were analysed using an unpaired t-test, non-parametric variables were analysed using the Mann-Whitney test and contingency tables were analysed using Fisher's exact test. In all cases, probability values were two-tailed with $p<0.05$ regarded as statistically significant.

RESULTS

There was no significant difference in the incidence of knee stiffness between acute and chronic ACL reconstructions (Table 2). Loss of motion (a loss of extension of more than 10° or flexion of less than 125°) occurred in 8 (12.9%) of the patients in the acute group and in 9 (17.3%) of the patients in the chronic group. Surgery for arthrofibrosis (typically a notchplasty and removal of a 'cyclops' lesion) was required following 4 acute reconstructions and 2 chronic reconstructions.

All knees were clinically stable, with 8 acute and 13 chronic patients having a pivot glide. On instrumented laxity testing using a KT-1000 arthrometer, the mean difference in anterior tibial translation was 1.21mm for acute reconstructions and 1.89mm for chronic reconstructions ($p = 0.027$) (Table 3).

There were no significant differences in muscle strength or functional scores between the two groups (Tables 4 and 5).

More knees had associated meniscal injuries (65% versus 31%) and chondral lesions (31% versus 18%) in the chronic group (Table 6). As would be expected, medial collateral ligament injuries were more common in the acute group since such injuries commonly occur at the same time as the ACL is ruptured and then go on to heal. There were no graft failures in either group.

DISCUSSION

The timing of ACL reconstruction has been controversial. Early reconstruction may allow an earlier return to high-level sport and other activities involving side-stepping and pivoting. It also protects both the joint and the secondary restraints from being injured by recurrent episodes of instability, since there is clear evidence that delayed ACL reconstruction is associated with an increased incidence of meniscal and chondral pathology [9, 10, 17]. Additionally, a meniscal repair is more likely to heal if the ACL is reconstructed at the same time [3, 8, 11].

However, there have been fears that early reconstruction is linked to an increased risk of post-operative joint stiffness due to arthrofibrosis [4, 6, 7, 15, 22, 23, 25, 26, 27].

This study suggests that ACL reconstruction performed within 3 weeks of injury is not associated with an increased risk of arthrofibrosis. Furthermore, the study confirms that early reconstruction is associated with less meniscal tears and chondral lesions.

The study also shows that acutely reconstructed knees tend to be more stable. We believe this may be due to the presence of an increased healing response in the acutely injured knee. Although the human ACL fails to heal after complete rupture, it progresses through four distinct histological phases: inflammation (up to three weeks after injury), epiligamentous repair (three to eight weeks), proliferation (eight to twenty weeks), and remodelling [16]. During the phase of epiligamentous repair, a layer of synovial tissue forms around the ruptured ligament. It has also been shown that human autografts have been shown to be viable as early as three weeks after ACL reconstruction has been performed [1, 20, 21], and this early viability is thought to be due to synovial nutrition and early vascular ingrowth. Thus, it may be postulated that, if a reconstruction is performed within the first few weeks after injury, when the injured ACL is in the phase of epiligamentous repair, early vascular ingrowth will be enhanced. This may result in greater graft viability and stiffness.

The increased inflammatory response present in an acutely injured knee also may be thought to lead to a propensity for arthrofibrosis, but, with meticulous surgery and the use of an accelerated rehabilitation programme, arthrofibrosis can be kept to a minimum. The main surgical steps that help prevent arthrofibrosis are a good notch clearance (including a notchplasty if required), isometric tunnel placement, and graft tensioning in extension.

A criticism of our study is that it was not randomised. However, in previous studies of the timing of ACL reconstruction, patients were also not randomised between the two groups of acute and chronic reconstruction [2, 4, 5, 6, 7, 13, 14, 15, 18, 19, 22, 23, 24, 25, 26, 27]. Random allocation of patients between the two groups is not possible as most patients would not accept being forced to delay their surgery if they were randomised into the chronic group. In our study, allocation to the groups was determined largely by the time of each patient’s presentation to our clinic. In general, those who presented early underwent an acute reconstruction, whereas those who presented late underwent a chronic reconstruction. We recognise this may give rise to bias but it is neither possible to control this (a randomised study not being possible) nor to identify the direction of bias. The acute group, for example, may either be more severely injured and more likely to present and opt for early surgery, or, conversely, less severely injured because the secondary restraints have not yet been damaged by repeated episodes of subluxation.

CONCLUSIONS

This study suggests that acute ACL reconstruction, performed within 3 weeks of injury, is not associated with an increased risk of knee stiffness due to arthrofibrosis, when compared with chronic reconstruction, performed more than 8 weeks after injury. Furthermore, acute reconstruction is associated with less meniscal and chondral pathology and results in a more stable knee.

We advocate that ACL reconstruction is performed within the first 3 weeks after injury.

REFERENCES

1 Abe S, Kurosaka M, Iguchi T, et al.: Light and electron microscopic study of remodeling and maturation process in autogenous graft for anterior cruciate ligament reconstruction. *Arthroscopy 9:* 394-405, 1993

2 Bach BR, Jr., Jones GT, Sweet FA, et al.: Arthroscopy-assisted anterior cruciate ligament reconstruction using patellar tendon substitution. Two- to four-year follow-up results. *Am J Sports Med 22:* 758-767, 1994

3 Barber FA, Click SD: Meniscus repair rehabilitation with concurrent anterior cruciate reconstruction. *Arthroscopy 13:* 433-437, 1997

4 Cosgarea AJ, Sebastianelli WJ, DeHaven KE: Prevention of arthrofibrosis after anterior cruciate ligament reconstruction using the central third patellar tendon autograft. *Am J Sports Med 23:* 87-92, 1995

5 Goradia VK, Grana WA: A comparison of outcomes at 2 to 6 years after acute and chronic anterior cruciate ligament reconstructions using hamstring tendon grafts. *Arthroscopy 17:* 383-392, 2001

6 Graf BK, Ott JW, Lange RH, et al.: Risk factors for restricted motion after anterior cruciate reconstruction. *Orthopedics 17:* 909-912, 1994

7 Harner CD, Irrgang JJ, Paul J, et al.: Loss of motion after anterior cruciate ligament reconstruction. *Am J Sports Med 20:* 499-506, 1992

8 Jensen NC, Riis J, Robertsen K, et al.: Arthroscopic repair of the ruptured meniscus: one to 6.3 years follow up. *Arthroscopy 10:* 211-214, 1994

9 Jomha NM, Borton DC, Clingeleffer AJ, et al.: Long-term osteoarthritic changes in anterior cruciate ligament reconstructed knees. *Clin Orthop 358:* 188-193, 1999

10 Keene GC, Bickerstaff D, Rae PJ, et al.: The natural history of meniscal tears in anterior cruciate ligament insufficiency. *Am J Sports Med 21:* 672-679, 1993

11 Kimura M, Shirakura K, Hasegawa A, et al.: Second look arthroscopy after meniscal repair. Factors affecting the healing rate. *Clin Orthop 314:* 185-191, 1995

12 Lysholm J, Gillquist J: Evaluation of knee ligament surgery results with special emphasis on use of a scoring scale. *Am J Sports Med 10:* 150-154, 1982

13 Majors RA, Woodfin B: Achieving full range of motion after anterior cruciate ligament reconstruction. *Am J Sports Med 24:* 350-355, 1996

14 Marcacci M, Zaffagnini S, Iacono F, et al.: Early versus late reconstruction for anterior cruciate ligament rupture. Results after five years of followup. *Am J Sports Med 23:* 690-693, 1995j

15 Mohtadi NG, Webster-Bogaert S, Fowler PJ: Limitation of motion following anterior cruciate ligament reconstruction. A case-control study. *Am J Sports Med 19:* 620-624, 1991

16 Murray MM, Martin SD, Martin TL, et al.: Histological changes in the human anterior cruciate ligament after rupture. *J Bone Joint Surg Am 82A:* 1387-1397, 2000x

17 Murrell GA, Maddali S, Horovitz L, et al.: The effects of time course after anterior cruciate ligament injury in correlation with meniscal and cartilage loss. *Am J Sports Med 29:* 9-14, 2001

18 Noyes FR, Barber-Westin SD: A comparison of results in acute and chronic anterior cruciate ligament ruptures of arthroscopically assisted autogenous patellar tendon reconstruction. *Am J Sports Med 25:* 460-471, 1997

19 O'Neill DB: Arthroscopically assisted reconstruction of the anterior cruciate ligament. A prospective randomized analysis of three techniques. *J Bone Joint Surg Am 78A:* 803-813, 1996
20 Rougraff B, Shelbourne KD, Gerth PK, et al.: Arthroscopic and histologic analysis of human patellar tendon autografts used for anterior cruciate ligament reconstruction. *Am J Sports Med 21:* 277-284, 1993
21 Rougraff BT, Shelbourne KD: Early histologic appearance of human patellar tendon autografts used for anterior cruciate ligament reconstruction. *Knee Surg Sports Traumatol Arthrosc 7:* 9-14, 1999
22 Schippinger G, Passler JM, Seibert FJ, et al.: [Are complications in cruciate ligament replacement operations with patellar tendon transplantation dependent on surgical technique and surgical timing?]. *Swiss Surg 3:* 154-159, 1997
23 Sgaglione NA, Schwartz RE: Arthroscopically assisted reconstruction of the anterior cruciate ligament: initial clinical experience and minimal 2-year follow-up comparing endoscopic transtibial and two-incision techniques. *Arthroscopy 13:* 156-165, 1997
24 Shelbourne KD, Foulk DA: Timing of surgery in acute anterior cruciate ligament tears on the return of quadriceps muscle strength after reconstruction using an autogenous patellar tendon graft. *Am J Sports Med 23:* 686-689, 1995
25 Shelbourne KD, Wilckens JH, Mollabashy A, et al.: Arthrofibrosis in acute anterior cruciate ligament reconstruction. The effect of timing of reconstruction and rehabilitation. *Am J Sports Med 19:* 332-336, 1991
26 Strum GM, Friedman MJ, Fox JM, et al.: Acute anterior cruciate ligament reconstruction. Analysis of complications. *Clin Orthop 253:* 184-189, 1990
27 Wasilewski SA, Covall DJ, Cohen S: Effect of surgical timing on recovery and associated injuries after anterior cruciate ligament reconstruction. *Am J Sports Med 21:* 338-342, 1993

Table 1. Patient demographics

	ACUTE GROUP	CHRONIC GROUP	SIGNIFICANCE (p values)	STATISTICAL TEST
NUMBER	62	52		
AGE	30.7 years (14 to 58)	29.9 (16 to 52)	0.272	UPT
NUMBER OF MALES	36 (58.1%)	34 (65.4%)	0.272	FE
TIME AFTER INJURY[a]	7 days (2 to 21)	19 months (2 to 337)		
REVIEW (months)[b]	7.0 (3 to 84)	6.2 (3 to 36)	0.173	UPT

[a] Median interval from date of injury to date of operation

[b] Median interval from date of operation to date of independent review

UPT = unpaired t-test

FE = Fisher's exact test

Table 2. Range of motion

	ACUTE GROUP	CHRONIC GROUP	SIGNIFICANCE (p values)	STATISTICAL TEST
MEAN EXTENSION[c]	-0.4° (-11° to 8°)	+0.2° (-8° to 5°)	0.447	UPT
>10° LOSS OF EXTENSION[d]	4 (6.5%)	3 (5.8%)	0.598	FE
MEAN FLEXION	134.5° (99° to 150°)	133.4° (105° to 140°)	0.446	UPT
<125° FLEXION	5 (8.1%)	6 (11.5%)	0.491	FE
LOSS OF MOTION[e]	8 (12.9%)	9 (17.3%)	0.531	FE
RE-OPERATION FOR ARTHROFIBROSIS	4 (6.5%)	2 (3.8%)	0.427	FE

[c] Hyperextension is expressed as positive, loss of extension as negative

[d] Compared with normal contralateral side

[e] >10° loss of extension or <125° flexion

Table 3. Stability

	ACUTE GROUP	CHRONIC GROUP	SIGNIFICANCE (p values)	STATISTICAL TEST
KT-1000[f]	+1.21 (7 to –3)	+1.89 (6 to –3.5)	0.027*	MWT
PIVOT SHIFT TEST (number with glide)[g]	8 (12.9%)	13 (25.0%)	0.106	MWT

[f] Anterior tibial translation in mm compared to the normal contralateral knee using a KT-1000 arthrometer with a displacement force of 13.6kg (30lb)

[g] Clinical pivot shift testing recorded as negative, glide or jerk. There were no jerks elicited in either group.

MWT = Mann-Whitney test

* Significant result ($p < 0.05$)

Table 4. Muscle strength

	ACUTE GROUP	CHRONIC GROUP	SIGNIFICANCE (p values)	STATISTICAL TEST
QUADRICEPS[h]	74.1% (21 to 100)	73.4% (29 to 100)	0.854	UPT
HAMSTRINGS[i]	93.1% (45 to 175)	90.6% (46 to 120)	0.461	UPT

[h] Average percentage of non-operated leg on Cybex II+ Isokinetic dynamometer (knee extension at 180°/sec)

[i] Average percentage of non-operated leg on Cybex II+ Isokinetic dynamometer (knee flexion at 180°/sec)

Table 5. Functional scores

	ACUTE GROUP	CHRONIC GROUP	SIGNIFICANCE (p values)	STATISTICAL TEST
LYSHOLM[j]	84.2 (41 to 100)	84.8 (45 to 100)	0.854	UPT
SELF-EVALUATION[k]	80.9 (60 to 98)	76.9 (40 to 95)	0.461	UPT

[j] Lysholm knee score: excellent 95-100, good 84-94, fair 65-83, poor <65

[k] Subjective assessment by patient: level of satisfaction with functional recovery on a 100-point analogue scale

Table 6. Associated pathology (meniscal tears, chondral lesions and MCL tears)

	ACUTE GROUP	CHRONIC GROUP	SIGNIFICANCE (p values)	STATISTICAL TEST
MENISCAL TEARS[1]	19 (30.6%)	34 (65.4%)	0.0002*	FE
CHONDRAL LESIONS[1]	11 (17.7%)	16 (30.8%)	0.080	FE
MCL TEARS[1]	15 (24.2%)	3 (5.8%)	0.006*	FE

[1] Number of knees affected