

Large Scale Open Wedge High Tibial Osteotomy, Does it Work?



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Disclosures

No disclosures from any of the authors

Large-Correction Medial Opening-Wedge HTO (>12 mm)

Background & Rationale

- Proximal tibial varus increases medial compartment loading and may accelerate degenerative change and instability.
- High tibial osteotomy restores the mechanical axis and may delay knee arthroplasty.
- Classic medial opening-wedge HTO is often limited to a 12-mm base wedge; larger corrections remain clinically relevant but less commonly reported.

Study Aim

To evaluate the safety of medial opening-wedge HTO with a base wedge exceeding 12 mm.



Study Snapshot

2015–2024

Registry period

41

Patients

54

Analyzed Tibias

8/33

Female/Male

15-59 (35.8)

Age

18

Concomitant Femur Osteotomy

13

Staged Bilateral Cases

12-29 (14.9)

Base Wedge Size

≥ 1 year

Clinical Follow up or until removal of hardware

Methods and Radiographic Correction

Methods

- Retrospective review of operative registry.
- Inclusion: tibial varus deformity treated with medial opening-wedge HTO, base wedge >12 mm, plate-and-screw fixation.
- Radiographic measurements: MAD, MPTA, PPTA, osteotomy wedge size.
- Adverse Outcomes: lateral cortex propagation, infection, delayed/nonunion, loss of correction.

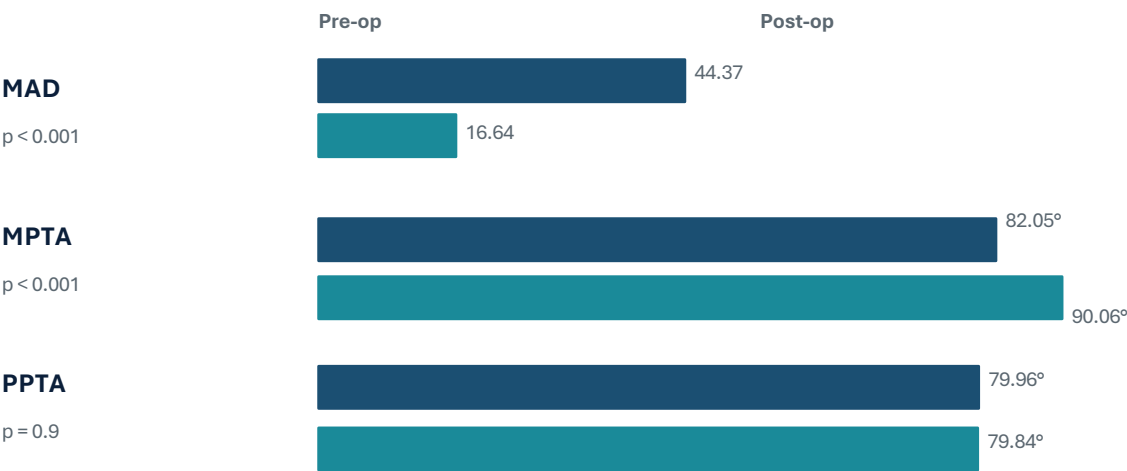
Mean wedge size

14.96 mm

Measured at the postero-medial corner

Key Radiographic Outcomes

Alignment correction was statistically significant for MAD and MPTA, with no significant alteration of sagittal tibial slope surrogate (PPTA).



MAD: mechanical axis deviation; MPTA: medial proximal tibial angle; PPTA: posterior proximal tibial angle.

Parameter	Pre-op	Post-op	p value
MAD	44.37 ± 29.54 mm	16.64 ± 19.75 mm	<0.001
MPTA	82.05 ± 8.71°	90.06 ± 4.63°	<0.001
PPTA	79.96 ± 4.52°	79.84 ± 6.45°	0.9

Complications, Interpretation

Large wedge correction produced reliable healing despite lateral cortex propagation

Complication Profile

15/54

Lateral cortex propagation

27%

1

Nonunion at 1 year

Revision planned

0

Wound or deep infection

0

Intra-articular propagation

Interpretation

- Opening wedges >12 mm appear feasible in appropriately selected tibial varus deformity cases.
- Lateral cortex propagation is relatively common with large corrections but was not associated with loss of correction or non/delayed union in this cohort.
- Sagittal alignment was preserved, as reflected by stable PPTA.

Conclusion

Medial opening-wedge HTO with base wedge >12 mm achieved significant coronal plane correction and maintained alignment.

Although lateral cortex osteotomy propagation occurred in 27%, it did not compromise healing or correction maintenance in this series.

Take Home Message

- > 12 mm based wedge HTO is feasible and reliable for varus correction of the tibia.
- Lateral cortex propagation although common, they do not represent increased risk for loss of correction or complication.
- No change in the Post-operative rehabilitation protocol.
- No increase in Non-union or revision surgery.

