Computer-assisted gap balancing technique improves outcome in total knee arthroplasty, compared with conventional measured resection technique.

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ABSTRACT

Methods: 140 patients were randomized into two groups. The conventional measured resection technique without computer navigation was performed in Group 1 and the computer-assisted gap balancing technique in Group 2. Range of motion, clinical laxity assessment with KT-1000 arthrometer, postoperative radiological films and various functional knee scores were documented at 6 months and 2 years.

Results: At 2 years, there were significantly more patients (five patients, 7%) in the Group 1 with flexion contractures of more than 5° (P = 0.05). There were significantly more outliers in the Group 1 (eight patients, 11%), who demonstrated anterior tibial translation [5 mm, than Group 2 (two patients, 3%) (P = 0.041). The total excursion at 20° was significantly higher in Group 1 at 6 months (P = 0.012) and after 2 years (P = 0.031). Group 2 was able to demonstrate significantly better limb alignment with fewer outliers (more than 3° varus/valgus) than Group 1. At 6-month follow-up, Group 2 demonstrated better outcomes in Function Score (P = 0.040) and Total Oxford Score (P = 0.031). At 2-year review, Group 2 had better outcome in the Total Oxford Score (0.030).

Conclusion: Computer-assisted gap balancing technique was able to achieve more precise soft tissue balance and restoration of limb alignment with better knee scores as compared to the conventional measured resection technique in total knee arthroplasty.

SUMMARY

The objective of this prospective randomized study on 140 patients was to compare the functional outcome of conventional measured resection technique and computer-assisted gap balancing technique in TKA (Brainlab navigation used). Various functional knee scores and other knee parameters were documented at 6 months and 2 years. At 6-month follow-up, the CAS group demonstrated better outcomes in Function Score (P = 0.040) and Total Oxford Score (P = 0.031). At 2-year review,

the CAS group had better outcome in the Total Oxford Score (P = 0.030).

CONCLUSION

CAS facilitates gap balancing method which leads to fewer outliers and improved knee scores.

"(...) CAS is a useful tool to facilitate the gap balancing method. In addition, mechanical alignment was improved. With better gap balancing and mechanical alignment, our randomized, controlled trial was able to demonstrate improved knee scores at 6 months and 2 years in patients who underwent computer-assisted gap balancing technique in total knee arthroplasty."

BRAINLAB

(continued…)

"Patients in Group 2 [CAS group] had significantly better alignment of the mechanical axis (P = 0.02) and significantly fewer people in the outlier group (>3° deviation from the mechanical axis) (P = 0.01) at 2 years"

BRAINLAB