

Medial compartment OA in the 'young' adult

Mubashshar Ahmad
SpR teaching programme
Oct 09



Overview

- Basic issues on surgical management
 - ◆ HTO
 - ◆ UKR
- Evidence-based considerations
 - ◆ Current role of HTO
 - ◆ Evidence for UKR
- UKR revisions/ Joint registry
- Coffee break (UKR stand/ Mathys)
- Discussion

High Tibial Osteotomy

Aim

- Pain relief
- Restore mechanical alignment
 - ◆ changes load distribution
- Reduce load through medial compartment

Advantages

- Biological effect
- Allows full activity after union
- ? Delays need for arthroplasty

Patient selection: HTO

- Age less than 60 years
- Purely medial OA knee
- Varus deformity of $<15^{\circ}$ (WB views)
- Flexion $>90^{\circ}$
- Flexion contracture $<15^{\circ}$
- No instability
- Ability/ motivation to effectively perform rehabilitation

Contraindications:

- Obesity
- Poor rehab compliance
- ?smoking

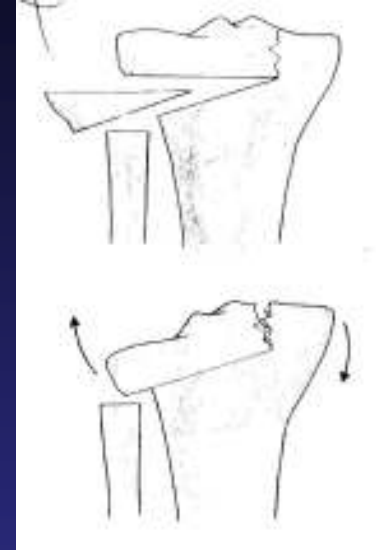
HTO

- Joint preserving techniques
 - ◆ Closing/ lateral wedge osteotomy
 - ◆ Opening/ medial wedge osteotomy
 - Graft
 - ◆ Dome-shaped osteotomy
 - ◆ Hemi-closed/Hemi-open wedge osteotomy
- Fixation devices and implants
 - ◆ Staples
 - ◆ External fixator
 - ◆ Blade plate and screws
 - ◆ Neutralization/ compression Plate and screws



Complications: HTO

- Intra-operative complications
 - ◆ Proximal fragment #
 - ◆ Contralateral cortical #
 - ◆ Over correction
 - ◆ Under correction
 - ◆ Peroneal nerve palsy
 - ◆ Slope alterations
 - ◆ Extensor mechanism alteration
- Post-operative complications
 - ◆ Nonunion / delayed union
 - ◆ Infection
 - ◆ Thromboembolism



Complications: HTO

Over correction

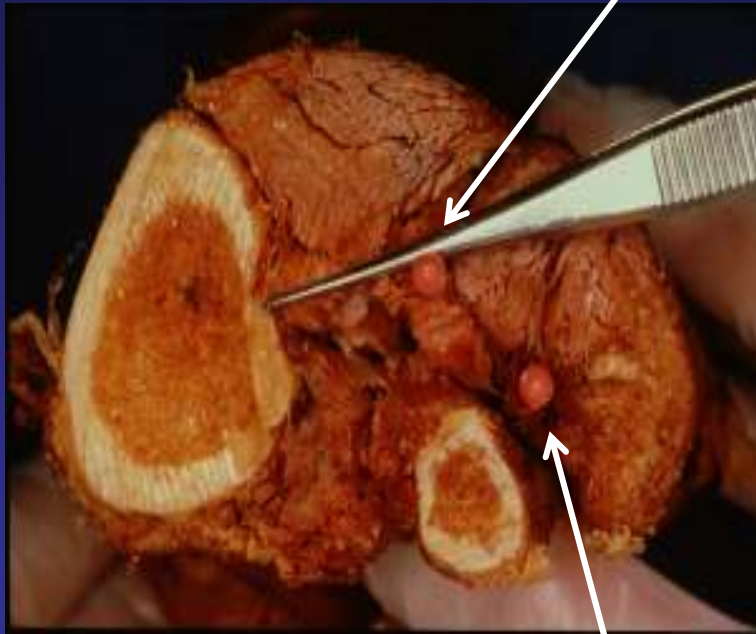


Under correction



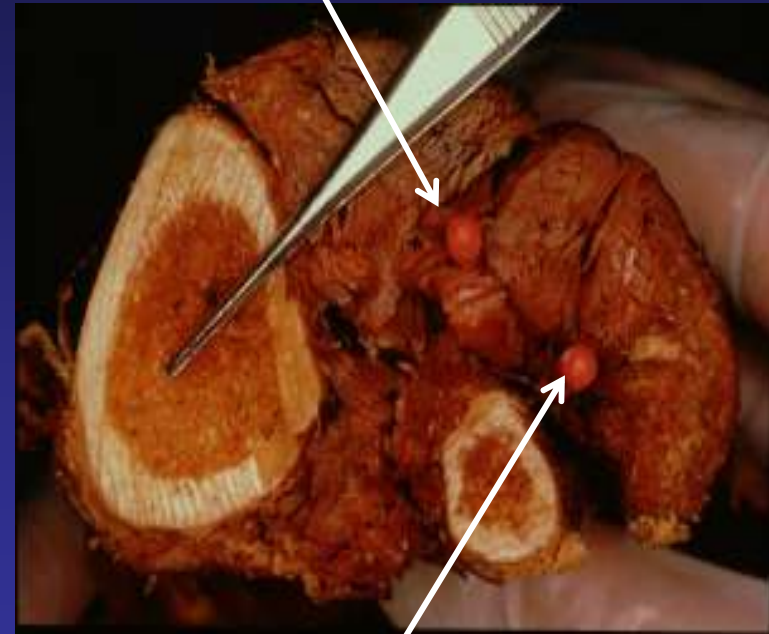
HTO: Peroneal nerve palsy

Incorrect direction



Deep peroneal nerve

Correct direction



Superficial peroneal nerve

Long-term results of HTO

Good results:

- *Hernigou et al: JBJS-Am, 1987*
 - 90% at 5 years
 - 45% at 10 years
- *Yasuda, et al: Clin Orthop, 1992*
 - 85% at 5 years
 - 63% at 10 years

The survival rate of HTO:

- *Aglietti et al: Clin Orthop 2003*
 - 78% at 10 years and 57% at 15 years
- *Nagi et al: JBJS-Am 2007*
 - 92% at 10 years and 58% at 20 years

My thoughts on HTO

- HTO delays the need for TKA
- Aim for good 10-year results
 - ◆ patient selection
 - ◆ surgical technique wrt restoration of correct alignment
- HTO
 - ◆ Surgical complications/ morbidity
 - ◆ Technically demanding

UKR

- Anteromedial osteoarthritis
- Intact ACL
- Preserved lateral compartment
- No Fixed flexion
- Flexion $>110^{\circ}$
- Correctable varus
- Age/ weight not CI
- Patella-femoral OA not a CI
- contraindicated in all forms of inflammatory arthritis.



Unicompartmental or total knee replacement. THE 15-YEAR RESULTS OF A PROSPECTIVE RCT

J. Newman et al. JBJS (Br) Vol 91-B, Issue 1, 52-57.

- 1989 and 1992
- 102 knees suitable for unicompartmental knee replacement (UKR)
- Randomised: St Georg Sled UKR or a Kinematic modular (TKR).

- The early results
 - ◆ UKR group had less complications and more rapid rehabilitation than the TKR group.
- At five years
 - ◆ equal number of failures in the two groups but the UKR group had more excellent results and a greater range of movement.

- 15 years follow-up survivorship
 - ◆ 24 (89.8%) for UKR
 - ◆ 19 (78.7%) for TKR.
 - ◆ During the 15 years of the review four UKRs and six TKRs failed.
- Conclusion
 - ◆ The better early results with UKR are maintained at 15 years with no greater failure rate.
 - ◆ These results justify the increased use of UKR.

Results

The Oxford medial unicompartmental arthroplasty: ten year survival

Murray DW et al. JBJS (Br) 1998;80-B:983-9.

- ◆ 144 knees
- ◆ Age 35-90
- ◆ 10y survival 98%

Oxford Partial Knee Arthroplasty.

Svard U et al. JBJS (Br) 2001;83-B:191-4.

- ◆ 420 medial unicompartmental replacements with no loss to fu
- ◆ 10y fu (122) 92% with good/ excellent results
- ◆ 10y survival 95%
- ◆ 15y survival 94%

Results: HTO vs UKR

UKR and HTO for osteoarthritis of the knee. A comparative study after 5-10y
NS Broughton, JH Newman, and RA Baily
JBJS (Br) Vol 68-B, Issue 3, 447-452

- ◆ retrospective review
- ◆ 49 HTO & 42 UKR
- ◆ 5 - 10 year fu.

- ◆ UKR: 32 (76%) were good, 4 fair, 3 poor and 3 revised.
- ◆ HTO: 21 (43%) were good, 11 fair, 7 poor and 10 revised.

- ◆ UKR were significantly better
- ◆ UKR showed no sign of late deterioration.

Results

Revision TKR. Comparison of outcome following HTO or UKR.
M Jackson, PP Sarangi, and JH Newman
J Arthroplasty, 1994 9: Bristol

- ◆ 43 revision TKR (23 UKR, 20 valgus HTO)
- ◆ Similar knee scores and ROM

- ◆ 4 HTO patients (20%) - deep infection.
- ◆ UKR – no wound problems.
- ◆ significant bone loss from the medial tibial plateau (50%)

HTO vs UKR

HTO compared with UKR for the treatment of medial compartment OA:
a meta-analysis

Nizar N et al

Current Orthopaedic Practice: April 09 (20) 2, 164-169

- Primary outcome: good or excellent outcomes.
- Secondary outcomes: implant survivorship
- Six studies
- Conclusion:
 - ◆ UKA yields a greater percentage of good or excellent outcomes
 - ◆ UKR showed a strong trend towards improved survivorship over HTO.

Discussion: HTO vs UKR

- HTO
 - ◆ Is it a reasonable long term option or a temporary procedure before TKR?
 - ◆ Do the benefits outweigh the risks
- UKR advantages over HTO:
 - ◆ Better good/ excellent results
 - ◆ Improved long term survival.