Control of posterior tibial slope and patellar height in open-wedge valgus high tibial osteotomy.

Abstract:
Background: Valgus-producing open-wedge high tibial osteotomy is an established treatment for varus malalignment and medial osteoarthritis, with reproducible results in the frontal plane. However, an undesirable but often accepted increase in posterior tibial slope and decrease in patellar height are still routinely seen. Purpose: To evaluate the influence of valgus open-wedge high tibial osteotomy on posterior tibial slope and patellar height when special techniques are used to minimize unwanted changes. Study Design: Case series; Level of evidence, 4. Methods: Twenty-five patients, 3 women and 22 men (mean age, 40.2 years), underwent valgus open-wedge high tibial osteotomy. Several technical steps were taken to prevent an increase in posterior tibial slope during the osteotomy. To minimize patellar height changes, the tibial tuberosity was left on either the proximal or distal fragment, depending on the desired patellofemoral effect. The medial and lateral posterior slope was measured using the proximal posterior cortex as a reference; the patellar height was assessed with the Caton-Deschamps Index and compared on preoperative and postoperative radiographs. Results: No significant posterior tibial slope changes were observed. Patellar height increased with both types of tibial tuberosity osteotomy. With the proximal osteotomy, the Caton-Deschamps Index increased...
from 0.95 to 0.97; with the distal osteotomy, it increased from 0.89 to 0.95. The change was not
significant with either osteotomy. The posterior tibial slope did not change on the medial side,
measuring 4.2 preoperatively and postoperatively. The lateral slope decreased from 5.4 to 5.1. There
was no correlation between the correction in the coronal plane and the changes in the sagittal plane.
Conclusion: Open-wedge high tibial osteotomy can be performed without significant changes in
patellar height or posterior tibial slope if specific intraoperative methods are used to prevent their
occurrence. Analysis and control of sagittal changes in valgus open-wedge high tibial osteotomy
should reduce the incidence of unwanted changes in patellar height and posterior tibial slope.