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Gait analysis of JOURNEY◊ II XR◊ total knee arthroplasty (TKA) compared to JOURNEY II BCS TKA

Amemiya K, Kaneko T, Omata M, Igarashi T, Takada K, Ikegami H, Musha Y. Anatomical bi-cruciate retaining TKA improves gait ability earlier than bi-cruciate stabilized TKA based on triaxial accelerometery data: a prospective cohort study. *AP-SMART*. 2021;25:35-41.

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Key points

Compared to JOURNEY II BCS, JOURNEY II XR patients demonstrated:

Significantly improved gait ability at 6 weeks post-TKA ($p<0.05$)

Significantly greater improvement in gait stability from pre-TKA to 6 weeks post-TKA ($p=0.04$)

Overview

- An independent, single-surgeon, prospective cohort study of consecutive patients receiving JOURNEY II XR or JOURNEY II BCS between 2019 and 2020.
  - 10 JOURNEY II XR patients (mean age, 75.0 years)
  - 15 JOURNEY II BCS patients (mean age, 74.4 years)
- A 10m walk test was performed pre-TKA and at 6 weeks and 3 months post-TKA
  - Walking time, number of steps, walking cycle time, coefficients of variability (CV) of double leg support time, gait velocity and stride length were assessed

Results

- No significant difference between JOURNEY II XR and BCS patients in gait ability at pre-TKA or 3 months post-TKA
- At 6 weeks, walking time (9.2 vs 13.7s; p=0.01; Figure), number of steps (18.1 vs 23.6; p=0.02), velocity (66.2 vs 45.8 m/min; p=0.01; Figure), and stride length (56.2 vs 43.2cm; p=0.01) were significantly improved in JOURNEY II XR patients compared to JOURNEY II BCS patients
- The rate of change from pre-TKA to 6 weeks post-TKA of CV of double leg support time was significantly improved for JOURNEY II XR patients compared to BCS patients (-27.2 vs 85.8%; p=0.04)

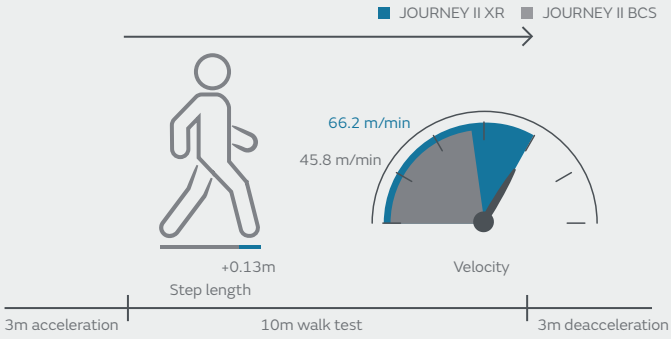

Figure. Difference in step length and velocity during 10m walk test at 6 weeks post-TKA with JOURNEY II XR and JOURNEY II BCS

Conclusions

At 6 weeks post-TKA, JOURNEY II XR patients experienced significantly improved gait ability compared to JOURNEY II BCS patients, with a significant improvement in gait stability compared to pre-TKA.

Considerations

Coefficient of variability (CV) of double leg support time is an indicator of gait stability, with low values indicating high stability.

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