BRITISH ASSOCIATION FOR SURGERY OF THE KNEE

2007 Meeting - 23rd & 24th March 2007

W5 at Odyssey, Belfast

DuPuy is pleased to support the 2007 BASK Spring Meeting
Intelligent Knee Surgery
BRITISH ASSOCIATION FOR SURGERY OF THE KNEE

BASK & the Belfast Meeting Committee (Mr Ian Corry, Mr Joe McClelland, Mr Richard Nicholas, Mr Chris Connolly, Mr David Warnock and Mr David Beverland)

Would like to thank DePuy Johnson & Johnson for their generous contribution regarding the publication of both programmes for this meeting.

DePuy

Smith & Nephew Healthcare for sponsoring the ‘Lorden Trickey Lecture’
Dr Leo Pinczewski and their generous contribution regarding the Annual Dinner.

Smith & Nephew

PEI for sponsoring the ‘Invited Lecturer’ David Beverland.

PEI

Stryker UK for their generous contribution regarding the delegate coach transfers for both the meeting and the annual dinner.

Stryker

DePuy Mitek for sponsoring and supplying the delegate bags.

DePuy Mitek
Thank you to the following companies for their continued support and contributions in accepting the invitation to exhibit.
Welcome to the 2007 annual meeting of BASK. The Belfast knee surgeons admirably lead by Ian Corry and assisted by Hazel have worked extremely hard to organise what promises to be a very stimulating and entertaining meeting.

As ever we were inundated with abstracts and many perfectly good papers had to be rejected. We have an excellent balance of papers on knee replacement, soft tissue reconstruction and the patello-femoral joint and two excellent guest lecturers in David Beverland and Leo Pinczewski who will give the inaugural Lorden Trickey lecture.

Our difficulties in accepting more abstracts perhaps merits some discussion. Should the meeting run for two whole days or are we now getting big enough to run concurrent sessions on knee replacement and soft tissue reconstruction? Please give us your views during the course of the meeting.

Once again we have had excellent support from the companies who have come along to exhibit and to sponsor aspects of the meeting. The companies very much prefer the format of BASK meetings to the bigger venues at the BOA so please take the opportunity to visit as many exhibitors as possible.

In future the BOA congress will be divided up into speciality days and BASK will have it’s first such speciality day at this year’s congress in Manchester on Friday, 28th September. Next year the annual meeting of BASK will take place in Bournemouth on 17th and 18th April and in September or October we are hoping to organise a combined meeting with the Australian, New Zealand and hopefully South African knee surgeons in Queensland. In 2009 we have two interesting meetings in the autumn. Firstly BASK have been invited to join the American Knee Society for their annual meeting in Boston on October 9th and 10th and in early December the French Arthroscopy Society have invited BASK to join them at their meeting in Deauville.

For the present, on behalf of BASK and our Belfast hosts, I hope that you will find this meeting interesting, stimulating and fun!

Nick Fiddian
President, BASK
BASK
Annual General Meeting, Belfast
Friday 23rd March 2007 - 4.50pm
(W5 Lecture Theatre – Level 4)

AGENDA

1. Apologies
2. a) Minutes of BASK AGM 23rd March 2006
   b) Matters arising
3. Report from Private Practice Committee plus report from Mr R Allum re FIPO
4. President’s Report
5. Report from the Knee Tutor
6. Treasurer’s Report
7. Election of Officers - BASK Website Controller
8. Secretary’s items/ NJR Report:
10. BASK Fellowships
11. Forthcoming Meetings:
    ISAKOS Florence May 2007
    BASK Spring Meeting Bournemouth 2008
    Joint meeting with Australian Knee Society
    Joint meeting with N American Knee Society 2009
12. Any Other Business?
BASK SPRING MEETING 2007
W5 at ODYSSEY, BELFAST

FRIDAY 23rd MARCH

REGISTRATION & COFFEE

08.30 am

INTRODUCTION – Nick Fiddian, President & Ian Corry, Belfast Host

09.05

Moderators
Session I

09.15

Tim Wilton &
David Beverland

09.20

THE EFFECT OF POSTERIOR TIBIAL SLOPE ON CORONAL ALIGNMENT IN TOTAL KNEE ARTHROPLASTY

09.25

Free Paper Session – TKR operative technique

09.33

THE ANTERIOR FEMORAL CORTICAL LINE: A NEW TECHNIQUE FOR ASSESSMENT OF INTRA-OPERATIVE FEMORAL COMPONENT ROTATION IN TOTAL KNEE REPLACEMENT
JRD Murray, M Sherlock, N Hogan, C Servant, S Palmer, MJ Cross
Australian Institute of Musculo Skeletal Research, 286 Pacific Highway, Crows Nest NSW Australia 2065

09.39

Discussion

09.45

Moderators
Session II

09.33

Tim Wilton &
David Beverland

09.45

Free Paper Session – TKR general

09.51

RESULTS OF LOCAL FLAP SURGERY FOR SOFT TISSUE DEFECTS AFTER TOTAL KNEE ARTHROPLASTY
SK Godey, JS Watson
Wythenshawe Hospital, South Manchester University Hospitals NHS Trust

09.51

Discussion

09.57

A PROSPECTIVE STUDY OF PREDICTORS OF TRANSFUSION IN TOTAL KNEE REPLACEMENT.
G Rainey, I Brenkel, S Gilani, R Elton.
Victoria Hospital, Kirkcaldy

09.57

CRUCIATE RETAINING VERSUS CRUCIATE SUBSTITUTING KNEE REPLACEMENT WITH THE PCL CUT; A PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL
DT Loveday, ST Donell
Norfolk and Norwich University Hospital NHS Trust, Norwich, England

09.57

LESIONS OF THE SAPHENOUS NERVE AND ITS INFRAPATELLAR BRANCH AS A CAUSE OF PERSISTENT KNEE PAIN
L. Beaton, J. Mitchell, A. Ehrenraich, J. Lavelle, A. Williams
Chelsea and Westminster Hospital, London
Moderators
Session III 10.10
Tim Wilton &
David Beverland

Free Paper Session – TKR complications

COMPARISON OF EMBOLIC PHENOMENA DURING COMPUTER-ASSISTED AND
CONVENTIONAL TOTAL KNEE REPLACEMENT: A PROSPECTIVE, DOUBLE-
BLIND, RANDOMISED, CONTROLLED TRIAL.
J S Church, J Scadden, R Gupta, C Cokis, K Williams, G C Janes
Perth Orthopaedic & Sports Medicine Centre, Western Australia

10.16

THE CASE FOR ADOPTING A UNIFIED SYSTEM FOR STRATIFYING COMPLEXITY
OF PATIENTS UNDERGOING PRIMARY TOTAL KNEE REPLACEMENT
Deo S D, Al-Arabi YB, S Vargas-Prada
The Great Western Hospital, Swindon & Marlborough NHS Trust

Discussion

10.30

Coffee – Level 4, Exhibition Hall

Moderators
Session IV 11.00
Colin Esler &
Joe McClelland

Free Paper Session – Revision TKR complications

REPORT OF TKAR COMPLICATIONS UP TO 1-YEAR POSTOPERATIVELY:
WHAT ARE THE ISSUES OF MOST CONCERN?
I J Gargan, K Mulhall
Mater Misericordiae Hospital, Dublin, Ireland

11.06

COMPARISON OF KNEE ARTHRODESIS TECHNIQUES BETWEEN A CUSTOM
MADE INTRAMEDULLARY COUPLED DEVICE AND EXTERNAL FIXATION
P Macnamara, C Jack, K James, A Butler Manuel
Conquest Orthopaedic Research Unit, Hastings, UK

11.12

OUTCOME FOLLOWING ARTHRODESIS OF THE KNEE USING A CUSTOM-MADE
INTRAMEDULLARY COUPLED DEVICE.
TM Barton, SP White, AJ Porteous, W Mintowt-Czyz, JH Newman
Avon Orthopaedic Centre, Southmead Hospital, Bristol

11.18

Discussion

Moderators
Session V 11.27
Colin Esler &
Joe McClelland

Free Paper Session – Revision TKR results

CORRECTING BONE LOSS IN REVISION KNEE ARTHROPLASTY: USING AN
UNCEMENTED PROSTHESIS & BONE GRAFTING.
W J S Aston, N DeRoeck and D P Powles.
The Lister Hospital Stevenage

11.33

SALVAGE REVISION TKR FOR INFECTION - A 10 YEAR REVIEW OF A 2 STAGE
RE-IMPLANTATION TECHNIQUE
N Briffa, P Mitchell, S Bridle
Department of Trauma and Orthopaedic, St. George’s Hospital, Blackshaw Road, Tooting

11.39

CO-ORDINATE PROSTHESIS FOR REVISION KNEE ARTHROPLASTY:
RESULTS OF 9-12 YEAR FOLLOW-UP
S Hakkalamani, PKR Meredith, RW Parkinson
Wirral Hospitals NHS Trust, UK.

11.45

Discussion
12.00
INVITED LECTURER:
David Beverland MD FRCS – 'Knee Arthroplasty – 15 years of research' Consultant Orthopaedic Surgeon, Belfast
(PEI / A Partnership for Better Healthcare have kindly sponsored this lecture)

12.30
LUNCH – Level 4, Exhibition Hall

13.25
PRESIDENTIAL MEDAL – Awarded by Robin Allum, President 2004 - 2006 to the author of the 'Best Podium Presentation' presented at the meeting in Newcastle 2005 or Slough 2006.

13.30
LORDEN TRICKEY LECTURE:
Dr Leo Pinczewski FRACS – 'Knee Ligament Reconstruction – 15 years of research'
North Sydney Orthopaedic & Sports Medicine Centre, Sydney, Australia
(Smith & Nephew have kindly sponsored this Lecturer)

Moderators
Session VI 14.10
Richard Parkinson & Richard Nicholas

Free Paper Session – Patello-femoral instability
THE AXIAL PATELLAR TENDON ANGLE – A SIMPLE NEW MRI MEASUREMENT IN PATELLAR INSTABILITY
BJA Lankester, AJ Barnett, JDJ Eldridge, CJ Wakeley
Bristol Royal Infirmary, Bristol

EARLY RESULTS OF TROCHLEOPLASTY FOR PATIENTS WITH DYSPLASIA AND SYMPTOMATIC RECURRENT PATELLOFEMORAL INSTABILITY.
J S Mulford, M R Utting, J D J Eldridge.
Avon Orthopaedic Centre, Bristol, United Kingdom

MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION USING SINGLE HAMSTRING TENDON
M Rathinam*, P J M Thompson, R B Brink.
Geelong Private Hospital, Australia

Discussion

Moderators
Session VII 14.38
Richard Parkinson & Richard Nicholas

Free Paper Session – Patello-femoral replacement
INTERMEDIATE RESULTS OF AVON PATELLOFEMORAL ARTHROPLASTY FOR ISOLATED PATELLOFEMORAL ARTHRITIS- A 5 YEAR FOLLOW UP
M Divekar, A Lee.
Royal Cornwall Hospital, Truro, UK

A REVIEW OF REVISION PATELLOFEMORAL ARTHROPLASTY PATIENTS.
Avon Orthopaedic Centre, Bristol, United Kingdom

Discussion

Moderators
Session VIII 14.57
Richard Parkinson & Richard Nicholas

Free Paper Session – Quads mechanism
IS IMPLANT REMOVAL NECESSARY FOLLOWING SURGICAL STABILISATION OF PATELLA FRACTURE?
PKR Mereddy, G Kumar, HL George, S Hakalamani, H Malik, NJ Donnachie.
Arrowe Park Hospital, Wirral, Merseyside

A BIOMECHANICAL STUDY COMPARING DIFFERENT METHODS FOR REPAIR OF PATELLAR TENDON RUPTURE
M D Waites, M D Chodos, I Wing, E Hoefnagels and S M Belkoff
International Centre for Orthopaedic Advancement, Johns Hopkins Hospital, Baltimore, Maryland, USA.

Discussion
15.15 Tea – Level 5, Poster Presentation area

Moderators
Session IX 15.35 Free Paper Session – Arthroscopy
Andy Williams & Ian Corry

15.15 IS PNEUMATIC TOURNIQUET NECESSARY IN KNEE ARTHROSCOPY?
H L George, G Kumar, P K R Mereddy, R A Harvey.
Arrowe Park Hospital, Liverpool, UK.

15.41 ARTHROSCOPY OF THE KNEE UNDER LOCAL ANAESTHESIA: IS IT SAFE AND PRACTICAL?
Mr A Phadnis*, Dr A Khanna*, Dr D Griffiths–, Mr AP Chandratreya*
Princess of Wales Hospital, Bridgend & Nottingham City Hospital, Nottingham. * Dept of Orthopaedics, –Dept of Anaesthesia.

15.47 CAN ARTHROSCOPIC SIMULATOR TRAINING IMPROVE OPERATIVE PERFORMANCE IN BASIC SURGICAL TRAINEES?
N R Howells, A J Carr, A Price, J L Rees
Nuffield Department of Orthopaedic Surgery, University of Oxford.

15.53 Discussion

Moderators
Session X 16.03 Free Paper Session – ACL Technique
Andy Williams & Ian Corry

16.03 2-BUNDLE ACL RECONSTRUCTION IMPROVES CONTROL OF THE PIVOT SHIFT IN-VIVO
J R Robinson, P D Colombet
Centre de Chirurgie Orthopédique et Sportif, Bordeaux-Mérignac, France.

16.09 ON THE RELATIVE CONTRIBUTION OF THE TWO MAIN ANTERIOR CRUCIATE LIGAMENT FUNCTIONAL BUNDLES TO INTACT KNEE KINEMATICS
P. Cuomo, R. Boddu Siva Rama, A.M.J. Bull, A.A. Amis
Imperial College London

16.15 THE FATE OF THE GRAFT IN ACL RECONSTRUCTION IN THE SKELETALLY IMMATURE
F Pease, A Ehrenraich, J. Skinner, A Williams, S Bollen
Chelsea & Westminster Hospital and The Yorkshire Clinic

16.21 Discussion

Moderators
Session XI 16.30 Free Paper Session – ACL Ten Year Results
Andy Williams & Ian Corry

16.30 ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING PATELLAR TENDON AUTOGRAFT. 13 YEAR OUTCOME
James RD Murray, Niall A Hogan, Allister Tregies, James Hutchinson, Erin Parish, John W Read, Mervyn J Cross
Australian Institute of Musculo-Skeletal (AIMS) Research, Sydney, Australia

16.36 LONG TERM RESULTS OF ARTHROSCOPIC RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT WITH IPSILATERAL PATELLAR TENDON GRAFT. A PROSPECTIVE LONGITUDINAL TEN-YEAR STUDY
Chris Connolly, Vivianne Russell, Lucy Salmon, Justin Roe, Craig Harris, Leo Pinczewski

16.42 Discussion

16.50 AGM

19.45 for 20.15 BASK Annual Dinner, Belfast City Hall, Host Joe McClelland
Principal dinner guest – Lord Major of Belfast
### SATURDAY 24th MARCH

**08.15 am**

Coffee and registration

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<td>Session XII</td>
<td>Phil Hirst &amp; Chris Connolly</td>
<td>Free Paper Session – Anatomy and early OA</td>
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<td>Bristol Royal Infirmary and Charles University, Prague</td>
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<td>GENETIC INFLUENCES IN THE AETIOLOGY OF ANTEROMEDIAL OSTEOARTHRITIS OF THE KNEE.</td>
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<td>Nuffield Department of Orthopaedic Surgery, University of Oxford, UK</td>
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<td>WEAR PATTERNS IN ANTEROMEDIAL OSTEOARTHRITIS OF THE KNEE HAVE A CORRELATION WITH ACL STATUS.</td>
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<td>A PROSPECTIVE RANDOMISED CONTROLLED TRIAL TO COMPARE SAFETY AND EFFICACY OF INTRA ARTICULAR SYNTHETIC AND AVIN HYALURONIC ACID INJECTIONS.</td>
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<td>Department of Trauma and Orthopaedics, Whiston Hospital, Prescot-L355DR</td>
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<td>THE EFFICACY OF HYLAN G-F 20 AND SODIUM HYALURONATE IN THE TREATMENT OF OSTEOARTHRITIS OF THE KNEE – A PROSPECTIVE RANDOMIZED CLINICAL TRIAL</td>
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<td><em>R Raman, A Dutta, N Day, CJ Shaw, GV Johnson</em></td>
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<td>Department of Orthopaedics, Hull Royal Infirmary, United Kingdom</td>
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<td>IS AUTOLOGOUS CHONDROCYTE IMPLANTATION EFFECTIVE IN OVERWEIGHT PATIENTS?</td>
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<td>Joint Reconstruction Unit, Royal National Orthopaedic Hospital, Stanmore, United Kingdom</td>
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<td>DOES AUTOLOGOUS CHONDROCYTE IMPLANTATION ALLOW RETURN TO PHYSICAL ACTIVITY AND WORK?</td>
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<td>ISOLATION OF VIABLE HUMAN CHONDROCYTES FOLLOWING RTCULAR CARTILAGE CRYOPRESERVATION</td>
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<td>Botnar Research Centre, Institute of Musculoskeletal Sciences, the University of Oxford, Oxford, OX3 7LD UK.</td>
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Free Paper Session – UNI and Bilateral TKR

HIGHER EARLY RE-OPERATION RATE WITH THE PROFIX MOBILE BEARING COMPARED TO FIXED BEARING TOTAL KNEE REPLACEMENT
Andrew P Davies BSc MD FRCS(Orth), Michael J Gillespie MB BS FRACS,
Peter H Morris MB BS FRACS.
Calvary Hospital, Canberra, Australia

10.00

TWENTY-YEAR SURVIVAL AND 10-YEAR CLINICAL RESULTS OF THE MEDIAL OXFORD UNICOMPARTMENTAL KNEE ARTHROPLASTY.
A Price, Ulf Svard
Skaraborgs Sjukhus Kärnsjukhuset, Skövde, Sweden
Nuffield Orthopaedic Centre, Oxford, UK

10.18

BILATERAL TOTAL KNEE REPLACEMENTS STAGED ONE WEEK APART: A GOOD COMPROMISE?
MC Forster, AJ Bauze, AG Bailie, MS Fatworth, RD Oakeshott
SPORTSMED SA, Adelaide, Australia

Free Paper Session – Postop pain in TKR

A RANDOMISED BLINDED CLINICAL TRIAL ASSESSING EFFICACY OF PERIARTICULAR INJECTION USING MULTIMODAL ANALGESIA IN TOTAL KNEE REPLACEMENT.
Constant A Busch*; Benjamin J Shore, Rakesh Bhandari, Su Ganapathy,
Steven J MacDonald; Robert B. Bourne; Cecil H Rorabeck,; Richard W McCalden,
Division of Orthopaedic Surgery, London Health Sciences Centre, University Campus,
339 Windermere Road, London, Ontario, N6A 5A5, Canada* Consultant Orthopaedic Surgeon, The Rowley Bristow Unit, Ashford and St Peters NHS Trust, Guildford Road, Chertsey, Surrey, KT16 0PZ

11.21

DO MOBILE BEARING KNEE REPLACEMENTS CAUSE MORE PAIN?
Gardner ROE, Newman JH
Avon Orthopaedic Centre, Bristol, England

11.27

THE ROLE OF PAIN AND FUNCTION IN DETERMINING PATIENT SATISFACTION FOLLOWING TOTAL KNEE ARTHROPLASTY: ANALYSIS OF DATA FROM THE NATIONAL JOINT REGISTRY (NJR).
P N Baker, J Van Der Meulen, J Lewsey, P J Gregg
Clinical Effectiveness Unit, Royal College of Surgeons of England
35-43 Lincoln’s Inn Fields, London WC2A 3PN

Discussion

Free Paper Session – Post TKR kneeling ability

FORCE PLATE ANALYSIS OF KNEELING ABILITY AFTER KNEE ARTHROPLASTY
Hassaballa M A, Bevan D C, Porteous A J
Avon Orthopaedic Centre, Southmead Hospital, Westbury-on-Trym, Bristol, BS10

11.53

DO MOBILE BEARINGS IMPROVE KNEELING ABILITY?
M Hassaballa, A Porteous, J H Newman
Avon Orthopaedic Centre, Bristol, UK

Discussion
Moderators
Session XVIII 12.05
Nick Fiddian &
David Warnock

Free Paper Session – Cement / No cement

A RANDOMISED, CONTROLLED TRIAL OF CEMENTED VERSUS CEMENTLESS PRESS-FIT CONDYLAR KNEE REPLACEMENT: FIFTEEN YEAR SURVIVAL ANALYSIS.

P N Baker, F M Khaw, L M G Kirk, R W Morris, P J Gregg
Glenfield Hospital, Leicester, England.

12.11
5 TO 8 YEAR RESULTS OF THE UNCEMENTED DURACON TOTAL KNEE ARTHROPLASTY SYSTEM

R Chana*, Y Shenava, PW Skinner, PA Gibb.
Department of Orthopaedics, Kent and Sussex Hospital, Mount Ephraim Road, Royal Tunbridge Wells, TN4 8AT

12.17
Discussion

Moderators
Session XIX 12.23
Nick Fiddian &
David Warnock

Free Paper Session – TKR results

DOES A MANUFACTURER’S CHANGE IN DESIGN INFLUENCE THE OUTCOME IN TOTAL KNEE ARTHROPLASTY?

B G Bolton-Maggs & L McGonagle
St. Helens & Knowsley NHS Trust Hospitals

12.29
FIFTEEN YEAR FOLLOW-UP OF PRIMARY TOTAL KNEE REPLACEMENTS IN THE TRENT REGION

VI Roberts, CN Esler, WM Harper
Trent Regional Arthroplasty Study (TRAS), based at Glenfield General Hospital NHS Trust, Leicester

12.35
Discussion

12.45
Closing Remarks

13.00
LUNCH
Each of the predictive factors was tested for significance using t-tests and chi-squared tests as appropriate. Multiple logistic regression was used to test for the factors.

Patients with a post-op haemoglobin less than 8.5 g/dl were transfused as were those less than 10 g/dl who were symptomatic as per unit protocol.

Data was collected prospectively on 1532 patients undergoing primary TKR between 1998 and 2006. This was collected at a preadmission clinic and various fusion following TKR.

Rainey, I Brenkel, S Gilani, R Elton.

Australian Institute of Musculo Skeletal Research, 286 Pacific Highway, Crows Nest, NSW Australia 2065

JRD Murray, M Sherlock, N Hogan, C Servant, S Palmer, MJ Cross

Victoria Hospital, Kirkcaldy

A PROSPECTIVE STUDY OF PREDICTORS OF TRANSFUSION IN TOTAL KNEE REPLACEMENT.

As blood transfusion is associated with various risks, a prospective study was carried out to see if it was possible to predict patients more likely to require transfusion following TKR.

Data was collected prospectively on 1532 patients undergoing primary TKR between 1998 and 2006. This was collected at a preadmission clinic and various demographics were measured including haemoglobin, BMI, and a knee score. All patients had a tourniquet and the same approach. All received a LMWH until discharge. Patients with a post-op haemoglobin less than 8.5 g/dl were transfused as were those less than 10 g/dl who were symptomatic as per unit protocol.

Each of the predictive factors was tested for significance using t-tests and chi-squared tests as appropriate. Multiple logistic regression was used to test for the independent predictive of factors after adjusting for one another.

Results show transfusion is more likely if the patient was older, female, short, light or thin. Also those undergoing a lateral release or a bilateral procedure, having a low pre-op haemoglobin or a large post-op drop were more likely to be transfused. There was also a 2 fold difference between surgeons.

After regression analysis 4 important factors were identified. These were a bilateral procedure, low pre-op haemoglobin, a low BMI or having a post-op drop greater than 3g/dl.

Following this all patients with post-op haemoglobin less than 11g/dl are postponed and investigated and treated as required. For those with the above predictive factors, measures can be taken to try and reduce the rate of transfusion such as pre-donation, cell salvage or tranexamic acid.

THE EFFECT OF POSTERIOR TibIAL SLOPE ON CORONAL ALIGNMENT IN TOTAL KNEE ARTHROPLASTY


Background: Coronal alignment is important in long-term survival of TKA. Many systems are available; most sign to produce a posterior slope on the tibial component in order to reproduce the 70° seen in the normal tibia. Some are designed to produce a bone cut with 70° of slope whereas others combine the slope of the bone cut with an in-built slope on the polyethylene insert. We have investigated the theory that resecting the tibial plateau with a posterior slope can introduce error in coronal plane alignment in TKA.

Methods: We used a standard saw-bones model in conjunction with a computer navigation system that is available for use in TKA (Stryker Orthopaedics). The normal protocol for preliminary referencing was followed; care was taken to identify tibial landmarks (tibial plateau reference point, true sagittal plane and transmalleolar axis). We then used a standard extramedullary alignment jig (Scorpio TKR System, Stryker Orthopaedics) with cutting blocks designed to give 0, 3, 5 and 7 degrees of posterior slope and varied the position of the alignment jig. Variations included:

1. Medial rotation of the cutting block
2. Medialisation of the plateau reference point
3. Medio-lateral translation of the distal jig
4. External rotation of the distal jig

Results: In all experiments, there was a greater deviation from ideal coronal alignment as the slope on the tibial cut was increased. The greatest influence was from external rotation of the distal part of the jig which produced 3° of varus at only 15° of external rotation with a 7° slope. Medialisation of the proximal reference point worsened this to 4.5° of varus.

Conclusions: We have quantified the degree of coronal malalignment that can occur for different posterior slopes during tibial resection for TKA. We recommend either using a minimal slope or navigation to ensure correct implant positioning.

THE ANTERIOR FEMORAL CORTICAL LINE:
A NEW TECHNIQUE FOR ASSESSMENT OF INTRA-OPERATIVE FEMORAL COMPONENT ROTATION IN TOTAL KNEE REPLACEMENT

JRD Murray, M Sherlock, N Hogan, C Servant, S Palmer, MJ Cross

Australian Institute of Musculo Skeletal Research, 286 Pacific Highway, Crows Nest, NSW Australia 2065

Purpose: To assess the anterior femoral cortical line (AFCL) as an additional anatomical landmark for determining intraoperative femoral component rotation in total knee arthroplasty. The anterior femoral cortical line (AFCL) is an anatomical landmark which has been used by the senior author for 20 years to assess femoral rotation in over 4000 TKRs. The AFCL describes the alignment of the anterior cortex of the distal femur proximal to the trochlear articular cartilage.

Methods: The AFCL was compared with the surgical epicondylar axis (SEA), anteroposterior axis (Whiteside’s line) and posterior condylar (PC) axis using 50 dry-bone cadaveric femora, 16 wet cadaveric specimens, 50 axial MRI scans and 58 TKR patients intra-operatively.

Results: In the dry-bone and cadaveric femora (measuring relative to the SEA) the AFCL and Whiteside’s AP axis were 1° externally rotated and the PC axis was 1° internally rotated. With MRI (relative to the SEA) the AFCL was 8° internally rotated, Whiteside’s was 2° externally rotated and the PC axis was 3° internally rotated. In the clinical study (measuring relative to a perpendicular to Whiteside’s line alone) the AFCL was 4° degrees internally rotated, which equates to 2-3° of internal rotation relative to the SEA.

Conclusion: The AFCL is another axis, completing the ‘compass points’ around the knee. It may prove particularly useful when one or all of the other reference axes are disturbed such as in revision TKA, lateral condylar hypoplasia or where there has been previous epicondylar trauma. We suggest building in 5° external rotation with respect to the anterior femoral cortical line when judging femoral component rotation.

Session II - TKR General

A PROSPECTIVE STUDY OF PREDICTORS OF TRANSFUSION IN TOTAL KNEE REPLACEMENT.

G Rainey, I Brenkel, S Gilani, R Elton.

Victoria Hospital, Kirkcaldy
RESULTS OF LOCAL FLAP SURGERY FOR SOFT TISSUE DEFECTS AFTER TOTAL KNEE ARTHROPLASTY

SK Godey, JS Watson
Wythenshawe Hospital, South Manchester University Hospitals NHS Trust

Introduction and aims
Soft tissue defects after total knee arthroplasty (TKA) are difficult problems to treat. Flap surgery has been successful in salvaging the prostheses. We present results of flap surgery for exposed TKAs over a 10 year period performed by single surgeon.

Material and Methods
Between 1996 and 2005, 31 patients (32 knees) underwent flap surgeries for TKAs. Four of these procedures were done prophylactically in patients with previous knee surgeries. Gastrocnemius, medial fasciocutaneous and anterior compartment flaps were used either solely or in combination based on the size of the defect. The data was collected retrospectively from case-notes and correspondence from the treating orthopaedic surgeons.

Results
The patients were aged between 50 and 94 years. Indication for primary TKA was osteoarthritis in 25 patients and rheumatoid arthritis in 5. Coagulase negative Staph. aureus was the most commonly isolated organism. In patients using steroids, 4 of 6 (71.4%) knees had good or satisfactory outcome compared to 22 of 24 (91.7%) knees in patients not on steroids. Smoking did not influence the outcome of flap surgery. The average duration between the TKA and flap surgery was 11 weeks (range 1–52). Successful soft tissue cover was achieved in 30 of 32 knees (94%). Overall, TKA was salvaged in 20 of 28 knees (71.4%).

Conclusion
Local flap surgery for providing soft tissue cover for exposed TKA is a viable and successful procedure with good results.

LESIONS OF THE SAPHENOUS NERVE AND ITS INFRAPATELLAR BRANCH AS A CAUSE OF PERSISTENT KNEE PAIN

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Chelsea and Westminster Hospital, London

Purpose of Study:
To further study a group of patients with characteristic features presenting with significant, persistent, and seemingly hard to diagnose and treat, knee pain.

Methods / Results:
16 cases were collected. The was no association with age. 8 cases were sent as a second opinion.

Causation:
7 cases: direct trauma [5: associated with MCL tears (1 chronic overload from triple-jump), 1: a blow to front of knee, 1: chronic from kneeling]
4 cases: Knee replacement-related irritation from osteophyte 1, implant-related 3
3 cases: irritation from medial meniscal sutures [2: Fast-Fix, 1: in/out]
1 case: surgery induced neuroma in arthrotomy wound
1 case: irritation by an enlarging cyst

In all cases the time to make the diagnosis was prolonged. All had pain, which on close questioning was ‘neuritic’ (burning) in approximately 2/3. It was exceedingly well localized in all. Altered sensation in the appropriate distribution was noted by the patient in 3 cases, but shown in 5 cases on examination. A positive Tinel test was present in all cases.

In approximately half of cases ultrasound plus diagnostic injection of local anaesthetic [+/ steroid] was useful. However 15 of the 16 came to surgery in which a neurolysis or removal of neuroma, in 3 cases, [all confirmed on histology] was undertaken plus the underlying causative factor dealt with eg excision of osteophyte or scar. One case settled [90% better according to patient] after ultrasound-guided injection of a prepatellar bursa which was irritating the infrapatellar branch of the nerve. Of the 15 who had had surgery 12 had complete resolution of symptoms.

Conclusion:
Although a relatively uncommon this scenario is worth considering as a cause of significant morbidity, with a good outcome from treatment in most cases. The presentation is of persistent very well localized troubling pain with marked tenderness, and a positive Tinel test.
Systemic embolic phenomena are well recognized during total knee replacement (TKR) and are widely believed to be the cause of intra-operative hypotension and reduced cardiac output, which may lead to circulatory collapse and sudden death. We undertook a prospective, double-blind, randomised study comparing the cardiac embolic load during computer-assisted and conventional (intramedullary-aligned) TKR, as measured by transoesophageal echocardiography. 26 consecutive procedures were performed by a single surgeon at a single site. Embolic load was scored using the modified Mayo grading system for echogenic emboli.

Patients undergoing conventional TKR (n=12) had a mean embolic score of 6.15 (SD 0.83) on release of the tourniquet. Those undergoing computer-assisted TKR (n=14) had a mean embolic score of 4.89 (SD 1.10). Comparison of the groups using a two-tailed t-test confirmed a highly significant reduction (p=0.004) in embolic load when performing computer-assisted TKR. The groups were otherwise well matched and there were no complications.

In conclusion, this study demonstrates that computer-assisted TKR results in the release of significantly fewer systemic emboli than conventional TKR using intramedullary alignment. There is evidence that this should reduce perioperative morbidity and neurological dysfunction. This would appear to add to the ever-growing list of arguments in favour of computer-assisted total knee replacement.

THE CASE FOR ADOPTING A UNIFIED SYSTEM FOR STRATIFYING COMPLEXITY OF PATIENTS UNDERGOING PRIMARY TOTAL KNEE REPLACEMENT

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The Great Western Hospital, Swindon & Marlborough NHS Trust

We have previously noted that patients undergoing primary knee arthroplasty can be broadly divided into standard and complex. Complexity can be further subdivided into local site of surgery issues, general co-morbidity problems or both.

On this basis, we devised a simple to apply four-part classification system for patients undergoing primary total knee replacements (PTKR) to facilitate cumulative risk estimation:

- Complex 0 (CO): "Standard" knee replacement in a fit patient with a simple pattern of arthritis.
- Complex I (CI): A fit patient with a locally complex arthritis pattern.
- Complex II (CII): Medically unfit patient with a simple pattern of arthritis.
- Complex III (CIII): Medically unfit patient with a complex arthritis pattern.

When a series of consecutive PTKR’s performed by the senior author was grouped according to our classification, all early postoperative complications and length of stay were evaluated and compared. Compared to ‘standard CO PTKR patients, we found a 3-fold increase in the cumulative complication risk in the CI group (p<0.001), a 4-fold increase in the CII group (p<0.001) and an increased length of stay in the CIII group (p<0.001). There were similar trends between CO and other groups.

Further local studies to quantify the cost differentials of treating complex patients and their longer term outcomes and satisfaction are underway. The senior author would like to discuss with the attending members of this BASK meeting the desirability of adopting such a system regionally or nationally, with the potential benefits for individual patients, surgeons, departments, Trusts and the healthcare system as a whole, and whether minor changes could and should be made to the National Joint Registry forms to accommodate this.

REPORT OF TKAR COMPLICATIONS UP TO 1-YEAR POSTOPERATIVELY: WHAT ARE THE ISSUES OF MOST CONCERN?

IJ Gargan, KMulhall
Mater Misericordiae Hospital, Dublin, Ireland

Total knee arthroplasty revisions (TKAR) are increasing in incidence. These complex and demanding procedures are typically associated with a higher complication rate than primaries. We report on the actual complications encountered in a prospective study of TKAR patients to determine the current nature and incidence of these problems.

230 consecutive patients undergoing TKAR were enrolled to our database and had information on demographics, comorbidities, outcomes (WOMAC and SF-36) and complications recorded. Baseline information and data from 2 month, 6 month and 1 year follow up was collated.

Mean patient age was 68.0 and clinical outcomes scores showed significant improvements for function, stiffness and pain at all points of follow-up. The total number of complications was 131 in 97 (42.2%) patients (48 by 2 months, 46 at 6 months and 32 at 1 year). Systemic complications comprised 41 of these, many being relatively minor. There were no deaths, 4 deep vein thromboses and 3 myocardial infarctions. The majority of complications (90) were local, including 2 patellar dislocations, 3 periprosthetic fractures, 3 peroneal nerve injuries, 2 'late' patellar tendon ruptures and 1 patellar avascular necrosis, 9 wound hematomas, and a substantial rate of superficial or deep wound infections.

Although patients experience significant improvement in function, activity and pain following TKAR, there is a considerable incidence of complications up to 1 year following TKAR. This is important in terms of resources, patient counseling and also in identifying and instituting preventive measures where possible in order to improve outcomes for these patients.
The aim of this study was to compare two types of knee arthrodesis. Fourteen patients underwent arthrodesis of the knee in a single institution. Seven had a customised coupled nail (the Mayday arthrodesis nail), and six had external fixation applied, one patient had both procedures undertaken. Twelve patients had infected knee arthroplasty, one had recurrent dislocation following arthroplasty and one had an infected open meniscectomy. Comparison was made with the external fixation in which only two cases achieved bony union compared with all eight (100%) using the customised nail. Time to bony union was also considerably shorter in the later group, as was the length of hospital stay. We conclude that a customised intra-medullary nail is a superior method of knee arthrodesis compared with external fixation.

OUTCOME FOLLOWING ARTHRODESIS OF THE KNEE USING A CUSTOM-MADE INTRAMEDULLARY COUPLED DEVICE.

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Purpose: To review long-term outcome following knee arthrodesis, and compare this with patient outcome following revision knee arthroplasty.

Methods: Case notes and radiographs of patients who underwent arthrodesis using the Mayday nail were reviewed retrospectively for evidence of clinical and radiological union. Patients also completed an SF12 health survey and Oxford knee score in the form of postal questionnaires. Each patient was matched with patients who had undergone revision knee arthroplasty and the outcomes were compared.

Results: 19 patients were reviewed who underwent knee arthrodesis using a Mayday nail in two centres between 1993 and 2004. 18 cases had united clinically and radiologically with one case lost to follow-up. Mean SF12 scores of patients following knee arthrodesis indicated severe physical (28.8) but only mild mental (43.3) disabilities. The mean Oxford knee score in this group was 41.0. These results were comparable with matched patients following revision knee arthroplasty who scores 27.2 (physical) and 41.1 (mental) on the SF12, and a mean of 38.8 on the Oxford knee score.

Conclusion: Outcome scores following knee arthrodesis were similar to those following revision knee arthroplasty making it an option worth considering in selected patients requiring revision surgery.

Discussion: The Mayday nail provides a method of knee arthrodesis with a high union rate and an acceptable complication rate. Outcome scores following arthrodesis were not dissimilar to those following revision total knee replacement. These results suggest that knee arthrodesis may be considered as an acceptable alternative to complex knee revision surgery.

 Session V - Revision TKR Results

CORRECTING BONE LOSS IN REVISION KNEE ARTHROPLASTY: USING AN UNCEMENTED PROSTHESIS & BONE GRAFTING.

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The Lister Hospital Stevenage

Aim: To determine whether moderate bone loss in revision total knee arthroplasty can be corrected using an uncemented prosthesis combined with cancellous bone grafting.

Methods and Patients: 40 revision total knee replacements were undertaken by the senior author between May 1999 and June 2004. 27 one stage revisions for aseptic loosening and 13 two stage revisions for infection. All cases involved bone loss of grades F1/2 and or T1/2 according to the Anderson Orthopaedic Research Institute Classification (Engh 1998). Bone loss was treated with a mixture of morselized autograft, morselized allograft and bone reamings loosely packed into any contained or uncontained defects following the technique of Whiteside (1992). Uncemented prostheses with long contact bearing stems were then inserted. Patients were followed up prospectively with Oxford and HSS knee scores.

Results: All 40 cases were able to partially weight bear immediately postoperatively, indicating satisfactory early press fit. No cases of loosening or cases suspicious of loosening have been noted. Mean follow up of 37 months with no patients requiring re revision, no persistent stem pain and no infection in the one stage revisions. 2 cases of infection in the 2 stage group are discussed, neither have required implant removal. Intraoperative and postoperative complications are discussed as well as range of motion, pain and patient satisfaction. In 39/40 cases bone stock has been restored. In 1 case there was significant bone resorption under the tibial base plate due to stress shielding.

Conclusions: This technique is successful in building up moderate bone loss in revision total knee arthroplasty, therefore avoiding the need for excessive bone resection, large metal augments, mass allografts or custom made prostheses.

SALVAGE REVISION TKR FOR INFECTION - A 10 YEAR REVIEW OF A 2 STAGE RE-IMPLANTATION TECHNIQUE

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Introduction
Infection post knee arthroplasty is a catastrophic surgical complication offering a major challenge to the orthopaedic surgeon. We present the outcome of a two-stage revision implantation technique utilizing a rotational hinge prosthesis with an antibiotic impregnated cement spacer in the interim period.

Materials & Method
Since 1995, 38 definitely infected knee replacements were revised. All were followed prospectively over a 10 year period. Initial treatment consisted of thorough debridement, removal of implants and a period of antibiotic administration. Vancomycin impregnated articulating cement spacer was inserted in the interim. C-reactive protein values were monitored periodically. At second stage all patients were clinically and biochemically free of infection.

Results
Second stage revision was performed at an average interval of 9 months (range 4 – 11 months). Average length of hospital stay post 2nd stage was 19.8 ± 8.2 days. At follow-up (3.5 ± 2.5 years) outcome was poor in 33 % (amputations, arthrodesis, re-infections), good in 49 % (decreased ROM, PFJ pain) and excellent in 13 %. 3, 5% of patients had died with their prostheses in situ. The average pre and post operative Oxford Knee Score were 47.0 ± 7.5 and 21.6 ± 4.3 respectively.

Conclusion
Two-stage re-implantation using a hinge knee prosthesis is a safe and acceptable way of dealing with infected TKRs, conferring a stable reconstruction whilst allowing a through debridement. Thus potentially decreasing failure rates due to recurrence of primary infection. In this challenging group, complication rates were high, but at mid- and long-term review, no prostheses had failed from an aseptic cause. Moreover, this salvage procedure allows a quick rehabilitation and is tolerated well by patients.
We reviewed the clinical and radiological outcome of 72 Co-ordinate prostheses (DePuy, Warsaw, Ind) used for revision knee arthroplasty performed by a single surgeon from May 1994 to December 1997. Twenty-three patients (25 knees) since died. Two were lost to follow-up. At a mean follow-up of 10 years (range 9-12 years), 43 knees in 43 patients were available for review. There were 12 men and 31 women with a mean age of 71.34 years (range 43 to 87 years). The reason for revision was instability in 38 knees, infection in 5 knees and stiffness in 2 knees. There was a significant improvement in the SF-12 PCS and WOMAC pain and stiffness scores at the latest follow-up. Five of these knees had to have re-revision surgery. One patient had a re-revision for aseptic loosening, one patient for recurrent dislocation of patella. Three patients underwent repeat procedures for infection.

Radiological evaluation using the Knee Society system revealed well-fixed components in 35 knees (77.78%). The radiolucencies of varying degrees were present in 10 knees (22.22%). Eight had non-progressive radiolucencies and did not show any evidence of loosening. 25 (55.5%) knees had halo sign (radiopaque line) present around the prosthesis (7 were femoral side, 4 were tibial side and 14 around both the prosthesis). Using Kaplan Meier method the cumulative survival rate was 88.87% at 12 years, removal of the prosthesis or re-revision were used as end points. An analysis of clinical and standard radiographic outcomes has revealed that the Co-ordinate revision knee system continues to function satisfactorily at a mean of 10 years.

**Moderators - Richard Parkinson & Richard Nicholas**

**Session VI - Patello-Femoral Instability**

**THE AXIAL PATELLAR TENDON ANGLE – A SIMPLE NEW MRI MEASUREMENT IN PATELLAR INSTABILITY**

*BJA Lankester, AJ Barnett, JDJ Eldridge, CJ Wakeley*

**Introduction**

Patello-femoral instability (PFI) and pain may be caused by anatomical abnormality. Many radiographic measurements have been used to describe the shape and position of the patella and femoral trochlea.

This paper describes a simple new MRI measurement of the axial patellar tendon angle (APTA), and compares this angle in patients with and without patello-femoral instability.

**Method**

Axial MRI images of the knee of 20 patients with PFI and 20 normal knees (isolated acute ACL rupture) were used for measurement. The angle between the patellar tendon and the posterior femoral condylar line was assessed at three levels from the proximal tendon to its insertion.

**Results**

In normal knees, the APTA is 11 degrees of lateral tilt at all levels from the proximal tendon to its distal insertion. In PFI knees, the APTA is 33 degrees at the proximal tendon, 28 degrees at the joint line and 22 degrees at the distal insertion. The difference is significant (p<0.001) at all levels.

**Discussion**

Measurement of the APTA is reproducible and is easier than many other indices of patello-femoral anatomy. In PFI, the APTA is increased by 21 degrees at the proximal tendon and by 11 degrees at its distal insertion.

In PFI, the patella is commonly tilted laterally. This is matched by the orientation of the patellar tendon. The increased tilt of the tendon is only partially normalized at its distal insertion with an abnormal angle of tibial attachment. When performing distal realignment procedures, angular correction as well as displacement may be appropriate.

**EARLY RESULTS OF TROCHLEOPLASTY FOR PATIENTS WITH DYSPLASIA AND SYMPTOMATIC RECURRENT PATELLOFEMORAL INSTABILITY.**

*J S Mulford, M R Utting, J D J Eldridge.*

**Avon Orthopaedic Centre, Bristol, United Kingdom**

**Purpose:** Trochlea dysplasia is a developmental condition characterized by an abnormally flat or dome shaped trochlea. This predisposes to recurrent patella instability. This study prospectively reviews the early results of patients undergoing a trochleoplasty procedure which corrects the dysplastic anatomical abnormality.

**Patients and Methods:** All patients were recruited from the senior author’s (JDJE) specialist knee clinic following the standard patellofemoral assessment. Patients were seen pre-operatively to collect epidemiological data, ensure completion of patient reported assessment forms and document clinical examination findings and investigations. Duration of instability and previous procedures performed for patella instability were recorded. Multiple patient-reported outcome measures were recorded. Outcome score assessments and clinical examinations were repeated post-operatively, along with a patient satisfaction questionnaire. All operations were carried out by the senior author with supplementary procedures based on pre-operative assessment.

**Results:** 22 patients had a minimum of 12 months follow-up. The average age was 21 years and the average duration of instability symptoms (pre-trochleoplasty) was 7 years. There were 16 females and 6 males. Mean follow up was 18 months. Patients reported improvement in outcome when the pre and post-operative scores were compared (mean scores of Oxford 34 to 41, WOMAC 23 to 15, Kujala 62 to 79, IKDC 62 to 81, and Lysholm 57 to 77). The patient satisfaction questionnaire revealed just one patient not satisfied with the procedure despite good patient reported outcome scores. The majority of patients perceived improvement due to the surgery and agreed they would recommend the procedure to others despite some residual symptoms. Recurrent instability after trochleoplasty was rare (one subluxation) and range of movement was uniformly excellent.

**Conclusion:** Early results of this trochleoplasty for patients with trochlear dysplasia and symptomatic recurrent patella instability are encouraging.
**MEDICAL REPRESENTATIVE**

**Session VII - Patello-Femoral Replacement**

**M Divekar, A Lee.**

Royal Cornwall Hospital, Truro, UK

Isolated patellofemoral arthritis is a common, often debilitating, condition with a number of treatment options available. Avon patellofemoral arthroplasty has been practiced in our district general hospital setting with favourable results. Previous studies have been mainly from the pioneering Bristol centre. We present the findings of the intermediate results of Avon patellofemoral arthroplasty (PFA) used in the treatment of isolated patellofemoral arthritis. From 1999 until August 2006, 63 Avon PFAs were carried out in 46 patients by a single surgeon. We analysed retrospectively the patient case records and collected data regarding clinical, radiological findings along with patient satisfaction scores using the Oxford knee questionnaire. 45/46 (98%) patients had primary patellofemoral (PF) arthritis. 17/46 (36%) patients suffered from bilateral PF arthritis. The average duration of follow up was 5 years (3 months to 7 years). There were 7 males and 39 females with a median age of 63 years. The average range of movement was 120° (90°- 140°). There were no observable radiological loosening. There was a reduction in the Oxford knee score from 33 (21 - 48) to 17 (1 - 44). Complications of the procedure included superficial infections (2/46), transient foot drop (1/46), and persistent pain (2/46). Further surgery requiring lateral release was carried out in 2/46 patients. To date, none of the cases have required revision due to progression of arthritis. Patients reported high level of satisfaction following the procedure. PFAs is an effective procedure for the treatment of isolated patellofemoral arthritis, with a low rate of complications and good functional results. To our knowledge, this is the first study in UK outside Bristol, presenting the findings of intermediate results of Avon PFA.

**A REVIEW OF REVISION PATELLOFEMORAL ARTHROPLASTY PATIENTS.**

**A J Porteous, J S Mulford, J H Newman, C E Ackroyd.**

Avon Orthopaedic Centre, Bristol, United Kingdom.

**Purpose:** Revision patellofemoral arthroplasty (PFA) is a relatively uncommon procedure, with no published reviews identified in the literature. Revision PFAs performed at our institution were reviewed to determine the reasons for PFA failure, the technical ease of revision and to document patient-reported outcomes after revision.

**Methods:** A prospective review of a cohort of 411 Avon PFA patients identified 31 subsequent revision knee procedures in 27 patients. Data was collected from the institution's prospective data base, operative reports, X-rays and medical records. Post-operative knee scores (Oxford Knee Score, WOMAC Osteoarthritis Index, Bristol Knee Score) were available on 26 knees.

**Results:** The commonest reason for revision was progression of osteoarthritis (18 cases) followed by undetermined pain (7 cases). Patients with undetermined pain were found to be revised sooner than patients with disease progression (33 months vs 63 months) and also reported poorer outcome scores at 2 years post revision than the disease progression group.

Only two trochlea components were loose at the time of revision and one patella had a large amount of macroscopic wear. All other components were found to be well fixed with minimal wear at the time of revision. There were no difficulties in removing either component. No cases required augments or stemmed femoral components due to bone loss.

Patients undergoing revision surgery did report improvement in their post revision outcome scores compared with their pre-operative scores. The average Oxford Knee Score improved from 17 to 23, Bristol Knee Pain Scores improved from 11 to 20 and Bristol Knee Functional Scores improved from 15 to 16. These results are poorer than those recorded by the overall cohort of primary PFA.

**Conclusion:** PFA is easy to revise to a primary total knee. Results of revision knees are improved from preoperative scores but not as good as expected.
Session VIII - Quads Mechanism

IS IMPLANT REMOVAL NECESSARY FOLLOWING SURGICAL STABILISATION OF PATELLA FRACTURE?

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Arrowe Park Hospital, Wirral, Merseyside.

To assess the outcome and implant removal rate following surgical stabilisation of patella fracture. Sixty-seven patients who underwent surgical stabilisation of patella fracture between January 1999 and December 2004 were retrospectively reviewed to determine the adequacy of fracture stabilisation, fracture union and implant removal rate. Forty-three were men and 24 were women with a mean age of 49 years (range 14-90 years). Table below demonstrates the injury, fracture patterns and fixation methods. There were 30 open fractures and associated injuries were noted in 22 patients. All fractures united even though the fixation was inadequate in 46 patients. Two superficial infections responded to oral antibiotics. One patient had revision surgery at 6 weeks. Twenty-two patients required implant removal between 2 and 20 months (average 11 months) for implant related symptoms. Of the 22 (32.8%) patients requiring implant removal, 16/40 (40%) were less than 60 years and 6/27 (22.2%) were over 60 years. Mean follow up in asymptomatic patients was 8 months (3 to 18 months) and in patients with implant related problems was 17 months (10 to 36 months). Four patients were lost to follow up. Surgical stabilisation by current techniques demonstrated satisfactory fracture union. However, one in three required second surgery for implant related symptoms. In the under 60 years group, the implant removal rate increased to 40%. Newer techniques to avoid skin irritation need to be considered.

<table>
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<th>Mechanism of Injury</th>
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<th>Fixation Method</th>
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<tr>
<td>Simple fall: 32</td>
<td>Transverse: 32</td>
<td>TBW: 44</td>
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<td>Comminuted: 15</td>
<td>TBW + Circlage Wire: 13</td>
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A BIOMECHANICAL STUDY COMPARING DIFFERENT METHODS FOR REPAIR OF PATELLAR TENDON RUPTURE

MD Wauters, MD Chodas, IW Wing, E Hoefnagels and SM Belkoff
International Centre for Orthopaedic Advancement, Johns Hopkins Hospital, Baltimore, Maryland, USA.

Objective
The aim of this study was to compare different patellar tendon repair constructs.

Materials and Methods
Eight pairs of cadaveric legs were used to compare metal suture anchor repair with “standard” Krakow tendon suture through patella bone tunnels and steel box wire augmentation loop repair. Each leg was restretched with box wire augmentation loop and simple 2/0 polyglactin suture repair. The repairs were tested by mounting the legs on a specially designed rig on a materials testing machine which allowed the leg to be cycled from 90° knee flexion to full extension. The specimens were cycled 1000 times at 0.25Hz or until the repair failed. Optical markers were attached to the leg which enabled the repair gap and knee angle to be monitored during testing (Smart Capture and Analyser Tracking system, Padua, Italy).

Results
Six out of eight suture anchor repairs failed, all suture bone tunnel repairs with augmentation loops completed 1000 cycles. One out of 16 augmentation loop with simple 2/0 suture repair failed.
For all specimens regardless of repair type that completed 1000 cycles there was no significant difference in repair gap distance.

Conclusion
Suture anchors alone do not provide a strong enough construct for patellar tendon repair. The box wire augmentation loop is key to maintaining patellar tendon repair. Krakow tendon sutures secured through patellar bone tunnels do not provide additional benefit to a simple appositional suture and box wire augmentation loop.

Moderators - Andy Williams & Ian Corry

Session IX - Arthroscopy

IS PNEUMATIC TOURNIQUET NECESSARY IN KNEE ARTHROSCOPY?

H L George, G Kumar, P K R Mereddy, RA Harvey.
Arrowe Park Hospital, Liverpool, U K.

Background: Tourniquet provides a blood less field for surgery, but it has few complications and contraindications. There are several studies identifying the tourniquet as a factor for increased risk of complications in knee arthroscopy, we reviewed 200 consecutive knee arthroscopies done in our hospital with out tourniquet to analyse the outcome.

Aim: To analyse the out come of 200 knee arthroscopies done with out use of tourniquet; with respect to visualisation, time of surgery, bleeding, analgesia and post operative complications.

Materials and methods: We retrospectively analysed 200 consecutive knee arthroscopies with out tourniquet done in our institute. Average age of these patients was 39 (21-81). All patients underwent soft tissue procedures under general anaesthesia, supine, with sole support, no antibiotics and were done by same surgeon as day case. Same arthroscopic kit (Dyonics) with pump was used for all patients, using 2 litre saline bag and pump set at 65 mm Hg pressure. First few cases had tourniquet applied but not inflated, but later even this was avoided. Procedures included were diagnostic arthroscopies, arthroscopic debridements, meniscal repairs and partial or complete meniscal resections. Procedures like arthroscopic ACL reconstruction and other bony procedures were excluded. We looked at any visualisation problems, time of surgery, bleeding, analgesia and post operative complications. We also looked weather any of these patients visited the consultant or GP for any wound related problem or pain before the usual review at 2 weeks.

Results: There was no problem with visualisation noted in any of the cases, or any incidence where arthroscopy was unduly prolonged. There was no incidence of bleeding, stiffness or increased need for analgesia in any of these patients. None of the patients had any wound problem or haemarthrosis requiring intervention.

Conclusions: Many orthopaedic units continue to use a tourniquet routinely for soft tissue procedures in knee arthroscopy, probably in the belief that a clear operative view can only be achieved with one. However, the findings in our study indicate that knee arthroscopy for soft tissue procedures may be performed without a tourniquet...
ARThROSCOPY OF THE KNEE UNDER LOCAL ANAESTHESIA: IS IT SAFE AND PRACTICAL?

Mr A Phadnis*, Dr A Khanna*, Dr D Griffiths*, Mr AP Chandratreya*
Princess of Wales Hospital, Bridgend & Nottingham City Hospital, Nottingham. * Dept of Orthopaedics, - Dept of Anaesthesia.

Introduction:
Knee arthroscopy under LA, has been shown to be reliable and safe. However, this is not a widely practiced method for knee arthroscopy in the UK. A number of studies have compared various types of anaesthesia with a specific knee pathology. The aim of this study was to compare various anaesthesia techniques, and determine for LA cases the ease of the procedure, level of perioperative pain, patient satisfaction and outcome, in a non homogenous population.

Materials and Methods:
We prospectively studied a group of 116 consecutive patients undergoing knee arthroscopy. The choice of LA and GA was given to the patient, the decision for Spinal was made by the anaesthetist. Time for each method, surgical access, peri-operative pain and patient satisfaction were studied. Patients undergoing arthroscopy for suspected instability had GA.

Results:
97 patients had the surgery performed under LA, 6 had SA and 19 had GA. Patients undergoing arthroscopy under LA understood the disease process better, 86-97% of the LA group did not complain of any pain/discomfort. 8 patients required further sedation for completion of the procedure. 2 patients had a possible vaso-vagal attack and needed monitoring. Surgical access was good in all patients with LA. A variety of procedures could be carried out including partial meniscectomy, chondroplasty and microfracture in 2 patients. Immediate post-operative pain score: 0 in 92/97. Overall patient satisfaction: good in 89/97. There were more complications in the Spinal and GA group.

Conclusion:
Arthroscopy of the knee performed under local anesthesia is a safe, practical and, possibly economical alternative to conventional anaesthesia. It can be done in most routine knee arthroscopic surgery.

CAN ARTHROSCOPIC SIMULATOR TRAINING IMPROVE OPERATIVE PERFORMANCE IN BASIC SURGICAL TRAINEES?

N R Howells, A J Carr, A Price, J L Rees
Nuffield Department of Orthopaedic Surgery, University of Oxford.

Objective: To investigate the effect of lab based simulator training, on the ability of basic surgical trainees to perform diagnostic knee arthroscopy.

Method: 20 orthopaedic SHO’s with minimal arthroscopic experience were randomised to 2 groups. 10 received a fixed protocol of simulator based arthroscopic skills training. This consisted of 3 sessions of 6 simulated arthroscopies using a Sawbones bench-top knee model. Their learning curve was assessed objectively using motion analysis. Time taken, path length and number of movements were recorded. All 20 then spent an operating list with a blinded consultant trainee. They received instruction and demonstration of diagnostic knee arthroscopy before performing the procedure independently. Their performance was assessed using the intra-operative section of the Orthopaedic Competence Assessment Project (OCAP) procedure based assessment (PBA) protocol for diagnostic arthroscopy and further quantified with a global rating assessment scale.

Results: In theatre, simulator-trained SHO’s outscored all but one untrained SHO. The simulator trained group were scored as competent on more than 70% of occasions compared to less than 15% for the un-trained group (p<0.05). The mean global rating score of the trained group was 24.4 out of 45 compared with 12.4 for the untrained group (p<0.05). Motion analysis demonstrated objective and significant improvement in performance during simulator training.

Conclusion: The use of lab based arthroscopic skills training leads to subsequent significant improvement in operating theatre performance. This may suggest that formalised lab based training should be a standardised part of future surgical curricula. OCAP PBA’s appear to provide a useful framework for assessment however potential questions are raised about the ability of OCAP to truly distinguish levels of surgical competence.


table

<table>
<thead>
<tr>
<th>Arthroscopic Surgery</th>
<th>Translation</th>
<th>Rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-bundle ACL reconstruction (n=17)</td>
<td>64%</td>
<td>49%</td>
</tr>
<tr>
<td>Two-bundle ACL reconstruction (n=18)</td>
<td>67%*</td>
<td>59%*</td>
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Table 1. The percentage reduction of the mean maximum AP tibial translation and coupled tibial rotation occurring during the Pivot Shift manoeuvre with ACL reconstruction (p=0.034, * = Not significant).

Session X - ACL Technique

2-BUNDLE ACL RECONSTRUCTION IMPROVES CONTROL OF THE PIVOT SHIFT IN-VIVO

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Background: Studies have shown that normal tibio-femoral rotational kineamtics is not regained following single-bundle ACL reconstruction and that 14-30% of patients may have a residual “pivot glide”. It has been suggested that 2-bundle reconstruction could better control this laxity, but this has not been demonstrated conclusively in-vivo. This study tested the hypothesis that 2-bundle ACL reconstruction improves the control of the Pivot Shift.

Methods: We measured the mean maximum tibial translation and coupled rotation occurring during the pivot shift (using a previously validated surgical navigation based methodology) in 35 consecutive patients undergoing hamstrings ACL reconstruction. 17 patients had a standard single-bundle reconstruction and 18 patients a 4-tunnel, 2-bundle reconstruction. 10 pivot shift tests were performed pre- and post operatively by a single operator and the differences compared.

Results: The two groups were equally age and sex matched. There was no difference in pre-operative pivot shift measurements. 2-bundle reconstruction decreased the tibial rotation occurring with the pivot shift test more than single-bundle reconstruction (Table 1). There was no detectable difference in the control of tibial translation.

Conclusion: This study quantifies, in-vivo, the differences between single and 2-bundle ACL reconstruction in controlling pivot shift. It suggests that anatomically, 2-bundle ACL reconstructions could reduce pivot instability more effectively than a single-bundle. Whether the 10% additional control of the rotational component of the pivot improves functional stability is yet necessary every patient and, in the longer term, limits the development of gonarthrosis secondary to abnormal motions, remains to be seen.

% reduction

Table 1. The percentage reduction of the mean maximum AP tibial translation and coupled tibial rotation occurring during the Pivot Shift manoeuvre with ACL reconstruction (p=0.034, * = Not significant).
ON THE RELATIVE CONTRIBUTION OF THE TWO MAIN ANTERIOR CRUCIATE LIGAMENT FUNCTIONAL BUNDLES TO INTACT KNEE KINEMATICS

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Imperial College London

Background and purpose of the study: the anterior cruciate ligament (ACL) is a continuum of fibres which are differently recruited through range of motion. Two main functional bundles can be identified: the posterolateral bundle (PLB) which is taut exclusively towards extension and the anteromedial bundle (AMB) which is taut through full range of motion. The purpose of this investigation was to assess the relative contribution of the bundles to intact knee kinematics.

Material and methods: fourteen intact cadaver knees were instrumented in a non-ferromagnetic rig and six degrees of freedom kinematics through flexion-extension was recorded with an electromagnetic device under the application of a 90N anterior force or a 5Nm internal rotation torque. The AMB and PLB were alternately cut first in each knee and knee kinematics was recorded. The other bundle was then dissected and ACL deficient knee kinematics tested.

Results: when the AMB was cut anterior tibial translation increased and no effects on rotations were recorded. When the PLB was first cut no significant effects on anterior laxity were observed. Different rotational responses were observed in different knees. After the section of both bundles a larger increase in anterior laxity was observed. The changes in rotation differed from knee to knee.

Discussion: The AMB is a primary restraint against anterior tibial translation and has a small and variable effect on rotations. The PLB is a secondary restraint against anterior tibial translation in extension and maintains normal rotational laxity in AMB deficient knees. Therefore, reconstruction of both bundles is theoretically advantageous to restore both intact knee anteroposterior and rotational laxity.

THE FATE OF THE GRAFT IN ACL RECONSTRUCTION IN THE SKELETALLY IMMATURE

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Chelsea & Westminster Hospital and The Yorkshire Clinic

Purposes of Study:
To establish what happens, over time, to an ACL graft which is implanted in the skeletally immature knee.

Methods / Results:
5 cases of hamstring ACL reconstruction in prepubertal patients were available from the practices of 2 surgeons in which there were X-ray / MRI images taken over a period of an average approximately 3 years from the operation. The changes in graft dimensions were measured from these images. No case of growth arrest was seen, nor of soft tissue contracture such as fixed flexion. All patients recovered to their same pre-injury level of activity, including elite level sport in 3 cases. Clinical laxity tests were always satisfactory but the senior authors have noticed that they tighten in time. The growth of the patients was an average 17cm. The graft diameters did not change despite large changes in graft length (average 145%). Most of the length gain was in the femur.

Conclusion: Much has been written regarding potential harm to the growth plate in these patients but we are not aware of literature on the subject of the fate of the graft itself. Considerable length changes in the grafts were evident. The biological phenomena taking place in the graft are unknown. We have clearly shown an increase in the size of graft tissue due to lengthening but no change in girth. Either the graft stretches or tissue neogenesis occurs, or both. If it simply stretched then the graft would be expected to become narrower, at least in places- it did not. Nevertheless the ‘tightening’ phenomenon reported anecdotally could be due to the graft having to stretch but failing to keep up with growth. As the volume of graft increases so much then at least some neogenesis is highly likely.

Session XI - ACL Ten Year Results

ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING PATELLAR TENDON AUTOGRAFT. 13 YEAR OUTCOME

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Background:
There is limited evidence on long-term outcome following ACL reconstruction. Concern has been raised that degenerative joint disease is common in the long-term and this may be associated with use of patellar tendon autograft.

Methods:
162 patients underwent single-surgeon arthroscopic ACL reconstruction (1991-1993) were identified from our prospective database. Patient-centred outcome was by Lysholm and Subjective IKDC score, objective outcome measures were clinical examination, arthrometry and X-rays.

Results:
13 year outcome (10-15 years) is known in 115/161 patients (71%). The median subjective scores were 94% (Lysholm) and 90% (IKDC). Ipsilateral graft rupture rate was 4%, with contralateral ACL injury in 8%. Mean manual maximum KT 1000 was 9mm in the grafted knee and 8mm in the contralateral knee. Clinical laxity scores of grade 0 or 1 were found in over 93% patients. Radiographically 66% were normal or near normal (Grade A or B). When compared to the contralateral uninjured knee we found no significant difference in the proportion of normal/near normal x-rays (grade A/B) versus abnormal/severe (grade C/D) for the medial, lateral nor patellofemoral compartments. There was no significant difference in the radiological IKDC grades in the medial compartment when compared to the contralateral uninjured knee, but there was a difference in the lateral and patellofemoral joints.

Conclusions:
At 13 years patellar tendon ACLR provides excellent patient satisfaction, with clinically objective knee stability and low risk of re-rupture. Radiographically degenerative change was seen in 34%. There was no significant side to side difference to the uninjured contralateral medial meniscus joint, but there was a small but significant difference in the lateral and patellofemoral joints. The lateral joint differences may reflect underlying bone bruising at the time of injury. We do not believe that the patellar tendon autograft is the cause of arthrosis after BTB ACLR.
LONG TERM RESULTS OF ARTHROSCOPIC RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT WITH IPSILATERAL PATELLAR TENDON GRAFT. A PROSPECTIVE LONGITUDINAL TEN-YEAR STUDY

Chris Connolly, Vivianne Russell, Lucy Salmon, Justin Roe, Craig Harris, Leo Pinczewski

This longitudinal prospective study reports the 10-year results of arthroscopic, anterior cruciate ligament (ACL) reconstruction using patellar tendon autograft in 90 patients. The patients selected had no significant meniscal, chondral or concurrent ligamentous pathology at the time of reconstruction. Evaluation was conducted pre-operatively, 2, 5, 7, and 10 years after surgery and included the IKDC Standard Evaluation, Lysholm knee score, clinical and instrumented ligament evaluation and radiographs at 2, 5, 7 and 10 years. Seventy-four of the 84 patients (88%) with intact grafts at 10 years were reviewed. Four (4%) meniscectomies were performed, 6 graft (7%) ruptures and 18 (20%) contralateral ACL ruptures occurred in the follow-up period. Ninety-seven percent of patients graded their knee function as normal or nearly normal and the median Lysholm knee score was 95 at 10-years. The proportion of patients participating in IKDC level I and II sports fell from 85% at 2-years to 45% at 10 years, 12% attributing the decrease to their knee. On laxity testing 85% and 93% had grade 0 on Lachman and pivot shift testing, respectively and 77% had <3mm of anterior tibial displacement at 10 years. Kneeling pain increased to 58% of patients. 59% had no pain on strenuous activity with 33% of patients having a fixed flexion deformity at 10 years. Radiological examination at 10 years demonstrated osteoarthritic changes in 48% of patients. Factors predictive for the development of radiographic osteoarthritis were increased age at operation and increased ligamentous laxity at 2 years as measured clinically and by KT 1000. As such, arthroscopic ACL reconstruction, employing patellar tendon, is not preventative of the development of osteoarthritis even when the confounding factors of meniscal, chondral and other ligamentous injury are excluded.
WEAR PATTERNS IN ANTEROMEDIAL OSTEOARTHRITIS OF THE KNEE HAVE A CORRELATION WITH ACL STATUS.

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Nuffield Department of Orthopaedic Surgery, Nuffield Orthopaedic Centre, Oxford

Anteromedial osteoarthritis is a distinct phenotype of osteoarthritis. The arthritic lesion on the tibia is localised to the anteromedial quadrant with an intact ACL. Deficiency of the ACL leads to a progression to tricompartmental disease. Within the spectrum of intact ACL a varying degree of ligament damage is seen. Our aim was to correlate the progression of ACL damage to the geographical extent of disease and the degree of cartilage loss on the tibial plateau.

We systematically digitally mapped 50 tibial plateau resection specimens from clinical photographs of patients undergoing uni-compartmental arthroplasty. All specimens had a similar macroscopic appearance. A significant difference was seen with the progression of ACL damage and area of eburnation of bone. Using an unpaired t-test, a significant difference in area of % full thickness cartilage loss (Pa=0.047) was seen between patients with a normal and longitudinal splits within their ACL.

All specimens had a similar macroscopic appearance. A significant difference was seen with the progression of ACL damage and area of eburnation of bone. Using an unpaired t-test, a significant difference in area of % full thickness cartilage loss (Pa=0.047) was seen between patients with a normal and longitudinal splits within their ACL.

We surmise that the progression from anteromedial to tricompartmental osteoarthritis of the knee may be related to the graduated damage of the ACL.

Full thickness cartilage loss of tibial plateau

% of cartilage loss

ACL status

Normal

Synovium loss

Longitudinal splits

20
Session XIII - Visco -Supplementation

A PROSPECTIVE RANDOMISED CONTROLLED TRIAL TO COMPARE SAFETY AND EFFICACY OF INTRA ARTICULAR SYNTHETIC AND NATURAL HYALURONIC ACID INJECTIONS.

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Purpose of the study: To see if there are any differences in pain relief and complications with intrarticular Knee injection of natural and synthetic Hyaluronic acid products.

Summary: After following the inclusion and exclusion criteria, 130 patients were randomly allocated two groups, receiving either synthetic or natural Hyaluronic acid injections. Patients were explained about the study and consent was sought. They were given Western Ontario and McMaster University [WOMAC] questionnaires to be filled before, 48 hours, 6 weeks and 3 months after the injections. They were examined at 3 and 6 months post injections. 124 of these patients promptly responded. 68 patients had natural product and 56 patients had synthetic product.

In the natural injection group of 68 patients, 57 had pain relief at 3 months and 20 of these continued to have relief at 6 months.

In the synthetic injection group of 56 patients, 48 had pain relief at 3 months and 28 of these continued to have relief at 6 months.

No complications were noted in either of the groups.

Using Chi square test and with 95% confidence interval, synthetic injection has significant pain relief at 6 months with p value of 0.043, but no significance in pain relief at 3 months with p value of 0.5.

Conclusion: Synthetic injections are safe, significantly more effective and economical than natural ones. So, using synthetic products would give better pain relief for patients and also decrease the financial burden on the organisation.

THE EFFICACY OF HYLAN G-F 20 AND SODIUM HYALURONATE IN THE TREATMENT OF OSTEOARTHRITIS OF THE KNEE
A PROSPECTIVE RANDOMIZED CLINICAL TRIAL

R Raman, A Dutta, N Day, CJ Shaw, GV Johnson
Department of Orthopaedics, Hull Royal Infirmary, United Kingdom

Aim: To compare the clinical effectiveness, functional outcome and patient satisfaction following intrarticular injection with Hylan G-F-20 and Sodium Hyalurionate in patients with osteoarthritis (OA) of the knee.

Methods: In this independent study, 382 consecutive patients with OA of the knee were prospectively randomized into two groups to receive Hylan G-F-20 - Synvisc (n=196) or Sodium Hyalurate -Hyalgan (n=186) and reviewed by blinded independent assessors at pre injection, 6 weeks, 3, 6, 12 months. Knee pain, patient satisfaction was measured on a BAS. Functional outcome was assessed using WOMAC, UCLA, Tegner, Oxford knee score and EuroQol- 5D scores.

Mean follow up was 14 months.

Results: Patients in both groups predominantly had grade III OA. Knee pain on VAS improved from 6.7 to 3.2 by 6 weeks (p=0.02) and was sustained until 12 months (3.7, p=0.04) with Synvisc. In the Hyalgan group, pain improved from 6.6 to 5.7 at 6 weeks (p=0.05) and to 4.1 at 3 months (p=0.04) but was sustained only until 6 months (5.9, p=0.05). Improvements in the WOMAC pain and physical activity subscales were significantly superior in the Synvisc group at 3 months (p=0.02), 6 months (p=0.01) and 12 months (p=0.02). General patient satisfaction was better in the Synvisc group at all times although statistically significant 3 at months (p=0.01) and 6 months (p=0.02). There was local increase in knee pain in one patient who received Synvisc, which settled by 4 weeks. Total treatment cost was 23% more in the Hyalgan group due to the two additional visits.

Conclusion: Although both treatments offered significant pain reduction, it was achieved earlier and sustained for a longer period in patients with Synvisc with early increase in activity levels. However, a local reaction of pseudo sepsis was observed with Synvisc in one patient. The total treatment cost, both for the patient and the hospital are higher with Hyalgan. From this study, it appears that the clinical effectiveness and general patient satisfaction are better amongst patients who received Synvisc.

Session XIV - ACI

IS AUTOLOGOUS CHONDROCYTE IMPLANTATION EFFECTIVE IN OVERWEIGHT PATIENTS?

Joint Reconstruction Unit, Royal National Orthopaedic Hospital, Stanmore, United Kingdom

Aims
To compare the clinical and functional outcomes of autologous chondrocyte implantation for treatment of osteochondral defects of the knee performed in overweight, obese and patients of 'ideal weight' as defined by their BMI.

Methods
We analysed the data on all our patients that have been followed up for a minimum of 2 years and had their height and weight recorded initially in our database. Functional assessment consisted of the Modified Cincinnati Scores (collected prospectively at 6 months, 1 year, 2 years and 3 years following surgery). Patients were placed into 3 groups according to their body mass index (BMI). Group A consisted of patients with BMI of 20 to 25.9, group B patients with BMI of 25 to 29.9 and Group C are patients with BMI of 30 to 39.9.

Results
There were 80 patients (41 males and 39 females) with a mean age of 35.4 (range 18 to 49). The mean BMI for the entire group was 26.6. The pre-operative, 6 month, 1 year, 2 year, and 3 year Modified Cincinnati Score in Group A (32 patients) was 54.4, 80.3, 82.7, 74.7 and 72.6. Similarly in Group B, the scores were 53, 41, 54, 56, 49.5 and in Group C the scores were 36.3, 56.3, 49.6, 56, and 35.7. The wound infection rate in Group A was 6.25%, in Group B was 17.6% and Group C was 14.3%.

Conclusions
Initial results from this study suggest that BMI is an important predictor of outcome after chondrocyte implantation. The group of patients that would gain most benefit from ACI are patients that are not overweight (defined by BMI in the range of 20 to 24.9). Further work is being carried out to support the hypothesis that surgeons should strongly consider not operating on patients unless the BMI is less than 25.
DOES AUTOLOGOUS CHONDROCYTE IMPLANTATION ALLOW RETURN TO PHYSICAL ACTIVITY AND WORK?

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Joint Reconstruction Unit, Royal National Orthopaedic Hospital, Stanmore, United Kingdom

Aims
The purpose of this study was to determine whether autologous chondrocyte implantation (ACI) in patients with articular cartilage defects of the knee resulted in patients returning to pre-injury levels of work and physical activities.

Methods
133 consecutive patients from January 2001 to December 2002 underwent ACI at our institution. A telephone and postal questionnaire was conducted to ascertain a detailed occupational and leisure activity profile in this cohort of patients. For each job held for at least 2 months, we asked whether an average working day had involved any of the ten specified physical activities. Similarly, for each sport that had been played more than 5 times a year, we asked the age the sporting activities had begun and whether they were able to return to these sports after surgery. Occupation for each patient was given a 3 digit code according to the Standard Occupational Classification System 2000 and hence determined whether the work performed was manual or non-manual.

Results
97 patients responded to the questionnaire. There were 53 females and 44 males and the mean age at the time of operation was 34.5 (range 14 to 49). Category 6 (Personal Services Occupations) was the most common occupation pre-operatively, whereas category 4 (Administrative and Secretarial Occupations) was the most common post-operatively. 7% of patients’ work involved kneeling or squatting and this figure rose to 12%, 4 years following surgery. 42% of patients had to make some form of modification to their work (usually less physical or more office based). 47% of patients were able to return to at least one of the sports they played pre-injury.

Conclusion
This is the first study to demonstrate that patients are able to return to work and resume sporting activity following autologous chondrocyte implantation.

ISOLATION OF VIABLE HUMAN CHONDROCYTES FOLLOWING ARTICULAR CARTILAGE CRYOPROSERVATION

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Boneour Research Centre, Institute of Musculoskeletal Sciences, the University of Oxford, Oxford, OX3 7LD UK.

Aim
The aim of this study was to investigate whether viable chondrocytes can be isolated and subsequently expanded in culture, from cryopreserved intact human articular cartilage.

Method
Human articular cartilage samples, retrieved from patient undergoing total knee replacement, were cored as 5 mm diameter discs then minced to approximately 0.1 mm² size pieces. Samples were cryopreserved at the following stages: intact cartilage discs, minced cartilage and chondrocytes immediately after enzymatic isolation. After completing of isolation, cell viability was examined using LIVE/DEAD fluorescent staining. Isolated chondrocytes were then cultured and a cell proliferation assay was performed at day 4, 7, 14, 21 and 28 days.

Results
The results showed that the viability of isolated chondrocytes from control, cryopreserved intact AC discs, minced AC and isolated then frozen samples were 71.84 ± 2.63%, 25.61 ± 2.41%, 31.32 ± 2.47% and 42.53 ± 4.66% respectively. Isolated chondrocytes from all groups were expanded by following degrees after 28 days of culture; Group A: 10 times, Group B: 18 times, Group C: 106 times, and Group D: 154 times.

Conclusion
We conclude that viable chondrocytes can be isolated from cryopreserved intact human AC and then cultured to expand their number. This method could be employed to patients benefit undergoing autologous chondrocyte implantation.

Session XV - UNI and Bilateral TKR

HIGHER EARLY RE-OPERATION RATE WITH THE PROFIX MOBILE BEARING COMPARED TO FIXED BEARING TOTAL KNEE REPLACEMENT

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The Profix knee replacement arthroplasty manufactured by Smith and Nephew has been in use for the past five years however there are few published outcome data for this prosthesis. The purpose of this study was to provide clinical outcome data for a cohort of patients with a Profix TKR at a minimum 3 years follow up. There were 65 joint replacements in 58 patients all performed by or under the direct supervision of one of two senior consultant Orthopaedic surgeons. There were 34 right and 31 left knees replaced in 31 male and 27 female patients. Mean age of the patients was 69 years (51-84 years) and mean body mass 89kg (65-140Kg). The femoral component was uncemented in 49 knees and cemented in 16 knees. The tibial component was cemented in all 65 cases. There were 53 mobile bearing polyethylene inserts and 12 fixed bearing knees. The patella was resurfaced primarily in 32 cases. Using the Oxford Knee score, the mean knee score was 20.7 (Range 12-42) where a perfect score is 12 and the worst possible score 60. Mean clinical range of movement was 111 degrees (Range 90-150 degrees). Of the 65 joints, 13 have required or are awaiting some form of re-operation. These included 3 for patellae that were not resurfaced at the index arthroplasty, 6 for secondary insertion or revision of mobile bearing locking-screws and one femoral revision for failure of on-growth of an uncemented femoral component. The finding of loosening of the mobile bearing locking screw in three well functioning knees highlights the importance of X-ray follow-up of patients even if their knee scores are entirely satisfactory.

Overall, the clinical results of this prosthesis are satisfactory, however these data would support routine patellar resurfacing and use of the cemented fixed bearing option for the Profix arthroplasty.
TWENTY-YEAR SURVIVAL AND 10-YEAR CLINICAL RESULTS OF THE MEDIAL OXFORD UNICOMPARTMENTAL KNEE ARTHROPLASTY.

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Nuffield Orthopaedic Centre, Oxford, UK

Aim
This paper presents the 20-year survival and 10-year clinical follow-up results from the entire series of all medial Oxford meniscal bearing unicompartamental knee arthroplasties performed in a single centre in Sweden, between 1985 and 2004.

Method
Patients were contacted and information about the state of the knee collected. Revision surgery was used in the life-table survival analysis performed. For the entire cohort clinical follow up at 6 weeks is routinely performed, using the HSS knee score.

Results
Overall hospital stay and the incidence of wound complications was not different between the two groups. There was little difference in terms of complications and clinical outcome at a mean follow up of 4 years. Those patients in Group 3 had worse AKS function scores (p=0.02) and those patients in Group 2 had a significantly better HSS score (p=0.02). There was no significant difference between the groups in terms of rate of motion or the AKS Knee score. This study has confirmed a shorter operation and hospital stay when the bilateral TKRs are carried out under the same anaesthetic. The patients also bled the most postoperatively. There were no hospital or 30 day deaths in any of the groups. The patients in Group 3 had worse AKS function scores (p=0.02) and those patients in Group 2 had a significantly better HSS score (p=0.02). There was no significant difference between the groups in terms of range of motion or the AKS Knee score. This study has confirmed a shorter operation and hospital stay when the bilateral TKRs are carried out under the same anaesthetic. These patients also bled the most postoperatively. There was little difference in terms of complications and clinical outcome at a mean follow up of 4 years. With appropriate patient selection, both same anaesthetic and same admission bilateral TKR are safe methods to treat bilateral arthritis.

BILATERAL TOTAL KNEE REPLACEMENTS STAGED ONE WEEK APART: A GOOD COMPROMISE?
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SPORTSMED SA, Adelaide, Australia

The aim of this study was to assess the results of bilateral total knee replacement (TKR) staged one week apart during one hospital admission and compare these results with those of bilateral sequential TKRs and bilateral TKRs performed in 2 separate admissions by a single surgeon using a single prosthesis. Between 5th November 1997 and 10th August 2000, 104 patients underwent bilateral LCS TKRs using the Anteroposterior glide (APG) tibial component. The patients were analysed in 3 groups. The patients in Group 1 underwent bilateral sequential TKR under the same anaesthetic. The patients in Group 2 underwent bilateral TKRs under 2 separate anaesthetics, 7 days apart, during the same admission. The patients in Group 3 underwent bilateral TKR under 2 separate admissions, essentially 2 unilateral TKRs. The patients in Group 1 had shorter operations (p<0.001) and shorter hospital stays (p<0.001). Patients in Group 2 had less blood loss (p=0.004) but were not transfused any less than the other groups. The complication rate was low and comparable in all groups. There were no hospital or 30 day deaths in any of the groups. Those patients in Group 3 had worse AKS function scores (p=0.02) and those patients in Group 2 had a significantly better HSS score (p=0.02). There was no significant difference between the groups in terms of rate of motion or the AKS Knee score. This study has confirmed a shorter operation and hospital stay when the bilateral TKRs are carried out under the same anaesthetic. These patients also bled the most postoperatively. There was little difference in terms of complications and clinical outcome at a mean follow up of 4 years. With appropriate patient selection, both same anaesthetic and same admission bilateral TKR are safe methods to treat bilateral arthritis.
DO MOBILE BEARING KNEE REPLACEMENTS CAUSE MORE PAIN?

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BACKGROUND:
In the UK 80% unicompartmental knee replacements (UKRs) and 10% of total knee replacements (TKRs) use mobile bearings. It is suggested that mobile bearings are more physiological and wear less, however it is still unclear whether patients tolerate mobile bearing knee replacements as well.

PATIENTS AND METHODS:
We report four prospective studies. Two compared fixed with mobile bearings in TKR and two in UKR. The prostheses involved were fixed and mobile variants of the Rotaglide (TKR), Kinemax (TKR) and Uniglide (UKR). In addition the Oxford and St. George Sled UKRs were compared. All except the Uniglide study were randomized prospective trials (RCTs).

RESULTS:
611 patients were involved with a mean age of 68 years. Residual pain following surgery was assessed with either the Oxford Knee Score (OKS) or the WOMAC score. The patients were followed up at one and two years postoperatively by a Research nurse and the findings recorded prospectively on the Bristol Knee database.

Study 1: Rotaglide. Prospective RCT. 171 patients. Mean pain score (OKS) Fixed bearing 15.4 v Mobile bearing 13.2. P= 0.012. Fixed bearing prosthesis caused significantly less pain.

Study 2: Kinemax. Prospective RCT. 198 patients. Mean pain score (WOMAC) Fixed bearing 8.9 v Mobile bearing 8.3. P = 0.443. Trend favouring fixed bearing.

Study 3: Uniglide. Non-randomised trial. 184 patients. Mean pain score (WOMAC) Fixed bearing 7.6 v Mobile bearing 10.1. P <0.001. Fixed bearing caused significantly less pain.

Study 4: St. George Sled v Oxford. Prospective RCT. 94 patients. Mean pain score (OKS) 15.8 v 13.9. P= 0.058. Strong trend suggesting the Sled caused less pain.

CONCLUSION
Our data suggests that the fixed bearing knee replacements result in less residual pain than their mobile bearing counterparts, at least in the first two years following surgery.

THE ROLE OF PAIN AND FUNCTION IN DETERMINING PATIENT SATISFACTION FOLLOWING TOTAL KNEE ARTHROPLASTY: ANALYSIS OF DATA FROM THE NATIONAL JOINT REGISTRY (NJR).

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Purpose:
To examine how patients viewed the outcome of their joint replacement at least one year post surgery. Emphasis was placed on investigating the relative influence of ongoing pain and functional limitation on patient satisfaction.

Method:
Questionnaire based assessment of the Oxford Knee Score (OKS), patient satisfaction, and need for reoperation in a group of 10,000 patients who had undergone primary unilateral knee replacement between April and December 2003. Questionnaires were linked to the NJR database to provide data on background demographics, clinical parameters and intraoperative surgical information for each patient.

Data was analysed to investigate the relationship between the OKS, satisfaction rate and the background factors. Multivariable logistic regression was performed to establish which factors influenced patient satisfaction.

Results:
87.4% patients returned questionnaires. Overall 81.8% indicated they were satisfied with their knee replacement, with 7.0% unsatisfied and 11.2% unsure. The mean OKS varied dependent upon patients’ satisfaction (satisfied=22.04 (S.D 7.87), unsatisfied=41.70 (S.D 8.32), unsure=35.17 (S.D 8.24)). These differences were statistically significant (p<0.001).

Regression modelling showed that patients with higher scores relating to the pain and function elements of the OKS had lower levels of satisfaction (p<0.001) and that ongoing pain was a stronger predictor of lower levels of satisfaction. Other predictors of lower levels of satisfaction included female gender (p<0.05), a primary diagnosis of osteoarthritis (p=0.02) and unicondylar replacement (p=0.002). Differences in satisfaction rate were also observed dependent upon age and ASA grade.

609 patients (7.4%) had undergone further surgery and 1476 patients (17.9%) indicated another procedure was planned. Both the OKS and satisfaction rates were statistically significant (p<0.001).

Conclusion:
This study highlights a number of clinically important factors that influence patient satisfaction following knee replacement. This information could be used when planning surgery to counsel patients and help form realistic expectations of the anticipated postoperative result.

Session XVII - Post TKR Kneeling ability

FORCE PLATE ANALYSIS OF KNEELING ABILITY AFTER KNEE ARTHROPLASTY

Hassaballa MA, Bevan D C, Porteous A J
Avon Orthopaedic Centre, Southmead Hospital, Westbury-on-Trym, Bristol, BS10

Introduction
Force plate analysis of contact areas and pressure has been used in the fields of podiatry and foot surgery. We used this tool in assessing normal subjects and knee replacement patients kneeling.

Aim
We analysed contact areas and pressures over the front of the knee during different kneeling positions.

Methods
Twenty three normal subjects and 33 knee replacement patients were included in this study. The patients were selected according to age and kneeling ability and the absence of involvement of other joints. They had unilateral or bilateral Total (TKR) or Unicompartmental knee replacements (UKR).
TEEN YEAR SURVIVAL ANALYSIS. A RANDOMISED, CONTROLLED TRIAL OF CEMENTED VERSUS CEMENTLESS PRESS-FIT CONDYLAR KNEE REPLACEMENT: FIFTEEN YEAR SURVIVAL ANALYSIS.

P. N Baker, F M Khaw, I. M G Kirk, R W Morris, P J Gregg
Gleneagles Hospital, Leicester, England.

Purpose:
To compare the survivorship, at 15 years, of cemented versus cementless fixation of press-fit condylar primary total knee replacements.

Methods:
A prospective randomised consecutive series of 501 primary knee replacements were compared between either cemented (219 patients, 277 implants) or cementless implants (772 patients, 224 implants) fixation. All operations were performed either by, or under the direct supervision of, a single surgeon (PJG). Patients were followed up to compare the cumulative survival rates for the two groups. Life table analysis was used to assess survival. Cox's proportional hazards regression analysis was used to compare the cumulative survival rates for the two groups.

Results:
Altogether 44 patients underwent revision surgery (24 cemented vs. 20 cementless). 11 cases were revised secondary to infection, 26 were revised due to aseptic loosening and 7 cases were revised for other reasons (instability, anterior knee pain, polyethylene wear, patellar malalignment). At the time of follow-up, a further 7 had revision planned.

Conclusion:
There was a significant positive correlation between body mass and kneeling load at both 90 degrees and maximum flexion. Kneeling pressure was never identical in both knees in all groups. There was no significant difference of peak pressures and contact areas between the normal and UKR group.

Maximum contact pressures were increased in knees able to achieve full flexion. As kneeling flexion angle increases, the contact area decreases and while the thigh is off the calf and the peak pressure increases. Contact pressure dropped to below 90 degrees level whenever full flexion was achieved.

DO MOBILE BEARINGS IMPROVE KNEELING ABILITY?
M Hassaballa, A Porteous, J H Newman
Avon Orthopaedic Centre, Bristol, UK

Introduction:
There is an impression among Orthopaedic surgeons that mobile bearing knee replacement has a better functional outcome than fixed bearing knee replacement. Since kneeling demands a high level of function after knee replacement this study was undertaken to see if mobile bearings in either total or unicompartmental replacement conferred an advantage.

Methods:
A prospective randomised study of 207 TKR patients receiving the same prosthesis (Rotaglide, Corin, UK) was performed. Patients were randomised into a mobile bearing group (102 patients with a mean age of 53 years) and a fixed bearing group (105 patients with a mean age of 55 years).

Data was also prospectively collected on 215 UKR patients who received the same Unicompartmental implant (AMC, Uniglide, Corin, UK). One hundred and thirty six patients (Mean age: 62 yrs) had a mobile insert and 79 (Mean age: 65 yrs) a fixed insert.

All patients completed the Oxford Knee Questionnaire preoperatively as well as at 1 and 2 years postoperatively. Their stated kneeling ability and total scores were assessed with a perfect score for kneeling ability being 4 and 48 the maximum total score.

Results:
In all groups both the kneeling ability and the total scores improved markedly from their preoperative state. At two years the total score for the fixed bearing devices was marginally better than for the mobile (Rotaglide 36;31 and Uniglide 37;33).

There was a more striking difference with respect to kneeling ability with the fixed-bearing variants performing better, (Rotaglide 1;4: 0;9 and Uniglide 1;9: 1;4). However, the greatest difference was between the UKR and TKR groups (UKR 1;7: TKR 1;2). Pre-operatively less than 2% of TKR patients (7% of the UKR patients) could kneel. Post-operatively, the patients’ kneeling ability improved with 21% for the mobile bearing, 32% of fixed bearing UKR patients.
The TKR patients kneeling ability was 13% of the mobile, 26% of fixed bearing patients were able to kneel with little or no difficulty. In all groups the stated kneeling ability was poor with less than 50% of any group being able to kneel with ease or only minor difficulty.

Conclusion:
Those undergoing UKR appeared to perform better than those with a TKR. None of the forms of knee replacement used resulted in good kneeling ability, though this function was improved by arthroplasty in all groups. Mobile bearing inserts did not confer any advantage with respect to kneeling and in fact performed worse with regard to this particular knee function.

Session XVIII - Cement / No Cement

A RANDOMISED, CONTROLLED TRIAL OF CEMENTED VERSUS CEMENTLESS PRESS-FIT CONDYLAR KNEE REPLACEMENT: FIFTEEN YEAR SURVIVAL ANALYSIS.

P N Baker, F M Khaw, I. M G Kirk, R W Morris, P J Gregg
Gleneagles Hospital, Leicester, England.

Purpose:
To compare the survivorship, at 15 years, of cemented versus cementless fixation of press-fit condylar primary total knee replacements.

Methods:
A prospective randomised consecutive series of 501 primary knee replacements were compared between either cemented (219 patients, 277 implants) or cementless (177 patients, 224 implants) fixation. All operations were performed either by, or under the direct supervision of, a single surgeon (PJG). Patients were followed up to establish the rate of implant survival. No patients were lost to follow up. Revision was defined as further surgery, irrespective of indication, that involved replacement of any of the three original components. Life table analysis was used to assess survival. Cox's proportional hazards regression analysis was used to compare the cumulative survival rates for the two groups.

Results:
Altogether 44 patients underwent revision surgery (24 cemented vs. 20 cementless). 11 cases were revised secondary to infection, 26 were revised due to aseptic loosening and 7 cases were revised for other reasons (instability, anterior knee pain, polyethylene wear, patellar malalignment). At the time of analysis a further 7 had revision planned.

For cemented knees 15-year survival=80.7% (95%CI, 71.5-87.4), 10-year survival=91.7 (95%CI, 87.1-94.8). For cementless knees 15-year survival=75.3% (95%CI, 63.5-84.3), 10-year survival=93.3% (95%CI, 88.4-96.2). There was no difference between these two groups.

When comparing the covariates (operation, sex, age, diagnosis, side), there was no significant difference between operation type (Hazard ratio=0.83 (95%CI, 0.45-1.32) p=0.545), side of operation (HR=0.58 (95%CI, 0.32-1.05) p=0.072), age (HR=0.97 (95%CI, 0.93-1.01) p=0.097), diagnosis (OA vs. non OA, HR=1.25 (95%CI, 1.08-1.42) p=0.078). However, there was a significant gender difference (Males vs. Females (HR=2.48 (95%CI, 1.34-4.61) p=0.004).

The worst case scenario was calculated to include those patients that have also been listed for revision. Cemented 15-year survival=78.3% (95%CI, 68.9-85.4), cementless 15-year survival=72.0%, (95%CI, 59.9-81.5).

Conclusion:
This single surgeon series, with no loss to follow up, provides reliable data of the revision rates of the most commonly used total knee replacement. The survival of the press-fit condylar total knee replacement remains good at 15 years irrespective of the method of fixation. This information is useful for strategic health authorities when establishing future requirements for revision knee surgery.
We report the clinical and radiographic outcome of a consecutive series of 219 hydroxyapatite-coated total knee replacements with a follow-up of 5 to 8 years. Patients who fulfilled the entry criteria were included in a prospective study from early 1997 to late 1999. Regular clinical and functional assessment was subsequently performed using the Knee Society Score, WOMAC & SF-12 self-assessment questionnaires. Analysis of fluoroscopically controlled radiographs was performed using the American Knee Society Score. All living patients (216 knees) were followed-up. Exhaustive efforts were made to ensure that no patient was lost to follow-up. 28 patients (30 knees) were deceased. There have been 3 revisions.

The mean pre-operative Knee Score of 43.8 increased to 77.1 and the mean pre-operative Function Score of 20.3 increased to 63.4 at 5 years. The WOMAC scores also showed marked improvement from pre-operative status after 5 years minimum follow-up: pain 250 pre-op to 157, stiffness 115 pre-op to 56 and function 910 pre-op to 588.

There was no radiographic evidence of loosening or migration. The average American Knee Society Score for each component was 4. Small gaps between the bone-implant interface were observed to heal over the first year. A separate phenomenon of focal osteopenia is also described in a small number of well-fixed femoral components (12 of 219).

To date, 3 prostheses have been revised, 2 due to deep infection and 1 due to tibial tray subsidence. A survivorship of 98.6% has been achieved at 8 years. We believe this to be the first medium term study for the Duracon HA coated knee arthroplasty system, showing excellent clinical and radiographic outcome with 100% follow-up at 5 to 8 years.

FIFTEEN YEAR FOLLOW-UP OF PRIMARY TOTAL KNEE REPLACEMENTS IN THE TRENT REGION

VI Roberts, CN Esler, WM Harper
Trent Regional Arthroplasty Study (TRAS), based at Glenfield General Hospital NHS Trust, Leicester

PURPOSE:
To evaluate the fifteen year survivorship of primary Total Knee Replacements in a single UK health region.

METHODS:
Since the beginning of 1990, and with the agreement of all consultant orthopaedic surgeons in the region, all primary total knee replacements (TKR) performed throughout Trent were recorded prospectively. At the time of operation the surgeon completes a questionnaire, which records demographic, medical and operative details for each patient and implant. In this study we have traced all the patients, who had a primary total knee replacement between 1990 and 1992. We issued a validated, self administered questionnaire to all surviving patients, at a mean of fifteen years post arthroplasty. This questionnaire examines the patients level of expectation and satisfaction.

RESULTS:
4,665 primary TKR were performed on 4,448 patients. At fifteen year follow-up, 1,408 patients were alive. The questionnaire response rate was 57.1% (n=912). Of our responders, 87.8% were satisfied with the result of their TKR at 15 years post-arthroplasty, and 82% felt their TKR had met their expectations. Survivorship analysis revealed that 94.7% (+/-0.4%) of implants survive to 10 years, and 92.7% (+/-0.5%) to 15 years. Survivorship was significantly affected by gender of the patient, age at time of primary, and type of prosthesis used. Infection rate at 15 years was 0.9%.

DISCUSSION:
This is one of the first long term studies of primary TKR, which assesses survivorship of primary TKR beyond 10 years. This study shows that survivorship at 5 and 10 years compares favourably to the results of similar studies from other countries.
HIGH FAILURE RATE FOR A MOBILE BEARING UNICOMPARTMENTAL KNEE REPLACEMENT: RESULTS OF INDEPENDENT POSTOPERATIVE X-RAY ASSESSMENT.


Introduction: We have noted a concerning number of early failures (as defined by revision for unicompartmental knee arthroplasty or unicompartmental knee replacement (UKR) implantation in our hospital. This study retrospectively reviewed the postoperative radiographs to see if these failures were associated with a specific compartment.

METHODS: Between 2002 and 2004, 43 mobile-bearing Preservation knee replacements (UKRs) were implanted into 39 patients. The patients were reviewed at the time of the index procedure; 61.4 years (range, 46-83). The immediate postoperative radiographs were reviewed by 3 independent orthopaedic surgeons and a radiographer, who were blinded to the patient outcomes, using the radiographic criteria used for the Oxford UKR. We reviewed the radiographs to assess the postoperative patellar tracking and patellar height in each group. The radiographs were then compared with the normal range for each patient.

Results: Six (13.9%) of 43 knees were revised (5 for persistent pain, 1 for tibial component subsidence). Technical errors were few and no correlation was found between post-operative radiographic errors and the aetiology of failure. Posterior tibial translation above 15 mm was found in 15.8% of the cases (20 knees). The patellar index was found to be normal in 100% of the cases (20 knees).

Conclusions: We found no evidence to support our hypothesis that the DePuy mobile bearing implant design has flaws and is considerably correlated to early failures in some cases.

UNICOMPARTMENTAL OR TOTAL KNEE REPLACEMENT: EVIDENCE BASED PRACTISE OR SURGEON'S PREFERENCE?

N Brails, S Sadik, J Cobb

Introduction: Peri-operative complications of TKR are associated with considerable patient morbidity and high healthcare costs. Therefore, it is important to identify the procedures that will result in the best possible outcomes. The aim of this study is to compare the outcomes of unicompartmental knee arthroplasty and total knee arthroplasty and to identify which procedure is preferred by surgeons.

METHODS: Between 2002 and 2004, 43 mobile-bearing Preservation knee replacements (UKRs) were implanted into 39 patients. The patients were reviewed at the time of the index procedure; 61.4 years (range, 46-83). The immediate postoperative radiographs were reviewed by 3 independent orthopaedic surgeons and a radiographer, who were blinded to the patient outcomes, using the radiographic criteria used for the Oxford UKR. We reviewed the radiographs to assess the postoperative patellar tracking and patellar height in each group. The radiographs were then compared with the normal range for each patient.

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Conclusions: We found no evidence to support our hypothesis that the DePuy mobile bearing implant design has flaws and is considerably correlated to early failures in some cases.

BILATERAL SIMULTANEOUS UNICOMPARTMENTAL REPLACEMENT.

MC Forrester, G Kavanagh

The aim of this study was to assess the postoperative complications associated with bilateral simultaneous UKR and compare them with those of unilateral UKR and bilateral TKR. Over a 2 year period, 40 patients underwent bilateral simultaneous Preservation unicompartmental knee replacement UKR. They were compared to 40 matched unilateral UKRs and 28 bilateral simultaneous total knee replacement patients who had operations during the same period by the senior author. There was no significant difference between the groups in terms of age, weight, ASA grade and thromboembolism risk. The most common complication was wound infection, which occurred in 10 patients (25%). Infection was associated with an increased risk of re-operation (OR 30; 95% CI 1.2 to 730). Statistical analysis revealed no significant difference in the complications rates of all 3 groups. When compared to unilateral UKR and bilateral TKR, bilateral simultaneous UKR had a lower infection rate and a higher risk of re-operation. This is the first study assessing the postoperative complications associated with bilateral simultaneous UKR and comparing them with those of unilateral UKR and bilateral TKR. The results suggest that bilateral simultaneous UKR is a safe and effective procedure for the treatment of patients with bilateral knee osteoarthritis.

Conclusion: Bilateral simultaneous unicompartmental knee replacement is a safe and effective procedure with a low risk of complications. It is associated with a lower infection rate and a higher risk of re-operation compared to unilateral knee replacement and bilateral total knee arthroplasty. However, further studies are needed to confirm these findings and to determine the long-term outcomes of bilateral simultaneous knee replacement.

THE MEANING OF THE PATELLOFEMORAL JOINT.

Jr Choy, J Aam, AA Imperial College London

We have used CT to describe the anatomy of the patellofemoral joint and its relationship to the femoral condyle.

The deepest points on the trochlear groove can be fitted to a circle with a radius of 22mm (±4mm) and an orifice of 3.5mm. This circle is offset by 1mm (±0.5mm) and 15° from the line connecting the centres of the spines of the patella.

On either side of this line, the articulating surface of the trochlea can be fitted to spheres of radius 10mm (±0.5mm) laterally and 27mm (±2mm) medially. The centres of the trochlea and the two spheres fall on a line at an offset of 1mm. The anterior and posterior aspects of the patella can be described as a cylindrical surface (±0.4mm) and as a rectangular plate (±0.8mm) described as a straight line (±0.2mm). The angles between the trochlear groove (±12°) and the anterior and posterior aspects of the patella were measured at 81° and 119°. The length, width and thickness of the patella were measured at 27mm, 45mm and 15mm respectively.
A knee model was constructed using a constrained hip articulation and a non-mating hinged knee prosthetic. Correct registration point vectors were marked by a single observer on 7 occasions to determine intra-observer error. Alterations in the registration points by 5mm and 10mm were then performed with respect to the centre of the knee, AP axis, and the centre of the ankle. The effect of a single point error and additive effects of multiple registration errors were assessed.

Results
There was no significant intra-observer error in modal registration (p = 0.053). The results are summarized in the table below:

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Conclusion: The results suggest small errors in registration (single or combined) do not have a significant effect with respect to alignment in computer assisted TKA and the computer safeguard against greater errors.

**INFLUENCE OF PATELLAR HEIGHT ON OUTCOME AFTER MEDIAL OPENING WEDGE HIGH TibIAL OSTEOTOMY**

Jatavkaj PK, Chayvad VN, Cannon SN, Briggs TWR, Carrington RWJ, Skinner JAM
Joint Reconstruction Unit, Royal National Orthopaedic Hospital, Stanmore, United Kingdom

**AIM:** To assess whether clinical and functional outcomes after opening wedge high tibial osteotomy (HTO) are affected by changes in patellar height.

**INTRODUCTION:** Individual postoperative asymmetry of the medial -tibial -femoral joint can be treated with opening wedge HTO. There is reported error in patellar height from a single observer on 7 occasions to determine intra-observer error. Alterations in the registration points by 5mm and 10mm were then performed with respect to the centre of the knee, AP axis, and the centre of the ankle. The effect of a single point error and additive effects of multiple registration errors were assessed.

**Results**

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**Conclusion:** The results suggest small errors in registration (single or combined) do not have a significant effect with respect to alignment in computer assisted TKA and the computer safeguard against greater errors.

**THE USE OF COMPUTERISED STRAIN GAUGE PLATELET PHYSIOGRAPHY TO MONITOR DEEP VENOUS THROMBOSIS FOLLOWING TOTAL KNEE REPLACEMENT**

S.K. Pal, A.G. MacEachern
South Devon Healthcare NHS Trust, Torquay

**Aim of Study:** To assess the efficacy of Computerised Strain Gauge Platelet Physiography (CSGP) to monitor and detect the presence of proximal lower limb DVT.

**Methods:** A retrospective analysis of 82, obese, total knee replacements performed at Royal Liverpool and Broadgreen University Hospitals NHS Trust, Liverpool, UK was performed.

**Results**

- Obesity (Body Mass Index (BMI) >30) is seen in a growing percentage of patients seeking joint replacement surgery. Recent studies have shown no clear influence of obesity on the five-year, clinical outcome of total knee replacement; except for the morbidly obese.

**Conclusions:** CSGP offers a low pressure thigh cuff to first exclude venous outflow. When the calf is released the device is used to measure changes in calf diameters (by means of strain gauges tied around a standardised point of the calf) and used to detect the presence of proximal lower limb DVT. CSGP uses a low pressure thigh cuff to first exclude venous outflow. When the calf is released the device is used to measure changes in calf diameters (by means of strain gauges tied around a standardised point of the calf) and used to detect the presence of proximal lower limb DVT.
Background: Ten years ago Bollen reported that, in the UK, the diagnosis of ACL rupture and the treating physician in only 1% of cases and that the mean delay from injury to diagnosis was 21 months.

Aim: To assess if accuracy and delay of diagnosis of ACL rupture, and delay from date of presentation to diagnosis and date of surgery.

Methods: The records of 100 patients who had undergone ACL reconstruction by the senior author at a single NHS hospital, were reviewed to assess delay from injury, date of presentation, initial physician's diagnosis, delay from initial presentation to correct diagnosis and date of surgery.

Results: When an diagnosis was made by the primary treating physician, it was correct in 45% of cases. 19 patients had knee infections and 53 had MRI scans. Mean delay from injury to presentation was 3.2 months and from presentation to diagnosis was 4.3 months (influenced by NMR MRI wasting time). Mean time from diagnosis to surgery was 11 months. Patients referred elective by their GPs had longer delays to correct diagnosis and to surgery. Patients attending A&E and referred to a referral clinic were more accurate and had shorter waits for diagnosis and surgery.

Conclusion: Correct diagnosis delays and from injury to diagnosis have improved (substantially with Bollen 1996). Patient awareness needs to be improved. To evaluate early diagnosis to decrease the delay to presentation, Ankle Knee Injury clinics improve speed and accuracy of diagnosis. Decreasing NMRs waits for MRI scans and surgery should further decrease delays from diagnosis to surgery in future.

BILATERAL SIMULTANEOUS TWO SURGEON KNEE ARTHROPLASTY FOR UNICOMPARTMENTAL KNEE OSTEOARTHRITIS

M Kallinikos*, A McGeer, T J Spalding

University Hospital, Coventry, and Warwickshire NHS Trust, Coventry, UK

Aim: To assess the outcome of biological resurfacing combined with osteotomy for knee osteoarthritis (OA) in young individuals.

Methods: Between January 2000 and March 2006, 25 active patients with unicompartmental OA were treated with a combination of cartilage resurfacing and soft tissue or femoral osteotomy. The cartilage resurfacing procedure was microfracture on both surfaces in 20 patients. Medial Patellar Chondrolysis lateralisation, Autologous Chondrocyte Implantation in 1 and Meniscal transplantation in 1. For realignment, an open wide High Tibial Osteotomy was performed in 23 patients and Distal Femoral Osteotomy in 2 patients, using either the Pudde plate (Arthrex) or the Tomo-Fix plate (Synthes). There were 23 male and 2 female patients with a mean age of 45 years (range 21 to 60). The median follow-up period was 22.5 months (range 12 to 76 months). The patients were assessed radiographically and clinically using the knee society clinical score (KSCS) and the Knee activity scale.

Results: The outcome was satisfactory in 20 patients who had improvement in pain and function. The median Knee activity level was 5.5 and the median KSCS was 164. Poor results in 5 patients were due to delayed unions in 1, nonunion in 2 and persistent severe pain in 2 who subsequently underwent unicompartmental or total knee replacement.

Conclusion: Prediction of the success of biological resurfacing and osteotomy is difficult. This is an important consideration given the current trend towards unicompartmental knee replacement and highlights the possible need for investigation with appropriate imaging (MRI) and arthroscopy prior to this specific surgery.
BASK/DEPUY FELLOWSHIP ANNOUNCEMENT

The British Association for Surgery of the Knee is pleased to announce a Research Fellowship in knee surgery, generously sponsored by DePuy to the sum of £45,000 for one year. The Executive believe that the research should be undertaken in the UK and that the fellow should not undertake any routine clinical work. DePuy have made it clear that their support is totally without commercial restraints. A protocol for application is available. The applications will be judged by the President, Secretary and Education Secretary of BASK. A short list of applicants may be asked to attend for an interview. Applications should be submitted to the Honorary Secretary at the above address by 31st August 2007.

BASK/DEPUY RESEARCH FELLOWSHIP

1. APPLICANTS
These may be:
   a. A person in training with a project which will be supervised by a full Member of BASK and will be based in his/her Department. Firm evidence must be presented that the applicant has the backing and use of facilities of that Department.
   b. A full member or members of BASK with a project that will be undertaken within or from the Member’s Department, either by himself or by a named individual who can be recruited after the grant is awarded. Priority will usually be given to applications in which the research worker is an orthopaedic trainee, although applications in which the work will be undertaken by others such as a scientist, therapist or statistician will be considered.

2. APPLICATIONS
The application must consist of:
   a. A copy of the applicant’s CV. Where the potential research worker is known, a copy of their CV should be enclosed.
   b. An outline of the proposed research set out as follows:
      i). Summary in lay terms (maximum 250 words).
      ii). Aims of study.
      iii). Background to study.
      v). Financial details including salary, NI, additional costs.
      vi). A brief statement as to the exact location or base for the work.
      vii). If the application comes from 1(a) (see above) it should be accompanied by a brief report from the Supervisor.
   c. Referees must be named. For option 1(a) they must take the form of conventional professional trainee references. For option 1(b) there should be a brief letter from two relevant BASK Members who have had the opportunity to scrutinise the application prior to submission.

3. Where the award is made to a BASK member, who subsequently recruits a research worker, no money will be paid until the selection committee is satisfied that the individual recruited is suitable for the task in hand. This may involve an interview.

Deadline for Entries: 31 August 2007
BASK/SMITH & NEPHEW TRAVELLING FELLOWSHIP

The British Association for Surgery of the Knee is pleased to announce a Travelling Fellowship in conjunction with Smith & Nephew to the value of £5000.

Applications are invited from Specialist Registrars years 5 and 6 or Consultants in the first 5 years of appointment. Applications should include a CV, proposed itinerary and reasons for applying.

The successful candidate will be required to submit a brief report to the BASK Executive after completion of his Fellowship and may also be required to present an account of some or all of his Fellowship either to a BASK meeting or The Knee Journal.

Applications should be submitted to:
The Honorary Secretary
at the above address by 31st August 2007
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Yours sincerely,

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