

## GUIDELINES FOR PHYSIOTHERAPY FOLLOWING A PERIACETABULAR OSTEOTOMY

Mr Malviya is the only Consultant currently carrying out Periacetabular Osteotomies at Northumbria

Name of Protocol / Regime	Consultant	Updated On	Updated By	Review Date
PERIACETABULAR OSTEOTOMY (PAO)	Malviya	MARCH 2016	C.Pennie L.L. Group	JAN2018

Healthcare NHS Foundation Trust.

He uses a minimally invasive technique the modified Smith-Peterson approach.

During this operation the Sartorius and the inguinal ligament origin to the anterior superior iliac spine is detached and then repaired at the end of the operation. The iliacus is also dissected subperiosteally from the inner part of the pelvis. Earlier rehab with FWB too early in the course of recovery can increase the incidence of stress fractures.

### *Inpatients*

#### Post-op

The patient will routinely stay on the orthopaedic ward for around 4-5 days post op.

- Patients routinely get up with physio on day 1. They will normally have a PCA for analgesia along with local anaesthetic infiltration using a wound catheter for 48 hours.
- For the first six weeks post-operatively, **no active SLR or gravity resisted hip abduction should be carried out.** (Due to the Sartorius and TFL reattachment needing to heal).
- The patient will require a leg lifter to get in and out of bed, to avoid active SLR.
- Routine circulation and deep breathing exercises should be given.
- ROM exercises in supine and standing should be shown as per the patient PAO information leaflet. It is important to regain hip ROM as quickly as pain allows.

#### Weight Bearing

- Weight bearing is limited to **10-15kg TTWB** for the first 6 weeks post-surgery. (Progression of weight bearing will be after the patient's 6/52 consultant review with x-ray confirmation of progressive healing).
- TTWB should be taught initially with a Zimmer frame then elbow crutches as confidence and pain allows.
- Stair assessment TTWB will be required before discharge.

## **On-Discharge**

- The patient should be discharged with the PAO leaflet and TTWB with elbow crutches. They will also need to be able to transfer independently with their crutches and have completed a stairs assessment.

## **Outpatient Follow Up**

- The ward physiotherapist should refer the patient for outpatient physiotherapy.
- The patient should receive an out-patient physiotherapy appointment around 2 weeks post op.
- All patient should complete the HOOS on their first and last physiotherapy

## **PHASE I (weeks 1-6)**

### **AIMS**

- Reduce pain and swelling
- Protect the surgically repaired tissue
- Improve ROM

### **WEIGHT-BEARING**

- Weight-bearing continues to be limited to 10-15kg TTWB for the first 6/52 until x-ray confirmation of callus formation has been confirmed at the consultant review appointment.

### **ROM**

- All ROM exercises should be performed within pain limits to avoid exacerbating symptoms.
- There are no ROM restrictions, but flexion beyond 90 degrees may be difficult in the initial recovery phase. ROM exercises should be encouraged in all planes aiming to return quickly to good ROM.
- A sliding board may be required initially to help initiate hip flexion and hip abduction.

### **STRENGTHENING**

- Active SLR and active gravity resisted (side lying) hip abduction should be **avoided** for 6//52.
- IRQ and TRQ can be commenced.
- Isometric glutes
- Isometric quads
- Transversus abdominus activation.

### **CARDIOVASCULAR (CV)**

- From 2 weeks, providing scars have healed, hydrotherapy style hip ROM work can be commenced in the pool.
- Uni cam bike, (if available) as pain allows. (NWB through operated LL).

### **ADDITIONAL ADVICE/CAUTIONS**

- Avoid lifting heavy objects
- Avoid sitting on low chairs.

## **PHASE II (weeks 6-12)**

### **AIMS**

- Reduce pain and swelling
- Progress weight bearing.
- Restore full range of movement
- Improve muscle strength
- Improve core strength

### **WEIGHT-BEARING**

After the patient has been reviewed and X-rayed in clinic, weight bearing can gradually be increased:

- **Week 6-8** 25% PWB with 2 elbow crutches
- **Week 8-10** 50%PWB with 2 elbow crutches
- **Week 10-12** progress to FWB aiming to be FWB crutch free around 12 weeks post op.

Gait re-education should emphasise hip and core control to maximise lower limb alignment. Patients may need to be encouraged to walk slowly and to shorten their stride length to decrease the load on the anterior hip joint.

**Siris should be checked for instruction at 6/52 prior to starting to progress weight bearing. (Weight bearing too soon can lead to increased incidences of stress fracture).**

### **ROM**

- Continue all ROM exercises, aiming for full ROM.

### **STRENGTHENING**

- Active SLR and active side lying hip abduction can commence from 6 weeks, initially in standing then progress as pain and strength improves.
- Gluteal strengthening work can commence, bridging can start once WB status is increased to FWB
- Core stability and strengthening can be progressed.

### **CV**

- Week 8 resistance free exercise bike can start. (If available a recumbent bike is more comfortable).
- Continue pool based ROM exercises.

### **Driving**

- Can commence once adequate control of the leg is gained and WB status has been progressed. Normally around 8-10 weeks.

## **PHASE III (week 12 to 6 months)**

### **AIMS**

- Restore full range of movement
- Improve muscle strength
- Improve core strength
- Improve balance
- Improve/maintain cardiovascular fitness
- No running for 6 months post op.

### **WEIGHT-BEARING**

- By week 12 the patient should be fully weight bearing.

### **ROM**

- Continue with ROM exercises as required aiming to regain full ROM.
- Passive ROM and stretches should be more aggressive if limitations persist.

### **CV**

- Non-impact endurance training can include stationary bike, cross trainer and swimming
- Resistance can gradually be added to the static bike but the time should initially be reduced in order not to overload the joint with the aim of gradually building the time back up.
- Treadmill walking should initially start on the flat.

### **STRENGTHENING**

- On-going core strengthening is essential. Gradually progress core exercises ensuring sufficient control is demonstrated with the previous level without pain or compensations. (side bridging, bridging, 4 point kneeling work.)
- Progress CKC exercises by performing unilaterally, increasing depth of movement and/or applying an external load. However monitor carefully for any reaction and to ensure not impinging.
- Incorporate multi-planar movements including directional lunges (forward, back, lateral, diagonal) as long as the patient is able to maintain good control and alignment during static lunges 3x10-15.
- CKC with perturbation (including theraband) or on unstable surfaces can also be added.

### **BALANCE**

- Single leg stance (SLS) can be commenced once the patient is FWB and have demonstrated the ability to perform a double leg mini squat on a stable surface whilst maintaining alignment.
- Single leg activities challenging proprioception and strengthening of the hip muscles in functional positions should be performed once confidence with SLS has been gained.
- Balance training can be progressed onto a wobble board when the patient can maintain optimal lower limb alignment with single leg stance on a stable surface and a single leg half squat and single leg calf raise. More functional and dynamic balance exercises can be integrated to the patient's rehabilitation if deemed appropriate and they have sufficient control.

## **ADDITIONAL ADVICE/CAUTIONS**

- Psoas tendinopathy may be a problem around this phase, because of the pubic osteotomy callus irritating the psoas tendon as it glides over the superior pubic ramus. Psoas stretching exercises will be beneficial.

## **PHASE IV (6+ months)**

Running can commence after 6 months if the following criteria have been achieved.

### **DECELERATION**

Commence deceleration training. This is required to teach a fundamental landing technique maintaining lower limb alignment with the aim of increasing lower limb force absorption ability and decreasing joint reaction forces. Consequently it is a vital component of any lower limb rehabilitation and a prerequisite to running and plyometrics. This can initially be done with a step down from a step then stabilising. With deceleration training the patient must be able to land softly and correctly as well as stabilise in optimal alignment for 5 seconds 3X10-15 before progression.

### **RUNNING CRITERIA**

- No pain or swelling.
- Full pain free ROM; hip, knee and ankle.
- Normal gait.
- Total hip strength 80% or more of the contra-lateral limb.
- Squat; unilateral 3X10 maintaining optimal alignment.
- Calf raise; unilateral 3X10 with good control.
- Gluteus medius; (level 1) external rotation in side lying 10X 5-8 second holds.
- Trunk side flexors; McGill's side bridge 10X 5-8 second holds.
- Deceleration training; stabilise in optimal alignment for 5 seconds 3X10.

### **RETURN TO SPORT**

- No pain or swelling.
- Full pain free ROM; hip, knee and ankle.
- Normal gait.
- Total hip strength 85% or more of the contra-lateral limb.
- Adductor strength 80% or more of the Abductor strength (Aim 1:1ratio).
- Squat; unilateral 3X10 maintaining optimal alignment.
- Calf raise; unilateral 3X10 with good control.
- Gluteus medius; (level 1) external rotation in side lying 10X 5-8 second holds.
- Trunk side flexors; McGill's side bridge 10X 5-8 second holds.
- Deceleration training; stabilise in optimal alignment for 5 seconds 3X10.

Return to sport/activity must be based on the individual presentation of each patient and their ability to fulfil set criteria (listed above). It will also depend heavily on the nature of the sport and can therefore vary from 6-12+ months.