NHS
The Royal Orthopaedic Hospital
NHS Foundation Trust

Flatfoot and Tibialis Posterior reconstruction

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Surgical techniques

The technique(s) used to treat flatfoot deformities will depend on the stage of the tibialis posterior tendon dysfunction, and the clinical presentation of the patient. Surgery tends to include one or more of the following:

- Tendon reconstruction with Flexor Digitorum Longus (FDL) transfer, Flexor Hallucis Longus (FHL) transfer or Tibialis Anterior transfer (Cobb procedure)
- Calcaneal osteotomy
- Tendo-Achilles lengthening
- Spring ligament (Plantar calcaneonavicular ligament) repair
- Lateral column lengthening (eg, calcaneocuboid distraction)
- Midfoot osteotomy
- Hindfoot fusion

Expected Outcome:

- Improved function / mobility
- Improved pain relief, with decreased analgesic requirements
- Improved arch height and alignment
- Stop the progression of the deformity
- To be able to do single heel raise
- Muscle strength: inversion grade 4 or 5 on Oxford scale
- Return to low impact sports may be possible but strenuous sport unlikely
- Full recovery may take up to twelve months

Physiotherapy: milestone driven to encourage clinical reasoning.

Please consult Operative notes for any variations in rehabilitation

Initial rehabilitation phase
0-6 weeks

Goals:

- To be safely and independently mobile with appropriate walking aid, adhering to weight bearing status
- To be independent with home exercise programme as appropriate
- To understand self management / monitoring, e.g. skin sensation, colour, swelling, temperature, etc

Restrictions:

Ensure that weight bearing restrictions are adhered to:

Cobb Procedure:

Non-Weight Bearing (NWB) in Plaster Of Paris (POP) in plantar-flexion / inversion for 6 weeks, with change of cast every 2 weeks to bring foot towards neutral.

- Full Weight Bearing (FWB) at 6 weeks in POP if neutral,

Flexor Digitorum Longus Transfer:

- Non-Weight Bearing (NWB) in Plaster Of Paris (POP) for 6 weeks.
- Full Weight Bearing (FWB) in aircast boot at 6 weeks.
- Physiotherapy at 6 weeks
- Elevation
- If sedentary employment, may be able to return to work from 4 weeks post-operatively, as long as provisions to elevate leg, and no complications

Treatment:

- **Pain-relief**: Ensure adequate analgesia
- **Elevation:** ensure elevating leg with foot higher than waist
- **Exercises**: teach circulatory exercises
- **Education**: teach how to monitor sensation, colour, circulation, temperature, swelling, and advise what to do if concerned
- **Mobility**: ensure patient independent with transfers and mobility, including stairs if necessary

On discharge from ward:

- Independent and safe mobilising, including stairs if appropriate
- Independent with transfers
- Independent and safe with home exercise programme / monitoring

Milestones to progress to next phase:

- Out of POP. Team to refer to physiotherapy when appropriate (Cobb Procedure at 8 weeks post-operatively, FDL transfer at 6 weeks post-operatively.)

Recovery rehabilitation phase
6 weeks – 12 weeks

Goals:

- To be independently mobile out of plaster shoe / aircast boot
- To achieve full range of movement
- Tendon transfer to be activating
- To optimise normal movement

Restrictions:

- Ensure adherence to weight bearing status.
- No strengthening against resistance until at least 3 months post-operatively
- Do not stretch transfer. It will naturally lengthen over a 6 month period

Treatment:

- **Pain relief**
- **Advice / Education**
- **Posture advice / education**
- **Mobility:** ensure safely and independently mobile adhering to appropriate weight bearing restrictions. Progress off walking aids as able once reaches FWB stage.
- **Gait Re-education**
- **Wean out of aircast boot** once advised to do so. Provision of **plaster shoe** if patient unable to get into normal footwear

Exercises:

- Passive range of movement (PROM)
- Active assisted range of movement (AAROM)
- Active range of movement (AROM)
- Encourage isolation of transfer activation without overuse of other muscles. **Biofeedback** likely to be useful.
- Strengthening exercises of other muscle groups as appropriate
- Core stability work
- Balance / proprioception work once appropriate
- Stretches of tight structures as appropriate (e.g. Achilles Tendon), **not of transfer**.
- Review lower limb biomechanics. Address issues as appropriate.
- **Swelling Management**

Manual Therapy:

- Soft tissue techniques as appropriate
- Joint mobilisations as appropriate ensuring awareness of those which may be fused and therefore not appropriate to mobilise
- **Monitor** sensation, swelling, colour, temperature, etc
- **Orthotics** if required via surgical team

- **Hydrotherapy** if appropriate
- **Pacing advice** as appropriate

Milestones to progress to next phase:

- Tendon transfer activating
- Full range of movement
- Mobilising out of aircast boot / plaster shoe
- Neutral foot position when weight bearing / mobilising

Failure to meet milestones:

- Refer back to team / Discuss with team
- Continue with outpatient physiotherapy if still progressing

Intermediate rehabilitation phase
12 weeks – 6 months

Goals:

- Independently mobile unaided
- Optimise normal movement

Treatment:

- Further progression of the above treatment:
- **Pain relief**
- **Advice / Education**
- **Posture advice / education**
- **Mobility:** Progression of mobility and function
- **Gait Re-education**

Exercises:

- Range of movement
- Progress isolation of transfer activation without overuse of other muscles. **Biofeedback** likely to be useful.
- Strengthening exercises as appropriate
- Core stability work
- Balance / proprioception work
- Stretches of tight structures as appropriate (e.g. Achilles Tendon), **not of transfer**.
- Review lower limb biomechanics. Address issues as appropriate.
- **Swelling Management**

Manual Therapy:

- Soft tissue techniques as appropriate
- Joint mobilisations as appropriate ensuring awareness of those which may be fused and therefore not appropriate to mobilise
- **Monitor** sensation, swelling, colour, temperature, etc
- **Orthotics** if required via surgical team
- **Hydrotherapy** if appropriate
- **Pacing advice** as appropriate

Milestones to progress to next phase:

- Independently mobile unaided
- Transfer to be activating
- Adequate analgesia

Failure to meet milestones:

- Refer back to team / Discuss with team
- Continue with outpatient physiotherapy if still progressing

Final rehabilitation phase
6 months – 1 year

Goals:

- Return to gentle low impact sports
- Good transfer activation with grade IV / V inversion strength
- To be able to do single heel raise
- Establish long term maintenance programme

Treatment:

- **Mobility / function:** Progression of mobility and function, increasing dynamic control with specific training to functional goals
- **Gait Re-education**
- **Exercises:**
- Progression of exercises including range of movement, strengthening, transfer activation, balance and proprioception, core stability
- **Swelling Management**

Manual Therapy:

- Soft tissue techniques as appropriate
- Joint mobilisations as appropriate ensuring awareness of those which may be fused and therefore not appropriate to mobilise
- **Pacing advice**

Milestones for discharge:

- Independently mobile unaided
- Transfer to be activating with grade IV / V inversion strength
- Able to do single heel raise

Failure to progress

If a patient is failing to progress, then consider the following:

POSSIBLE PROBLEM	ACTION
Swelling	Ensure elevating leg regularly Use ice as appropriate if normal skin sensation and no contraindications Decrease amount of time on feet Pacing Use walking aids Circulatory exercises If decreases overnight, monitor closely If does not decrease overnight, refer back to surgical team or to GP
Pain	Decrease activity Ensure adequate analgesia Elevate regularly Decrease weight bearing and use walking aids as appropriate Pacing Modify exercise programme as appropriate If persists, refer back to surgical team or to GP
Breakdown of Wound e.g. inflammation, bleeding, infection	Refer to surgical team or to GP
Transfer not activating	Start working in NWB gravity eliminated position with AAROM and then build up as able Biofeedback Ensure adequate analgesia as appropriate Ensure swelling under control as appropriate Ensure foot neutral when mobilising to avoid excessive shear. Consider orthotics referral via surgical team if unable to keep neutral Refer back to surgical team if no improvement
Numbness/altered sensation	Review immediate post-operative status if possible Ensure swelling under control If new onset or increasing refer back to surgical team or GP If static, monitor closely, but inform surgical team and refer back if deteriorates or if concerned

Summary of evidence for physiotherapy guidelines

A comprehensive literature search was carried out to identify research relating to surgery for tibialis posterior tendon dysfunction and subsequent rehabilitation. After reviewing the articles and information, the physiotherapy guidelines were produced on the best available evidence.

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