Clinical Protocol

TIBIAL TUBERCLE OSTEOTOMY WITH DISTALISATION

SETTING Physiotherapy

FOR STAFF Musculoskeletal Physiotherapists

PATIENTS Patients who have had a Tibial Tubercle Osteotomy (TTO) by Nick Howells

PROTOCOL

This protocol is a general guide to rehabilitation. The time scales are an approximate guide and may be altered depending on various factors such as pain, swelling and muscle control. Pain along the osteotomy site is very common for up to 4 months post operatively and should not prevent participation in rehabilitation. The patient's management should be tailored to meet individual objectives.

The tibial tubercle is osteotomised and distalised / medialized to either:-

1) Correct patella Alta and lateral patella conflict
2) To stabilize the patella

The aims of rehabilitation are to protect the osteotomy in the early stages and to maximise range of motion, strength and function

Please check the post-operative notes for any variation in management.

General Points

	Post-operative
0-2 Weeks Aims: • Decrease / control swelling and pain • Full active and passive extension, flexion • Good quads contraction and ability to SLR in brace • Full weight-bearing as tolerated with brace locked in extension • When NWB – can have brace off or unlocked.	<u>Day case / 23 hour stay</u> • Active and active assisted knee flexion out of brace • Static and inner range quadriceps exercises, Straight leg raise taught (test rather than exercise) • Mobilise weight-bearing as tolerated with crutches in **brace locked in extension** • Ankle dorsiflexion/ plantarflexion exercises, including weight-bearing calf stretches • Swelling management • Education regarding rehabilitation, and what to expect at each milestone. Address any fear avoidance issues – **reiterate the importance of the patient taking responsibility for increasing ROM and function.** • Scar management following wound review • Start basic proprioception, balance and co-ordination training • Consider core and hip stability exercises • Education regarding rehabilitation. Address any fear avoidance issues – reiterate the importance of the patient taking responsibility for increasing ROM and function. Contraindications: • no resisted open chain quads
Week 2 – 6 Aim:	• Swelling management • Mobilise weight-bearing as tolerated with crutches in

• Full extension (normal / hyper-extension) and near full flexion • Good activation of quadriceps and straight leg raise with NO lag • Minimal pain • Mild/stable effusion • Normal gait pattern without crutches • ROM 0-90	**brace unlocked with ROM 0-90 degrees.** • Wean off crutches as pain and quadriceps control allows • Open & closed chain knee flexion exercises • Scar mobilisation – soft tissue techniques to rectus femoris gentle stretching, concentric and eccentric exercises • Patella mobilizations • Proprioception, balance and co-ordination training • Core and hip stability exercises **Precautions:** Avoid overstressing fixation with over pressure into flexion **Contraindications:** Resisted open chain quads- due to healing osteotomy site
Week 6- 12 **Aim:** Controlled pain and swelling. Full ROM including rotation Full ROM- must exceed 90 flexion (at 6/52) – if not, contact consultant team Increase strength and control ensuring good proximal alignment	Exercises need to be tailored to their functional aim • Once 100° flexion is achieved and have minimal swelling, can start using a stationary bike on minimal resistance • Progressive closed chain, eccentric control exercises • Road cycling – no clips or cleats – "normal pedals only" • CV fitness • Proprioceptive exercises – add controlled rotational exercises • Swimming – freestyle and pool walking **Considerations:** if not regained full flexion, include rectus femoris stretches and caudad patella mobilization Multigym if fully weight bearing with symmetrical gait and Low / moderate pain and or swelling **Precautions:** **Contraindications:** No resisted open chain quads or impact activity until osteotomy united
Week 12-16 **Clinic review** At 4/12 the osteotomy site should be united and confirmed on x ray **Aim:** • Full pain free TFJ & PFJ ROM. • Full length rectus femoris • Good quads and pelvic control in single knee dip • Raise fitness targets and set new goals • Increase speed of balance reactions and improve co-ordination • Normal gait in running. Good control of cutting, pivoting, stopping and starting if required • Sport specific exercises progressively sequenced to include walking followed by running forwards/ backwards/ sideways; changing directions • Advice on returning to training	• Increase fitness • Introduction of impact work— **ONLY** if full range of extension, eccentric quadriceps control with correct alignment*. And x ray has confirmed union.* • Gradual increase in resisted open chain/closed chain quadriceps • Continue with proprioceptive training – increase rotational control • Initiate running – gradual paced change of terrain / gradient and duration • Progressive introduction of dynamic activity – jumping / hopping (start on the trampette, emphasis on alignment of both push off and land) – change of direction; start single direction and progress to cutting, multidirectional and pivoting – stopping / starting and acceleration / deceleration – backwards running
Months 6+	**Prior to return to sports training:** • **Satisfactory single limb dynamic control**

Aim: Non-contact -> contact) sports training Suggest return to sport at 6-9 months	• 85% hop for height, length and cross over • 80% strength of non-involved limb • Confidence in knee • Return to activity **non-contact** training initially

Functional Milestones

Activity	**Time Scales**
Sedentary work	4-6 weeks as tolerated
Driving	6-8 weeks, once out of brace and can control car
Active job / on feet all day	2-3 months
Manual work	12 weeks / liaise with consultant
Very heavy manual job / ladders etc	3 months+

Refer back to clinic:

Signs of infection,
Thrombosis
Persistent stiffness > 6/52

Seen in clinic at approximately:

2/52, 6/52, 16/52 1 year

Always check the post-operative notation for any variant in the rehabilitation