BRITISH ASSOCIATION FOR SURGERY OF THE KNEE

2006 Meeting - 23rd & 24th March

Baylis House, Slough, Berkshire

Smith & Nephew Endoscopy is pleased to support the 2006 BASK Spring Meeting
Sometimes less is more

The GLIDER Articular Cartilage Probe is an early intervention tool for treatment of chondromalacia. With its pivoting head and low surface area electrode, the GLIDER Probe enables surgeons to debride and smooth diseased tissue with minimal cell death.

Through controlled application of RF energy, the GLIDER Probe restores a smooth, gliding cartilage surface while preserving the maximum amount of healthy tissue.
Would like to thank Smith & Nephew for their generous contribution regarding the publication of both programmes for this meeting and the Annual Dinner.

Plus Orthopedics for generously sponsoring the coach transfers for both the meeting and the annual dinner.

Stryker for sponsoring and supplying the delegate bags

Thank you to the following companies for their continued support and contributions in accepting the invitation to exhibit.
Welcome to the BASK Annual Meeting.

We have had over 200 abstracts submitted. We have been able to accept 54 Podium presentations and 35 posters. There is an instructional session on soft tissue allografts and a debate on bilateral Knee replacement, simultaneous or staged? Professor George Bentley is giving a lecture on contemporary management of osteochondral defects of the knee and Graham Deane on the early history of TKR. Geoffrey Glazer, Chairman of the Federation of Independent Practitioner Organisations (FIPO) will be coming to the AGM to discuss current issues in private practice.

Twenty seven companies will be exhibiting.

I do hope that you all have an enjoyable meeting.

Kind regards

Robin Allum FRCS
President of BASK
BASK – ANNUAL GENERAL MEETING
BAYLIS HOUSE, SLOUGH, 23rd March 2006 - 4.30 pm

AGENDA

1. Apologies
2. Minutes of BASK AGM 18th March 2005
3. Matters arising
4. Editor of The Knee Journal report
5. Knee Tutor’s report
6. Private Practice Committee report with guest Geoffrey Glazer, Chairman of FIPO
7. Secretary’s Report
8. Treasurer’s report
9. President’s Report
10. Election of Officers
11. Applications for Membership
12. Fellowships:
   1. DePuy
   2. Endo
   3. Smith and Nephew
13. Forthcoming Meetings:
   1. ESSKA Innsbruck, May 2006
   2. BASK Spring Meeting Belfast, March 2007
   3. ISAKOS Florence, May, 2007
   4. BASK Spring Meeting, Bournemouth 2008
14. National Joint Registry
15. Website
16. Any Other Business
17. Date of next meeting
### FULL MEMBERSHIP (16)

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<td>Great Western Hospital</td>
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BASK SPRING MEETING
BAYLIS HOUSE, SLOUGH, BERKSHIRE

Thursday 23rd March 2006

09.30 am  REGISTRATION & COFFEE
09.50 am  INTRODUCTION – Robin Allum, President

Moderators
Session I
Phil Hirst & Richard Parkinson

10.00
Free Papers – Patient issues in TKR

MAGNETIC RESONANCE DETERMINATION OF ANTHROPOMETRIC KNEE LANDMARKS FOR USE IN REVISION KNEE SURGERY
L A Crawford, R Mehan, D Q Donaldson, G J Shepard
Royal Bolton Hospital, England

10.06
RELATIONSHIP OF BODY MASS INDEX TO EARLY COMPLICATIONS IN KNEE REPLACEMENT SURGERY.
M Albrizio, A D Patel
Hinchinbrooke Hospital, Cambridgeshire, Huntingdon, UK

10.12
CHANGES IN BODY WEIGHT FOLLOWING LOWER LIMB ARTHROPLASTY.
E Mughal, *P Desai, *F Ashraf, Y Khan, D Dunlop, R Treacy, A Thomas
Royal Orthopaedic Hospital, Birmingham / *University of Birmingham
The Woodlands, Bristol Road South, Northfield, Birmingham

10.18
PROSPECTIVE RANDOMISED CONTROLLED TRIAL ON THE ROLE OF PATIENT INFORMATION LEAFLETS IN OBTAINING INFORMED CONSENT
V Khanduja, S Ashraff, G Malawa, T Dolan.
Department of Trauma and Orthopaedics, Newham University Hospital

10.24
Discussion

Session II
Phil Hirst & Richard Parkinson

10.35
Free Papers – Primary TKR decisions

A COMPARATIVE STUDY OF THE MIDVASTUS AND MEDIAL PARAPATELLAR APPROACHES FOR TOTAL KNEE ARTHROPLASTY IN THE EARLY POSTOPERATIVE PERIOD
M Maru, V Kumar, G Akra, A Port
The James Cook University Hospital, Middlesbrough

10.41
SHOULD WE RECONSIDER ALL-POLYETHYLENE TIBIAL IMPLANTS IN TOTAL KNEE ARTHROPLASTY?
SD Muller, DJ Deehan, JP Holland, LM Kirk, S Outsides, PJ Gregg, AW McCaskie.
Department of Orthopaedics, Freeman Hospital, Newcastle upon Tyne

10.47
LONG TERM FOLLOW-UP COMPARISON OF NEW JERSEY LCS MENISCAL-BEARING AND ROTATING-PLATFORM TOTAL KNEE REPLACEMENT
I R Gill, P D Hamilton, S J Pearce, G Marsh
Orthopaedic department, Mayday University Hospital Croydon

10.53
Discussion
Free Papers – Perioperative TKR Techniques

THE BLOOD SAVING EFFECT OF IMMEDIATE KNEE FLEXION FOLLOWING TOTAL KNEE ARTHROPLASTY
J McConway, R K Wilson, D O Molloy, L Ogonda, D E Beverland
Departments of Orthopaedics; Musgrave Park Hospital, Belfast

COMPARISON OF TRANEXAMIC ACID AND TOPICAL FIBRIN SPRAY ON BLOOD LOSS FOLLOWING TOTAL KNEE ARTHROPLASTY – A RANDOMISED CONTROLLED TRIAL
D O Molloy, J McConway, H A P Archbold, L Ogonda, Mr D E Beverland
Orthopaedic Outcomes Department, Musgrave Park Hospital, Belfast

ASSESSMENT OF THE TIBIAL CEMENT MANTLE IN TOTAL KNEE REPLACEMENT – A PROSPECTIVE, CONTROLLED, COMPARATIVE STUDY OF TWO CEMENTING TECHNIQUES
City Hospital, Birmingham

Discussion

11.30
Allograft Symposium: Chairman - Robin Allum

Guest Lecturer: Professor John Kearney
‘Overview of Tissue Banking in the National Blood Service’

Discussion

12.00
Guest Lecturer: Professor David Pegg
‘What Does Cryobiology have to offer Knee Surgeons and their patients?’

Discussion

12.30
Keynote Lecturer: Chairman Robin Allum
Professor George Bentley
‘Contemporary management of osteochondral defects of the knee’

Discussion

1.00 pm
LUNCH

Free Paper Session – ACL Pre-op evaluation

MCMURRAY’S TEST REVISITED: EVALUATION OF VARIOUS METHODS OF PERFORMING MCMURRAY’S TEST
H Nalwad, M Agarwal, B N Muddu, M Smith, Mr. J K Borill
Tameside General Hospital, Ashton-under-Lyne; South Manchester University Hospital, Wythenshawe.

IDIOPATHIC ANTERIOR KNEE PAIN: WHAT IS THE ELECTROPHYSIOLOGICAL EVIDENCE?
S Patil, V Kumar, V Kamath, L White, J Dixon, A Hui
Department of Orthopaedics, James Cook University Hospital, Middlesbrough

BELIEFS AND ATTITUDES OF MEMBERS OF THE BRITISH ASSOCIATION FOR SURGERY OF THE KNEE REGARDING THE TREATMENT OF ANTERIOR CRUCIATE LIGAMENT INJURY.
M Goddard, A J Rees
Rotherham District General Hospital

Discussion
Session V  2.26  Free Paper Session – ACL Injury and Reconstruction

Roger Smith & Derek Bickerstaff

COMPLETE TRANSPHYSEAL ACL RECONSTRUCTION IN SKELETALLY IMMATURE PATIENTS
M M Utukuri, H S Somayaji, G S E Dowd, D M Hunt
St Mary’s Hospital, London; Royal Free Hospital, London; The Wellington Hospital, London

2.32  ANTERIOR CRUCIATE LIGAMENT INJURY – A QUIET EPIDEMIC REVISITED
V T Veysi, S R Bollen
Bradford Royal Infirmary

2.38  DAY SURGERY ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: A PROSPECTIVE STUDY.
S A Jain, J Rollo, A L Pimpalnerkar
Royal Centre for Defence Medicine & Good Hope Hospital NHS Trust, Birmingham

2.44  PATIENT SATISFACTION FOLLOWING DAY CASE ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION.
H Deo, R Sharma, M Wilkinson
King’s College Hospital, London

2.50  THE CONTROL OF THE KNEE KINEMATICS ACHIEVED BY SINGLE VERSES DOUBLE-BUNDLE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: INTRA-OPERATIVE MEASUREMENT USING SURGICAL NAVIGATION.
J R Robinson, L Carat, C Granchi, P Colombet
Centre de Chirurgie Orthopédique et Sportive, Bordeaux-Méringac, France

Session VI  3.10  Free Paper Session – PCL and PLC Reconstruction

Roger Smith & Derek Bickerstaff

A STUDY OF FUNCTIONAL DISABILITY, LOWER LIMB ELECTROMYOGRAPHY AND GAIT IN RECREATIONAL SPORTSMEN WITH POSTERIOR CRUCIATE AND POSTEROLATERAL LIGAMENT DEFICIENCY OF THE KNEE
F Muir, S H Palmer, D Hollinghurst, T Theologis
Nuffield Orthopaedic Centre, Oxford and Worthing and Southlands Hospitals, West Sussex

3.16  COMBINED RECONSTRUCTION OF CHRONIC POSTERIOR CRUCIATE LIGAMENT AND POSTEROLATERAL CORNER DEFICIENCY: A 2-9 YEAR FOLLOW UP STUDY
V Khanduja, H S Somayaji, M Utukuri, G Dowd.
Royal Free Hospital, London

3.24  KINEMATICS OF POSTERIOR CRUCIATE LIGAMENT (PCL) AND POSTEROLATERAL CORNER (PLC) DEFICIENT HUMAN CADAVER KNEE RECONSTRUCTED WITH TWO DIFFERENT TECHNIQUES OF POSTEROLATERAL CORNER RECONSTRUCTIONS.
T Nguyen, S Apsingi, AMJ Bull, A Unwin, DJ Deehan, AA Amis.
Imperial College London

3.30  KINEMATICS OF POSTERIOR CRUCIATE LIGAMENT (PCL) AND POSTEROLATERAL CORNER (PLC) DEFICIENT HUMAN CADAVER KNEE RECONSTRUCTED WITH SINGLE OR DOUBLE BUNDLE POSTERIOR CRUCIATE LIGAMENT
S Apsingi, T Nguyen, AMJ Bull, DJ Deehan, A Unwin, AA Amis.
Imperial College, London.

3.36  Discussion
3.45 pm   Tea

4.10 pm  Graham Deane – Consultant Orthopaedic Surgeon, Somerton, Somerset
‘TOTAL KNEE REPLACEMENT – Why are we where we are now?’

4.30 pm   AGM
Attending by invitation: Mr Geoffrey Glazer, Chairman of FIPO
‘Private Practice: Facing the Abyss?’

7.45 pm for  8.15 pm   Annual Association Dinner - Stoke Park Club, Buckinghamshire
BASK SPRING MEETING
BAYLIS HOUSE, SLOUGH, BERKSHIRE

Friday 24th March 2006

08.30 am Coffee

Moderators
Session VII
John Newman & Colin Esler
09.00 am Free Paper Session – Patello-femoral ligament reconstruction
MEDIAL PATELLO-FEMORAL LIGAMENT RECONSTRUCTION. THE DERBY EXPERIENCE.
M A Yaqoob, D Bajju, R Chauhan, G Geutjens.
Derbyshire Royal Infirmary.
09.06 THE OUTCOME OF ARTHROSCOPIC REPAIR OF TRAUMATIC PATELLO FEMORAL INSTABILITY (TPFI)
S Shakkor, A Aldairy, K Adra
Sports injury department, Hamish hospital, Damascus, Syria
09.12 MEDIAL PATELLO-FEMORAL LIGAMENT RECONSTRUCTION WITH SEMITENDINOSUS RE-ROUTING FOR THE TREATMENT OF TRAUMATIC PATELLA DISLOCATION
V. Kumar, A Panagopoulos, J K Triantafyllopoulos, L van Niekerk
Centre for Sports Injury Surgery, Friarge & Duchess of Kent Military Hospitals, Northallerton, North Yorkshire
09.18 Discussion

Session VIII
John Newman & Colin Esler
09.27 Free Paper Session – Fractures around the knee
MANAGEMENT OF PERIPROSTHETIC SUPRACONDYLAR FEMORAL FRACTURES WITH NEW TECHNIQUE
V Ramasamy, S C Haider
Calderdale Royal Hospital, Halifax, Southwest Yorkshire, UK
09.33 A BIOMECHANICAL STUDY COMPARING 6.5MM CANCELLOUS SCREWS AND 3.5MM CORTICAL SCREWS FOR DEPRESSED TIBIAL PLATEAU FRACTURES
S Patil, A Mahon, I. McMurtry, S. Green, A. Port
James Cook University Hospital, Middlesbrough
09.39 BIOMECHANICAL ASSESSMENT OF FORCES ACTING ACROSS THE PATELLA TO DETERMINE THE OPTIMAL TREATMENT OF PATELLA FRACTURES
WS Khan, R Jones, L Nokes, DS Johnson
Gait Analysis Laboratory, Centre for Rehabilitation and Human Performance Research, Salford University, Manchester
09.45 Discussion

Session IX
John Newman & Colin Esler
09.54 Free Paper Session – Cartilage repair
THE SEQUENTIAL IMPROVEMENT IN CLINICAL OUTCOME FOLLOWING AUTOLOGOUS CHONDROCYTE IMPLANTATION – A 7 YEAR FOLLOW UP
BA Rogers, Mr Carrington, Mr Skinner, Prof Bentley & TWR Briggs
The Royal National Orthopaedic Hospital, Stanmore, UK.
10.00 DURABILITY OF CARTILAGE REPAIR- DOES HISTOLOGY MATTER?
SP Krishnan, JA Skinner, J Jagiello, RWJ Carrington, AM Flanagan, TWR Briggs, G. Bentley.
Royal National Orthopaedic Hospital Stanmore.
TWO STAGE AUTOLOGOUS CHONDROCYTE IMPLANTATION FOR LARGE FULL
THICKNESS CARTILAGE DEFECTS IN HIGH DEMAND PATIENTS: RESULTS
AFTER 2 YEARS FOLLOW-UP
V Kumar, A Panagoupolous, J K Triantafyllopoulos, L van Niekerk
Centre for Sports Injury Surgery, Friarage and Duchess of Kent Military Hospitals, North
Yorkshire

THE ROLE OF FIBROBLAST GROWTH FACTOR-2 IN THE PROLIFERATION AND
CHONDROGENIC POTENTIAL OF INFRAPATELLAR FAT PAD DERIVED STEM
CELLS
WS Khan, DS Johnson, JG Andrew, TE Hardingham
United Kingdom Centre for Tissue Engineering, University of Manchester

Discussion

Coffee

Session X
Simon Donell & Robin Allum

Free Paper Session - UKA
SURVIVORSHIP OF 203 FIXED BEARING UNICOMPARTMENTAL KNEE
REPLACEMENTS DURING THE SECOND DECADE
R G Steele, J H Newman, S Hutabarat, R Evans, C E Ackroyd
Avon Orthopaedic Centre, Southmead Hospital, Bristol, U.K.

A PROSPECTIVE RANDOMISED TRIAL COMPARING MINIMAL INVASIVE AND
STANDARD PARAPATELLAR APPROACHES FOR UNICOMPARTMENTAL
ARTHROPLASTY
MP Jackson, H Cottam, A Butler-Manuel, H Apthorp
The Conquest Hospital, Hastings, East Sussex Hospitals NHS Trust

LATERAL UNICOMPARTMENTAL KNEE REPLACEMENT: FIXED OR MOBILE
BEARING?
MC Forster, A Bauze & G Keene
Sportsmed SA, Adelaide, Australia.

Discussion

Session XI
Simon Donell & Robin Allum

Free Paper Session – PFJ Replacement
FIVE TO EIGHT YEAR RESULTS OF THE AVON PATELLOFEMORAL
ARTHROPLASTY
C E Ackroyd, J H Newman, R Evans, C C Joslin
Avon Orthopaedic Centre, Southmead Hospital, Bristol

EARLY RESULTS IN 110 CASES OF PATELLO-FEMORAL REPLACEMENT IN
PATIENTS UNDER 55 YEARS OF AGE
T D Clare, J H Newman,
Avon Orthopaedic Centre, Bristol

Discussion

Session XII
Simon Donell & Robin Allum

Free Paper Session – Trochlear pathology
CLINICAL PRESENTATIONS OF TROCHLEAR DYSPLASIA
M M Kulkarni, J D Eldridge, J H Newman
Avon Orthopaedic Center, Bristol

FEMORAL TROCHLEOPLASTY FOR PATELLAR INSTABILITY;
A NEW OPERATIVE TECHNIQUE
S H Zaki, I Rafiq, P J Rae
Wrightington Hospital for Joint Diseases, Lancashire.

Discussion
Session XI 11.03
Simon Donell & Robin Allum

Free Paper Session – Patellar problems at TKR

PATELLO-FEMORAL TRACKING IN FIXED AND MOBILE KNEE DESIGNS.
P. J James1, P.A. May2, W. Gerard Tarpey1, M. Blyth1 and I G Stother1
Nottingham City Hospital1 and Glasgow Royal Infirmary2

12.09 PSEUDO-PATELLA BAJA FOLLOWING SOFT TISSUE BALANCING IN TOTAL KNEE ARTHROPLASTY
Stoke Mandeville Hospital, Solihull Hospital, RNOH Stanmore, Northwick Park Hospital Kings Mill Hospital.

Discussion

12.21 SIMULTANEOUS VERSUS STAGED KNEE ARTHROPLASTY: A COMPARISON OF OUTCOMES IN 116 PATIENTS
Orthopaedic Dept., Conquest Hospital, Hastings

Discussion

12.30 DEBATE: Chairman - Nick Fiddian
'Bilateral TKR: Simultaneous or Staged?'
For Simultaneous - Mr Paul Allen vs For Staged - Mr Jonathan Noble

1.15 LUNCH

2.10 Prize awarded for the Best Poster Presentation

Session IV 2.15
Tim Wilton & Andy Williams

Free Paper Session – TKR Peri-operative complications

EFFECTIVENESS OF NAVIGATION-BASED TOTAL KNEE REPLACEMENT IN ENHANCING THE MECHANICAL PERFORMANCE OF KNEE SYSTEM COMPONENTS.
MC Norris, D Beaver, W. Schmidt, M Kester, SK Chauhan
Stryker Orthopaedics, Mahwah, NJ, USA; Royal Perth Hospital, Australia; Brighton and Sussex University Hospitals

2.21 THE EFFECT OF A THROMBOPROPHYLAXIS PROTOCOL ON THE INCIDENCE OF VENOUS THROMBOEMBOLISM AFTER TOTAL KNEE REPLACEMENT
RAE Clayton, C R Howie, P Gaston, A C Watts
Royal Infirmary of Edinburgh, Little France Crescent, Edinburgh

Discussion

Session XV 2.33
Tim Wilton & Andy Williams

Free paper Session – Revision TKR Technique

IS LONGSTEM IMPLANT IMPERATIVE IN REVISION KNEE REPLACEMENT.
S. Hakkalamani, V. Prasanna, A Acharya, R Finley, RW Parkinson.
Arrowe Park Hospital, Upton, UK.

2.36 THE USE OF CT IN PRE-OPERATIVE ASSESSMENT OF FAILED TOTAL KNEE REPLACEMENT PRIOR TO REVISION SURGERY
M. Norris, M Ather, S Chauhan
Brighton and Sussex University Hospitals

2.42 Discussion
Session XVI
2.47
Tim Wilton &
Andy Williams
Free Paper Session – Infected TKR
THE ECONOMIC CONSEQUENCES OF INFECTED KNEE ARTHROPLASTY.
E Robinson, PF Partington
Wansbeck General Hospital, Ashington
2.53
MEASUREMENT OF IN VIVO INTRA-ARTICULAR GENTAMICIN LEVELS FROM ANTIBIOTIC LOADED ARTICULATING SPACERS
J Mutimer, G Gillespie, A Lovering, A Porteous
Avon Orthopaedic Centre, Southmead, North Bristol NHS Trust
2.59
SURGICAL SITE INFECTION (SSI) FOLLOWING TOTAL KNEE REPLACEMENT (TKR): A PROSPECTIVE STUDY
M Venkatesan, SN Sambandam, R Burman, S Maxfield, RC McGivney, B Ilango
Fairfield General Hospital, Bury
3.05
Discussion
Session XVII
3.10
Tim Wilton &
Andy Williams
Free Paper Session – Clinical Outcomes
A COMPARISON OF RANGE OF MOTION AND OUTCOME IN FIXED AND MOBILE KNEE DESIGNS.
P J James¹, P A May¹, W Gerard Tarpey¹, M Blyth¹ and I G Stother²
Nottingham City Hospital and Glasgow Royal Infirmary²
3.16
PREOPERATIVE KNEE FUNCTION PREDICTS THE SEQUENTIAL IMPROVEMENT IN CLINICAL & FUNCTIONAL OUTCOMES FOLLOWING TOTAL KNEE ARTHROPLASTY
BA Rogers, L Unitt, SR Cannon, TWR Briggs
Royal Surrey County Hospital, Guildford; Royal National Orthopaedic Hospital, Stanmore
3.22
RANDOMIZED CONTROLLED TRIAL COMPARING FUNCTIONAL OUTCOME FOR FIXED AND MOBILE BEARING IN TOTAL KNEE ARTHROPLASTY
B C Hanusch, S Patil, A Hui, P Gregg
James Cook University Hospital, South Tees NHS Trust, Middlesbrough
3.28
THE ROLE OF PAIN AND PSYCHOSOCIAL FACTORS ON FUNCTIONAL RANGE OF KNEE MOTION IN PATIENTS WITH OSTEOARTHRITIS AWAITING TOTAL KNEE ARTHROPLASTY
ML van der Linden¹, PJ Rowe¹, PA Roche¹, P Gaston¹, RW Nutton¹
¹School of Health Sciences, Queen Margaret University College, Edinburgh
Bioengineering Unit, University of Strathclyde, Glasgow
¹Orthopaedic department, New Royal Infirmary Edinburgh
3.34
FUNCTIONAL OUTCOME OF KNEE ARTHROPLASTY SURGERY IN OSTEOARTHRITIC PATIENTS 55 YEARS OLD OR YOUNGER: RESULTS FROM A REGIONAL JOINT
M R Acharya, C N A Esler, W M Harper
University Hospitals Leicester NHS Trust
3.40
Discussion
4.00 pm
Close of Meeting
MAGNETIC RESONANCE DETERMINATION OF ANTHROPOMETRIC KNEE LANDMARKS FOR USE IN REVISION KNEE SURGERY

L A Crawford, R Mehan, D Q Donaldson, G J Shepard
Royal Bolton Hospital, England

Aims: To determine the anthropometric measurements of bony landmarks in the knee using MR scans and so assist revision knee surgeons in prosthesis placement.

Methods: We analysed 100 MR scans of patients aged 16-50 (50 male, 50 female) which were performed for meniscal pathology, patellar dislocation and ACL injury. Those over the age of 50 or with symptoms suggestive of general osteoarthritis, or where the epiphyses had not yet fused were excluded. All measurements recorded were to the level of joint line and are shown below.

Results:

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<tr>
<td>Medial epicondyle</td>
<td>Joint Line</td>
<td>Males</td>
<td>28</td>
<td>21-38</td>
<td>3.4</td>
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<tr>
<td></td>
<td></td>
<td>Females</td>
<td>24</td>
<td>17-33</td>
<td>2.5</td>
<td></td>
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<tr>
<td>Lateral epicondyle</td>
<td>Joint Line</td>
<td>Males</td>
<td>22</td>
<td>14-35</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Females</td>
<td>20</td>
<td>13-30</td>
<td>3.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Percentage of patients whose measurements are within 5mm of the recorded mean values for each measurement

<table>
<thead>
<tr>
<th>From</th>
<th>MALE</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tibial tubercle</td>
<td>87%</td>
<td>89%</td>
</tr>
<tr>
<td>Fibular head</td>
<td>88%</td>
<td>84%</td>
</tr>
<tr>
<td>Medial epicondyle</td>
<td>88%</td>
<td>96%</td>
</tr>
<tr>
<td>Lateral epicondyle</td>
<td>84%</td>
<td>94%</td>
</tr>
</tbody>
</table>

Conclusions: To ensure near normal knee mechanics are achieved during revision knee surgery the joint line should be within 5mm of the original. Our study provides mean values for the distance from various bony landmarks to the joint line in non-arthritic knees on MR scan. The use of the medial epicondyle value as a sole reference will place the joint line within 5mm in 88% of males and 96% of females. Use of multiple landmarks further increases accuracy. The final position of the joint will depend on trialling prostheses.

RELATIONSHIP OF BODY MASS INDEX TO EARLY COMPLICATIONS IN KNEE REPLACEMENT SURGERY.

M Albrizio, A D Patel
Hitchinbrooke Hospital, Cambridgeshire, Huntingdon, UK

Background: The purpose of this study was to evaluate the relationship between body mass index and early complications following total knee joint replacement surgery.

Methods: 527 patients who underwent a primary knee replacement were included in this study. All these patients were subjected to a pre-operative assessment and then followed up at six weeks and one year following surgery. Any complication that occurred during this period was recorded. Complications were grouped into systemic and local, each group being subdivided into minor and major. Collected data were analysed by the SPSS version 12. Chi-square tests, t-test analysis, univariate logistic regression studies and multivariate analysis were performed.

Results: 64 patients (12,1%) were found to have an early complication following knee replacement surgery. 36 patients (6.8%) were found to have a major local complication. Overall BMI did not seem to influence the rate of complication. After stratification of patients per BMI, there appeared to be a weak correlation between BMI and early complications but this was not statistically significant. A stronger correlation was found between the surgeon and presence of complication.

Conclusions: BMI has a weak correlation to early complications following joint replacement surgery. The operating surgeon seems to have a stronger correlation to early complications as compared to BMI.

CHANGES IN BODY WEIGHT FOLLOWING LOWER LIMB ARTHROPLASTY.

E Mughal, *P Desai, F Ashraf, Y Khan, D Dunlop, R Treacy, A Thomas
Royal Orthopaedic Hospital, Birmingham / *University of Birmingham
The Woodlands, Bristol Road South, Northfield, Birmingham

Weight gain is often reported by patients who succumb to impaired activity as a result of progressive osteoarthritis of the hip or knee. Optimistic views of weight loss after joint replacement are often held by patients. We studied the affect of lower limb arthroplasty on body weight.

We reviewed 144 patients having undergone hip and knee arthroplasty and were functionally well. Infected cases were excluded. Average age was 65 years and average follow up was 27 months. The Body Mass Index (BMI) was prospectively measured at follow up and compared to immediate post-operative BMI. Our findings demonstrated an average rise in BMI post-operatively which was statistically significant. A rise in post operative BMI was seen in patients who were obese to start with or those who had undergone a total hip replacement (statistically significant). Moderate rises were seen in patients who had undergone hip resurfacing procedures or those who were overweight pre-operatively (p=0.06).

These findings are useful in informing patients of achievable expectations following joint replacement surgery and preoperative overweightness should be treated as a separate entity unrelated to co-existing joint degeneration.
Objective: To determine whether patient information leaflets improve patient recall during the process of informed consent.

Design: Prospective randomised controlled trial which compared a group of patients who were posted a patient information leaflet with those given verbal consent only.

Setting: Orthopaedic Unit of a District General Hospital

Patients: 110 patients were selected, of which 57 were randomly allocated to receive patient information leaflets through the post and 53 were given verbal consent only.

Outcome Measure: The recall of information given to the patient. This was tested using a questionnaire on admission. Each patient was allocated a score out of ten.

Results: There was a significant difference between the group who received patient information leaflets compared to those who did not (P<0.0001, CI 2.0 to 3.1).

Conclusion: Patient information leaflets are a useful tool for the surgeon to improve the recall of the information given to the patient, in order to facilitate informed consent.
A COMPARATIVE STUDY OF THE MIDVASTUS AND MEDIAL PARAPATELLAR APPROACHES FOR TOTAL KNEE ARTHROPLASTY IN THE EARLY POSTOPERATIVE PERIOD

M Maru, V Kumar, G Akra, A Port
The James Cook University Hospital, Middlesbrough

Introduction: The commonest surgical approach for total knee arthroplasty is medial parapatellar approach. This involves splitting the quadriceps tendon, potentially destabilising the extensor mechanism. The midvastus approach involves splitting the vastus medialis muscle instead of entering the quadriceps tendon, therefore, minimising interruption of the extensor mechanism without compromising the exposure of the knee.

Objective: To compare clinical parameters associated with medial parapatellar and midvastus approaches for total knee arthroplasty in the early postoperative period.

Methods and results: We present a prospective observational study of 88 patients undergoing primary total knee arthroplasty using medial parapatellar or midvastus approach (44 in each group). The prosthesis design and physical intervention was standardised in all the patients. The Oxford Knee Score, pain scale, knee flexion, unassisted straight leg raise, standing and walking were compared at 3rd, 5th and 7th day postoperatively, then at 6 weeks and at 3 months. The patients and physiotherapist were blinded to the type of approach used. The average age was 67 years (range 42 to 88). There were 49 women and 39 men. The average hospital stay was 7 days (range 2 to 15). There was statistically significant difference in duration of hospital stay, unassisted straight leg raise and standing at 3 days (p<0.001) and pain scale at 5 days, all in favour of midvastus approach. There was no statistically significant difference in Oxford Knee Scores and duration to achieving full flexion and walking. The average duration to achieving straight leg raise for the midvastus group was 5 days and for the medial parapatellar approach group was 8 days.

Conclusion: The study shows that total knee arthroplasty performed through the midvastus approach resulted in less postoperative pain, earlier unassisted straight leg raise and ambulation, therefore, shorter hospital stay as compared to medial parapatellar approach. This may be of benefit to the patients due to less discomfort after surgery, and to the healthcare system due to shorter hospital stay for patients.

SHOULD WE RECONSIDER ALL-POLYETHYLENE TIBIAL IMPLANTS IN TOTAL KNEE ARTHROPLASTY?

SD Muller, DJ Deehan, JP Holland, LM Kirk, S Outsides, PJ Gregg, AW McCaskie.
Department of Orthopaedics, Freeman Hospital, Newcastle upon Tyne

We report the results of a prospective randomised controlled clinical trial assessing the radiosterophotogrametric analysis (RSA), clinical and radiological performance of a metal backed and an all-polyethylene tibial cruciate retaining, condylar design, PFC-S TKA up to twenty four months. 65 patients were recruited, of which 41 patients were randomised. There were 20 metal backed and 21 all-polyethylene. None were lost to follow-up. There were no significant inter-group demographic differences. We found a significant increase in SF-12 and Oxford knee scores after surgery in both groups. No significant difference was found between the groups in the RSA, SF-12, Oxford Knee score, radiological alignment and range of movement at 6, 12 or 24 months. At 2 years one metal backed implant showed translational migration >1mm. No all polyethylene implant migrated >1mm. Further analysis identified possible progressive subsidence of the metal backed implants compared to all-polyethylene implants, although the magnitude of this difference was very small.

The results of the study showed that there was a significant overall improvement in the NJOHSS (mean improvement = 22.4 points) with 81% of the cohort scoring ‘good to excellent’ postoperatively. When the two designs were compared there was no significant difference in improvement in the NJOHSS. However, both the ‘Post-op’ and ‘Function’ components of the post-operative KSS were greater in the rotating-platform total knee replacement. The comparison of the post-operative KSREF did not show any significant differences between the two types of arthroplasty.

Revision procedures were carried out in 3 patients with meniscal-bearing arthroplasty and 2 patients with rotating-platform arthroplasty. Of the Meniscal-bearing group two were for sepsis and one required liner exchange. Both of rotating-platform group were revised for aseptic loosening.

We therefore conclude that there was excellent long-term survival of the LCS knee arthroplasty in this cohort and there was no significant difference in functional outcomes for either knee replacement. We also note that there have been no revisions for aseptic loosening in the meniscal-bearing group to date.
THE BLOOD SAVING EFFECT OF IMMEDIATE KNEE FLEXION FOLLOWING TOTAL KNEE ARTHROPLASTY

J McConway, R K Wilson, D O Molloy, L Ogonda, D E Beverland
Departments of Orthopaedics, Musgrave Park Hospital, Belfast

Introduction: Blood loss is a major concern following total knee arthroplasty (TKA) frequently resulting in blood transfusions postoperatively. Various strategies exist to reduce blood loss and allogenic transfusion requirements. This study investigates the effect of immediate postoperative flexion on blood loss and transfusion requirements following TKA.

Methods: 180 consented patients undergoing primary TKA by a single surgeon were enrolled into a prospective randomised controlled study. 90 patients were randomised to have the operated knee nursed in extension postoperatively, and 90 patients to have the knee nursed in flexion for six hours postoperatively. Both groups followed a strict transfusion protocol. Data collected included calculated pre- and postoperative haemoglobin and haematocrit which was used to calculate total blood loss. Units transfused and postoperative complication rates were also recorded.

Results: There was no significant difference in demographics or factors predisposing to bleeding between the groups. The mean total blood loss was 1841mls for those in the extension group compared with 1587mls in the flexion group (p=0.02). The mean number of units transfused in the extension group was 0.78 units/patient compared with 0.36 units/patient in the flexion group (p=0.004). There was no significant difference in pain scores between the groups (p= 0.62).

Conclusion: This study shows that the use of immediate postoperative flexion significantly reduces calculated total blood loss and transfusion rates following TKA.

COMPARISON OF TRANEXAMIC ACID AND TOPICAL FIBRIN SPRAY ON BLOOD LOSS FOLLOWING TOTAL KNEE ARTHROPLASTY – A RANDOMISED CONTROLLED TRIAL

D O Molloy, J McConway, H A P Archbold, L Ogonda, Mr D E Beverland
Orthopaedic Outcomes Department, Musgrave Park Hospital, Belfast

Patients and Methods: One hundred and fifty patients with pre-operative haemoglobin levels of 13.0g/dl or less were enrolled into a randomised controlled trial comparing the blood saving effect of intravenous tranexamic acid and topical fibrin spray on blood loss following primary total knee arthroplasty.

Those randomly assigned to the Tranexamic Acid group received 500mg intravenously five minutes prior to tourniquet deflation and a repeat dose three hours later. Those assigned to the Topical Fibrin Spray group received 10mls of the combined product intra-operatively. Those in the control group received no pharmacological intervention.

Results: There was a significant saving in total calculated blood loss for those in the topical fibrin spray group (p=0.016) and the tranexamic acid group (0.041) compared with the control group with losses of 1190mls, 1225mls and 1415mls respectively. The increased reduction in blood loss in the topical fibrin spray group was not significantly different to that in the tranexamic acid group (p=0.72).

ASSESSMENT OF THE TIBIAL CEMENT MANTLE IN TOTAL KNEE REPLACEMENT – A PROSPECTIVE, CONTROLLED, COMPARATIVE STUDY OF TWO CEMENTING TECHNIQUES

City Hospital, Birmingham

Background
Aseptic loosening of the tibial component is the one of the commonest cause of failure following a TKR. Good cement penetration into bone can reduce this and this has led to the development of new devices and techniques to improve the pressurisation during the cementing process.

We have conducted a case controlled study on a novel cementing technique and compared the results with published optimum levels.

Methods
104 patients that underwent TKR at our institution were studied. Half of these were cemented using a double mix of cement inserted under pressure via an inexpensive alternative to the cement gun. The data was collected prospectively and included patient information, knee outcome scores and radiological assessment and there was a minimum 4 years follow-up.

Results
We found a significant difference in the number of early lucent lines as well as the size of the cement mantle particularly in the most important Zones. Despite pressurisation 1 of the 14 zones did not improve and we have examined the reasons for this.

In order to achieve optimum cement penetration we recommend that attention is paid to good pressurization and cement penetration and describe our technique for doing this.
MCMURRAY'S TEST REVISITED: EVALUATION OF VARIOUS METHODS OF PERFORMING MCMURRAY'S TEST

H Nalwad, M Agarwal, B N Mudda, M Smith, Mr. J K Borill
Tameside General Hospital, Ashton-under-Lyne; South Manchester University Hospital, Wythenshawe.

Aim: To evaluate and assess the validity and accuracy of various described ways of performing the McMurray’s test in the diagnosis of meniscal tears.

Material & Methods: Prospective study with patients divided into seven groups based on seven described ways of performing McMurray’s test. Twenty-five patients in each group, aged between 15 to 60 years, undergoing arthroscopy of knee for clinically suspected meniscal tear. Exclusion criteria were ACL tear on arthroscopy, radiological or arthroscopic evidence of osteoarthritis and patients within six weeks of injury. All patients were assessed preoperatively with knee examined in one of seven different methods. EUA followed by arthroscopy. Clinical and arthroscopic findings were correlated and sensitivity and specificity were determined.

The study is ongoing with following results

<table>
<thead>
<tr>
<th>Methods</th>
<th>Accuracy</th>
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<tbody>
<tr>
<td>Apley</td>
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<tr>
<td>Hamilton Bailey</td>
<td>60%</td>
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<tr>
<td>Monks</td>
<td>50%</td>
</tr>
<tr>
<td>McRae</td>
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</tr>
<tr>
<td>Reider</td>
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</tr>
<tr>
<td>Campbell</td>
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</table>

Conclusion: Accuracy of McMurray's test ranged between 0 to 95% in various studies. Factors determining outcome include patient selection difference in applying test and interpretation of results. McMurray's original description included no varus or valgus stress and a click a was positive test. Other descriptions include varus or valgus stress and apart from click pain is also considered a positive test. Comparisons among results in literature are difficult with confusing results. Our study is incomplete but trends suggest Reider's method may be the most accurate.

IDIOPATHIC ANTERIOR KNEE PAIN: WHAT IS THE ELECTROPHYSIOLOGICAL EVIDENCE?

S Patil, V Kumar, V Kamath, L White, J Dixon, A Hui
Department of Orthopaedics, James Cook University Hospital, Middlesbrough

Introduction: Poor proprioception and imbalance between quadriceps and hamstrings have been suggested as causes for anterior knee pain. The aim of our study was to compare the proprioception of patients with anterior knee pain to a normal population and to compare the activity of quadriceps and hamstrings using electromyography (EMG) in the 2 groups.

Methods: Patients and controls between the ages 11-25 yrs were recruited into the study. The proprioception (stability index) of the patients and controls was tested using the Biodex stability system. This computerised system tests the ability of a person to balance his/her own body on a platform that moves in various directions. An EMG tracing from the quadriceps and hamstrings was also recorded simultaneously.

Results: 22 patients and 16 controls were recruited. So far we have found a significant difference in the stability index between the cases and controls (p=0.068), indicating thereby that controls had better proprioception than the patients. We have not found a significant difference in the EMG recordings of the quadriceps and hamstrings in the 2 groups (p=0.41). This study is to be completed by the end of December.

Conclusion: Poor proprioception is associated with anterior knee pain. Whether it is the cause or effect requires further assessment.

BELIEFS AND ATTITUDES OF MEMBERS OF THE BRITISH ASSOCIATION FOR SURGERY OF THE KNEE REGARDING THE TREATMENT OF ANTERIOR CRUCIATE LIGAMENT INJURY.

M Goddard, A J Rees
Rotherham District General Hospital

Purpose: To quantify the amount of agreement among UK orthopaedic surgeons regarding the natural history and treatment including surgery and rehabilitation of the ACL deficient knee.

Methods: Following from Marx et al (Arthroscopy, 2003 Sep;19(7):762-70) a surgeon mail survey was performed to 360 members of the British Association for Surgery of the Knee. Surgeons who had treated ACL deficient patients in the last year were asked to complete the survey. Thirty questions were included to determine the surgeons' opinions regarding the natural history of the ACL deficient knee, indications for surgery and patient selection, surgical treatment and rehabilitation. Clinical agreement was present when 80% or more agreed on the same response option.

Results: 150 surgeons in total responded to the survey; 121 had treated ACL deficient patients in the past year. The mean age was 48.9 years and 83% considered their practice to be a subspecialty in knee surgery. The mean number of ACL reconstructions performed in the past year was 41 (range 1-210). Clinical agreement was present for 12 (40%) of the 30 questions; surgeons disagreed on 18 (60%) of the questions.

Conclusions: Similar significant variation regarding the management of ACL injuries is seen among members of BASK as among members of the American Academy of Orthopaedic Surgeons (AAOS). Clinical disagreement included whether ACL deficient patients can participate in all recreational sporting activities, that ACL reconstruction reduces the rate of arthrosis in the ACL deficient knee, and the use of bracing in non-surgically treated ACL deficient knees. Surgeons also disagreed about age, open growth plates, radiographic evidence of osteoarthritis, pain, and, repairable and unreparable meniscal tears in ACL deficient patients.
COMPLETE TRANSPHYSEAL ACL RECONSTRUCTION IN SKELETALLY IMMATURE PATIENTS

M M Utukuri, H S Somayaji, G S E Dowd, D M Hunt
St Mary's Hospital, London; Royal Free Hospital, London; The Wellington Hospital, London

Aim: This is a report on outcome of Complete Transphyseal ACL reconstruction in a group of 24 children with open physes of whom 6 were under 12 years (Prepubertal).

Materials & Methods: A group of twenty-four children with an average age of 13 years were reviewed. Six children were aged 12 or under at the time of operation. There were 21 boys and 3 girls. The follow-up ranged from 12 to 72 months (mean 37.8 months).

ACL Reconstruction was done by a standard 4-strand hamstring technique using an endobutton proximally and a spiked washer and screw distally in the tibia. The IKDC, Lysholm and Tegner scores were used to assess the knees pre and post-operatively. Stability was measured using the KT-1000 arthrometer.

Results: Common modes of injury were football, rugby, skiing and squash. The left side was involved in 13 patients, and the right side in 11 patients. Interval between injury and surgery ranged from 3 to 22 months with an average of 8 months. Meniscal repair was carried out in 9 out of 14 patients with meniscal tears. The average Tegner score before injury was 7.7, before operation was 4 and at the last follow-up was 7.6. The average pre-operative Lysholm score was 54.6 compared to the post-operative score of 93. There was no incidence of angular deformity or a limb length discrepancy. There has been 1 re-rupture in a child aged 11 years 11 months at operation but no meniscal injuries. The outcome in the 5 other children aged 12 or less at the time of operation has been as good as the older children.

Conclusion: Reconstruction of the anterior cruciate ligament using a trans-physeal technique gives good results in pre-pubertal children and in adolescents.

ANTERIOR CRUCIATE LIGAMENT INJURY - A QUIET EPIDEMIC REVISITED

V T Veysi, S R Bollen
Bradford Royal Infirmary

Purpose: The aim of the study was to evaluate whether the recognition rates of ACL injuries had improved in the decade following the original paper published by the senior author.

Methods: Prospective data collection using a standard questionnaire on all patients presenting to a dedicated soft tissue knee injury clinic. There were 103 patients with a median age of 31.

Results: 94 out of the 103 patients gave a typical history of an ACL injury. The mean time to referral to this specialist clinic was 92 weeks. The commonest mechanism of ACL injuries was sports (88/103), with soccer making up the vast majority. The correct diagnosis was made by 13% of A&E staff, 30% of CPs and 57% of Orthopaedic surgeons.

Of the 11 patients who had an arthroscopy, 4 were told that they had an ACL injury. None of the 15 who had an MRI scan were told that they had an ACL injury.

Conclusion: Despite the increasing incidence and changes in management, there appears to have been very little improvement in the detection of the ACL injured knee in the last 10 years.

DAY SURGERY ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: A PROSPECTIVE STUDY.

S A Jain, J Rollo, A L Pimpalnerkar
Royal Centre for Defence Medicine & Good Hope Hospital NHS Trust, Birmingham

A review of the outcome, safety, practicality and cost effectiveness of day surgery anterior cruciate ligament (ACL) reconstruction was studied in the British set-up.

From January 2003 to May 2005, 75 patients who underwent day case arthroscopic ACL reconstruction without the use of tourniquet or nerve blocks, but using a pump-regulated saline-epinephrine irrigation system were studied prospectively. 68 patients had a hamstring tendon graft and 7 patients had patellar tendon graft reconstruction. None of the patients required overnight stay. Mean immediate postoperative Visual Analogue Score (VAS) for pain was 2.5 (range 1-8) and 0.5 (range 0-3) at 6 weeks indicating excellent pain control. The mean follow-up was 14 months (range 6-30 months). We had no early or late complications in this series. ACL specific Mohtadi Quality of Life Index improved from pre-operative score of 20 (15-40) to 93 (80-100) at 9 months after surgery. The mean Modified Lysholm Knee Score was 93.9 points, (range 80-100) at the 9 months follow-up examination. On Tegner activity score, 68 patients returned to the same level of sporting activity at 8 months and the rest 7 patients dropped 1 level. The average saving per patient was in the range of 50-60% when compared to inpatient ACL reconstruction.

In conclusion, day case ACL reconstruction using a pump-regulated saline-epinephrine irrigation system is safe, cost-effective and is the patient’s choice.

Fig.1 Mohtadi QOL assessment index.

Fig.2 Pain scores with only oral analgesia.
PATIENT SATISFACTION FOLLOWING DAY CASE ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION.

H Deo, R Sharma, M Wilkinson
King's College Hospital, London

Aim: To assess pain control, functional outcome and patient satisfaction following day surgery ACL reconstruction.

We report the results of 60 consecutive primary anterior cruciate ligament (ACL) reconstructions performed by a single operator at King’s College Hospital Day surgery unit. A “3 in 1” nerve block was used after general anaesthesia. Semitendinosus and gracilis were harvested from the ipsilateral side, doubled and implanted arthroscopically. Patients were discharged the same day with oral analgesia. The mean age was 34.7 years old (range 18-58). Mean period between injury and reconstruction was 26.9 months (range 6-63 months). Mean follow-up was 38 months (range 7-86 months). Average post operative pain score was 3.86 with an average analgesic requirement of 11.2 days (range 0-50 days) Mean Modified Lysholm score was 85.63 (range 31-100) and mean IKDC score was 79.83 (range 37-100).

In conclusion we found that following day surgery ACL reconstruction, pain relief was adequate in most cases, functional outcome was rated good or excellent by 78% of patients and 91% were satisfied with the overall service.
Cadaveric experiments using knee testing machines have suggested that anatomical ACL reconstruction, replacing both antero-medial (AM) and posterolateral (PL) bundles, restores knee rotation kinematics more effectively than does a single bundle. The aim of this study was to measure intra-operatively the control of the translation and coupled rotations that occur with standard clinical laxity tests (anterior drawer, Lachman and pivot shift).

The knee kinematics of 10 patients were measured using a surgical navigation system and described in terms of tibial axial rotation and antero-posterior translation. In the ACL deficient knee, the average maximum tibial rotation during the pivot shift test was 29.0° and the mean maximum translation 17.0 mm. Reconstruction of the AM bundle (which behaves in a biomechanically similar way to a single-bundle reconstruction) reduced the rotational component to 16.4° (p = 0.0001) and translation to 6 mm (p = 0.0002). Addition of the PL bundle further reduced rotation to 12.6° (p = 0.0007) but had no significant effect on translation. Addition of the PL bundle also significantly reduced coupled tibial internal rotation during the Lachman and Anterior draw tests. The pivot shift test simulates the instability suffered by patients with ACL deficiency and this study suggests that its rotational component is better restrained by anatomical, 2 bundle ACL reconstruction.

A STUDY OF FUNCTIONAL DISABILITY, LOWER LIMB ELECTROMYOGRAPHY AND GAIT IN RECREATIONAL SPORTSMEN WITH POSTERIOR CRUCIATE AND POSTEROLATERAL LIGAMENT DEFICIENCY OF THE KNEE

F Mair, S H Palmer, D Hollinghurst, T Theologis
Nuffield Orthopaedic Centre, Oxford and Worthing and Southlands Hospitals, West Sussex

Purpose of Study:
1. To describe the degree and type of disability experienced by patients with combined posterolateral corner and posterior cruciate ligament knee injuries
2. To document any dynamic abnormalities of the lower limbs through the gait cycle using kinematic and kinetic gait analysis
3. To identify abnormal electromyographic signals of the quadriceps, hamstring and gastrocnemius muscles through normal gait.

Methods and Results:
After rigorous exclusion criteria were instituted twelve patients were identified as having the required combined knee ligament injuries. These patients underwent functional assessment, clinical examination and gait analysis at the Oxford Gait Laboratory. Significant functional disability was noted in all patients. Characteristic gait abnormalities identified included hypertension and dynamic varus deformity with a corresponding increase in the internal valgus knee moment. Electromyographic data revealed early and prolonged contraction of the medial hamstrings and gastrocnemius muscles.

Conclusion:
These results suggest the presence of compensatory mechanisms of the musculature around the knee and suggest direction in rehabilitation programs in patients with combined injuries to the posterior cruciate ligament and posterolateral corner of the knee. The results also provide baseline data that will be useful when evaluating the post-operative outcomes in patients undergoing knee ligament reconstruction in the future.

COMBINED RECONSTRUCTION OF CHRONIC POSTERIOR CRUCIATE LIGAMENT AND POSTEROLATERAL CORNER DEFICIENCY: A 2-9 YEAR FOLLOW UP STUDY

V Khanduja, H S Somayaji, M Utukari, G Dowd.
Royal Free Hospital, London

Objective: The aim of this study was to assess the results of combined arthroscopically assisted posterior cruciate ligament reconstruction and open reconstruction of the posterolateral corner in patients with chronic (3 months or more) symptomatic instability and pain.

Patients & Methods: A retrospective analysis of all the patients who had a combined reconstruction of the posterior cruciate ligament and the posterolateral corner between 1996 and 2003 was carried out. Nineteen patients who had the combined reconstruction were identified from the database. All the patients were assessed pre and post-operatively by physical examination and three different ligament rating scores. All the patients also had weight bearing radiographs, MRI scans and an examination under anaesthesia and arthroscopy pre-operatively. The PCL reconstruction was performed using an arthroscopically assisted single anterolateral bundle technique and the posterolateral corner structures were reconstructed using an open Lachman type of tenodesis.

Results: Pre-operatively all the patients had a grade III posterior sag and demonstrated more than 20 degrees of external rotation as compared to the opposite normal knee on the Dial test. The average follow up was 66.8 months (range 24 -108). Post-operatively 7 patients had no residual posterior sag, 11 patients had a grade I posterior sag and 1 patient had a grade II posterior sag. Five of the 19 patients demonstrated minimal residual posterolateral laxity. The Lysholm score improved from a mean of 41.2 to 76.5 (P = 0.0001) and the Tegner score from a mean of 2.6 to 6.4 (p=0.0001).

Conclusions: We conclude that while a combined reconstruction of chronic posterior cruciate ligament and posterolateral corner instability does not restore complete anatomical stability, improvement in symptoms and function demonstrate its value in these difficult injuries.

KINEMATICS OF POSTERIOR CRUCIATE LIGAMENT (PCL) AND POSTEROLATERAL CORNER (PLC) DEFICIENT HUMAN CADAVER KNEE RECONSTRUCTED WITH TWO DIFFERENT TECHNIQUES OF POSTEROLATERAL CORNER RECONSTRUCTIONS.

T Nguyen, S Apsingi, AMJ Bull, A Unwin, DJ Deehan, AA Amis.
Imperial College London.

Aim: To compare the ability of two different PLC reconstruction techniques to restore the kinematics of a PCL & PLC deficient knee to PCL deficient condition.

Methods: 8 fresh frozen cadaver knees were used. A custom rig with electromagnetic tracking system measured knee kinematics. Each knee was tested with posterior & anterior drawer forces of 80N, external rotation moment of 3Nm & varus moment of 5Nm when intact, after dividing PLC and PLC (lateral collateral ligament & popliteus tendon), after PLC reconstruction type 1 (1PLC & PLC reconstruction type 2 (2PLC). 1PLC was modification of Larson's technique with semitendinosus graft. 2PLC was performed with semitendinosus graft to reconstruct the lateral collateral ligament & the popliteo/bibular ligament, gracilis ligused to reconstruct popliteus tendon.

Results: The paired t test with Bonferroni correction was used to analyse the data. Only in deep flexion 2PLC reconstruction was significantly better than the 1PLC reconstruction in restoring the posterior laxity to PCL deficient condition (p=0.02). In mid flexion the 2PLC was unable to restore the rotational laxity to PCL deficient condition (p=0.048).
Conclusion: The 2PLC reconstruction was better than the 1PCL in controlling the posterior drawer. The 1PLC technique though not significant tended to over constrain the external & varus rotations.

**KINEMATICS OF POSTERIOR CRUCIATE LIGAMENT (PCL) AND POSTEROLATERAL CORNER (PLC) DEFICIENT HUMAN CADAVER KNEE RECONSTRUCTED WITH SINGLE OR DOUBLE BUNDLE POSTERIOR CRUCIATE LIGAMENT**

*S Apsingi, T Nguyen, AMJ Bull, DJ Deehan, A Unwin, AA Amis.*

*Imperial College, London.*

**Aim:** To analyse the posterior and external rotational laxities in single bundle PCL (sPCL) and double bundle PCL reconstruction (dPCL) in a PCL and PLC deficient knee.

**Methods:** Ten fresh frozen were used. A custom made wooden rig with electromagnetic tracking was used to measured knee kinematics. Each knee was tested with posterior and anterior drawer forces of 80N and an external rotation moment of 5Nm when intact, after PCL resection, after dividing the PLC and after performing dPCL and sPCL reconstructions with a bone patellar tendon bone allograft and tibial inlay technique.

**Results:** The one-tailed paired Student’s t test with Bonferroni correction was used. There was a significant difference between the ability of the dPCL and sPCL reconstruction to correct the posterior drawer in extension (p=0.002). There was no difference between the dPCL reconstruction and the intact condition of the knee near extension (p=0.142, Fig 1). There was no significant difference between the intact condition and both sPCL (p=0.26) and dPCL (p=0.20) reconstructions in flexion in restoring posterior laxity. Neither of the reconstructions could restore the rotational laxity (Fig 3).

**Conclusion:** In a combined PCL and PLC deficient knee the posterior laxity can be controlled by both the sPCL as well as the dPCL reconstructions except near extension where the dPCL reconstruction was better.

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**Figure 1:** Posterior position with posterior drawer

**Figure 3:** Rotation with external torque
Session VII Free Papers - Patello-femoral ligament

MEDIAL PATELLO-FEMORAL LIGAMENT RECONSTRUCTION. THE DERBY EXPERIENCE.
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The aim of this study was to evaluate the functional and clinical outcome following medial patello-femoral ligament reconstruction using autogenous hamstring tendon grafts for patellar instability.

Over a 4 year period the senior author operated on 35 patients for lateral instability of the patella. The predominant initiating event was a sporting injury. Patients were evaluated clinically and functionally. The Fulkerson score was utilised pre and post operatively. The minimum follow up was 6 months, the mean follow up was 20 months. There were 18 males and 17 females. The mean age was 24.6 years. The mean pre-operative Fulkerson score was 59.3 (range 6-100). The mean post-operative Fulkerson score was 83.6 (range 25-100), the mean improvement was 24.3.

24 patients returned to sporting activities. The main complications was one patient with a patella fracture that was stabilised with internal fixation, one patient requiring exploration and reinforcing the ligament which had attenuated. Both patients finally had a good clinical outcome.

Our study has shown that symptomatic lateral instability of the patella can be effectively treated with a medial patello-femoral ligament reconstruction and result in overall good clinical and functional outcomes.

We would recommend this technique.

THE OUTCOME OF ARTHROSCOPIC REPAIR OF TRAUMATIC PATELLO FEMORAL INSTABILITY (TPFI)
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Purpose: the purpose of this study was to evaluate the outcome of arthroscopic repair of the medial patello femoral joint capsule (MPFJC) and its supporting structures in traumatic patello femoral instability (TPFI).

Type of study: prospective case series.

Material and methods: 24 patients 15 male and 9 female with traumatic patello femoral instability (TPFI) were treated with arthroscopic repair of the medial patello femoral joint capsule regardless of the injury chronology using 2/0 vicryle stitches by outside-in technique lateral release were not required, average age at the operation was 23.2 years (range 20-26) with 1 patient was 33, average time from injury to operation 3 months (range 1-8 months) with 1 patient had the injury for 3 years.

The patients evaluated at 10 days, 3 weeks, 6 weeks, 3 months and every 3 months afterward up to 1 year. Average follow up was 9.3 months (range 3-12 months).

Subjective data were calculated using the IKDC system. Objective data included a comprehensive knee examination and evaluation and comparing it with normal side, which was used as a reference.

Results: at the final review all patients were satisfied with their knees, the IKDC final score improves from 54 pre op to 93.

There has been no recurrence of the instability or tenderness around the knee, nil infection rate, normal side-to-side movement of the patella comparing with normal side, full range of motion, and normal quadriceps belly.

Conclusions: the patient returned to light sports activities at 6 weeks, and to their pre-injury level of sport at 3 months.

Conclusion: we feel that our approach to treat TPFI is a reliable, safe, and cost effective. Our results are encouraging, although we feel that longer follow up might be required.

MEDIAL PATELLO-FEMORAL LIGAMENT RECONSTRUCTION WITH SEMITENDINOSUS RE-ROUTING FOR THE TREATMENT OF TRAUMATIC PATELLA DISLOCATION
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Background: The medial patellofemoral ligament (MPFL) is the principle medial stabilizer of the patella. It is damaged after traumatic patella dislocation.

We describe a reproducible technique for MPFL reconstruction and our preliminary results at 12 months.

Material and methods: 25 patients (19 men, 6 women; average age 26.9 years-old) with post-traumatic patellar instability underwent MPFL reconstruction at a mean post-injury interval of 22.3 months. Five patients had evidence of generalized laxity, 3 had trochlear dysplasia and 16 (64%) more than two episodes of dislocation. Arthroscopic assessment revealed associated chondral lesions in 88% and marked lateralization. The reconstruction was performed using ipsilateral semitendinosus tendon. With the distal attachment preserved, the proximal end is passed through the medial intermuscular membrane and secured to the medial border of the patella.

Clinical pre- and post-operative assessments included IKDC, Tegner, Lysholm and Kujala scores. ICRS documentation recorded the contribution of articular cartilage damage, whereas Merchant views and MRI scans documented the abnormal radiological parameters and the damaged structures of the medial retinaculum respectively.

Results: at a mean follow up period of 12 months (8-18 months) no cases of re-dislocation were recorded. The Tegner and IKDC scores averaged 4.2 and 46.9 pre-injury. Postoperatively they had improved to 7.7 and 86.5. The average postoperative Lysholm- and Kujala scores were 87 and 89 respectively. Re-operation was required in one patient after patellar fracture 8 weeks post reconstruction.

Conclusion: Our preliminary results suggest surgical reconstruction of the MPFL provide a favorable early outcome for the treatment of post-traumatic patellofemoral instability and will form the basis for longer follow up in a larger cohort.
MANAGEMENT OF PERIPROSTHETIC SUPRACONDYLAR FEMORAL FRACTURES WITH NEW TECHNIQUE

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Periprosthetic fractures around Total Knee Arthroplasty are potentially devastating complication to both the patients and the surgeons. The reported prevalence of supracondylar femoral fractures following Total Knee Replacement has ranged from 0.3 to 2.5 percent. The complication rates of various treatment modalities reported in literature varies from 25 to 70 percent.

Aim: The purpose of this study is to evaluate the outcome of Antegrade Nailing and Wire fixation in Supracondylar femoral periprosthetic fractures.

Material & Methods: Seven patients who sustained complex distal femoral fractures above Total Knee Arthroplasty all treated by New technique of Antegrade intramedullary Nailing and intramedullary bi-wire fixation through greater trochanteric approach without opening the distal femur were retrospectively evaluated.

Results: All the patients demonstrated uncomplicated postoperative follow-ups and returned to weight bearing between 2 and 3 months. The average age of patient was 70 (55-90) years. All fractures healed in a satisfactory alignment in average duration of 12.6 weeks. There was no wound infection, loss of reduction or implant failure. The average range of movement of knee was 86 degrees.

Conclusion: The Antegrade Nail with Wires is a simple & effective method of treating displaced periprosthetic fractures proximal to Total Knee Arthroplasty. This involves less soft tissue dissection, less operative time and satisfactory bony healing even in poor quality bones while maintaining adequate range of movements of the knee.

A BIOMECHANICAL STUDY COMPARING 6.5MM CANCELLOUS SCREWS AND 3.5MM CORTICAL SCREWS FOR DEPRESSED TIBIAL PLATEAU FRACTURES

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Introduction: There is a recent trend of using a raft of small diameter 3.5 mm cortical screws instead of the large diameter 6.5mm screws in depressed tibial plateau fractures. Our aim was to compare the biomechanical properties of these two constructs in the normal and osteoporotic synthetic bone model.

Methods: 20 rigid polyurethane foam blocks with a density simulating osteoporotic bone and normal bone were obtained. A Schatzker type 3 fracture was created in each block. The fracture fragments were then elevated and supported using 2, 6.5mm cancellous screws or 4, 3.5mm cortical screws.

The fractures were loaded using a Lloyd’s machine and a load displacement curve was plotted.

Results: Osteoporotic model. The mean force needed to produce a depression of 5mm was 700.8N with the 4-screw construct and 512.4N with the 2 screw construct (p=0.007).

Non-osteoporotic model. The mean force requires to produce the same depression was 1878.2N with the 2-screw construct and 1938.2N with the 4 screw construct (p=0.42).

An increased fragmentation of the synthetic bone fragments was noticed with the 2-screw construct but not with the 4-screw construct.

Conclusion: A raft of 4, 3.5 mm cortical screws is biomechanically stronger than two, 6.5mm cancellous screws in resisting axial compression in osteoporotic bone.

BIOMECHANICAL ASSESSMENT OF FORCES ACTING ACROSS THE PATELLA TO DETERMINE THE OPTIMAL TREATMENT OF PATELLA FRACTURES

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Introduction: In this study the optimal angle of fixation or splintage for partially weight bearing fractures of the patella was determined by a gait analysis measurement system.

Subjects and Methods: A knee brace was applied to eight subjects and locked at 0, 10, 20 and 30 degrees. Measurements were also taken for an unlocked brace and in the absence of a brace. The subjects were instructed on partial weight bearing mobilisation. Three dimensional motion analyses were performed using an infrared 8-camera system. The ground reaction force was recorded by two 3-dimensional force plates embedded in the walkway. Kinematic and kinetic data was collected and the data was transferred to a computer programme for further analysis and the forces acting on the patella were calculated.

Results: The results showed that the forces acting on the patella were directly proportional to the knee flexion angle. The results also showed that the knee flexion angle does not always correspond with the angle set at the knee brace; however they did exhibit a direct relationship.

Conclusion: Our findings show that, for partially weight bearing patella fractures, the optimum form of splintage corresponds with a low knee flexion angle.

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THE SEQUENTIAL IMPROVEMENT IN CLINICAL OUTCOME FOLLOWING AUTOLOGOUS CHONDROCYTE IMPLANTATION - A 7 YEAR FOLLOW UP

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Introduction: The treatment of distal femoral cartilage defects using autologous chondrocyte implantation (ACI) and matrix-guided autologous chondrocyte implantation (MACI) is becoming increasingly common. This prospective 7-year study reviews and compares the clinical outcome of ACI and MACI.

Methods: We present the clinical outcomes of 159 knees (156 patients) that have undergone autologous chondrocyte implantation from July 1998. Our surgeons performed all operations with patients subsequently assessed on a yearly basis using 7 independent validated clinical, functional & satisfaction rating scores.

Results: Modified Cincinnati, Patient Functional Outcome and Lysholm & Gilchrist clinical rating scores all showed significant improvements compared to pre-operative levels (p<0.0001). Although ACI scores are superior at one year (p<0.05) there is no significant difference between ACI and MACI at 2 years. Visual Analogue Score and Bentley Functional rating score showed significant improvements compared to pre-operative levels (p<0.0001) with ongoing yearly sequential improvement.

Conclusion: Patient Rating and Brittberg scores, both subjective patient scores, similarly showed continuing improvements in the years following surgery.

DISCUSSION: ACI and MACI produce significant improvements in knee function when compared to pre-operative levels with continued sequential improvement in outcomes for up to seven years. The initial data suggests a superior rate of clinical improvement using the MACI technique.

DURABILITY OF CARTILAGE REPAIR - DOES HISTOLOGY MATTER?

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Aim: The aim of this study was to correlate the histology of cartilage repair site with long term clinical function.

Materials and methods: We have analyzed the clinical results of a cohort of patients who had collagen-covered autologous chondrocyte implantations performed since 1998. Our hypothesis was that the hyaline cartilage repair does influence the clinical outcome.

The modified Cincinnati scores (MCRS) of eighty-six patients were evaluated prospectively at one year and at the latest follow-up following ACI-C (mean follow-up=4.7 years. Range= 4 to 7 years). All these patients underwent biopsies of their cartilage repair site performed at variable periods between six months and five years following ACI-C (mean=22.2 months ). The neo-cartilage was graded as hyaline (n=32), mixed fibrohyaline (n=19), fibrocartilagenous (n=35) and fibrous (n=6).

Results: The clinical results showed that at one year, the percentage of patients with excellent and good results was 64.4, 89.5 and 74.3 respectively for those with hyaline, mixed fibro-hyaline and fibro-cartilagenous histology respectively. Their mean MCRS were 70.8, 74.2 and 66.2 respectively. This difference was not statistically significant (p=0.34). However, their clinical scores at the latest follow-up demonstrated a significantly superior result for those with hyaline repair tissue compared to those with mixed fibro-hyaline and fibro-cartilagenous repair tissue (p=0.05). The percentage of patients with excellent and good results for those with hyaline, mixed fibro-hyaline and fibro-cartilagenous repair was 75, 42 and 66.6 respectively. Their mean MCRS were 70.6, 56.6 and 63.9 respectively.

Conclusion: This study demonstrates that any form of cartilage repair would give good clinical outcome at one year. An average of four years and beyond, it appears that patients with hyaline repair tissue tend to show a more favorable clinical outcome whereas those who demonstrated mixed fibrohyaline and fibrocartilagenous repair would show less favourable clinical results.

TWO STAGE AUTOLOGOUS CHONDROCYTE IMPLANTATION FOR LARGE FULL THICKNESS CARTILAGE DEFECTS IN HIGH DEMAND PATIENTS: RESULTS AFTER 2 YEARS FOLLOW-UP

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Background & Aim: Recent studies have claimed good results after ACI in athletes. Our aim was to evaluate the early functional outcome and activity level after 2-stage ACI in professional athletes and soldiers.

Methods: Thirteen soldiers and five professional athletes (14 men and 4 women; average age 31 years), with 21 full thickness cartilage defects (ICRS grade-IV) of the knee were treated with 2-stage ACI. Mean interval between injury and surgery was 43.8 months. Average defect size was 6.63 cm² and was located to the MFC in 7 cases, LFC in 7 cases and the femoral trochlea in one case. The functional outcome was evaluated with ICRA form, Tegner activity rating scale and Lysholm score after a mean follow up period of 23.4 (18-32) months.

Results: The ICRA and Lysholm scores were improved from 42.7 and 47.6 pre-operatively to 63.1 and 69.9 respectively. The average Tegner scale was 8.8 pre-injury, 3.7 prior to surgery and 6.4 at the final follow up. Nine patients (50%) underwent second-look arthroscopy for persistent mechanical symptoms. Periosteal flap overgrowth was identified in 6 cases with adequate graft integration while partial failure of the graft was noted in one case and was treated with microfracture.

Conclusion: The early results of ACI in high-performance athletes and professional soldiers are not as good as other studies suggest. Returning to pre-injury performance levels for athletes and military people is by no means assured in the first 24 months after ACI.

THE ROLE OF FIBROBLAST GROWTH FACTOR-2 IN THE PROLIFERATION AND CHONDROGENIC POTENTIAL OF INFRAPATELLAR FAT PAD DERIVED STEM CELLS

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Introduction: In this study infrapatellar fat pad (IPFP) derived stem cells were expanded with and without Fibroblast Growth Factor-2 (FGF-2) supplementation and were compared with regards to their ability to proliferate and differentiate into chondrocytes.

Materials and Methods: Cells were isolated from the IPFP tissue and expanded in monolayer culture with and without rhFGF-2 supplementation (final concentration 10ng/ml). Cell aggregates were placed in chondrogenic media for two weeks. Gene expression studies were carried out using quantitative real time PCR. Immunohistochemical labelling was performed with antibody localisation determined by an immunoperoxidase procedure. The pellets were also weighed and digested in papain for DNA and glycosaminoglycan (GAG) analysis.

Results: Cells expanded in FGF-2 supplemented media were smaller and proliferated more rapidly. The FGF-2 supplemented cell aggregates also showed 100 times higher expression of collagen type II (COL2A1). Immunohistochemical studies showed that pellets made from FGF-2 treated cells stained more strongly for collagen II and more weakly for collagen I. Pellets made with FGF-2 treated cells were larger, continued with enhanced proliferation and contained more proteoglycan.

Conclusion: Our findings show enhanced proliferation and chondrogenic differentiation in IPFP derived stem cells expanded in FGF-2 supplemented media.
SURVIVORSHIP OF 203 FIXED BEARING UNICOMPARTMENTAL KNEE REPLACEMENTS DURING THE SECOND DECADE

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Purpose of Study: Fixed bearing unicompartmental knee replacement (UKR) has become popular since several series have shown good 10 year survivorship and excellent function. However little is known about survival during the second decade.

Method: From the Bristol database of over 4000 knee replacements 203 St. George Sled UKR’s which had already survived 10 years were identified. The mean age at surgery was 67 years (48-85), with 64% being female. This cohort has been further reviewed at an average of 14.8 years (10-30) from surgery to determine survivorship and function.

Results: Survivorship during the second decade was 87.5%. 58 patients (69 knees) had deceased with implant in situ, only 2 after revision. A further 15 UKR’s have been revised at an average of 13 years post op; 7 for progression of disease, 4 for tibial loosening, 3 for polyethylene wear, 2 for femoral component fracture and 2 for infection.

99 knees were followed for 15 years and 21 knees for 20 years. The average Bristol knee score of the surviving knees fell from 86 to 79 during the second decade.

A previous study showed an 89% 10 year survivorship and this is now extended to 82% at 15 years and 76.5% at 20 years.

Conclusion: Satisfactory survival of fixed bearing UKR can be achieved in the second decade suggesting that the indications for mobile bearings require careful definition since there is a higher incidence of complications in many people’s hands.

A PROSPECTIVE RANDOMISED TRIAL COMPARING MINIMAL INVASIVE AND STANDARD PARAPATELLAR APPROACHES FOR UNICOMPARTMENTAL ARTHROPLASTY

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AIMS: To compare a randomised group of patients undergoing UKA to investigate the advantages of the minimal invasive approach in the early post-operative stage.

METHODS & RESULTS: 100 patients on the waiting list for UKA were recruited into the trial. Patients were randomised into 2 groups: Group 1 - longitudinal skin incision with dislocation of the patella, Group 2 - the minimally invasive approach. Standard milestones were recorded post-operatively: time to achieve IRQ, independent stair climbing and to discharge. Additionally, patients were scored with the AKSS and Oxford knee questionnaire pre-operatively, at 6 weeks, 6 months and 1 year.

No significant differences were found between the 2 groups in the measured parameters.

CONCLUSION: To our knowledge, there has been no previous randomised trial to investigate the results of less invasive surgery for UKA. We have been unable to demonstrate a significant advantage of this approach. With the continued drive for early return to function, some centres incorporate a 24hr accelerated discharge protocol. The less invasive approach may make this more achievable. We recommend however that the surgical procedure and implant position must not be compromised for the benefit of rapid discharge to the deficit of long term results.

LATERAL UNICOMPARTMENTAL KNEE REPLACEMENT: FIXED OR MOBILE BEARING?

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The aim of this prospective cohort study is to compare the early results in a single surgeon series of the mobile and fixed bearing versions of the Preservation UKR for lateral OA. Lateral UKRs were only considered for patients with isolated lateral compartment osteoarthritis with a functioning anterior cruciate ligament.

Mild patellofemoral osteoarthritis was not considered a contraindication. If there was any doubt over the condition of the medial compartment or patellofemoral joint, single photon emission computed tomography was performed. Significant uptake in the medial or patellofemoral joint was considered a contraindication. Patients were assessed preoperatively and at 1 and 2 years postoperatively with the American Knee Society Score (AKSS), Oxford knee questionnaire and with anteroposterior, lateral and Rosenberg radiographs.

Between 29th May 2001 and 15th May 2003, the senior author (GK) performed 233 consecutive Preservation UKRs. Of these, 30 were lateral UKRs (13%) performed in 12 men and 16 women (2 bilateral cases) with a mean age of 67 years (range 36 to 93 years). A metal-backed mobile bearing tibial component was used in 13 knees and an all-polyethylene fixed bearing tibial component in 17 knees. Patients in the mobile bearing group were significantly younger (t test; p<0.0001) and had better AKSS knee (Mann-Whitney U test; p=0.05) and AKSS function scores (Mann-Whitney U test; p=0.005). The patients were reviewed after a minimum of 2 years (range 2 to 3.4 years). There was no significant difference between the 2 groups. There had been 3 revisions in the mobile bearing group for tibial loosening and none in the fixed bearing group (chi squared test; not significant). There was 1 tibial periprosthetic fracture in the fixed bearing group.

A similar good functional result was obtained with a fixed bearing despite the mobile bearing group being younger and having significantly better preoperative AKSS knee and function scores. The 3 revisions for tibial loosening in the mobile bearing group are a concern. However, these results are short-term and there may be improved implant longevity in the long-term with mobile bearing tibial components due to reduced polyethylene wear.
Session XI Free Papers - PFJ Replacement

FIVE TO EIGHT YEAR RESULTS OF THE AVON PATELLOFEMORAL ARTHROPLASTY

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Objective: To review the results of the Avon patellofemoral arthroplasty at 5 to 8 years.

Methods: The Avon patellofemoral arthroplasty was introduced in clinical practice in September 1996. We present a prospective cohort review of all patients treated in the first three years. Patients were evaluated using the Bristol knee score (BSK), the Melbourne patella score (MPS) and the Oxford knee score (OKS).

Results: 109 patellofemoral arthroplasties were performed in 92 patients between September 1996 and November 1999. The median age was 68 years (range 46 to 86 years). Nine patients (12 knees) died and two patients (two knees) were unfit for follow-up. Ten knees in 9 patients were lost to follow-up giving a follow-up rate of 89%. The mean period of follow-up was 5.8 years.

The median pain score rose from 15/40 pre-operatively to 40 points at eight years. The median (MPS) rose from 10/30 points pre-operatively to 25 points at eight years. The median (OKS) rose from 18/48 pre-operatively to 38 at eight years. 87% of knees had mild or no pain at eight years. There were no cases of failure of the prosthesis itself. All 15 revisions resulted from progression of arthrititis in the tibio-femoral joint. The five-year survival rate for all causes with 86 cases at risk was 96%.

Conclusions: The results show that this type of arthroplasty can give predictable pain relief and excellent functional improvement in patients with isolated patellofemoral arthritis. Disease progression is the main reason for revision to total knee replacement and great care is required in assessing the indications for this procedure.

EARLY RESULTS IN 110 CASES OF PATELLO-FEMORAL REPLACEMENT IN PATIENTS UNDER 55 YEARS OF AGE

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Introduction: Following previously gratifying results in older patients the study aims to quantify the outcomes and identify any contraindications in patient selection for patello-femoral replacements using the Avon prosthesis in patients under 55 years old.

Method: We present early outcome results for a prospective cohort study of patients under 55 years of age. 110 knees in 86 patients (median age 47 years, range 25 to 54) have been treated with Avon patello-femoral replacement (88 in females and 22 in males). Diagnoses included lateral facet OA (59 knees), patella dislocation (36 knees), trochlear dysplasia (39 knees) and post patellectomy instability (7 knees). 108 knees had undergone previous surgery. 14 knees required additional intra-operative procedures (including 11 lateral releases and 2 patella realignments). All patients were assessed pre-operatively using the Oxford, Bristol and WOMAC scores.

Results: No knees have been lost to follow-up. 82 knees have post-operative scores available (mean follow-up 27 months). 8 have been revised (6 due to progression of OA). The mean Oxford, Bristol and WOMAC scores all improved: 18 to 32, 56 to 83 and 39 to 25 respectively. Asymptomatic deterioration of the tibio-femoral joint is seen in some cases of primary OA but not with trochlear dysplasia. 21 knees required post-operative additional procedures including 6 lateral releases, 3 patella realignments and 5 revisions. Equally good results were seen when comparing patients with the 3 main diagnoses. Trochlear dysplasia is strongly predicted by young age at onset of symptoms and patellar dislocation.

Conclusion: Many of this type of patient, with disabling symptoms, wish to "live now". The short-term improvements are frequently dramatic. Comparison of underlying pathologies has not identified groups that are performing less well to suggest restricting current indications. As yet there is no suggestion of prosthesis failure. Revision has presented little difficulty since minimal bone is resected primarily.
CLINICAL PRESENTATIONS OF TROCHLEAR DYSPLASIA

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Introduction: Anterior Knee pain is a very common presentation in Orthopaedic outpatient clinics. However, Trochlear Dysplasia as a condition is still not very well understood.

Materials and Methods: Operative findings in patients undergoing Trochleoplasty and in young patients undergoing Patella-femoral arthroplasty were studied. Patients having trochlear dysplasia were identified. All these patients were sent a questionnaire to explore the variety of symptoms they experienced. 87 patients were identified for the study. 71(82%) patients responded to the questionnaire.

Results: Two subgroups were identified, one with dislocation of patella and the other without dislocation of the patella. Patients in patella dislocation group were younger (12 years vs 24) than those who presented without dislocation of patella. Patella dislocation group had more patients with anterior knee pain (71% vs 52%) as teenagers as compared to the group without dislocations. Symptoms such as giving way, lack of trust and unable to participate in sports were more commonly seen in the group with patella dislocation whereas, limited walking distance and difficulty with climbing the stairs were more commonly seen in the group without dislocation. Symptoms such as pain, catching and locking were seen equally amongst the two groups.

Conclusion: We believe that the patients with trochlear dysplasia have a bimodal presentation. Patients with dislocation of patella present earlier than those without patella dislocation. These two groups also have different symptoms at presentation. It is important to identify these subgroups correctly for appropriate management.

FEMORAL TROCHLEOPLASTY FOR PATELLAR INSTABILITY; A NEW OPERATIVE TECHNIQUE

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Purpose Of The Study: Description of a new operative technique of trochleoplasty for patellar instability and its short-term results.

Method: we report a new technique of trochleoplasty for Trochlear dysplasia, using Mitek anchor sutures. The purpose of the procedure is to remove the anterior femoral boss associated with Femoral Trochlear dysplasia and make the floor of the trochlea level with the anterior femoral cortex. The operation entails undermining of the trochlear and lateral condylar articular cartilage to a new corrected level where it is held with the use of No 2 Ethibond Mitek anchor sutures. These anchors are placed in the subchondral bone, suture needle passed through the articular cartilage and the sutures tied over it. Approximately 4 -5 anchor sutures are placed to hold the trochlear cartilage down to the new corrected level. This procedure can be combined with proximal and distal patellar realignment.

So far, using this technique, we have operated on six patients with trochlear dysplasia and chronic patellar instability. The patients include 4 females and 2 male with an average age of 33 yrs (range 29 - 40). Average follow up is 16 months (range 8 - 24 months). There has not been any recurrence of patellar instability in the operated patients.

Conclusion: Short-term follow up of a new operative technique of trochleoplasty for patellar instability shows promising results.
PATELLO-FEMORAL TRACKING IN FIXED AND MOBILE KNEE DESIGNS.

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Aim: The aim of the study was to assess the impact of a self aligning unidirectional mobile bearing TKR on lateral patella release rates within a knee system using a common femoral component for both the fixed and mobile variants.

Methods and Results: A total of 357 patients undergoing TKR were randomly allocated to receive either a Mobile Bearing (181 knees) or a Fixed Bearing (176 knees) PSTKR. Further sub-randomisation into patella resurfacing or retention was performed for both designs. The need for lateral patella release was assessed during surgery.

The lateral release rate was similar for fixed bearing (9%) and mobile bearing (9%) implants (p=0.95). Patella resurfacing resulted in lower lateral release rates when compared to patella retention (5.5% vs 13.5%; p=0.012). This difference was most marked in the mobile bearing group where the lateral release rate was 16% with patella retention compared to 3% with patella resurfacing (p=0.009).

Conclusion: The addition of a rotating platform tibial component has had no impact on the lateral release rate in this study. Optimising patella geometry by patella resurfacing appears more important than tibial bearing design per se. The combination of a mobile bearing design and patella resurfacing appears to optimise patello-femoral tracking.

PSEUDO-PATELLA BAJA FOLLOWING SOFT TISSUE BALANCING IN TOTAL KNEE ARTHROPLASTY

Stoke Mandeville Hospital, Solihull Hospital, RNOH Stanmore, Northwick Park Hospital Kings Mill Hospital.

Introduction: Soft tissue balancing is an important factor in the success of TKA, but if extensive may necessitate the use of thicker tibial inserts with the risk of creating a Pseudo-patella baja (PPB), which describes narrowing between the patella and the tibia without shortening of the PT, and occurs when the tibial prosthesis plus insert are thicker than the resected tibia.

Hypothesis: Patients who undergo extensive soft tissue releases during TKA, with resultant use of thicker tibial inserts will develop a PPB, with increased risk of patella pathology.

Method: 506 patients aged 40-90 years underwent 526 Kinemax TKAs, between 1999 and 2002. The extent of soft tissue releases and thickness of tibial inserts were recorded. Patella height was measured on pre and post-operative radiographs by an independent observer. Outcome was assessed using the Oxford Knee Score and the American Knee Society Clinical Rating System, with a minimum follow-up of 12 months.

Results: 1. TKA surgery creates a Pseudo-Patella Baja. PPB was introduced into 26.7%) of patients. (p=0.000).
2. The incidence of pseudo patella baja increased with the extent of soft tissue release. (p=0.000).
3. The incidence of pseudo-patella-baja increased with increases in insert thickness. (p=0.035).

There was no correlation between the incidence of PPB and changes in outcome, as measured using the OKS and AKSS.

Conclusion: Pseudo patella baja occurs in 26% of all patients following TKA, and in 46% of patients in whom extensive soft tissue releases have been performed and/or large tibial inserts have been used. At 12 months, no detrimental outcomes were attributable to the incidence of pseudo patella baja.

SIMULTANEOUS VERSUS STAGED KNEE ARTHROPLASTY; A COMPARISON OF OUTCOMES IN 116 PATIENTS

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Introduction: Debate continues regarding the optimal timing of surgery for patients requiring bilateral knee arthroplasty; we reviewed the costs, clinical and functional outcomes of 116 patients undergoing simultaneous or staged bilateral surgery using 3 different prostheses.

Method: Data were retrospectively collected from 116 consecutive patients undergoing 232 knee replacements over 10 years, either simultaneously or over 2 hospital admissions (staged). Post-operative complication rate, total cost of treatment (calculated from prostheses, theatre time, days in hospital and number of clinic attendances) and functional (HSS) score at 1 year were the outcome measures.

Results: 54 patients underwent Oxford unicompartmental knee replacements, 41 simultaneously, 13 staged; respective mean total costs were £9890 and £13,553 (p<0.001). 42 patients were treated with AGC prostheses; 14 simultaneously, 28 staged; with respective total costs of £12,187 and £16,920 (p<0.001). 10 TMK patients had simultaneous surgery (mean total cost £14,812), 10 were staged (£20,191); p=0.001. For all 3 prostheses, there was no significant difference in complication rate or 1 year functional outcome between simultaneous and staged groups.

Discussion: Some authors advocate replacing both knees simultaneously as safe and cost-effective; others report significant increases in medical and surgical morbidity. Our series shows significant cost savings with no increase in complication rate.
Session XIV Free Papers - TKR Peri-operative

EFFECTIVENESS OF NAVIGATION-BASED TOTAL KNEE REPLACEMENT IN ENHANCING THE MECHANICAL PERFORMANCE OF KNEE SYSTEM COMPONENTS.

MC Norris, D Beaver, W. Schmidt, M Kester, SK Chauhan
Stryker Orthopaedics, Mahwah, NJ, USA; Royal Perth Hospital, Australia; Brighton and Sussex University Hospitals

Introduction: Contact stresses, derived from navigation system and conventional TKR alignments, are compared to ideally aligned component stresses.

Methods: This study builds upon the work of previous studies, in which post-operative CT scans from 70 patients were utilized to extract knee component angular alignments from patients undergoing both navigation based and conventional TKR. Knee component (Stryker Orthopaedics Duracor® Condylar) FE models were oriented into specific alignment positions. Tibial insert contact stresses were computed under physiologically relevant loads at various flexion angles. FEA was also performed on ideally aligned cases for comparison purposes.

Results: At full extension, the median alignment of conventional TKR induces contact stresses 17.8% above ideal alignment conditions. Navigation based TKR alignment induces stresses 3.5% above ideal alignment conditions. At 45-90° flexion, conventional TKR alignment induces stresses 2.7% above ideal alignment conditions, while comparable navigation based TKR alignment induces stresses that match ideal alignment conditions.

Conclusion: Navigation based TKR procedures improve knee component alignment, which decreases contact stresses in UHMWPE tibial inserts. The result is a reduction in abnormal wear patterns and expected wear rates, with an increase in the structural longevity of knee system components.

THE EFFECT OF A THROMBOPROPHYLAXIS PROTOCOL ON THE INCIDENCE OF VENOUS THROMBOEMBOLISM AFTER TOTAL KNEE REPLACEMENT

RAE Clayton, C R Howie, P Gaston, A C Watts
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Aim: To investigate the incidence and type of venous thromboembolic event (VTE) diagnosed in patients undergoing total knee arthroplasty (TKA) and the trends over time following the introduction of a rigorously enforced thromboprophylaxis protocol.

Methods: Data from all 3260 TKAs performed in our unit between April 1996 and March 2003 were prospectively collected by the Scottish Arthroplasty Project (SAP). The SAP data identified 84 of these patients as having been admitted with or died from a VTE episode. A unified thromboprophylaxis protocol was introduced in 1999, from 2001 it was included as part of the integrated care pathway. We retrospectively reviewed all available casenotes of these patients to identify the assessment and thromboprophylaxis given, the precise diagnosis of VTE, the treatment and adverse outcomes.

Results: Of the 84 VTEs identified, 29 had pulmonary emboli (PE), 12 had above knee deep vein thrombosis (DVT), 24 had calf DVT and 10 had no evidence of VTE though were coded as such (but not treated) by physicians elsewhere. Data were unavailable for the remaining 9 but these were assumed to have had VTE for the purposes of this study. Of the 24 patients with calf only DVT, 16 were given therapeutic anticoagulation of whom five developed haemorrhagic complications. From 2001 the thromboprophylaxis protocol was followed in 100% of patients. The rate of VTE in our unit has fallen steadily from 2.26% in 1996-7 to 1.05% in 2002-3.

Conclusions: There has been a steady decline in the rate of venous thromboembolism in our unit over the seven years of the study. A thromboprophylaxis protocol has been successfully introduced in our unit and consistently applied since 2001. There is considerable overdiagnosis and treatment of calf DVT with significant resultant morbidity.

We are grateful for the help of the SAP in collecting these data.
IS LONGSTEM IMPLANT IMPERATIVE IN REVISION KNEE REPLACEMENT.

S Hakkalamani, V Prasanna, A Acharya, R Finley, RW Parkinson.
Arrowe Park Hospital, Upton, UK.

Stem dissociation in modular revision knee replacement due to failure of the frictional lock of the Morse taper has been reported in the literature. However, the medium and long-term implications of stem dissociation are unknown, as clinical outcomes have not been reported. We report a series of 10 cases in which there was intra-operative dissociation of the tibial stem.

Between 1994 and 1999, 98 patients underwent revision total knee replacement for aseptic loosening at our institution. Ten of these patients were noted to have tibial stem dissociation, apparent on the immediate post-operative radiographs. The senior author (RWP) performed all procedures and used a standardized operative technique. The Co-ordinate modular knee revision system was used in all cases. The quality of the bone was noted in all the cases intra-operatively; and was graded as 1) sound bone, 2) soft but intact, 3) soft and fractured cortex.

Our study demonstrates that the tibial stem dissociation did not cause any significant detriment to the clinical outcome on minimum follow-up of six years in nine cases where the tibial metaphyseal cortical rim was intact. In one case, where the medial tibial plateau had a cortical defect, the prosthesis drifted into varus mal-alignment and the patient required a further revision for aseptic loosening. We therefore question whether long canal filling tibial stems are necessary in all revision total knee replacements particularly when the cortical rim is intact and a non-constrained polyethylene insert is used.

THE USE OF CT IN PRE-OPERATIVE ASSESSMENT OF FAILED TOTAL KNEE REPLACEMENT PRIOR TO REVISION SURGERY

M. Norris, M Ather, S Chauhan
Brighton and Sussex University Hospitals

Introduction: We investigated the routine use of CT scans in identifying alignment causes for failure as well as in the pre operative planning of the procedure.

Methods: Twenty poorly functioning total knee arthroplasties were analysed using the Perth CT protocol. All patients were awaiting revision total knee arthroplasty and were scanned using a GE multislice CT scanner. The measurements were performed using standard CT software. Knee society scores were obtained pre- and post-operative.

Results: The mean coronal position of the components was 3 degrees of valgus for the femoral component and 2.5 degrees of varus for the tibial component. Fourteen knees had errors of femoral component rotation, which ranged from 1 degree of external rotation to 9 degrees of internal rotation. Nine knees had errors of tibial baseplate rotation with all being internally rotated relative to the PCL/Tibial tuberosity axis from 3 to 12 degrees. The cumulative error of implantation ranged from 6-24 degrees in all 7 planes.

Knee society scores improved post-operatively from a mean of 52 pre-operatively to 83 at one year. Compound error also improved to a range of 6 to 10 in all 7 planes.

Conclusions: Revision total knee arthroplasty remains a difficult procedure but is increasing in frequency. The use of a CT protocol allows all coronal, sagittal and rotational errors of a previous implant to be accurately identified prior to surgery. We believe that all knee revision operations should have a CT scan as part of the pre operative planning. Also CT scans may be useful in investigating painful total knee replacements. Total knee replacement failure in some cases maybe explained by a cumulative error in alignment when no other obvious cause is found.
MEASUREMENT OF IN VIVO INTRA-ARTICULAR GENTAMICIN LEVELS FROM ANTIBIOTIC LOADED ARTICULATING SPACERS

J Mutimer, G Gillespie, A Lovering, A Porteous
Avon Orthopaedic Centre, Southmead, North Bristol NHS Trust

The aim of this study was to measure intra-articular gentamicin levels at the 2nd stage revision following the use of an antibiotic impregnated articulating spacer. Infected total knee replacements are a cause of considerable morbidity often requiring revision in two stages. Rings of bone cement, cement moulds and spacer devices are available for use following the initial debridement and removal of infected metalwork. The availability of antibiotic impregnated articulating spacers are potentially attractive to achieve a high local dose of antibiotic and to maintain a good range of movement. Seven patients underwent a two stage revision of their total knee replacements. Following the initial debridement an antibiotic impregnated articulating spacer was cemented in place. At the 2nd stage revision a perioperative joint aspirate and blood sample was taken and gentamicin levels measured. The range of movement was assessed. The average gentamicin levels were 0.72mg/l (0.24 – 2.36mg/l). A good range of movement was maintained in all cases. At these levels the gentamicin would be therapeutic. Antibiotic impregnated articulating spacers possess several potential advantages to the revision knee surgeon by helping maintain the range of movement and provide local release of antibiotics. Their use should be considered in such cases.

SURGICAL SITE INFECTION (SSI) FOLLOWING TOTAL KNEE REPLACEMENT (TKR): A PROSPECTIVE STUDY

M Venkatesan, SN Sambandam, R Burman, S Maxfield, RC McGivney, B Ilango
Fairfield General Hospital, Bury

Introduction: Infection following TKR is a catastrophic complication. Few authors have highlighted the need for screening of patients (nose, axilla and groin) before TKR. Despite the fact that some of the centers in UK now routinely perform preoperative screening for TKR patients the overall incidence of surgical site infection in the year 2004 was 2.9%.

Methods and Materials: We introduced a new admission policy and SSI surveillance protocol for TKR patients in the year 2004 at our center. According to the new admission policy all TKR patients who were preoperatively screened were admitted into a clean elective ward. Care was taken not to admit anybody with positive infection screening in that ward, irrespective of the diagnosis. Further we also introduced a new policy of SSI surveillance according to NINSS protocol carried out by dedicated trained nurses.

Results and conclusions: Following the introduction of these policies our surgical site infection has come down to 0% in the year 2004-5 in contrast to 1.7% in the year 2002-3. These results showed that simple measures like having dedicated infection free clean wards and dedicated trained surveillance nurses can significantly reduce the infection rate following TKR.
Session XVII Free Papers - Clinical Outcomes

A COMPARISON OF RANGE OF MOTION AND OUTCOME IN FIXED AND MOBILE KNEE DESIGNS.

P J James', P A May', W Gerard Tarpey', M Blyth' and I G Stothers
Nottingham City Hospital' and Glasgow Royal Infirmary'

Aim: This study aims to establish whether or not mobile bearing TKR delivers the often stated benefits improved function and range of motion when compared to its fixed bearing equivalent.

Methods and Results: A total of 357 patients undergoing TKR were randomly allocated to receive either a Mobile Bearing (181 knees) or a Fixed Bearing (176 knees) FKT. Further sub-randomisation into patella resurfacing or retention was performed for both designs. All knees were scored using standard tools (Oxford, AKSS and SF12) preoperatively and at intervals postoperatively by independent observers.

The range of motion increased from an average of 96 deg. (pre-op) to an average of 109 deg. at 1 year post-op for both the fixed and mobile bearing design. The management of the patella had no effect in either group.

Conclusion: There were no measurable differences in range of motion and clinical outcome scores at 1 year post-op for a mobile bearing design over its fixed bearing equivalent. It is likely that any potential advantages of a mobile bearing design will manifest in longevity rather than function.

PREOPERATIVE KNEE FUNCTION PREDICTS THE SEQUENTIAL IMPROVEMENT IN CLINICAL & FUNCTIONAL OUTCOMES FOLLOWING TOTAL KNEE ARTHROPLASTY

BA Rogers, I. Unitt, SR Cannon, TWR Briggs
Royal Surrey County Hospital, Guildford; Royal National Orthopaedic Hospital, Stanmore

Introduction: Predicting outcomes in the heterogeneous population undergoing Total Knee Arthroplasty (TKA) is difficult. This prospective multi-centre study details the relationship between preoperative knee function and the sequential clinical and functional outcome progression of TKA.

Methods: Annual clinical and functional outcome scores (Oxford Knee Score & Knee Society Score) from 526 primary cemented Kinemax TKA implanted into 506 patients over a period of 3 years were assessed. Depending on preoperative knee function, patients were grouped into 3 cohorts: mild, moderate and severe.

Results: At one year there was a significantly (p<0.05) greater improvement in Oxford Knee Score, Knee Society Score and range of movement in patients with severe preoperative knee function in comparison to the mild cohort. However, a significantly greater improvement (p<0.05) in functional outcome was shown in patients with mild preoperative knee function.

Discussion: Severe, in comparison to mild, preoperative knee function predicts greater clinical but inferior functional improvement at one year, with deterioration in all outcome measures commencing from three years. Mild to moderate preoperative knee function affords ongoing sequential improvement in clinical and functional outcomes.

RANDOMIZED CONTROLLED TRIAL COMPARING FUNCTIONAL OUTCOME FOR FIXED AND MOBILE BEARING IN TOTAL KNEE ARTHROPLASTY

B C Hanusch, S Patil, A Hui, P Gregg
James Cook University Hospital, South Tees NHS Trust, Middlesbrough

The aim of this study was to determine whether there is a difference in the functional outcome between fixed and mobile bearings in total knee arthroplasty. 120 patients were randomized (computer generated) to receive either a fixed or mobile bearing PFC. Sigma total knee replacement. 96 patients were needed to detect a 20° difference in range of motion (ROM) with a significance level of 0.05 and a test power of 0.97. Oxford knee score (OKS) and ROM were assessed independently before and one year after surgery.

Mean ROM and Oxford knee score before and at one year after surgery for both groups are shown as preliminary results for 70 patients (follow-up expected to be completed by March 2006):

<table>
<thead>
<tr>
<th></th>
<th>ROM at 1 year</th>
<th>OKS before</th>
<th>OKS at 1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>mobile</td>
<td>97° (±20.88°)</td>
<td>101° (±12.12°)</td>
<td>40.4 (±7.66)</td>
</tr>
<tr>
<td>fixed</td>
<td>97° (±11.24°)</td>
<td>100° (±9.62°)</td>
<td>41.5 (±7.61)</td>
</tr>
</tbody>
</table>

Table 1: Functional scores before and at one year after surgery.

There is no statistically significant difference in the mean ROM at one year and in change in ROM between the two groups (p=0.53 and p=0.21 respectively). The findings were similar for Oxford Knee Score at one year and change in Oxford Knee Score (p=0.45 and p=0.82). There was no early aseptic loosening in either group.

The one year results suggest that there is no significant difference in functional outcome measured as ROM and Oxford Knee Score between the two types of bearing. Further follow-up will be carried out to detect any differences in the long term outcome.

THE ROLE OF PAIN AND PSYCHOSOCIAL FACTORS ON FUNCTIONAL RANGE OF KNEE MOTION IN PATIENTS WITH OSTEOARTHRITIS AWAITING TOTAL KNEE ARTHROPLASTY

ML van der Linden', PJ Rowe', PA Roche', P Gaston', RW Nutton'
1School of Health Sciences, Queen Margaret University College, Edinburgh
2Bioengineering Unit, University of Strathclyde, Glasgow
3Orthopaedic department, New Royal Infirmary Edinburgh

Purpose: This study aims to explore the role of pain, fear of movement and learned helplessness on functional knee range of motion and daily functioning in patients awaiting total knee arthroplasty (TKA).

Methods and results: Sixty-five patients (mean age 69 years old) with osteoarthritis were assessed an average of 37 days prior to TKA. Dynamic knee angle was measured during 11 functional activities including getting up from a chair and walking up and down a slope using flexible electromyography. Function was assessed using the function components of the Knee Society Score (KSS) and the Western Ontario & McMaster University Osteoarthritis Index (WOMAC). Other self-report measures included the 8 item Tampa scale for kinesiophobia to assess 'activity avoidance' (TSK-AA), and the 5 item Helplessness
subscale of the rheumatology attitudes index. The pain component of the WOMAC was negatively associated with the knee angle during sitting down and getting up from a low chair and stepping in and out of a bath (r=0.40-0.45), but not with the peak knee angle during ascending and descending a slope or walking speed. Higher scores of the activity avoidance and the helplessness scales however, were associated with reduced knee angles during descending a slope and a slower walking speed (r=0.31-0.38). Both psychosocial scales were also associated with function (r=0.39-0.45). Another important finding was that activity avoidance was not associated with pain.

Conclusions: Not only pain but also fear of movement and learned helplessness play a role on specific components of knee function in patients with final stage osteoarthritis of the knee. Further research into the impact of pain and psychosocial variables on functional outcome in osteoarthritis is indicated.

FUNCTIONAL OUTCOME OF KNEE ARTHROPLASTY SURGERY IN OSTEOARTHRITIC PATIENTS 55 YEARS OLD OR YOUNGER: RESULTS FROM A REGIONAL JOINT

M R Acharya, C N A Esler, W M Harper
University Hospitals Leicester NHS Trust

Introduction: The functional outcome and survivorship of knee arthroplasty in young patients remains a concern. The aim of this study is to assess patient reported outcomes of knee arthroplasty surgery in osteoarthritic patients age 55 years old or younger in a generalist setting.

Patients and methods: All patients 55 years old or younger at the time of index arthroplasty were identified from the Trent arthroplasty register. Demographic data was available for all patients. A self-administered questionnaire was mailed to patients. This questionnaire included an Oxford Knee Score along with questions relating to employment, leisure activities and the patient expectations of their surgery.

Results: 242 patients 55 years old or younger had a knee arthroplasty in the study period (male:female 1:1). 208 patients had a total knee arthroplasty. The remaining had a unicompartmental knee replacement. Mean age of patients for the total knee arthroplasty group was 51 years (range 37-55) and that for the unicompartmental group was 50 years (range 37-55). The average length of follow up for the total knee arthroplasty group was 33.3 months (range 12-57) and that for the unicompartmental group was 29.3 months (range 16-45). The average Oxford knee score at follow up was comparable between the two groups; 31.8 (range 12-57) for the total knee arthroplasty group and 32.0 (range 13-54) for the unicompartmental group. 77% of patients in the total knee arthroplasty group and 71% of patients in the unicompartmental group reported that the pain relief was better or just as they expected following the operation.

Conclusion: Knee arthroplasty remains a satisfactory procedure in young patients under the age of 55 years. There is no significant difference in Oxford knee scores between patients that have total knee replacement or unicompartmental knee replacement. Pain relief is better or just as expected in the majority of patients in both groups.
Poster Presentations – Total Knee Replacement

1. USE OF LONG LEG FILMS IN TOTAL KNEE ARTHROPLASTY

S Hakimabadi, A Acharya, A Carroll, R Finlay, NJ Donachie
Arrowe Park Hospital, Upton, UK

The aim of this study was to evaluate whether using a pre-operative 3D CT and standard valgus or valgus cut could restore normal mechanical axis of the TKA. The study included 460 patients who underwent TKA under care of the senior author (NJD). Details of height, weight, BMI were noted. All the radiographs were taken with the patient standing, with the knees in maximum extension, with the parallel facing forward. The long leg radiographs were evaluated and the mechanical axis and anatomical axis were marked. The TKA (stem) (EP) and the angle between the anatomical and the mechanical axis of the stem were measured, with special attention paid to distal femoral inclination, as this is a variable supplied by the implant company. Statistical analysis was done using SPSS (Table 1). Proportion of the cases with VA less than 6 degrees or more than 7 degrees were calculated. Similar cases with EP distance less than 0.7 and more than 5.5mm were also identified. Cases with VA of 6-7 degrees and EP 6.5-6.6mm were identified as one group. Correlation was performed using non-parametric tests. The results revealed the angle between the anatomical and the mechanical axis range from 4 to 9.5 degrees (mean 6.6 degree and standard deviation 1.1 degree). Only 35% had an angle between 6 and 7 degrees, with 7% of knees having an angle of less than 5 degrees or greater than 8 degrees.

2. INFECTION IN KNEE ARTHROPLASTY AFTER PREVIOUS INJECTION OF INTRA-ARTICULAR STEROID

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Eastbourne District General Hospital, Eastbourne, East Sussex, UK

Objective: To assess the possible effect of intra-articular steroid injection to future TKAs.

Materials and Methods: We retrospectively studied 213 patients (64 male) who had TKAs performed between January 2002 and February 2002. 213 patients were included in the study for the period from January 2002 to December 2002.

Results: The mean age of the patients was 70 years. 172 patients had osteoarthritis and 41 patients had rheumatoid arthritis. 20 patients had had a previous steroid injection into the joint and 40 patients had no previous injection.

Conclusions: We found no significant difference in infection rates between those patients who had a previous steroid injection and those who did not.

3. STIFF TKR. IS THERE A TREND?

D S Donnay, S Hall, M L Scaife
Petersborough Hospitals

Aim: To assess patient and surgeon related factors to identify any trend for patients who underwent MUA, in the treatment of a stiff TKA.

Materials and Methods: Retrospective analysis of TKRs which have undergone MUA during the period from 01/01/1999 to 25/06/2005 at Petersborough Hospitals. We included primary TKRs with a minimum post MUA follow up of six months.

Results: Out of a total of 1890 TKRs, 42 TKRs (2.3%) in 33 patients received MUA. 26 (62%) were females with a median age of 67 years and a median BMI of 30. 34 (81%) had varus knee. Median pre-operative flexion was 100 degree. Median follow up was 12 months (6 - 45 months). Median pre MUA flexion was 70 degree (100 degree). Median surgery to MUA interval was 12 weeks (range: 10 days to 104 weeks). Median gain in flexion during MUA was 35 degree (0 - 90 degree). At final follow up, 74% had lost flexion gained at MUA (median: 17.5 degree, mean: 20 degree). 71% gained a median of 20 degree of flexion with MUA. (Median: 25 degree, range: 13-85 degree). Median range of flexion at final follow up was 90 degree (46 - 120 degree).

Conclusion: Stiff TKR is not an indication for MUA. Non-operative treatment followed by MUA flexion at final follow up was 90 degree. This information is useful when counselling patients undergoing MUA. A protocol for management of stiff TKA is suggested.

4. ANALGESIA IN TOTAL KNEE REPLACEMENT: A COMPARISON BETWEEN FEMORAL AND SCiotic ARC BLOCK

S Hakimabadi, F. A Carroll, C Ford, P Meredith, G Jefferies, A W Parkinson
Arrowe Park Hospital, Upton Road, Wirral

Background and objectives: Total knee replacement (TKR) produces severe postoperative pain. Peripheral nerve blocks can be used as an adjunctive analgesic for TKR but the efficacy of a sciatic nerve block as an adjunct to a femoral nerve block is controversial. The aim of this study was to compare femoral nerve block (FN), sciatic nerve block (SN) and combined femoral and sciatic nerve block (F/S block) on postoperative pain, opioid consumption, nerve block analgesia and patient satisfaction.

Methods: 20 patients were involved in the study. 10 patients received only a FN block, 10 patients received both FN and SN blocks.

Results: Patients receiving a FN block required more analgesia postoperatively. Analgesia requirements were lower in patients receiving a F/S block. The mean duration of anaesthesia was 128 minutes in FN patients compared to 43 minutes in patients receiving a F/S block. All patients preferred the F/S block.

Conclusion: Combined femoral and sciatic nerve block should be performed and used as a key component to the preoperative plan.

5. A 5 TO 10 YEAR REVIEW OF THE ROTAGLIDE TOTAL KNEE REPLACEMENT

Herewith MD, Awan S, Chahate MB, Scott DJ, Powally DP
Lister Hosp, Harrow, Harrow

Background: Mobile bearing knee arthroplasty is an alternative to a fixed bearing knee arthroplasty, we present the results of a retrospective study of a fully congruent, multi-directional mobile bearing knee with a tibial post: the Rotaglide Total Knee System.

Methods: Patients were clinically and radiologically assessed at dedicated follow up appointments.

Results: The study group included 59 knees. The Prosthesis had a survival rate of 93.2% at 5 years. The adverse events associated with good rates of patient satisfaction and high scores on the HSS and the KSS Systems. No knees were revised for aseptic loosening.

Conclusions: This, fully congruent, multiarticulation mobile bearing knee prosthesis is well tolerated by patients. It is a safe, reliable prosthesis associated with good clinical outcome.

6. DEDATED ONS DEEP INFECTION AFTER TOTAL KNEE ARTHROPLASTY: COMPARISON BASED ON THE INFECTING ORGANISM

S Jenby, B Thomassen, N Gysi, A Mahule, R S King
Department of Orthopaedics, City Hospital, Birmingham

The aim of our study is to identify the organisms causing delayed deep infection after total knee replacement and to determine whether this is related to the infecting organism in the current situation. We also compared the differences in outcome based on the infecting organism.

We undertook a retrospective study of all the patients who presented with delayed deep infection following total knee replacement during a six year period between April 1998 and March 2004. We analysed the demographics, sensitivity of the organism to antibiotics, number of surgical procedures carried out and the outcome of the infected arthroplasty based on the infecting organism. Statistical analysis was done using Fisher’s Exact test for categorical data and Mann-Whitney U test for the non-parametric numeric data.

The mean age at the time of primary arthroplasty was 69.9 years (range 46 to 92 years, 90.6%). The mean follow-up time (time since the initial knee replacement) was 77.3 months (range 27-179 months). The mean follow-up since the last surgery procedure to treat infection was 33.3 months (range 14-47 months). Organisms were isolated in 27 of the 31 patients who presented with delayed deep infection. Forty-four % of the organisms isolated were multi-drug resistant with increasing incidence of Methicillin resistant Staphylococcus aureus and multi-drug resistant methicillin sensitive Staphylococcus epidermidis. Successful outcome following total infected knee arthroplasty was lower compared to the previous studies where there were fewer multi-drug resistant organisms. The number of patients with satisfactory outcome is significantly lower when the organism isolated is multi-drug resistant. Patients infected by multi-drug resistant organisms had longer time from surgery to revision surgery. The number of surgical procedures compared to patients where the organism is not multi-drug resistant. We conclude that deep infection with MRSA and Methicillin resistant Staphylococcus epidermidis are on the rise. Outcome is significantly better when the organism isolated is not resistant Staphylococcus aureus.

7. CONTEMPORARY CAUSES OF PREMATURE FAILURE OF PRIMARY TOTAL KNEE REPLACEMENT.

C Davis, JH Newman and A Davies
Southend Hospital, Essex

The purpose of this study was to determine the incidence of revision total knee replacement (TKR) within 5 years of the index procedure at a single multi-surgeon unit and to determine the cause of failure of those implants.

This was a retrospective review of primary Kinemax Plus TKR performed at the Avon Orthopaedic Center between 1.1.1990 and 1.1.2000. Cases were identified that required revision arthroplasty in any form within 5 years of the index procedure. Cause of failure was categorized into the seven following categories.

We were 2826 primary Kinemax Plus TKR performed during the study period. Of these 20 were known to have required revision surgery within 5 years. 8 were revised for deep infection of the prosthesis. 12 cases were revised for premature failure. The overall incidence of premature failure of the Kinemax Plus TKR at 5 years was 0.31%. The incidence of aseptic premature failure at 5 years was 0.42%. Detailed examination of the clinical records indicated that some form of technical error at the time of the index arthroplasty was responsible for the early failure of 6 prostheses. This equates to 0.25% of the procedures performed. Aseptic loosening of the remaining 6 cases could not be attributed to a specific cause.

8. CONTEMPORARY CAUSES OF PREMATURE FAILURE OF PRIMARY TOTAL KNEE REPLACEMENT.

C Davis, JH Newman and A Davies
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This was a retrospective review of primary Kinemax Plus TKR performed at the Avon Orthopaedic Center between 1.1.1990 and 1.1.2000. Cases were identified that required revision arthroplasty in any form within 5 years of the index procedure. Cause of failure was categorized into the seven following categories.

The incidence of deep infection with MRSA and Methicillin resistant Staphylococcus epidermidis infections. Surgical failure following total infected knee arthroplasty was lower compared to the previous studies where there were fewer multi-drug resistant organisms. The number of patients with satisfactory outcome is significantly lower when the organism isolated is multi-drug resistant. Patients infected by multi-drug resistant organisms had longer time from surgery to revision surgery. The number of surgical procedures compared to patients where the organism is not multi-drug resistant. We conclude that deep infection with MRSA and Methicillin resistant Staphylococcus epidermidis are on the rise. Outcome is significantly better when the organism isolated is not resistant Staphylococcus aureus.
11. ETHNIC DIFFERENCES IN PREOPERATIVE KNEE FUNCTION.

Joshy, A Datta, A Perera, N Gogi, A Modi, BK Singh

Patients of Asian origin undergoing total knee arthroplasty have lower preoperative knee function to Caucasians. Cultural beliefs and social support explain part of this discrepancy but health care providers must also attempt to educate patients and close family members about the importance of timing the surgery to obtain the optimum benefits of pain relief and function.

12. A SIMPLE RISK CLASSIFICATION SYSTEM FOR PRIMARY KNEE ARTHROPLASTY PATIENTS

Y Al-Arabi, S D Deo

The Great Western Hospital, Swindon

We devised a four-part clinical risk classification system for patients undergoing primary total knee arthroplasty (PTKR) to facilitate risk estimation.

13. PRIMARY KNEE ARTHROPLASTY PATIENTS - A NEW CLASSIFICATION SYSTEM

S P Badhe, M Espag, T J Wilton

Adequate exposure in revision knee arthroplasty is important because poor exposure may result in technical errors which may affect the outcome of the revision procedure.

14. THE 'OPEN BOOK APPROACH TO DIFFICULT KNEE ARTHROPLASTY

P S Bhat, M Espag, T J Wilson

Derbyshire Royal Infirmary

Purpose of study: To evaluate the ‘open book’ technique (described below) for the extended approach to Total Knee Arthroplasty with respect to its efficacy and outcome.

Summary: Adequate exposure in revision knee arthroplasty can be technically very demanding. Various techniques have been described to aid in exposure. These include Tibial tubercle osteotomy, V-Y quadrupled flap, rootlet and Pictoral tunnel-down approach. Since 1998 the senior author (TJW) occasionally has combined a ‘Tibial crest’ resection with the ‘Open Book’ Approach in revision Knee Arthroplasty where exposure was markedly limited by bone stock.

Re$ults: Among the 6 patients requiring a Revision Knee arthroplasty in whom the ‘open book’ technique for extended approach to the knee were reviewed for an average of 4.5 years. The patients were evaluated clinically and radiologically at final follow-up.

Results: All patients made good recovery of range of motion with little evidence of extensor lag. There was no evidence of refracture, stiffness or non-union of the osteotomy. Conclusion: We conclude that the ‘Open Book’ technique is useful in the extended approach of Total Knee arthroplasty resulting in improved clinical outcome with no adverse effects.

15. PREDICTION OF WOUND HEALING IN TOTAL KNEE REPLACEMENT SURGERY

J D Martin, S Patil, D Byrne, W J Leach

Western Infirmary, Glasgow

Cluster locally: Severe or fixed deformity and/or bone or soft tissue necrosis, knee surgery or trauma, and/or ligament instability.

Conclusion: Systemic and local complicating factors influence the prediction of wound healing after knee arthroplasty.

16. KNEE SKIN TEMPERATURE FOLLOWING UNCOMPlicated TOTAL KNEE ARTHROPLASTY

R G Hallas, RM Charity, RS Bassi, P Nicolai, BK Singh

City Hospital, Dudley Road, Birmingham

Aims: We have carried out a prospective study to compare Duplex ultrasonography and transcutaneous oxygen tension as predictors of wound healing after knee arthroplasty.

Methods and Materials: 53 patients were included in the study. All underwent preoperative Duplex scans of their lower limbs. In addition, transcutaneous oxygen tension measurements were made adjacent to the implantation incision pre-operatively and on days 1, 3, and 7 post knee arthroplasty.

Conclusions: Patient Selection, ulcers and neuropathic foot are risk factors.

Conclusion: Pre-operative transcutaneous oxygen tension measurement is a better predictor of wound healing after knee replacement surgery than duplex ultrasonography. It may be one useful tool to use in the extended approach of Total Knee Arthroplasty.
1. A NEW TECHNIQUE FOR FEMORAL AND TIBIAL TUNNEL BONE GRAFTING USING THE OATS HARVESTING REVISION ACL RECONSTRUCTION
H G Said, K Baloch, M A Green
Royal Orthopaedic Hospital, Birmingham

Revision ACL reconstruction is becoming more frequent especially in specialized centers, due to the large numbers of primary ACL procedures performed. In two stage revisions, bone grafting of the tunnels may be undertaken. The former position was inaccurate or osteotomy has caused widening of the tunnels. This will allow the desired placement of the new tunnels without the risk of foraminal structural injury. It is technically difficult to deliver and impact bone graft into the femoral tunnel with the standard surgical and arthroscopic instruments. We describe a new technique for femoral and tibial tunnel impact grafting for revision ACL revisions, utilizing the OATS grafting instruments.

The appropriately sized OATS harvester is chosen 1 mm larger than the diameter of the bone graft from the iliac crest through a percutaneous approach. This provides a cylindrical graft, which is delivered to the femoral tunnel through the arthroscopic portal. The inside punch of the harvester is tapped, this allows delivery of the graft in a controlled manner, and allows impaction into the tunnel. The same is repeated for the tibial tunnel while providing support for the proximal end of the tunnel.

2. ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: A STUDY OF THE EFFECT OF RADIOLOGICAL IMAGE GUIDANCE ON TUNNEL PLACEMENT
G Stables, M Rathinam, M J McNicholas
North Cheshire NHS Trust, Warrington Hospital

Aim: To study the effect intra-operative image guidance has on the position of both femoral and tibial tunnel placement in primary anterior cruciate ligament reconstruction surgery.

Methods: Prospective study of 2 consecutive series of 10 primary anterior cruciate ligament reconstruction surgery all operated on by the same surgeon (the senior author). In the first group in- 1operative image guidance in the form of a standard image intensifier was used to guide the surgeon in the positioning of the femoral and tibial tunnels. In the second group no image guidance was used. The position of the femoral and tibial tunnels were assessed on AP and lateral radiographs post-operatively and recorded. The two groups were compared.

Conclusion: There was no significant difference in the position of the femoral tunnel position between the 2 groups (p=0.23). There was no significant difference in the position of the tibial tunnel between the 2 groups, in either the AP (p=0.71) or lateral (p=0.51) planes. This appears to be no benefit to using an image intensifier in addition to tunnel perforations in ACL reconstruction surgery.

3. SUBJECTIVE EVALUATION OF ACL RECONSTRUCTION: A PROSPECTIVE STUDY USING THE WARRINGTON KNEE INJURY DATABASE
A J Rathinam, I Pengas, G Stables, A Hatcher, M McNicholas
Warrington General Hospital, Warrington, United Kingdom

Purpose: To subjectively assess and present the outcome after primary ACL reconstruction surgery all operated on by the same surgeon (the senior author). In the first group intra-operative image guidance in the form of a standard image intensifier was used to guide the surgeon in the positioning of the femoral and tibial tunnels. In the second group no image guidance was used. The position of the femoral and tibial tunnels were assessed on AP and lateral radiographs post-operatively and recorded. The two groups were compared.

Results: Forty-six patients were included in the study, of whom 28 were operated on by the senior author, and 18 by the junior author. The mean age was 25 years (range 18 to 45), 30% were female. The mean time from injury to surgery was 35 months (range 1 to 96 months). The evaluation parameters included functional assessment, clinical examination, and functional score. All data was collected prospectively. The second period of follow up was 28 months (range 9 to 50 months).

Results: Using the IKDC subjective assessment 68% of the patients had normal/normal knee function (range 16 to 94). On Lysholm scoring 71% reported good or excellent results. On objective examination 62% had absence of reverse pivot with 91% showing no evidence of PLC instability.

Conclusions: Anterior cruciate ligament reconstruction in this study produced a satisfactory clinical outcome in terms of return in function objective assessment and symptom improvement. The technique has improved results in terms of outcome than previous reports in the literature would suggest.

4. ARTHROSCOPIC DOUBLE BUNDLE PCL RECONSTRUCTION: A PROSPECTIVE STUDY
N Davidson, M Rathinam, JF Pengas, A Hatcher, MJ McNicholas
Warrington General Hospital, Warrington

Introduction: This prospective study is designed to evaluate PCL reconstruction using the arthroscopic "double bundle technique" in a consecutive series of patients with multiple ligament instability.

Methods: Twelve consecutive patients who underwent arthroscopic posterior cruciate ligament reconstruction at Warrington Hospital for a unilateral ligament injury with PCL knee between 2001 and 2004 were included in the study. The indication for surgery was functional instability of the knee due to pain and instability. All were male patients with an average age 33 years (range 18 to 44). Average time from injury to surgery was 31.5 months (range 1 to 96 months). The evaluation parameters included functional assessment, clinical examination, and functional score. All data was collected prospectively. The second period of follow up was 28 months (range 9 to 50 months).

Results: Using the IKDC subjective assessment 68% of the patients had normal/normal knee function (range 16 to 94). On Lysholm scoring 71% reported good or excellent results. On objective examination 62% had absence of reverse pivot with 91% showing no evidence of PLC instability.

Conclusions: Anterior cruciate ligament reconstruction in this study produced a satisfactory clinical outcome in terms of return in function objective assessment and symptom improvement. The technique has improved results in terms of outcome than previous reports in the literature would suggest.

5. THE OXFORD KNEE SCORE IN SOFT TISSUE KNEE PATHOLOGY
Y Al-Arubi, JFR Morley, Matthew Wyatt, V Smith, SD The Great Western Hospital, Swindon

Aim: To assess the Oxford Knee Score (OKS) for the assessment of soft tissue knee pathology?

Method: In a prospective study we compared the OKS against the International Knee Documentation Committee (IKDC) 2000 and the Lysholm Scores (LYS). We also assessed the OKS with the IKDC and antegrade and retrograde (as currently used in Oxford) methods. The OKS was compared with the IKDC using the following criteria:

- Soft tissue knee assessment (12 points)
- IKDC in a standard form
- Lysholm secondary score
- Exclusion: Degenerative arthritic.
- Age between 15 and 95.
- Bony surgery or trauma.

Results: Linear regression analysis revealed no significant difference between all 3 scores (R²=0.8323, R²=0.9009). The OKS correlated best with the IKDC (r²=0.8323), Figs 1, 2, but less with the LYS (r²=0.3728, Figs 2). The reversed IKDC did not correlate as well (R²=0.0903) with either the IKDC (r²=0.2978) or the LYS (r²=0.2566). ANOVA showed the OKS to be significantly larger than LYS to complete (p<0.0001) and not significantly larger than IKDC (p>0.05).

Conclusion: The OKS is patient friendly and reliable in assessing soft tissue knee injury. This is particularly useful if the IKDC is already in use within a department for measurement of severity of degenerative disease.

6. CHANGING DEMOGRAPHICS IN ANTERIOR CRUCIATE INJURY
E S English
Bristol Royal Infirmary

Purpose: To examine changing demographics in ACL Injury.

Methods: The data from a cohort of 117 consecutive patients with ACL injury from a study performed in 1994 was compared with the data from a cohort of 108 consecutive patients with ACL injury collected in 1994/95.

Results: In 1994, 12% of the patients were female, in 2004 29%. In 1994, 63% of the injuries were sustained during soccer and rugby, in 2004 56%. In 1994, 99% of injuries were sustained during sporting, in 2004 23% - a 30% increase. In 1994 the average age was 26.5, in 2004 33. When this increase was accounted for in detail the average age of the athlete was 21, the soccer players 31 and the rugby players 27.

Clearly there has been a change in the demographics of ACL injury which may have a significant impact in providing NHS services for the ACL injured patient in the UK.

7. LONG TERM RESULTS OF ARTHROSCOPIC POSTERIOR CRUCIATE LIGAMENT RECONSTRUCTION
O Duff, M S Allen
University Mill Hospital, Dudley, West Midlands

Object: We would like present the long term results of Posterior Cruciate Ligament Reconstruction, with mean follow up of 4 years (range 1-9 years).

Material and method: Between 1995 and 2003, 15 patients with PCL deficiency were treated surgically by arthroscopic reconstruction using 4 strand hamstring graft.

- The diagnosis was confirmed by history of instability, positive posterior sag and posterior drawer test on clinical examination and finally by MRI scanning.
- Patients with injuries of postero-lateral corner, medial ligament rupture or grade IV OA were excluded. In two cases both ACL and PCL were reconstructed in the same sitting.
- 15 patients were treated with mean age of 25 (19-40). 13 were involved in contact sports (football, rugby) and 3 were motorcycle injuries.
- All patients were operated by one surgeon (Senior author), by two tunnel arthroscopic technique.
- Twelve patients were reviewed in a clinic recently and 3 were lost to follow up after 12 months.
- The patients were assessed clinically by Lysholm Knee Scoring Scale, Tegner Activity Score, IKDC Knee Ligament Standard Evaluation form and KT2000 arthrometer assessment.

Results: On Lysholm Score 90% were good or excellent.
- On IKDC evaluation 92% achieved normal or near normal result.
- On KT2000 arthrometer, 70% had 2 mm or less AP laxity and had between 0-2 mm of LL laxity.

Conclusion: Arthroscopic PCL reconstruction using 4 strand hamstring graft gives good functional result in the long term.
9. CLINICAL RESULTS OF RECONSTRUCTION OF THE POSTEROLATERAL CORNER OF THE KNEE

D Adams, D Howland-Burns, J Webb
BUPA Hospital, Bristol

Statement: A prospective review of the clinical outcome following reconstruction of isolated posterolateral corner (PLC) injuries to the knee.

Method: 10 patients underwent an isolated PLC reconstruction for symptomatic instability. All patients had preoperative clinical examination, and functional knee scores.

Results: There were 9 males and 1 female, mean age of 35, with 100% follow up. Median length of follow up was 46 months (range 2-96). At the latest follow up, the mean Lysholm scores were 89.9 with an average increase in Tegner scores of 3.3 (range 2-6). IKDC scores showed a median of 93 (range 2-100). All patients had <3 mm mean side to side difference using the KT-2000 arthrometer, and no increase in PLRI. There were no complications and no clinical failures requiring further surgery. All the patients said they would undergo the surgery again.

Conclusion: In this series of patients with symptomatic PLC injury, hamstring graft reconstruction has restored knee stability with good functional outcomes.

10. RETURN TO SPORTS AFTER RECONSTRUCTION OF ISOLATED ACL RUPTURES

M Rotheram, J P Pengas, A Hatcher, J E Arbuthnott, M J McNicholas
Warrington General Hospital, Cheshire, UK

Purpose: To assess the results of ACL reconstructions carried out at our institution in a non-elite cohort of patients with regards to return to active sports post reconstruction.

Materials & Methods: Seventy-five (71%) of 106 patients who underwent reconstruction of isolated ACL tears between June 2001 and August 2004 performed by the senior author completed a newly designed questionnaire (incorporating Cincinnati Sports Activity Scale (CSAS)) to help us fully assess their return to sports and to elucidate reasons if not returning to pre-injury level. 55 were completed at follow up, were all asked to fill in a subjective questionnaire. Seventy-eight (93.3%) operated within 2 years from injury achieved preoperative preinjury activity level. 28 of 30 patients (93.3%) operated within 3 years from injury achieved preoperative preinjury activity level. The mean Lysholm, IKDC and KOOS Sports scores at 12 to 24 months follow up revealed a progressive trend and were 94.9, 76.3 and 73.6 respectively.

One reason for not returning to pre-injury intensity of sports was that many (71.7%) expressed fears of instability though most (70%) had no instability on play. 77.8% of patients who were more than 30 years age reassessed not wanting to risk re-injury compared to 36.8% in the under 30 group. More significantly, 44.4% of over 30s said they were planning to drop their sporting level anyway compared to 5.5% in the younger group.

Conclusion: ACL reconstruction is best done as early as possible after injury for persons intending to return to competitive sports. The results are even better after early intervention in younger patients. Psycho-social issues play a significant role in return to active sports.

11. AN AUDIT OF TUNNEL POSITION FOLLOWING RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT: THE IMPORTANCE OF GOOD IMAGING

A J Wilkinson, R M Nicholas
Macclesfield Park Hospital - Ref1

Purpose of the study: To audit the radiological position of the tunnels following reconstruction of the anterior cruciate ligament (ACL).

Methods: Preoperative radiographs were obtained on patients following ACL reconstruction in a single surgeon series. The positions of the tunnels in the femur and the tibia were measured and recorded. The tunnel positions were compared to the recommended positions as established by literature review. Lateral radiographs displaying greater than 2mm of imperfect projection in relation to the femoral condyles were noted.

Results: 108 radiographs were collected from 65 patients, 69 were right knees and 48 were left. There were 85 men and 17 women.

When measured along Blumensaat's line from the anterior condylar surface, the femoral tunnel in the sagittal plane should be found at 75% of the total anteroposterior distance, the recorded figure in this audit was 74%. Measured from the anterior edge in the sagittal plane, the tibial tunnel should be found at 44% of the total tibial depth, our measurements averaged 46%. The tibial tunnel in the coronal plane should be found at 45% of the total width from the medial edge, our measurements averaged 46%. 57 (53%) of the radiographs demonstrated imperfect lateral projection of greater than 2mm.

Conclusion: The position of the tunnels analyzed in this audit compare favourably with the positions recommended in the available literature. Over 50% of the lateral radiographs displayed imperfect lateral projection greater than 2mm. Imperfect lateral film projection affects the apparent position of the tunnel. Any interpretation of position in it appears on a two-dimensional image must take into account possible errors in the image.
1. TENSEITY OPENING WEDGE OSTEOTOMY
R H Banim, A R Patti, J H Kiltner, J B Richardson
Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, Shropshire

The purpose of this study is to demonstrate proof of principle of a novel opening wedge osteotomy.

"Tenseity" is an engineering term, applied to a system in which structures stabilize themselves by balancing the counteracting forces of compression and tension. The osteotomy is performed by exploiting the planned osteotomy slot, drilling two holes in the osteotomy plane, and completing it with osteotomy and saw. Three threads of osteotomy are thus inserted into the drill holes, and slowly inserted, opening the osteotomy to the predetermined width. This osteotomy is then stabilized with plates and screws, possibly augmented by a staple on the opposite side.

Six patients have been operated using this technique, all with a diagnosis of unicompartmental osteoarthritis. There has been no loss of correction of the osteotomy, and no revision procedures are necessary.

We believe the "tenseity" osteotomy gives additional support compared with standard techniques, because the cortical compression devices separate the forces of compression and tension, and by being positioned anterior and posterior to the tension plate, it gives a triangular construct with a broad base which is more stable than a linear model. We believe this is supported by clinical results.

2. RESULTS OF AORTICOPHONIC RESSECTION OF HOFFA'S FAT PAD AT FIVE TO EIGHT YEARS
M Bhatia, S Alham, J P Fleetcroft
Majors Medical Centre, Gloucester, Kent

Purpose: The aim of this study was to analyse the intermediate to long term results of aorticophonic resection of Hoffa's fat pad.

Methods & Results: This is a retrospective study. All the patients who underwent aorticophonic resection of the infrapatellar fat pad for anterior knee pain between 1997 and 2000 were included in this study. The patients had an additional surgical procedure associated with the Hoffa's fat pad resection. All patients had a BASK score and an MRI scan pre-operatively. All patients were seen pre-operatively by a consultant orthopaedic surgeon or had surgery by the senior author. They were reviewed by telephone interview and postal survey. The BASK score and the patient satisfaction was recorded.

Thirty patients were available for follow up at minimum follow up of 5 years. The clinical diagnosis of Hoffa's disease was made pre-operatively in 12 cases whereas in 18 cases the aorticophonic involvement itself was the Hoffa's fat pad resection. The three cases only in one case the MRI scan was reported as Hoffa's disease. The average follow up period was 76 months (60-168 months). There were 20 males and 10 females. The average age was 36 years (13 - 62 years). The left side was involved in 19 patients and right in 9 patients. One patient had a bilateral involvement. The average pre operative BASK score was 40.5. This improved to 85.8 post operatively (p<0.001). This improvement was statistically significant (p<0.05) for all the components of BASK score. 23 patients (76.6 %) rated their improvement as very good or excellent whereas 6 patients rated it as fair. The patients reported the improvement over the operation and it was found that there was no change following the operation. There was no significant post operative deterioration.

Conclusion: Hoffa's disease is an important cause of anterior knee pain. MRI scan is a sensitive tool for diagnosis of this pathology. There is often relatively a low index of suspicion of its presence. At arthroscopy if the knee is otherwise normal and Hoffa's pad is seen to be tense, we recommend the aorticophonic excision of the Hoffa's pad. This study confirms resolution of the Hoffa Pad in chronic Hoffa's Disease produces long-term improvement in the symptoms.

3. SHOULD OUR MANAGEMENT OF THE ACUTE LOCKED KNEE CHANGE?
V Brudies, P Rau, M Silmon, D Spicer
St. James's Hospital, London

Purpose Of Study: To review our management of the acutely locked knee and the health economic implications of a change in our protocol.

Methods: All patients who underwent knee arthroscopy (£1602 per patient) for an acutely locked knee from October 1st 2003 to October 31st 2005 were identified. Using direct costs, an average per patient cost to manage an acutely locked knee from October 1st 2003 to October 31st 2005 was calculated. Following a conservative approach to direct costs, any patient with a locked knee was assumed to be treated using the current protocol.

Results: The number of acutely locked knees which underwent arthroscopy was performed to assess the implications of adding DIP analysis was performed to assess the implications of adding MRT (£240 per patient) to our protocol.

Findings:

- Number of acutely locked knees which underwent arthroscopy

- 48 patients

- 40 per cent of patients were symptom free following further resection but have undergone ACI or MACI for OA from July 1998. All patients were subsequently assessed on a yearly basis using 6 independent validated clinical, functional & satisfaction rating scores.

Conclusion: This study suggests ACI and MACI produce significant functional improvements in the osteoarthritic knee compared to pre-operative levels.

4. CENTRAL PATELLA WEAR AND RADIOLOGICAL UNDER-DIAGNOSIS OF PATELLO-FEMORAL OSTEOARTHROSIS
D A Smart, H Akesson, Z Debah, T R Burgess
Princess of Wales Hospital, Cardiff, UK.

Aim: To record and explain the incidence of an observed gross discrepancy between the clinical diagnosis of unicompartmental osteoarthritis and skywalking radiographs and actual intra-operative findings.

Methods: Twenty patients undergoing total knee arthroplasty with a pre-existing total knee arthroplasty had skywalking radiographs pre-operatively. At operation the true extent of osteoarthrosis was observed and graded according to Outerbridge. Wise. These results were also recorded. The clinical diagnosis of unicompartmental osteoarthritis was contralateral to the operated knee, and normal skyline radiographs were obtained.

Results: The pre-operative and intra-operative osteoarthrosis grades for each patient were compared. The Kellgren and Lawrence classification was accurate in 51 cases (35%). It underestimated the true extent of osteoarthrosis by at least one grade in 37 cases (25%) and overestimated in eight cases (5%).

Conclusion: The warning radio graph is important to be projected when the patient does not want to assess the long-term outcomes of these patients. We did not find a statistically significant difference in the other biometric parameters.

Central idiopathic anterior knee pain is a self-limiting condition. Tightness of the hamstring muscles and an imbalance between the quadriceps and hamstrings may be one of the aetiological factors, though further research is needed to prove the connection.

5. THE SURGICAL TREATMENT OF PROXIMAL Tibio-FIBULAR GANGLIONS
D Whittle, P Stilesman
Northfield Orthopaedic Centre, Oxford and the Wesley Hospital, Brisbane, Australia

Introduction and aims: The aim of this study was to retrospectively analyse the long term results of the surgical excision of a proximal tibio-fibular joint ganglia.

Method: They are uncommon tumours in this population (prevalence <1%) ' and mimic more sinister pathology creating diagnostic difficulty. They can expand between or within muscle and can lie close to or within the deep branch of the common peroneal nerve. From the Queensland Orthopaedic Oncology Database, twelve patients were identified who had presented with a proximal tibio-fibular joint cyst between 1991 and 2004 and proceeded to surgery. Patients were reviewed at clinic or by phone to assess continued symptom or recurrence.

Results: There were 4 males and 8 females with an average age of 44 years (18-75). One patient had bilateral cysts but elected to only have one side excised. The side distribution was equal. All patients presented with a swelling and pain with pain. Two patients presented with a common peroneal nerve palsy. All patients obtained a marginal excision and histology confirmed a ganglion cyst. At mean long term follow up of 48 months (18-168), eight patients had no recurrence. One patient postoperatively had a transient common peroneal nerve palsy. Of the four patients who had had a recurrence, one patient, and the planned osteotomy site; drilling two holes in the osteotomy plane, and completing it with osteotomy and saw. Two threads of osteotomy are thus inserted into the drill holes, and slowly inserted, opening the osteotomy to the predetermined width. This osteotomy is then stabilized with plates and screws, possibly augmented by a staple on the opposite side.

6. A COMPARATIVE STUDY OF BIOMETRIC PARAMETER IN PATIENTS WITH IDEOPLASTIC ANTERIOR KNEE PAIN
S Pattil, V V Kumar, V Karmath, L White, A Dui
Department of Orthopaedics, James Cook University Hospital, Middlesbrough, UK.

Introduction: Our aim was to compare the biometric parameters of patients with ideopathic anterior knee pain (IARP) with age and sex matched normal population.

Methods: We retrospectively recorded the Q angle, juxta (binocular) angle (KJ), leg length discrepancy (LLD), the medial joint space, and the general health status (SF-36 questionnaire) of patients with idiopathic anterior knee pain less than the age of 11-5 years. These findings were compared with a control group. We also performed a radiological evaluation in all patients.

Results: The visual analogue pain scores in 67 patients (40 bilateral) improved from a mean of 40 at presentation to 25 at follow up. Patients with IARP had significantly greater hamstring tightness than the control group (p=0.03). The medial joint space angles were 30 degrees and 20 degrees respectively in the patient and control groups. We did not find a statistically significant difference in the other biometric parameters.

Central idiopathic anterior knee pain is a self-limiting condition. Tightness of the hamstring muscles and an imbalance between the quadriceps and hamstrings may be one of the aetiological factors, though further research is needed to prove the connection.

7. THE FUNCTIONAL OUTCOME OF AUTOLOGOUS CHONDRONECOTIC IMPLANTATION IN DISTAL FEMORAL OSTEOARTHRITIS
B Rogers, G Bentley, N Butterworth, J Simkhon, TFR Briggs
Royal National Orthopaedic Hospital, Stanmore, Middlesex.

Introduction: The treatment of distal femoral cartilage defects using autologous chondrocyte implantation (ACI) and microfractured autologous chondrocyte implantation (MACI) is supported by clinical results.

Methods: We present the clinical outcomes of 23 knees that have undergone ACI or MACI for OA from July 1998. All patients were subsequently assessed on a yearly basis using 6 independent validated clinical, functional & satisfaction rating scores.

Results: Modified Macnab, Bentley Functional Outcome and Lysholm & Gilchrist clinical rating scores all showed significant improvements compared to pre-operative levels (p<0.05). There was no significant difference between ACI and MACI. Patient Satisfaction and Brittlejohn Visual Analogic Rating Scores both showed sustained improvements. Benefits to both the physical and mental health components of the SF-36 score were demonstrated.

Discussion: This study suggests ACI and MACI produce significant functional improvements in the osteoarthritic knee compared to pre-operative levels.

8. TOPOGRAPHICAL GLYCOSAMINOGLYCAN VARIATION IN HUMAN ARTICULAR CARTILE.
J Fagerby, C Murphy, S Wang, D Hammersmith.
The Royal National Orthopaedic Hospital, Stanmore, UK.

The lead bearing surface of articular cartilage has often been shown to affect its biochemical composition. This study investigates the topographical variation of glycosaminoglycan (GAG) relative to DNA content in human distal femoral articular cartilage.

Methods: 26 paired samples of distal femoral articular cartilage, from weight bearing and non-weight regions, were obtained from thirteen patients undergoing arthroplasty. Following paraformaldehyde fixation, spectrophotometric (GAG) and fluorometric (DNA) assays assessed the biochemical composition of the explants. Data was analysed using a T test.

Results: Despite no significant differences is absolute DNA concentrations, weight-bearing regions of articular cartilage showed a significantly higher concentration of GAG relative to DNA compared with non-weight bearing areas (p<0.021).

Discussion: This study suggests that chondrocytes in weight bearing regions of human articular cartilage produce a greater quantity of GAG than those located in non-weight bearing areas. We conclude that the role of GAG in maintaining the biochemical composition of human articular cartilage.

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**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 2006.

**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 2006**
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.

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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 2006
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Mr Andy Williams
Mr Simon Donnell
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