Unicompartmental Knee Replacement

Peter Brooks MD, FRCS(C)
Cleveland, Ohio

Disclosures

- Consultant
  - Stryker
  - Smith and Nephew

Surgery for Knee OA

- Choice depends on:
  - Patient factors
  - Extent and location of disease
- Not every patient needs a TKR!

Medial Compartment OA

- Far more common than lateral OA, 10:1
- Most common indication for medial uni
- Patient selection is critical

Indications for Medial Uni

- Medial compartment osteo-arthritis
- Sufficient symptoms
- Antero-medial arthritis
- Functionally intact ACL, MCL
- Full-thickness lateral compartment
- Passively correctable varus

Antero-medial Arthritis

- Anterior tibial plateau
- Limited region of exposed bone
- ACL is functionally intact
- Prevents postero-medial changes
- Prevents MCL shortening!
- No need for medial release
Antero-medial Arthritis

Anterior

Antero-Medial Arthritis

MCL Laxity

Tightens in Flexion

Intact Posterior Cartilage

- MCL pseudolaxity in slight flexion
- Tightens up every time patient flexes
- MCL contracture does not develop
- No need for medial release
- All this depends on intact ACL

Postero-Medial Arthritis

No Uni!

Contraindications to Uni

- “Classical” contraindications
  - many
- Actual contraindications
  - Far fewer
Classical Contraindications

- Young
- Old
- Overweight
- Active
- Chondrocalcinosis
- Anterior knee pain
- ACL deficiency
- Excessive deformity
- Inflammatory arthritis, eg RA
- Patellofemoral involvement

Obesity

- Little data on excessively obese patients
- Be wary of osteopenia and morbid obesity
- Risk of fracture

Chondrocalcinosis

- Compared knees indicated for uni
  - 78 without chondrocalcinosis
  - 20 with chondrocalcinosis
  - No difference
  - (Woods DA et al, 1995)

No Difference in Outcomes

- BMI > 40
- Younger or older patients
- Presence of patellofemoral disease
- Pain localized medially or not
  - (Berend et al, 2011)

Real Contraindications

- ACL absent or non-functional
- Flexion contracture > 15 degrees
- Lateral compartment arthritis
  - Weight-bearing area, not notch
- Inflammatory arthritis
- Severe patellofemoral OA

Severe PF OA, Grooving

No Uni
Surgical Technique

- Antero-medial incision
- Inspect the joint
  - Antero-medial arthritis?
  - ACL, lateral and PF joint OK?
- Remove femoral osteophytes
- No other medial release

Resect Tibia

- Be conservative
- Avoid crossing sawcuts
  - risk of plateau fracture
- Orient sagittal cut towards femoral head
- Size the resected tibia

Balancing the Knee

- Not by releasing a tight MCL
- Knee is balanced by bone cuts
- Instruments allow matching of flexion and extension gaps

Measure Gaps

- I place leg on leg-holder
- Use feelers
- Flexion gap of dangling leg
- Remove feeler !!
- Extension gap
  - not full extension, about 10°

Gap Balancing

Flexion gap = 9
Extension gap = 10
Adjustable distal cutting block “-1”
Prepare Distal Femur
- Extension gap is often slightly greater than flexion gap
- Measure the difference with feelers
- Adjust distal femoral resection by that amount
- Gaps are now balanced

Every mm Matters
- Gaps are surprisingly sensitive
- If excessive poly needed, you cut the MCL
- Given a choice, choose to leave it looser
- Add tibial slope if needed to loosen flexion gap

Finish Bone Prep
- Posterior and chamfer cuts
- Posterior femoral osteophytes
- Lug holes
- Keel hole
- Cement

Alignment Goals
- TKR: aim is zero degree mechanical axis
  - Release ligaments, add poly
- Uni: aim is to restore the pre-arthritic alignment
  - usually slight varus

Correct       Excess Valgus

Overcorrection
- Deliberate or accidental release of MCL
- Thick poly needed
- Overloads lateral compartment
- Major cause of uni failure
  - Protect the MCL!
Surgical Tip

- If you can’t decide between poly thicknesses:
  - Choose the thinner one
  - Leave it looser, not tighter
  - Not like a TKR

Outcomes of Uni Knees

- Greater patient satisfaction than TKR
- Feels more normal (ACL)
- Better ROM
- Quicker recovery, less pain
- Normal kinematics

A TKR in a Uni Candidate?

- TKR removes the healthy 2/3 of the knee
- TKR removes normal ligament(s)
- Knee may have paradoxical roll-back
- Does not feel normal
- Relatively high dissatisfaction

HTO in Uni Candidate?

- Introduces new deformity
- Does not address intra-articular pathology
- Higher failure rates than Uni or TKR
- Difficult revisions (patella baja)

Revisions by Age

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Higher Revision Rate

- Patient selection? Device selection?
- Some surgeons disapprove of Uni’s
- An easy revision?
- Risk of revision is inversely proportional to the difficulty
- Device with lowest risk of revision: the *Hinge*!
Revision Risk

Australian Registry 2013

Mortality Risk

- Uni is a safer procedure
- TKR has 53% higher mortality!

Australian Registry 2013

Conclusions

- Medial Uni knee is indicated in
  - Antero-medial OA
  - Intact ACL
  - Not excessive deformity
  - Patient selection is important

Ignore “Classical” contraindications

- Age (old or young)
- Obesity
- Activity level
- Moderate PF OA
- Chondrocalcinosis
- Location of pain

Technical Pearls

- No medial release !!
- Balance gaps by bone cuts
  - slope tibia in necessary
  - Avoid over-correction
  - Leave it looser, not tighter

Higher Revision Rate, but

- Easier recovery
- Better ROM
- Feels more normal
- Greater satisfaction
- Lower mortality
Thank You