Patellofemoral Reconstruction Rehabilitation Program

Introduction

Patellofemoral reconstruction is not often required. Most cases of patellofemoral syndrome can be treated with a specific muscle strengthening program under the guidance of a physiotherapist. This program will be similar to what is done for non-operative management of patellofemoral dysfunction, and should be followed for up to one year post operatively.

The rationale for this program is to stabilise an unstable joint, or a potentially unstable joint, and decrease the stress on the patellofemoral joint. Joint stabilisation has been shown to decrease articular cartilage injury. This should, in turn, decrease the incidence of later osteoarthritic change. It will also allow return to activities that were difficult secondary to joint instability or activities that increased forces on the patellofemoral joint.

Rehabilitation following patellofemoral reconstruction is an essential part of full recovery. Ideally this rehabilitation should be carried out under the guidance of a physiotherapist.

This Rehab program has been designed to guide your physiotherapist through your rehabilitation as I think it should be done. All rehabilitation programs are flexible. Individual progress varies greatly, and this will require some modifications of the program at the discretion of your physiotherapist. Different techniques may also be used by your physio depending on available equipment, and your individual needs to meet the described aims.

Surgical Procedure

The iliotibial band is a strong fibrous band on the lateral (outside) side of your knee which pulls the patella sideways. This tendon is released during your surgery. If instability is present, the ITB release is then combined with a reconstruction of the medial retinacular structures which act to pull the patella medially, or the opposite direction of the ITB.

Aims of Physiotherapy

Physiotherapy should ideally commence preoperatively. Patients who have a pain-free, mobile, healthy joint recover far quicker post operatively than those patients with acutely painful joints. It is ideal to learn the required exercises pre-operatively. The treatment goals are:

1. Diminish post-operative pain and swelling
2. Restore full range of motion
3. Restore muscle tone and strength
4. Maintain and develop aerobic conditioning
5. Proprioceptive retraining allowing a safe return to work and sport as soon as possible

Brief Timeline:

Day 1	Begin physiotherapy
Day 10-14	Wounds usually healed enough to remain uncovered
	Can start swimming
	Can usually return to work for “light duties” if available
	Usually walking reasonably comfortably
Week 6	Can commence running in a straight line
Week 12	Commence sport specific training. Can start to jump.
	Return to sport as able

The Rehabilitation Program

Stage 1 *Wound Healing phase*

Day 1- Day 14

Aims

Adequate pain relief

Progressively stop using crutches

Decrease leg and joint swelling

Restore full extension

Aim for 90 degrees flexion

Establish muscle control and aim for normal gait

Treatment Guidelines

- Weight bearing as tolerated, decreasing dependence on crutches
- Pain and swelling reduction techniques including

  Ice

  Elevation

  Co-contraction

  Pressure pump

  Biofeedback and selective muscle stimulation if necessary
- Range of motion exercises aiming for full extension at 14 days

  Stationary bike- start with seat high, low resistance

  Prone leg hangs

  Gait retraining with full extension at heel strike
- Strengthening program

  Static Quads co-contraction in neutral and hip internal rotation emphasizing VMO control and various angles of knee flexion progressing to weight bearing positions. With biofeedback if possible.
- Balance and proprioception training

  Single leg stance with eyes open / closed

AVOID: Quads exercises with external rotation of the hip, open chain quads exercises, patella mobilisations

Stage 2 ***Hamstrings and Quadriceps Control***

Week 2- week 6

Aims

Obtain a full unrestricted range of motion

Develop good muscle control and early proprioceptive skills

Maintain cardiovascular fitness

Normalise gait

Treatment guidelines

- Use active and passive techniques to aim for full range of motion
- Can commence swimming once wounds healed (no whip kick)
- Gym equipment can be introduced once the effusion is decreasing

  Stepper

  Leg Press to 45 degrees

  Mini Trampoline

  Stationary bike
- Progress Co-contraction for muscle control

  Increase reps / length of contraction

  2 leg quarter squats

  Lunges

  Stepping

  Elastic cords
- Soft tissue treatment to tight lateral structures, hamstrings and calf muscles
- Scar massage

AVOID: Quads exercises with external rotation of the hip, open chain quads exercises, patella mobilisations.

Stage 3 ***Muscle strengthening and proprioception***

Weeks 6-12

Aims

Improve neuromuscular control and proprioception

Continue working on cardio fitness

Improve endurance capacity of muscles

Improve patient confidence

Treatment Guidelines

- Progress with resistance on gym equipment
  - Leg press
  - Hamstring curls
  - Stairmaster
  - Treadmill power walking
  - Rower and cross trainer
- Progress with strength training
  - Progress co-contractions to dynamic
  - Step lunges
  - Half squats
  - Wall squats
  - Eccentric quads exercises in ER may be commenced with increasing VMO strength
- Can begin jogging on the flat
  - Start cycling on a normal bicycle
  - Progress with proprioceptive work
    - Lateral stepping
    - Slide board
    - Wobble board
    - Trampoline balance

AVOID: Open chain quads exercises, patella mobilisations.

Stage 4 ***Sport specific***

Weeks 12-20

Aims

Prepare to return to sport

Incorporate more sport specific activities

Introduce agility and reaction time into proprioceptive work

Increase leg strength

Develop patient confidence

Treatment Guidelines

- Patellofemoral tapping should be introduced and continued for 1 year following surgery during sporting activities
- General strength work

  Half squats with resistance

  Leg press

  Leg curls

  Wall squats

  Step work on progressively higher steps
- Sport specific

  Shuttle runs

  Ball skills

  Sideways running

  Skipping rope
- Low impact step aerobics class
- Swimming can include using flippers

NB: Ideally quadriceps exercises should remain closed chain for the first 12 months

Possible Complications

Infection

The patient complains of a constant, severe pain. The patient may be sweaty, ill, have a temperature and often a tense effusion.

Post operative haemorrhage into the donor graft site

Results in a hot tender area over the posteromedial thigh. May be difficult to distinguish from infection. Knee motion is usually not restricted.

Deep Venous Thrombosis

The patient has calf, popliteal, thigh or groin pain and tenderness associated with swelling. Should have a venous duplex performed if this concern exists

Stiffness

May occur at any stage of the rehabilitation. The causes include:

Arthrofibrosis

Complex regional pain syndrome

If any concerns please contact the rooms, the private hospital, or the orthopaedic registrar through the public hospital ASAP