

# The Incidence of Secondary Pathology after ACL Rupture in over 5000 patients.

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## INTRODUCTION

Additional injuries to the menisci and articular cartilage often exist at the time of ACL reconstructive surgery. These either occur at the time of the index injury, from pre-existing pathology, or develop later due to repeated injury or abnormal loading. It has been established that a delay of more than 12 months to ACL reconstruction is associated with more secondary pathology and long term degenerative change. What is less clear is a more precise estimation of the length of time that is appropriate to delay before surgery without increasing the risk of damage to the articular cartilage and menisci.

The aim of this study was to determine the incidence of secondary pathology in anterior cruciate ligament (ACL) deficient knees with respect to the time between injury and reconstruction in a large group of patients, and establish a 'safe' waiting time.

## METHODS

A review of 5086 patients undergoing primary ACL reconstruction, using hamstring graft, carried out between January 2000 and August 2010 at the North Sydney Orthopaedics and Sports Medicine Centre. Data collected included the interval between injury and surgery, types and location of meniscal tears (requiring meniscectomy) and location and severity of chondral damage (ICRS grading system), gender and age.

## RESULTS

There were 3251 (64%) male and 1835 (36%) female patients, with a mean age of 30 years (9 to 69 years). The median time to surgery was 3 months (0.25 to 480). Overall, an increasing incidence of medial meniscal surgery and chondral damage occurred with increasing time to surgery. The incidence of lateral meniscal tears did not increase significantly.

The odds of requiring medial meniscal surgery was increased by a factor of 2 if ACL reconstruction

was delayed more than 4 months and increased by a factor of 6 if surgery was delayed more than 12 months.

## RESULTS (cont)

The effect of delaying surgery on medial meniscal status was also pronounced in the <17 year age group where a delay of 5-12 months doubled the odds of medial meniscal surgery (OR 2.0, p=0.001) and a delay of >12 months quadrupled the odds of medial meniscal surgery (OR 4.3, p=0.001).

Increasing age was associated with a greater odds of chondral damage (OR 4.6, p=0.001) and medial meniscal injury (OR 2.9, p=0.001), but not lateral meniscal injury. When compared to females, males had a greater incidence of lateral meniscal tears (34% vs. 20%, p=0.001) and

	Odds ratio	95% Confidence Interval	p
<b>Any meniscal surgery or chondral injury</b>			
<b>&lt; 5 months (reference category)</b>			
5-12 months	1.3	1.1-1.5	0.002
>12 months	3.4	2.9-4.0	0.000
<b>Medial meniscal surgery</b>			
<b>&lt; 5 months (reference category)</b>			
5-12 months	1.8	1.5-2.1	0.000
>12 months	6.4	5.5-7.5	0.000
<b>Lateral meniscal surgery</b>			
<b>&lt; 5 months (reference category)</b>			
5-12 months	1.0	0.9-1.2	0.841
>12 months	1.3	1.2-1.6	0.000
<b>Chondral Damage</b>			
<b>&lt; 5 months (reference category)</b>			
5-12 months	1.4	1.2-1.6	0.000
>12 months	4.0	3.4-4.9	0.000

medial meniscal tears (28% vs. 25%, p=0.006), but not chondral damage (35% vs. 36%, p=0.104).

## CONCLUSIONS

The incidence of chondral damage and medial meniscal tears increases with increasing time after injury. The incidence of lateral meniscal tears does not increase. Ideally

and particularly in younger patients, ACL reconstruction should not be delayed beyond 4 months from injury.

% of patients requiring medial meniscectomy

