Implant Size and Outcome Differences Between Knees in the Same Patient *after Simultaneous and Staged Bilateral TKA*

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Disclosures

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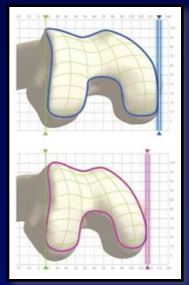
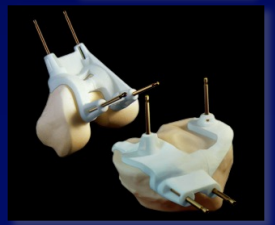
Introduction

- The importance of anatomic variation in knee replacement prosthesis selection has gained popularity.
- This trend is evident by the availability of gender-specific designs, patient-specific cutting jigs, and an increased number of prosthesis size options.
- Clinical benefits of these numerous options are conflicting.
- Size differences can also occur between knees of the same individual.





Objective

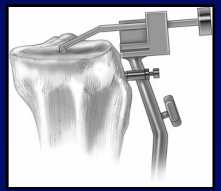
• The purpose of this study is to evaluate the frequency of anatomic variation between knees within the same patient and to determine whether outcomes differ depending on the component size.

Methods

- From 2010-2018, 550 patients underwent staged or simultaneous bilateral knee replacements by a single surgeon.
- Of the 1100 procedures, there were 440 simultaneous TKAs and 660 staged procedures.
- Patients had an average age of 70 at time of the first surgery, and BMI of 30.
- Tourniquet time was the same for the two surgeries, average 76 minutes.
- Intraoperative range of motion against gravity was the same for both knees at 110 degrees.
- Patients were evaluated for perioperative complications and by clinical outcomes.
- Radiographs were evaluated for implant positioning and appropriateness of size.

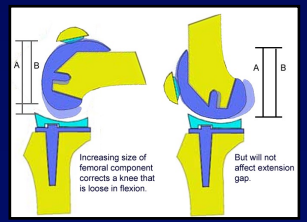
Results

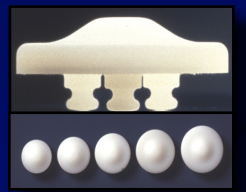
- Component sizes differed within the same patient in 36.2% (398/1100).
- Femoral sizes differed in 52 patients (4.7%), the tibia 57 (5.2%), the patella 47 (4.3%), and liner 238 (21.6%).
- In 12 patients, the femur and tibia simultaneously differed in size from one knee to the other.
- The liner size differed simultaneously with 14 patients with differing femurs.
- The liner was thicker in 13 knees with larger tibial components, and thicker in 9 with smaller tibial components.
- Tibial size did not seem dependent on depth of tibial resection as the tibial insert thickness did not correlate with smaller tibial sizes (p=0.47).



Results

- Patellar thickness before and after resurfacing were similar (p=0.48) for knees in which patellar component size differed.
- Motion was not greater for smaller femoral sizes, with both groups achieving average 127 degrees flexion (p=0.9).
- Knee and function scores were not different between the knees with larger versus smaller components.
- Patient satisfaction was similar for both knees in each patient.





Discussion

- ✓ Total knee replacement component sizes can vary between knees of the same patient.
- ✓ Liner thickness most frequently varies between knees, but femoral, tibial, and patellar component sizes can also differ with some regularity.
- ✓ Surgeons should be aware of this occurrence of size differences to avoid improperly sizing the second knee based only on its contralateral counterpart.
- ✓ The different sized components do not seem to affect outcome of the individual knees.
- ✓ Rather, the variability in prosthesis size is appropriate anatomically and leads to comparable outcomes compared to the contralateral knee.