Tibial Derotation Osteotomies are Effective in Improving Hip Pain and Function

Fransiska Guerreiro MBBS, MSc, MRCS
Vitali Goriainov BM, MSc, PhD, FRCS (Orth)
Tom Pollard MD, FRCS (Tr & Orth)
Antonio Andrade MB BS, MSc, FRCS
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Aim

Tibial Rotational profile is widely accepted as a contributor to anterior knee pain. However, it is less well understood in relation to hip symptoms.

The aim is to investigate:

• Clinical outcomes following Distal Tibial Derotation Osteotomy (DTDO) performed to manage hip pain in the presence of tibial maltorsion

• Review how co-existent pathomorphology affected the management.
Tibial Malrotation as Contributor to Hip Pain
Methods

Review of all patients undergoing DTDO between 2018-2020 in a Joint Preservation setting

Inclusion criteria
- Hip pain
- Tibial rotational deformities – predominant aetiology
- Tibial maltorsion – excessive torsion >40°
- Minimal follow-up 24 months or complete symptom resolution

Exclusion Criteria
- >50 years old
- Presenting with degenerative joint changes
- Neuromuscular conditions
Methods

Lower limb rotational profile was routinely evaluated clinically

If clinically suspected abnormalities:

Computed tomography (CT) rotational profile assessment, including three blocks

• 1st block – the pelvis and hip joints
• 2nd block – the knee joints
• 3rd block – the ankle joint
Methods

Distal Tibia Derotational Osteotomy

- Oblique fibular osteotomy
- Tibial Osteotomy through distal metaphysial region
- Parallel to tibial plafond
- Stabilised with low profile 2.7mm Evos plate (Smith&Nephew, Watford, UK)
Methods

PROM functional assessments (Pre-operative, Interval post-operative at 12 and 18 months)

- International Hip Outcome Tool (iHOT12 – percentage of 0-68 points)
- Knee Outcome Score Activities of Daily Living Scale (KOS ADLS – percentage of 0-70 points) and Sport Scale (KOS SS – percentage of 0-55 points)
- KOS scores included additional graphical scores (percentage on a scale)
- Anterior Knee Pain or Kujala score (AKP – 0-100 points).
Results

Thirty-two patients underwent DTDO. Mean tibial torsion–48.8° (41-63°). Average age–27 years (18-44), average follow-up–30 months (16-45). Nine patients (28%) had a co-existent Cam/pincer and 8 (25%) – excessive MI (51-76°).

Overall, 63% of all patients (including 54% of patients with co-existent pathology) experienced significant hip functional improvement following DTDO alone.

Pre-operative vs 18 months post-operative scores were:

- iHOT-12–38 vs 96(p=0.0001);
- HOS-ADLS–54 vs 91(p=0.0009);
- HOS-ADLS graphical–46 vs 93(p=0.0005);
- HOS-SS–40 vs 87(p=0.0005);
- HOS-SS graphical–44 vs 85(p=0.001).

Statistically significant difference in all PROMs was attained at 12 months.
Conclusion

- Patients with hip pain and lower limb rotational malalignment frequently present with multi-level deformity and co-existent Cam/pincer.
- Malrotation correction should be prioritised.
- Significant proportion of symptomatic hip impingement patients (>50%) improve with tibial derotation alone even in the presence of co-existing pathomorphology.
- Functional recovery to near normal level is expected within a maximum of 12 months post-DTDO