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演講主題:	膝關節炎階梯式手術治療
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演講大綱

請參閱附件

最高學歷

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【Abstract】

Purpose High tibial osteotomy (HTO) has been adopted as an effective surgery for medial cartilage degeneration of the osteoarthritis (OA) knee. However, satisfactory outcomes necessitate the precise creation and distraction of the osteotomized wedges and the use of intraoperative X-ray images to continually monitor the wedge-related manipulation. As a result, HTO, as a freehand operation, is highly technique-demanding and has a high degree of radiation exposure, especially for non-experienced surgeons. We report on a patient-specific instrument (PSI) guide for the precise creation and distraction of HTO wedge in this study, and evaluate the clinical outcomes.

Methods This study first parameterized five HTO procedures to serve as a design rationale for an innovative PSI guide. Then, preoperative X-ray and computed tomography (CT)-scanning images were used to design and fabricate PSI guides for clinical use. The weight-bearing line (WBL) of the ten patients in this study was shifted to the Fujisawa's point (i.e., WBL percentage=62.5% to the medial side) and instrumented using the TomoFix system. Finally, the radiological results of the PSI-guided HTO surgery were evaluated by the WBL percentage and tibial slope.

Results All patients consistently showed an increased range of motion in the medial varus knee and a decrease in pain and discomfort at about the three-month follow-up. This study demonstrates the satisfactory accuracy of the WBL percentage and tibial slope when using a PSI guide to distract the HTO wedge. For all patients, the average pre- and postoperative WBL are respectively 14.2% and 60.2%, while the tibial slope are 9.9 and 10.1 degree. The standard deviations are 2.78 and 0.36 respectively in postoperative WBL and tibial slope. The relative errors of the pre- and postoperative WBL percentage and tibial slope averaged 4.9 % and 4.1%, respectively.

Conclusion Instead of using the navigator system, this study integrated 2D and 3D preoperative planning to create a PSI guide that could most likely render the outcomes close to the planning. The PSI guide is a precise procedure that is time-saving, radiation-reducing, and relatively easy to use. Precise osteotomy was performed with the PSI guide and good short-term results were achieved.

Keywords OA knee, High tibial osteotomy, HTO, Patient-specific instrument, PSI