ISAKOS

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine

11th Biennial ISAKOS Congress • June 4-8, 2017 • Shanghai, China

Paper #111

Influence of Preoperative Range of Motion on Varus-Valgus Laxity in Total Knee Arthroplasty

Hiroshi Kiyomatsu, MD, PhD, JAPAN
Kazunori Hino, MD, PhD, JAPAN
Seiji Watanabe, MD, JAPAN
Tatsuhiko Kutsuna, MD, PhD, JAPAN
Kunihiko Watamori, MD, JAPAN
Yasumitsu Ishimaru, JAPAN
Hiromasa Miura, MD, PhD, Prof., JAPAN

Ehime University Graduate School of Medicine
Toon, Ehime, JAPAN

Summary:
In cases of TKA admitting flexion contracture, a treat to acquire soft tissue balance was required attention to the change throughout from full extension to flexion, because preoperative flexion contracture influenced on varus-valgus laxity after TKA at not only extended but also flexed knee position.

Abstract:
Introduction
Total knee arthroplasty (TKA) is one of the excellent treatments for osteoarthritis (OA) of knee. However varus and valgus stability of knee joint after TKA is important factor to improve patients' quality of life, it remains unclear that what factors influence on varus-valgus laxity. It is assumed that there are many factors concerned with varus-valgus laxity, such as muscle strength, bony alignment, ligament function, implant design, and preoperative range of motion (ROM). In this study, we examined the influence of the flexion contracture on varus-valgus laxity in patients of OA of knee.
Methods
A total of 42 knees underwent TKA using posterior stabilized (PS) type component by the measured resection method in our hospital were assessed in this study. The mechanical varus-valgus laxity was measured by the navigation system (precision N Knee Navigation Software v4.0; Stryker, Kalamazoo, Michigan) during operation at every 10° throughout the range of movement before and after implanted compornents. The objected knees divided into two groups, one was full extended group and the other was flexion contracture group. We analyzed two groups were compared using a non-parametric Mann-Whitney U test, and pre- and post-TKR comparisons were made using a non-parametric Wilcoxon signed-rank test. Analyses were performed with JMP statistical software v6.0 (SAS Institute, Tokyo, Japan). A p-value < 0.05 was considered to indicate statistical significance. We also evaluated correlation between preoperative ROM and postoperative varus-valgus laxity using the Spearman rank correlation coefficient.
Result
There was no significant difference of postoperative varus-valgus laxity between two groups. In the flexion contracture group, postoperative varus-valgus laxity were significantly greater than preoperative one at flexion of 10, 20, 30, 40, 50,and 60 degree. And the changing ratio of varus-valgus laxity in the flexion contracture group, which indicated postoperative varus-valgus laxity per preoperative one, were significantly greater than that in the full extended group at flexion of 80 and 90 degree. There were correlations between preoperative extension angle and changing ratio of varus-valgus laxity at flexion of 10, 20, 30, 60, and 90 degree. The rank correlation coefficient of Spearman were 0.36, 0.33, 0.33, 0.31, and 0.33 ($p < 0.05$) each.
Discussion and Conclusion
In this study, it was observed influence of preoperative ROM on varus-valgus laxity not only at extended knee position but also at flexed knee position in the cases with flexion contracture after TKA. It suggested that treat of soft

tissue to improve extension angle is involved varus-valgus laxity at flexed knee position. In cases admitting flexion contracture, a treat to acquire soft tissue balance was required attention to the change throughout from full extension to flexion.