Medial compartment OA surgery: Review of literature

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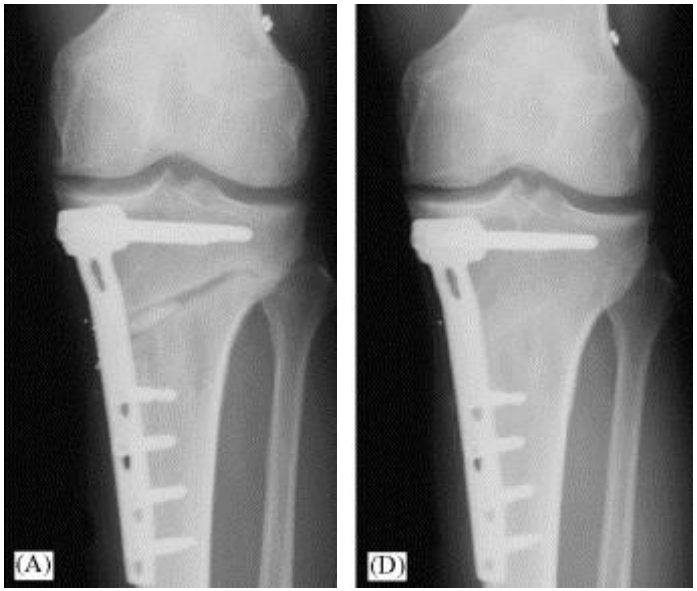
ST8, UHND

Post grad teaching 15/10/12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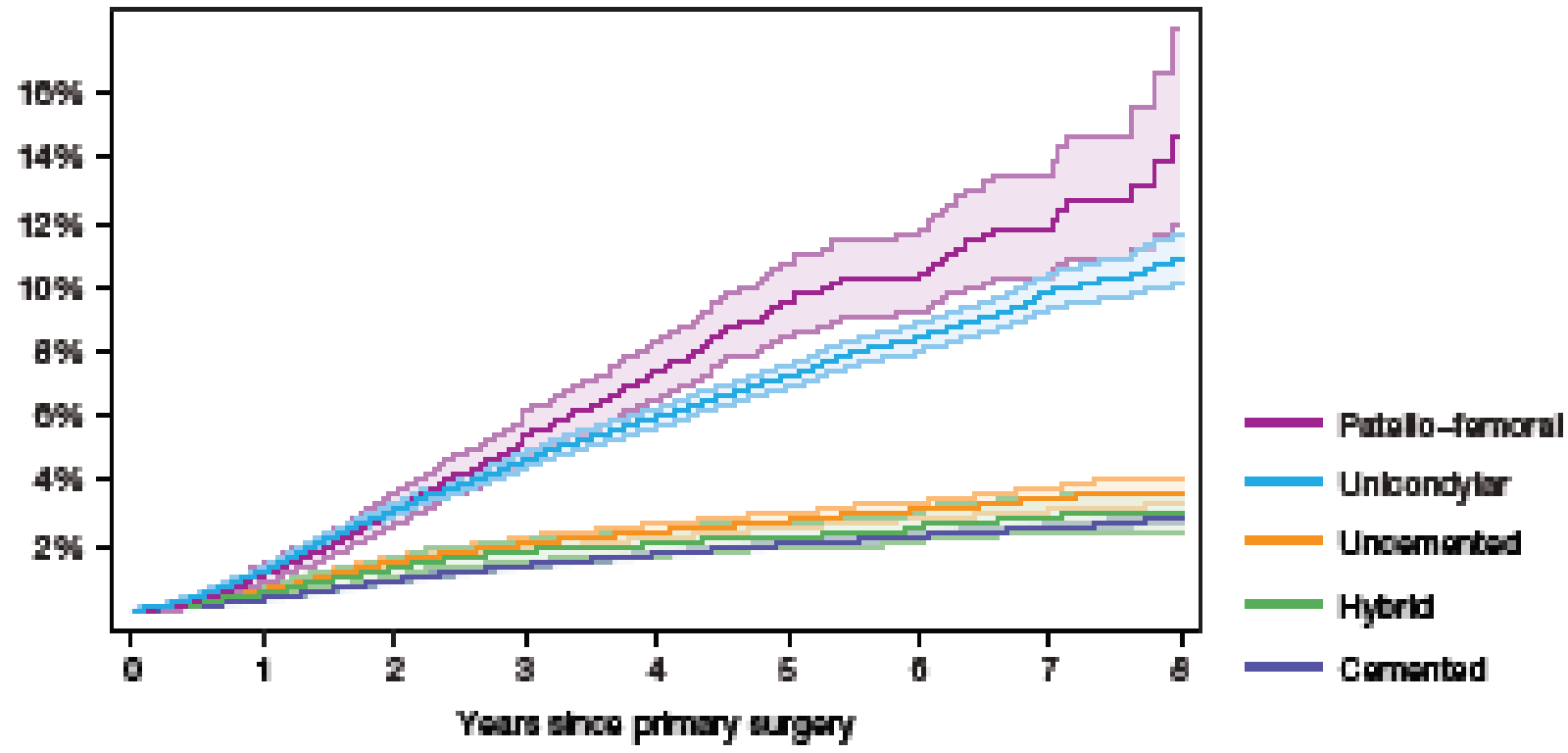
NJR Annual report, 2012

Figure 3.6

Risk of revision following primary knee replacement (cumulative hazard with 95% confidence intervals), by prosthesis type.



April 2010

Survival and functional outcome after revision of a unicompartmental to a total knee replacement

THE NEW ZEALAND NATIONAL JOINT REGISTRY

A. J. Pearse,
G. J. Hooper,
A. Rothwell,
C. Frampton

From University of Otago, Christchurch, New Zealand

We reviewed the rate of revision of unicompartmental knee replacements (UKR) from the New Zealand Joint Registry between 1999 and 2008. There were 4284 UKRs, of which 236 required revision, 205 to a total knee replacement (U2T) and 31 to a further unicompartmental knee replacement (U2U). We used these data to establish whether the survival and functional outcome for revised UKRs were comparable with those of primary total knee replacement (TKR). The rate of revision for the U2T cohort was four times higher than that for a primary TKR (1.97 *vs* 0.48; $p < 0.05$). The mean Oxford Knee Score was also significantly worse in the U2T group than that of the primary TKR group (30.02 *vs* 37.16; $p < 0.01$). The rate of revision for conversion of a failed UKR to a further UKR (U2U cohort) was 13 times higher than that for a primary TKR.

The poor outcome of a UKR converted to a primary TKR compared with a primary TKR should contra-indicate the use of a UKR as a more conservative procedure in the younger patient.

THE JOURNAL OF BONE & JOINT SURGERY (Br)

■ KNEE

Minimally invasive Oxford phase 3 unicompartmental knee replacement

RESULTS OF 1000 CASES

H. Pandit,
C. Jenkins,
H. S. Gill,
K. Barker,
C. A. F. Dodd,
D. W. Murray

From the Nuffield Orthopaedic Centre, Oxford, United Kingdom

First 1000 cases
Mean f/u 5.6 yrs
Implant related re-operations – 2.9%
Ten year survival – 96% (revision – failure)
Ten year survival – 99.8% (revision – revision

May 2011

THE JOURNAL OF BONE & JOINT SURGERY

■ KNEE

Unnecessary contraindications for mobile-bearing unicompartmental knee replacement

H. Pandit,
C. Jenkins,
H. S. Gill,
G. Smith,
A. J. Price,
C. A. F. Dodd,
D. W. Murray

From the Nuffield Orthopaedic Centre, Oxford, United Kingdom

The contraindications for unicompartmental knee replacement (UKR) remain controversial. The views of many surgeons are based on Kozinn and Scott's 1989 publication which stated that patients who weighed more than 82 kg, were younger than 60 years, undertook heavy labour, had exposed bone in the patellofemoral joint or chondrocalcinosis, were not ideal candidates for UKR. Our aim was to determine whether these potential contraindications should apply to patients with a mobile-bearing UKR. In order to do this the outcome of patients with these potential contraindications was compared with that of patients without the contraindications in a prospective series of 1000 UKRs. The outcome was assessed using the Oxford knee score, the American Knee Society score, the Tegner activity score, revision rate and survival.

The clinical outcome of patients with each of the potential contraindications was similar to or better than those without each contraindication. Overall, 678 UKRs (68%) were performed in patients who had at least one potential contraindication and only 322 (32%) in patients deemed to be ideal. The survival at ten years was 97.0% (95% confidence interval 93.4 to 100.0) for those with potential contraindications and 93.6% (95% confidence interval 87.2 to 100.0) in the ideal patients.

We conclude that the thresholds proposed by Kozinn and Scott using weight, age, activity, the state of the patellofemoral joint and chondrocalcinosis should not be considered to be contraindications for the use of the Oxford UKR.

THE JOURNAL OF BONE & JOINT SURGERY (Br)

The implications of damage to the lateral femoral condyle on medial unicompartmental knee replacement

B. J. L. Kendrick,
R. Rout,
N. J. Bottomley,
H. Pandit,
H. S. Gill,
A. J. Price,
C. A. F. Dodd,
D. W. Murray

From Oxford Orthopaedic Engineering Centre, Botnar Research Centre, Nuffield Orthopaedic Centre, Oxford, England

- B. J. L. Kendrick, MRCS(Eng), Research Fellow
- R. Rout, MRCS(Eng), Research Fellow
- N. J. Bottomley, MRCS(Eng), Research Fellow
- H. Pandit, DPhil, FRCS(Orth), Senior Clinical and Research

With medial unicompartmental osteoarthritis (OA) there is occasionally a full-thickness ulcer of the cartilage on the medial side of the lateral femoral condyle. It is not clear whether this should be considered a contraindication to unicompartmental knee replacement (UKR). The aim of this study was to determine why these ulcers occur, and whether they compromise the outcome of UKR.

Case studies of knees with medial OA suggest that cartilage lesions on the medial side of the lateral condyle are caused by impingement on the lateral tibial spine as a result of the varus deformity and tibial subluxation. Following UKR the varus and the subluxation are corrected, so that impingement is prevented and the damaged part of the lateral femoral condyle is not transmitting load. An illustrative case report is presented.

Out of 769 knees with OA of the medial compartment treated with the Oxford UKR, 59 (7.7%) had partial-thickness cartilage loss and 20 (2.6%) had a full-thickness cartilage deficit on the medial side of the lateral condyle. The mean Oxford Knee Score (OKS) at the last follow-up at a mean of four years was 41.9 (13 to 48) in those with partial-thickness cartilage loss and 41.0 (20 to 48) in those with full-thickness loss. In those with normal or superficially damaged cartilage the mean was 39.5 (5 to 48) and 39.7 (8 to 48), respectively. There were no statistically significant differences between the pre-operative OKS, the final review OKS or of change in the score in the various groups.

We conclude that in medial compartment OA, damage to the medial side of the lateral femoral condyle is caused by impingement on the tibial spine and should not be considered a contraindication to an Oxford UKR, even if there is extensive full-thickness ulceration of the cartilage.

Jan 2009

THE JOURNAL OF BONE & JOINT SURGERY (BR)

Unicompartmental or total knee replacement

THE 15-YEAR RESULTS OF A PROSPECTIVE RANDOMISED CONTROLLED TRIAL

J. Newman,
R. V. Pydisetty,
C. Ackroyd

From Avon Orthopaedic Centre, Bristol, England

Between 1989 and 1992 we had 102 knees suitable for unicompartmental knee replacement (UKR). They were randomised to receive either a St Georg Sled UKR or a Kinematic modular total knee replacement (TKR). The early results demonstrated that the UKR group had less complications and more rapid rehabilitation than the TKR group. At five years there were an equal number of failures in the two groups but the UKR group had more excellent results and a greater range of movement.

The cases were reviewed by a research nurse at 8, 10 and 12 years after operation. We report the outcome at 15 years follow-up. A total of 43 patients (45 knees) died with their prosthetic knees intact. Throughout the review period the Bristol knee scores of the UKR group have been better and at 15 years 15 (71.4%) of the surviving UKRs and 10 (52.6%) of the surviving TKRs had achieved an excellent score. The 15 years survivorship rate based on revision or failure for any reason was 24 (89.8%) for UKR and 19 (78.7%) for TKR. During the 15 years of the review four UKRs and six TKRs failed.

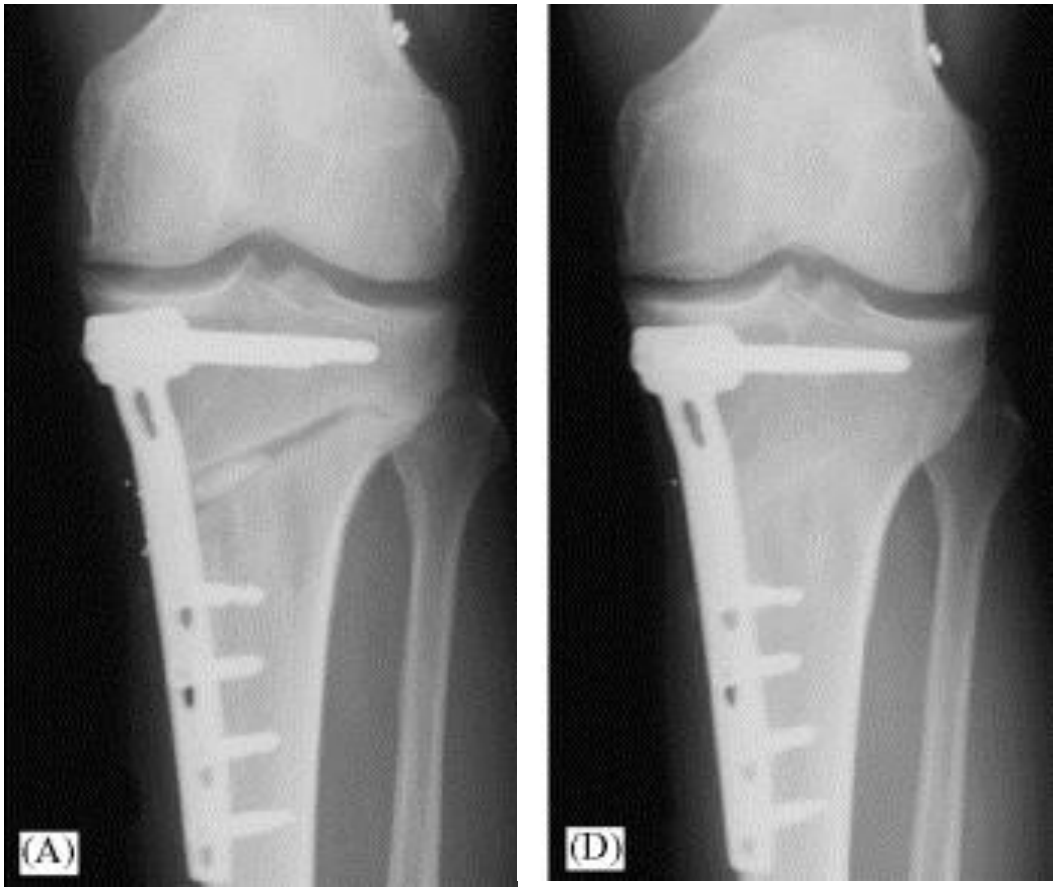
The better early results with UKR are maintained at 15 years with no greater failure rate. The median Bristol knee score of the UKR group was 91.1 at five years and 92 at 15 years, suggesting little functional deterioration in either the prosthesis or the remainder of the joint. These results justify the increased use of UKR.

Griffin et al, March 2007

- For knee function and postoperative pain, UKA = TKA and HTO at 5 years follow up.
- Range of motion UKA > TKA.
- Complication rates HTO > UKA / TKA
- 10yr survival UKA 85–95%, TKA 90% HTO < 85%.
- Revisions HTO > UKA

Knee, Cobb et al, 2009

- **Unicondylar knee arthroplasty in the UK an analysis of candidacy, outcome and cost efficacy.**
  - Candidacy for uni widespread (47%)
  - Uni functionally superior to TKR (TKQ scores)
  - Cost saving of £1761 per knee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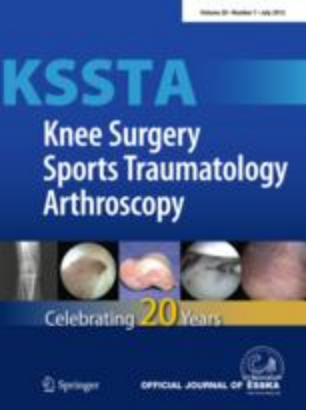
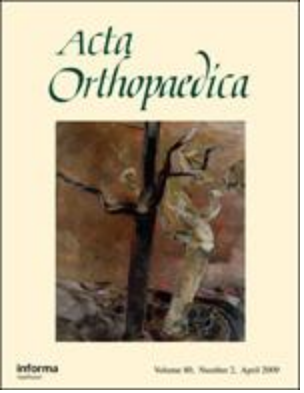


June 2012

Outcome after high tibial open-wedge osteotomy: a retrospective evaluation of 533 patients.

Floerkemeier S, Staubli AE, Schroeter S, Goldhahn S, Lobenhoffer P.

- Identify predictive parameters for outcome
- Multicentre study, Tomofix plate
- Average f/u 3.6 years, majority gr. III/IV lesion
- Positive indicators – male, operated by experienced surgeon
- Favourable mid term results
- No co-relation between age and OKS



HTO in Sweden, 1998-2007: a population-based study of use and rate of revision to knee arthroplasty.

W-Dahl A, Robertsson O, Lohmander LS.

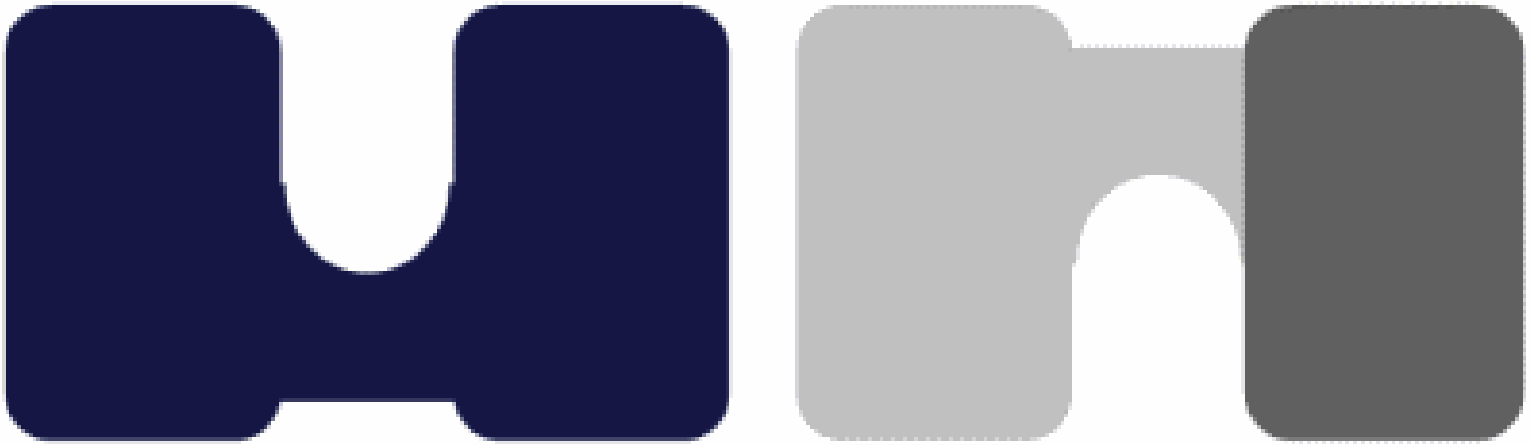
Jun 2012

- 3161 procedures
- Majority open wedge with ex-fix
- Cumulative revision rate at 10 yr was 30%
- Risk of revision increased with
  - increasing age
  - Higher in women


(A)

TOPKAT

NHS
National Institute for Health Research



Total Or Partial Knee Arthroplasty Trial

HTA
NIHR Health Technology Assessment

CHaRT
Centre for Healthcare Randomised Trials

UNIVERSITY OF OXFORD

TOPKAT

- Clinical and cost effectiveness of TKR v/s UNI for medial OA
- 500 patients from 20 centres over 2 years
- Patient focused questionnaires regarding knee pain, function, cost and treatment
- Post op radiological assessment

THE COCHRANE COLLABORATION®

Osteotomy for knee OA

- Thirteen studies, 693 patients
- Improvement in pain and function scores
  - Silver level evidence
- No significant difference compared to UKA
- No evidence that it is more effective than conservative treatment

HTO / UNI Review of literature
Iowa Orthopaedic Journal, 2010

TABLE 2. Summary of studies that compared groups of patients treated with HTO and UKA

author	year	type of study		number	HTO type/ UKA model	Follow-up	survivorship	Outcome	pain	ROM
Karpman, Volz	1982	retrospective	HTO UKA	23 21	CWHTO ??	2 y 3 y	100% 91%	57% good/excellent 91% good/excellent	- -	- -
Broughton et al	1986	retrospective	HTO UKA	49 42	CWHTO St Georg	7.8 y 5.8 y	80% 93%	43% good/excellent (Baily) 76% good/excellent (Baily)	59% no/mild 87% no/mild	- -
Weale Newman	1994	retrospective	HTO UKA	49 42	CWHTO St Georg	12-17 y	63% 88%	21% good/excellent (Baily) 41% good/excellent (Baily)	43% no/mild 80% no/mild	- -
Ivarsson Gillquist	1991	prospective matched	HTO UKA	10 10	CWHTO Oxford / PCA	12 mo 6 mo	100% 100%	40% good/excellent (Lysholm) 80% good/excellent (Lysholm)	6.3 / 100 4.1 / 100	112° 121°
Stukenborg-Colsman et al.	2001	prospective randomized	HTO UKA	32 28	CWHTO Oxford / PCA	7-10 y	69% 77%	71% good/excellent (KSS) 65% good/excellent (KSS)	- -	117° 103°
Borjesson et al	2005	prospective randomized	HTO UKA	18 22	CWHTO Brigham	5 y	100% 100%	BOA score median 37 (max=39) BOA score median 37 (max=39)	100% no/mild 100% no/mild	123° 123°
Deitoni et al	2008	prospective	HTO UKA	54 56	OWHTO (Puddu) Accuris	2-4 y	100% 100%	93% good/excellent (KSS) 95% good/excellent (KSS)	- -	- -
W-Dahl et al	2010	national UKA registry review	HTO	450 4799	Hemicallotasis Many	10 y	83% 83%	- -	- -	- -

Year = year of publication; HTO = high tibial osteotomy; UKA = unicompartmental knee arthroplasty; CWHTO = closing wedge high tibial osteotomy; OWHTO = opening wedge high tibial osteotomy; y = years; mo = months; Baily = Baily Knee Score; Lysholm = Lysholm Knee Score; KSS = Knee Society Score; BOA score = British Orthopaedic Association Score.