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Surgical Techniques

# Unicompartmental Knee Arthroplasty. Surgical Technique.

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## KEY WORDS

Unicompartmental knee arthroplasty

Knee osteoarthritis

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## INTRODUCTION

Unicompartmental knee arthroplasty is a bone preserving solution for patients with localized knee osteoarthritis. (1) Contrary to the total knee arthroplasty, this procedure allows to replace the single compromised compartment and preserve the rest of the cartilage and ligaments, allowing proper restoration of the knee biomechanics with a cinematic alignment method. There is conflicting evidence published in the literature regarding the benefits of the UKA, especially in the long-term follow – up, (3,4) however, it has been determined that the relative bad results are due to the low usage and caseload of the surgeons performing this procedure and outcomes had shown to improve in centers of excellence with experienced surgeons where results are similar to total knee arthroplasties. (6,7)

## DESCRIPTION OF THE TECHNIQUE

### **Indications:**

- Anteromedial Kelgrenn-Lawerence grade IV knee OA
- Medial compartment spontaneous osteonecrosis of the knee with articular collapse (2)
- Less than 25% lateral compartment collapse with weightbearing stress
- Varus deformity corrected with manipulation.
- Frontal plane deformity <15°
- Flexion deformity <15°
- No inflammatory pathology

With the patient in the supine position and with lateral and knee flexion assistance, a medial parapatellar

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incision is made and capsulotomy is performed with care of not damaging the patellofemoral cartilage. Exposition is performed with elevation of the capsuloligamentous flap in the tibia to allow visualization and removing tibial and femoral medial marginal osteophytes. The patella is then everted and addressed as deemed necessary, regularly only neurectomy and removal of osteophytes is needed. Then, with the knee at 90° the tibial plateau should be completely exposed to place the tibial cutting guide. Care must be taken to position it in line with the tibial crest and avoid internal rotation of the component. Varus – valgus and tibial slope is then defined for the cut. (0° varus and 5° tibial slope°) The tibial cut is performed with the saw and completed with an osteotome to allow blunt removal of the posterior border of the tibial bone block and avoid neurovascular complications. The tibial block is sized after complete osteophyte removal for appropriate determination of the tibial component size and soft tissue and meniscal remnants should be excised at this point. Gap evaluation in extension is done with the smaller trial to verify proper height of the tibial cut and stability with this first insert. With the knee in extension, the most anterior border of the tibia and the relation with the femoral condyle should determine the anterior border of the femoral component, which then should be marked. Femoral preparation is begun with the removal of the condyle cartilage with a saw and addressing the posterior femoral osteophyte with an osteotome. After this, femoral component trial is defined depending on the coaptation of the different sizes available and femoral preparation is completed. Tibial component preparation is then made with the previously sized trial and performing the tibial keel with an impactor. Trial components are then placed in the same order as the planned definitive components to evaluate proper stability and range of motion. Single stage, one cement dose cementation is then made beginning with the tibial component with the knee positioned at 60° flexion, external rotation, and valgus stress, then femoral component cementation is done with the knee in full flexion and excess cement is excised. Closure of the capsulotomy is done in a single plane using a bearded suture and subcutaneous tissue and skin is closed according to the surgeon's preference.

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## RESULTS

Prostheses should be evaluated taking into account its survival rate at 10 – 15 years, it also should be noted that in the case of UKA, different results had been published comparing the national registries, Australian registry (3) 10 – 15 years cumulative revision rate of 14.6% and 21% for UKA versus 5.5% and 6.5% TKA, UK national registries (4) showed 12 years cumulative revision rate 15% UKA vs 3.87 TKA, versus the centers of excellence that have proven that the procedure done by experienced surgeons with higher caseload and usage around 20% improve 20 years survival rates to 91% and 93% survival rate at 9years. These centers of excellence have also proven that the satisfaction and complication rate of the UKA is comparable to those of the TKA. (6,7)

## CONCLUSION

UKA is a safe procedure, with good long – term results and survival rate of the components in the hands of an experience surgeon. This surgical technique shows the step by step and our pearls to allow better results and avoid complications.

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## REFERENCES

1. Kozinn SC, Scott RD. Surgical treatment of unicompartmental degenerative arthritis of the knee. *Rheum Dis Clin North Am*. 1988;14(3):545-564.
2. Berend KR, Berend ME, Dalury DF, Argenson JN, Dodd CA, Scott RD. Consensus Statement on Indications and Contraindications for Medial Unicompartmental Knee Arthroplasty. *J Surg Orthop Adv*. 2015;24(4):252-256.
3. AOA. Australian Orthopaedic Association National Joint Replacement Registry. Aust Orthop Assoc Natl Jt Replace Regist. 2020;(Demographics and Outcome of Ankle Arthroplasty):219-289.  
<https://aoanjrr.sahmri.com/documents/10180/689619/Hip%2C+Knee+%26+Shoulder+Arthrop lasty+New/6a07a3b8-8767-06cf-9069-d165dc9baca7>.
4. National Joint Registry for England Wales Northern Ireland and the Isle of Man. 16th Annual Report 2019:National Joint Registry for England, Wales, Northern Ireland and the Isle of Man. NJR 16th Annu Rep 2019. 2019;(December 2018):1-248. <https://www.hqip.org.uk/wp-content/uploads/2018/11/NJR-15th-Annual-Report-2018.pdf>.
5. Johal S, Nakano N, Baxter M, Hujazi I, Pandit H, Khanduja V. Unicompartmental Knee Arthroplasty: The Past, Current Controversies, and Future Perspectives. *J Knee Surg*. 2018 Nov;31(10):992-998. doi: 10.1055/s-0038-1625961. Epub 2018 Mar 7. PMID: 29514367.
6. Walker T, Hetto P, Bruckner T, et al. Minimally invasive Oxford unicompartmental knee arthroplasty ensures excellent functional outcome and high survivorship in the long term. *Knee Surgery, Sport Traumatol Arthrosc*. 2019;27(5):1658-1664. doi:10.1007/s00167-018-5299-2.
7. Lisowski LA, Meijer LI, Van Den Bekerom MPJ, Pilot P, Lisowski AE. Ten- to 15-year results of the Oxford Phase III mobile unicompartmental knee arthroplasty: A prospective study from a non-designer group. *Bone Jt J*. 2016;98-B(10):41-47. doi:10.1302/0301-620X.98B10.BJJ-2016-0474.R1.