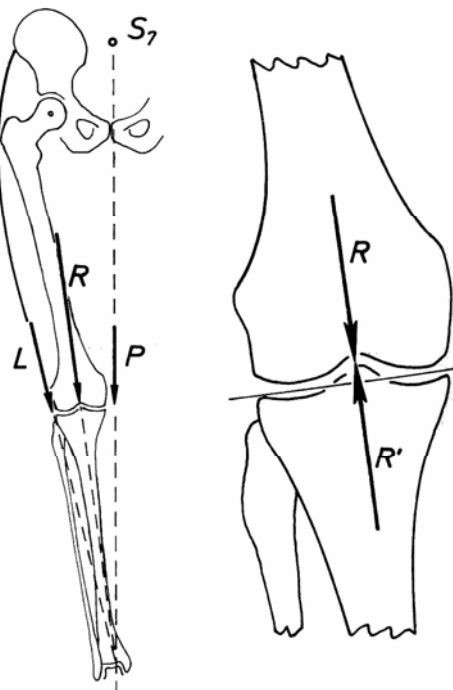
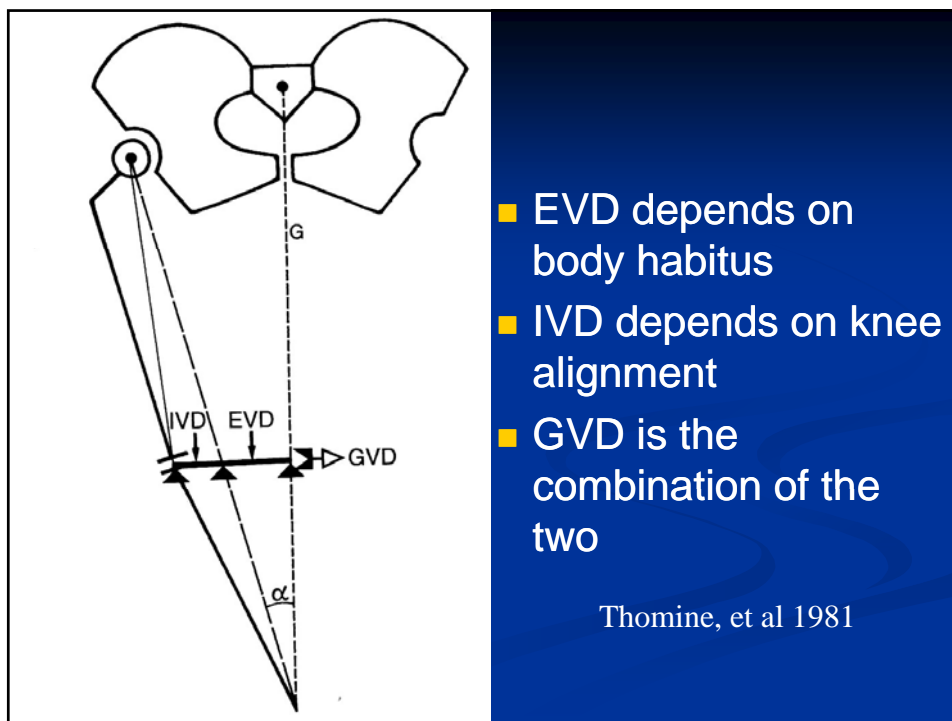


## Why does the medial compartment degenerate?

- Adduction moment
- Intrinsic vs. extrinsic varus moment
- Function of muscles
- Rotational contribution

- P- body weight
- L- muscular force
- R- resultant





## Treatment options

- Osteotomy
- Unicompartmental knee
- Unispacer

## Osteotomy Ideal candidate

- Young
- Active
- Not too heavy
- Coventry: Less than 1.32X ideal body weight

Coventry MB, Ilstrup J Bone Joint Surg..75(2):196-201, 1993.

CTQ

## Ideal candidate 2

- Flexion arc greater than 90 deg
- No significant flexion contracture
- Varus less than 12 degrees

CTQ

## Relative contraindications: patient

Inflammatory arthritis  
Significant patello-femoral OA  
Varus thrust or ligamentous instability  
Age greater than 60

CTQ

## Techniques

Lateral closing wedge (coventry)  
Medial Opening wedge  
    Puddu plate  
    External fixator  
Crescentic

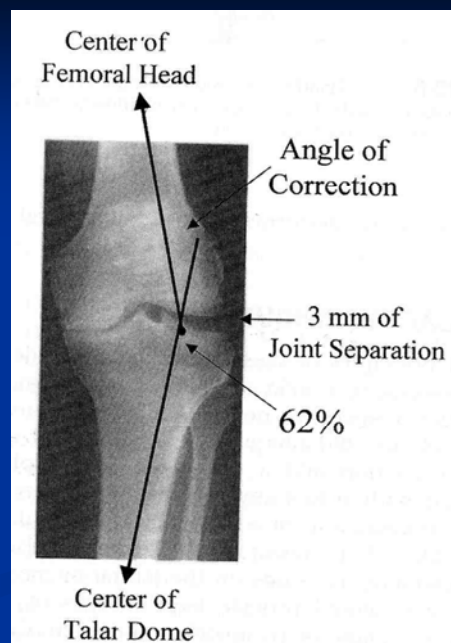
## Target alignment

- Fujisawa point
  - .66 distance from lateral margin to tibial spine
- Overcorrection of tibio-femoral axis to 7 to 10 degrees (6 is normal)

CTQ

CTQ

## Measurement of correction angle



## Outcomes

- 10 year results range from 28 to 80%\* (most in the 60's)
- Undercorrection highly correlated with poor result **CTQ**
- "reliable longevity of a proximal tibial osteotomy is approximately 6 years" **CTQ**
  - Ritter, Fechtman, J Arthroplasty, 1988

Matthews, et. Al, 1988  
 Hernigou, et. Al, 1987  
 Healy and Riley, 1986

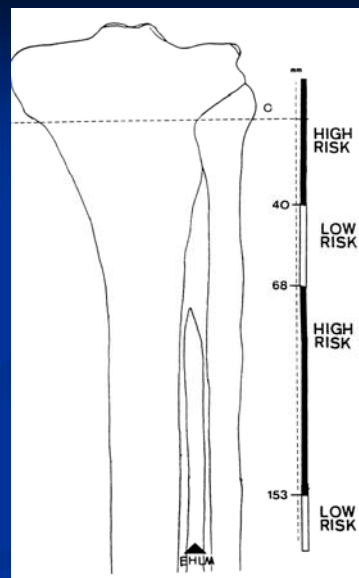
## Complications

- Peroneal nerve injury
- Popliteal artery laceration
- Compartment syndrome
- Hardware failure
- Non-union, malunion
- Patella infera
- Intra-articular fracture
- overcorrection



## “Safe zone” for fibular osteotomy

CTQ



## Consequences for revision

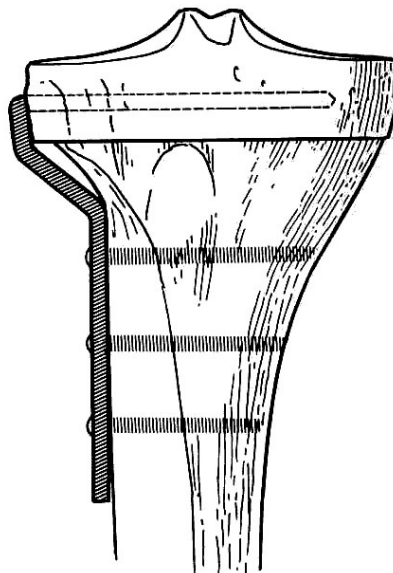
- Lateral column shortening
- Ligament imbalance
- Broken hardware
- Exposure problems (patella infera) CTQ
- Outcomes clearly worse than primary TKR CTQ



## Lateral column shortening

- Can move the center of the plateau laterally

CTQ



## TKR after HTO

- Comparing post HTO TKR to primary TKR, 81% good compared to 100% good
  - Katz, Hungerford, Krackow JBJS 1987
- Results of TKR after HTO are comparable to revision TKR, not primary TKR
  - Mont, Antonaides, Krackow, Clin Orth 1994

## Advantages of Opening Wedge

- Ease of operative technique
- Minimal muscle dissection
- Easily adjustable intraoperatively
- No patella height change
- No lateral shortening



## Advantages of Opening Wedge

- Proximal tib-fib joint undisturbed
- Easy intraoperative correction
- Osteotomy away from neurovascular structures
- Less risk of compartment syndrome
- Combination with ACL reconstruction or OATs procedure
- Less translation of osteotomy



## Disadvantages

- Delayed union / nonunion
- Need for autologous bone graft
- No adjustment after surgery
- Retained hardware
- Partial MCL release

## Preoperative planning

- Weightbearing long-leg radiographs



## Approach

- Arthroscopy
- 1mm of correction per degree **CTQ**
- MCL elevated and split longitudinally to protect
- Careful placement of posterior retractor (popliteal artery injury)



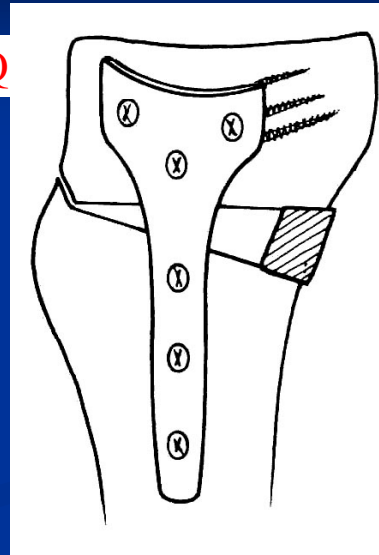
- Check under flouro to confirm bearing line.
- Don't open anteriorly too much! This will increase posterior slope
- Proximal then distal screws. **CTQ**



## Technique pitfalls

- Tends to increase posterior slope
- Medial laxity may lead to undercorrection
- The ability to decrease the tibial slope = good choice for PCL deficient

CTQ



CTQ

## Plate breakage

- Ratio of the experimental failure load to the calculated estimate of the knee joint forces during gait
- 1.07 in axial compression
- 0.925 in torsion
- Load during level walking slightly exceeds the failure load

CTQ

Am J Knee Surg. 1999 Summer;12(3):148-53

## Medial compartment replacement

- Older patient with sedentary lifestyle “first and last replacement”
- Middle aged patient “bridge arthroplasty”

CTQ

## Contraindications

- Inflammatory disease
- Poor bone quality
- Patello-femoral or lateral compartment disease
- Relative contraindications: High activity (laborer) or heavy weight (over 90kg)

CTQ

A unicompartment knee arthroplasty is contraindicated in which of the following clinical scenarios?

- 1-Inflammatory arthritis
- 2-Anteromedial osteoarthritis
- 3-Lateral compartment osteoarthritis
- 4-Medial femoral condyle osteonecrosis
- 5-Advanced age

Preferred Response: 1

## Advantages

- **Quick recovery! (only benefit supported by literature)** **CTQ**
- 4 ligament preservation- knees feel more normal
- Minimal bone resection with newer designs
- Minimal impact on subsequent arthroplasty

## Repicci Uni

- Very small incision
- No need to sublux patella
- Minimal bone resection



## Repicci disadvantages

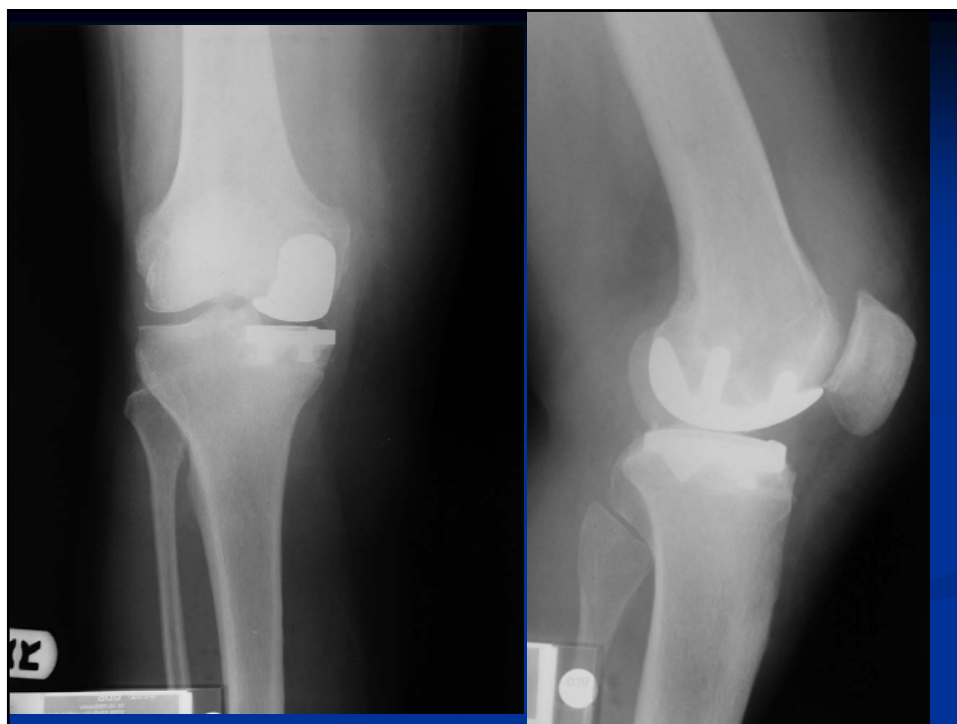
- Essentially un-instrumented
- Parts seated with a burr
- Tibia can subside if tibial bone is poor quality



## Instrumented uni

- More familiar technique
- Metal backed tibia
- Greater accuracy
- Components larger and resect more bone





## Failed UNI



- Too many fixation pins in proximal tibia may cause stress riser
- Femur not lined up over tibial component will cause edge loading

CTQ

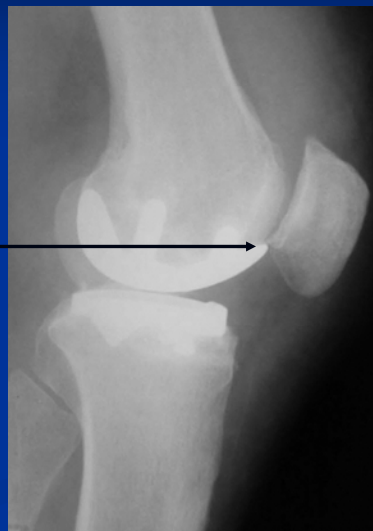
A 55-year-old electrician who is 5' 10" tall and weighs 250 lbs developed severe medial compartment degenerative arthritis 6 months ago and underwent a medial unicompartment knee arthroplasty. He did extremely well initially and returned to work after 5 weeks. He reports new onset pain made worse by prolonged weight bearing and stair climbing. He has no fevers, chills, or pain at rest. Radiographs are shown in Figures 60a and 60b. A delayed image from a bone scan is shown in Figure 60c. What is most likely diagnosis?

- 1-Infection
- 2-Anterior cruciate ligament disruption
- 3-Osteolysis
- 4-Stress fracture
- 5-Dislodgement of polyethylene

Preferred Response: 4

## Reasons for failure

- Progression of disease
- Heavy activity
- Patellar **CTQ** impingement
- Medial loading of the tibia



# Unispacer



# Unispacer

