

عنوان مقاله:

Robotic-arm Assisted Total Knee Arthroplasty: the Relationship between Bone Resection, Gap Balancing and Resultant Implant Alignment

محل انتشار:

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خلاصه مقاله:

Objectives: The primary aim was to assess the association between bone resection and the resultant flexion and extension gaps in the medial and lateral compartments of the knee when performing robotic -arm assisted total knee arthroplasty (rTKA). The secondary aims were to compare medial and lateral bone resections and the influence on limb alignment, and whether the amount of bone resection that resulted in equal gaps was predictable. **Methods:** A prospective study of ۲۲ consecutive patients with a mean age of ۶۶ years undergoing rTKA was conducted. The femoral component was mechanically aligned, and the alignment of the tibial component was adjusted (+/-۳degrees of the mechanical axis) to obtain equal extension and flexion gaps. All knees underwent soft tissue balancing using sensor-guided technology. The final compartmental bone resection, gaps, and implant alignment were obtained from the robot data archive. **Results:** There was a correlation between bone resection and the resultant gap in the medial ($r=۰.۴۳۳$, $p=۰.۰۴۴$) and lateral ($r=۰.۷۲۴$, $p<۰.۰۰۱$) compartments of the knee. There were no differences in bone resection from the distal femur and posterior condyles in the medial ($p=۰.۹۴۱$) or lateral compartments ($p=۰.۶۰۴$) or for the resultant gaps ($p=۰.۳۴۱$ and $p=۰.۵۴۲$, respectively). There was more bone removed from the medial compartment compared to the lateral aspect: ۰.۹mm ($p=۰.۰۰۵$) in extension and ۱.۲mm ($p=۰.۰۲۶$) flexion. The differential bone resection changed the knee alignment by one degree of varus. There were no significant differences between the actual and predicted medial (difference ۰.۰۵, $p=۰.۸۹۳$) or lateral (difference ۰.۰۰, $p=۰.۹۹۲$) tibial bone resection. **Conclusion:** There was a direct association between bone resection and resultant compartment joint gap when using rTKA, which was predictable. Gap balancing was achieved when less bone was resected from the lateral compartment which resulted in an estimated one-degree varus alignment of the knee. Level of evidence: II

کلمات کلیدی:

Arthroplasty, Gap Balancing, knee, Measured Resection, Robotic

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