Computer-assisted total knee replacement (CAS TKR) vs. conventional total knee replacement (TKR): post-operative ankle radiographic finding and ankle clinical assessment

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**Background:** Few previous studies showed post-operative conventional total knee replacement (TKR) have effected to ankle radiographic finding in the same side and we expected computer-assisted total knee replacement (CAS TKR) may prevent this problem. The purpose of this retrospective study was to compare post-operative ankle radiographic finding and clinical result of same side ankle joint between CAS TKR and Conventional TKR in 28 patients (56 knees) who underwent bilateral TKR.

**Materials and Methods:** 28 patients, 56 knees who underwent both CAS and Conventional TKR in both knees by one surgeon with combine Gap and Measurement technique at Rajavithi Hospital, Bangkok. Post-operative follow up to 12 months for ankle radiographic finding by TAT, TAS and TT(TAS-TTA), for clinical assessment by foot functional index (FFI) between pre-operation vs. post-operation in each group, CAS TKR vs. Conventional TKR for pre-operation and post-operation. P value ≤ 0.05 showed significantly different.

**Result:** 56 knees, 28 patients (26 female, 2 male) mean age = 67.79 year old who underwent bilateral TKR by Conventional group and CAS group had pre-operative mean TAS in Conventional TKR group = 91.68±3.72, in CAS TKR group = 90.89±3.55, p value = 0.094. Pre operative TTA in Conventional group = 90.57±4.17, CAS group = 90.18±3.88, p value = 0.56. Pre operative TT (TT=TAS-TTA) conventional group = 1.5(-5,8), CAS group = 0.5(-5,8), p value = 0.657. Post operative TAS conventional group = 90.71±3.68, CAS group = 91.36±5.15, p value = 0.369. Post operative TTA conventional group = 90.18±3.15, CAS group = 91.39±5.35, p value = 0.095. Post operative TT conventional group = 0.0(-5,3), CAS group = 1.0(-3,8), p value = 0.4. Compare pre -operative TT and post operative TT, p value = 0.032 and pre -operative TT with post-operative TT in Conventional group, p value = 0.016, but pre -operative TT with post-operative TT in CAS group, p value = 0.657, which was significantly different for TT in conventional group ,but was not significantly different in CAS group. For clinical assessment by foot functional index (FFI) which showed 1. Pain 2. Life difficulty for living 3. Daily life activity limitation, pre-operative FFI in conventional group = 1.85(0.81,6.88)and pre-operative FFI in CAS group=1.91(0.24,66.5 ) p=0.577 , post-operative FFI in conventional group =1.68(0.24,7.00) and post-operative FFI in CAS group =1.65(0.24,6.76) p=0.047 which showed significantly different between post-operative FFI both groups and CAS tend to have better clinical result. For conventional group; post-operative FFI was not significantly different from pre-operative FFI ,p = 0.208 , but for CAS group ; post-operative FFI was significantly different from pre-operative FFI , p = 0.047, which showed post-CAS TKR may help patients to have better foot functional index (FFI).

**Conclusions:** This study support the previous studies which conventional TKR could effect to post-operative radiographic finding (talar tilt ) and may give higher risk for degenerative change of same side ankle joint. We found from this study CAS TKR did not change ankle radiographic finding (talar tilt) from pre-operative radiographic finding (talar tilt) significantly and also had better post-operative foot functional index (FFI) than conventional TKR significantly which can be lower risk and prevention for degenerative change of same side ankle joint which will be concerned for ankle arthritis in future.
Anyway the small number of patients and short term follow up (12 months) made this study being weaker than we expected. Finally, we still need more number of patients and longer term follow up at least 5 years to improve this study being stronger and more reliable.