

Combined Anterior Cruciate Ligament and Collateral Ligament Knee Reconstruction

Introduction

Surgery: In complex multiple ligament knee reconstructions, a combination of autografts (medial hamstring tendons, patella tendon from ipsilateral and contralateral limb), and allografts eg Achilles tendon, may be used depending upon the circumstances and available tissue.

Some patients will be operated on acutely, whilst others will be operated on for chronic instability.

Indications for surgery: Knee instability

Expected Length of Stay: - one night

Surgeons: Mr John Keating, Mr Tim White, Mr Richard Nutton

Scope of practice

These guidelines are designed to guide physiotherapists when treating patients following this surgical procedure. These guidelines were produced by a process of systematic review of the current evidence based literature, medical and peer consultation. They were correct at the time of writing. The guidelines should be used in conjunction with the clinical reasoning skills of the physiotherapist, liaison and communication with the surgeon and patients should always be treated on a case-by-case basis.

Aim

The aim of these guidelines is to provide physiotherapy staff with a series of recommendations from the current evidence base to assist them in the management of patients who have undergone this surgical procedure.

Literature review question

What is the most effective and safe rehabilitation programme to follow for patients undergoing combined anterior cruciate and collateral ligament reconstruction of the knee, from day of surgery to return to function and sport?

Results

There were no articles that directly answered the literature review question. No articles relevant to rehabilitation specifically for the multiple ligament reconstructed knees were found but key articles with descriptors of rehabilitation protocols were included for information.

Post-operative instructions from the surgeon must always be followed.

Recommendations

Phase 1: 0-6 weeks

Goals	Recommendations	
Pain relief	Post-op hinged brace applied in recovery room set at 0-90° for 6 weeks Ankle, foot, toe ROM exs Mobilise TWB for first 2 weeks Mobilise PWB from 2-4 weeks Progress to FWB from 4-6 weeks post op	C
Decrease inflammation	Ice packs applied regularly	C
Increase ROM	Patella mobilisations Passive and active flexion & extension allowed within brace eg sliding board Aim for 90° flexion by 6 weeks post op Avoid full hyper extension	C
Increase muscle strength	Static quadriceps contractions Co-contractions of quads and hams SLR (within brace) Gradual increase in closed chain exs Calf exercises Hip & core (gluteals & abdominal) exercises eg prone SLR, avoiding varus/valgus stress through knee	C

Phase 2: 6-12 weeks

Precautions:

Timescales are approximate. Rehabilitation progress, at each stage, is guided by minimal swelling, resolution of pain, good muscle recruitment and no changes in ligament laxity on testing.

Goals	Recommendations	
Increase ROM	Unlock brace to allow full flexion at 6 weeks Wean off brace gradually over next 2-4 weeks Continue to increase passive & active assisted range of flexion	C
Progress weight bearing Increase muscle strength	Aim for FWB at 6 weeks post op Gradual increase in closed kinetic chain quadriceps exercises eg leg press, mini squats Exercise bike	C C

Improve proprioception

Wobble board, trampette etc

C

Phase 3: 12 weeks – 1 year

Precautions:

Timescales are approximate. Rehabilitation progress, at each stage, is guided by minimal swelling, resolution of pain, good muscle recruitment and no changes in ligament laxity on testing.

Ref: Anterior Cruciate Ligament Reconstruction Guidelines (2009) under review at time of writing (May 2010)

Goals

Recommendations

Restore functional strength, endurance, neuromuscular control & confidence

Gradual progression of all resisted, proprioception and functional exercises as per ACLR Guidelines **C**

*Plyometrics may be started once at least 90% strength of unaffected limb achieved and not before 4 months

***Criteria for return to functional and sporting activities**

Non-irritable, stable knee

Affected lower limb should be >90% strength of unaffected limb (assuming this is 'normal'), using isokinetic testing if available *before* plyometrics and running drills commence.

Functional hop tests: right = left within 10% difference

Expectations of Surgery

Provided no long term ligamentous laxity, patients should aim for a fully functional knee that should tolerate return to sport.

Search Process

Appraisal process: Literature searches using key words were performed on the databases listed below.

Total number of articles selected: 0

Total number of articles discarded: 0

CASPs used: n/a

Data Bases:

Data Base	Dates	Limitations
Medline	1989-2009	English
Cochrane	1989-2009	English
Google	1989-2009	English
Amed	1989-2009	English
Cinahl	1989-2009	English
Embase	1989-2009	English
Sports Discus	1989-2009	English
Joanna Briggs	1989-2009	English
NHS QIS	1989-2009	English

Key Words:

Anterior Cruciate Ligament/ACL	Combined Anterior Cruciate & Collateral Ligament reconstruction
Reconstruction	Knee reconstruction
Physical therapy	Post operative rehabilitation
Physiotherapy	Post operative care

Bibliography

Engle R P and Canner G C Knee Ligament Rehabilitation Chapter 8 Posterolateral Instability: Diagnosis and Treatment pp 85-91

Halinen J et al (2009) Range of Motion and Quadriceps Muscle Power After Early Surgical Treatment of Acute Combined Anterior Cruciate and Grade III Medial Collateral Ligament Injuries JBJS Am 91 pp1305-12

Irrgang J J and Fitzgerald G K (2000) Rehabilitation of the Multiple-Ligament Injured Knee Clinics in Sports Medicine 19(3) pp545-71

Jarvi S and Shelbourne K D (2001) Non-operative or Delayed Surgical Treatment of Combined Cruciate Ligaments and Medial side Knee Injuries Sports Medicine and Arthroscopy Review 9 pp185-192

Map of Medicine Health guides (2008) PCL tear- management, PLC injury – management

Noyes B and Barber-Westin S (1995) Treatment of Acute Combined Ruptures of Anterior Cruciate and Medial Collateral Ligament of the Knee Am J Sp Med 23 pp380-9

Rue J-P H et al (2007) Minimally Invasive Medial Collateral Ligament Reconstruction Using Achilles Tendon Allograft Techniques in Knee Surgery 6(4) pp266-273

Williams A Chelsea & Westminster Hospital Rehabilitation Protocol –ACL & PLC reconstruction

Disclaimer: This information should be used in conjunction with treatment from an appropriate physiotherapist and not in isolation.

Appendix

Levels of Evidence

Evidence from large randomised controlled trials (RCTs) or systematic review (including meta-analyses)†	A1
Evidence from at least one high quality cohort	A2
Evidence from at least on moderate size RCT or systematic review	A3
Evidence from at least one RCT	B
Expert opinions	C
Laboratory Evidence*	D

† *Arbitrarily, the following cut-off points have been used: large study size ≥ 50 patients per intervention group; moderate study size ≥ 30 patients per intervention group.*

* *Arbitrarily, added by Lothian Physiotherapy Musculoskeletal Network Group*

Modified from: MacAuley D and Best TM (2007) Evidence-based Sports Medicine. 2nd Edition. BMJ Books. Blackwell Publishing. Oxford, UK.

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