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Original Article

# Keblish's lateral surgical approach enhances patellar tilt in valgus knee arthroplasty☆

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ABSTRACT

*Objective:* To compare the clinical and radiological outcomes of conventional medial and lateral approaches for total knee replacement in the valgus osteoarthritic knee.
*Methods:* In this randomized controlled trial, 21 patients with valgus knee osteoarthritis were randomized to total knee replacement through medial or lateral approach. The primary outcome was radiographic patellar tilt. Secondary outcomes were visual analog scale of pain, postoperative levels of hemoglobin, and clinical aspect of the operative wound.
*Results:* There were no differences between the groups regarding other clinical variables. Mean lateral tilt of the patella was 3.1 degrees (SD ± 5.3) in the lateral approach group and 18 degrees (SD ± 10.2) in the medial approach group ($p = 0.02$). There were no differences regarding the secondary outcomes.
*Conclusion:* Lateral approach provided better patellar tilt following total knee replacement in valgus osteoarthritic knee.

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## Acesso lateral de Keblish melhora a inclinação da patela na artroplastia do joelho valgo

*Palavras-chave:*
Joelho
Osteoartrite
Artroplastia
Patela

RESUMO

*Objetivo:* Comparar os resultados clínicos e radiológicos da via de acesso convencional com artrotomia medial e da via de acesso lateral na prótese total primária em joelho valgo.
*Métodos:* Neste ensaio clínico prospectivo, 21 pacientes com osteoartrite e deformidade em valgo foram divididos aleatoriamente em dois grupos de acordo com a via de acesso cirúrgico usada: medial ou lateral. O desfecho principal foi a medida radiográfica da inclinação lateral

☆ Study conducted at Hospital de Clínicas, Universidade Estadual de Campinas (Unicamp), Campinas, SP, Brazil.

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da patela. Outros desfechos foram a dor após a cirurgia (escala visual de dor), o sangramento (níveis séricos de hemoglobina) e o aspecto clínico da ferida operatória.

*Resultados:* Não houve diferença entre os grupos em relação a outras variáveis clínicas. A inclinação lateral média da patela no grupo lateral foi 3,1 graus ± 5,3 DP e no grupo medial foi 18 graus ± 10,2 DP (p = 0,02). Os outros desfechos não apresentaram diferenças entre os grupos.

*Conclusão:* A via lateral proveu melhor inclinação lateral da patela pós-operatória nas artroplastias do joelho valgo.

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## Introduction

Approximately 10% of patients undergoing total knee arthroplasty have a valgus deformity, defined as a valgus alignment of the anatomical axes of the femur and tibia in the frontal plane greater than ten degrees.[1] In these cases, the results are considered less satisfactory when compared with patients who have varus knees.[2–5]

The standard access route in total knee arthroplasties is the medial parapatellar arthrotomy.[6,7] The lateral parapatellar approach described by Keblish[2] allows for a better exposure of the lateral and posterolateral structures, which are contracted in valgus deformities and should be released for proper ligament balance; it also has the advantage of including the release of lateral patellar retinaculum, which is necessary in most cases with valgus deformity.[2,8]

Although some authors recommend the use of the lateral access route in cases of fixed valgus deformities of the knee,[8,9] there is no consensus in the literature regarding the best approach for total arthroplasties in valgus knees.[8,10]

This prospective study aimed to compare the results of medial parapatellar access route (classical) and the lateral parapatellar approach (Keblish) in patients with valgus knees, in order to demonstrate the best correction of patellar tilt.

## Material and methods

Detailed explanations of the procedure and research protocol were given to 21 patients with advanced knee osteoarthritis, referred from the basic network of the Brazilian Unified Health System (Sistema Único de Saúde [SUS]) to a university hospital for total arthroplasty surgery. All patients agreed to participate and signed an informed consent form. The study protocol and the informed consent form were approved by the local Research Ethics Committee (CEP; opinion No. 381113 of August 27, 2013).

### *Inclusion criteria*

- Patients of both genders, between 50 and 75 years, diagnosed with knee osteoarthritis and valgus deformity.
- Indication of total knee arthroplasty due to failure of conservative treatment.
- Having understood, accepted, and signed the consent form.

### *Exclusion criteria*

- Arthroplasty revision surgery.
- Extra-articular deformities not related to osteoarthritis.
- Previous infection in the knee.
- Severe comorbidity with anesthetic contraindication.
- Inability to understand or sign the consent form.

The study was registered at ClinicalTrials.gov (NCT01965886).

### *Allocation*

Two groups were created: lateral and medial. A computer program (www.randomization.com) generated a random sequence, divided into blocks of six units, with three indications for each group in each block to avoid the accumulation of a single group at the beginning or at end of the study, as well as the effect of the surgeons' learning curve.

### *Blinding*

Each of these indications was kept in a box with sealed envelopes in the possession of an operating room nurse who did not participate in the study. In the operating room, after skin incision, the envelope was opened to indicate the group to which the patient had been allocated.

### *Interventions*

- Lateral group: lateral parapatellar access route and soft tissue ligament balance as described by Keblish,[2] preserving a flap of fat (Fig. 1) for closing the unstressed joint capsule.
- Medial group: conventional medial parapatellar access route and soft tissue ligament balance in the classic sequence.[1]

### *Surgical technique*

All cases were operated in the same operating room by two board certified knee surgeons (JRTF and MCP) by the Brazilian Society of Orthopedics and Traumatology (Sociedade Brasileira de Ortopedia e Traumatologia [SBOT]), always with supervision of one of the senior surgeons of the service (GCC, ARZ, JBM). The type of anesthesia was defined by the anesthesia team. All patients received infection prophylaxis with

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