

High Tibial Osteotomy With Patient-Specific Instrumentation

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Background

A high tibial osteotomy (HTO) is a powerful tool to adjust mechanical alignment of the lower limb and can be performed to manage pathology, such as osteoarthritis, symptomatic deformity, knee instability, patellofemoral instability, or used as an adjunct procedure for meniscal pathology. These procedures may be challenging from a planning and technical standpoint because of the three-dimensional nature of deformity and the potential for inaccurate planning. The use of patient-specific instrumentation (PSI) for a HTO can substantially reduce the difficulty of overcoming these challenges and may be useful in addressing multiplanar correction. PSI also is associated with less radiation exposure, decreased surgical time, elimination of screw or tunnel convergence, and hinge protection.

Purpose

This video and case presentation demonstrates the surgical technique for a medial wedge opening osteotomy using PSI in patients with varus malalignment.

Methods

Evaluation, diagnosis, and management of varus deformity via a HTO using PSI is discussed. The case presentations of a 53-year-old woman treated via a medial opening wedge osteotomy using PSI and a 31-year-old woman treated via a medial opening wedge osteotomy using PSI with concomitant medial meniscus root repair are reviewed.

Results

The patients had excellent outcomes and progressed through a standardized rehabilitation protocol. At 6 weeks postoperatively, the 53-year-old woman presented with minimal pain and weakness, and physical examination revealed full range of motion. At 9 months postoperatively, the 31-year-old woman presented with no pain, and radiographs demonstrated a healed HTO.

Conclusion

Digitally planned and executed osteotomies using PSI reduce surgical time and fluoroscopic imaging while achieving desired correction. Early results show good radiographic and clinical outcomes.