Welcome to BASK 2015
Tantalum patellar augments in the post patellectomy knee: are they doomed to failure? (Abstract Number: 0001)
robert.jordan@doctors.org.uk

Background
• Patellectomy is associated with high rate of extensor mechanism dysfunction
• Previous reports of high failure rates with tantalum patella augments in post-patellectomy knee

Methods-
Clinical and radiological assessment of post-patellectomy knee treated with augmentation reviewed. In vitro study used to assess the effect of tantalum on fibroblast using a Chick tendon fibroblast based fibrin gel contraction model.

Results
• (n=5) 3 females and 2 males, mean age 34 years at time of patella augmentation
• Each had undergone previous surgery, mean 13 years elapsed since patellectomy
• Initial improvement in functional outcome but all implants loosened/removed within two years

Discussion
• Small series, but concurs with previous reports
• Despite initial success all five implants failed within 2 years as found in literature (1, 2)
• Bony contact a key factor for success with all augments loosening < 50% bony contact (3)
• Soft tissue attachment reliant on fibroblasts and the effect of tantalum has not been studied
• These results suggest tantalum inhibits fibroblasts
• This strongly suggests that tantalum may negatively impact soft tissue formation and may explain the poor soft tissue ingrowth

Hypothesis
• In the absence of residual bone stock, the soft tissue ingrowth had insufficient mechanical properties to withstand physiological loading
• Once the sutures fail the implants detached

Conclusion
• In our experience the tantalum augment does not provide a reliable long-term treatment option

References
2) Graham J. Effect of bone porosity on mechanical integrity of the bone-cement interface. JBJSa 2003
3) Ries MD. Porous tantalum patellar augmentation: the importance of residual bone stock. CORR 2006
Determining the Immediate Weight Gain following Total Knee Replacement
Miss Kate Spacey, Mr Abdel Reda, Mr Alan White. Department of Orthopaedics

Background
Patients often report the belief that their operative leg is ‘heavier’ following surgery, or that any weight gain is a direct consequence of the weight of their prosthesis.

Although explanations such as postoperative swelling, or weight gain due to reduced activity are obvious; we set out to determine the actual immediate weight gain from insertion of a Total Knee Replacement.

Method
All soft tissue, boney cuts and leftover cement from 17 consecutive primary Vanguard TKR were weighed. Accurate weights for all implants were supplied by Biomet.

Results
• Average soft tissue/bone excision (g): Figure 1
  Male: 161
  Female: 84

• Average total weight gain (g): Figure 2
  Male: 369
  Female: 341

• Average gain:loss ratio: Figure 3
  Male: 2.3
  Female: 4.1

Conclusion
• Insignificant direct weight gain
• Represents 0.5% of average total body weight
• Greater proportion of weight gain in Women compared to that excised
INTRODUCTION

- Medial patellofemoral ligament (MPFL) is the primary static soft tissue stabiliser of the patellofemoral joint
- MPFL rupture is usually caused by traumatic patella dislocation. This can potentially lead to patellofemoral instability and recurrent patella dislocation
- MPFL reconstruction involves replacing the ruptured ligament with a graft which can either be autograft, allograft or synthetic ligament
- There are several types of graft fixation implant that can be used such as endobutton and interference screws
- The aim of our study was to assess the clinical outcome of MPFL reconstruction using Arthrex RetroButton as suture button fixation on patella

METHODS

- A retrospective analysis was done on 50 patients who had MPFL reconstruction surgery using autograft hamstring tendon
- One senior knee surgeon performed the operations
- The clinical outcome of surgery was determined at subsequent outpatient follow ups

RESULTS

- 50 patients underwent 54 MPFL reconstruction surgery between October 2007 and February 2014
- 4 patients had bilateral MPFL reconstruction surgery
- Mean age – 24 years old (13 – 44)
- Female : Male (36:14)
- All patients had Arthrex Retrobutton fixation on patella
- 9 patients had anterior knee pain requiring removal of the prominent retrobutton which resolved the pain
- Other complications include patella fracture, graft failure, infection and saphenous nerve injury
- 4 MPFL reconstructions were revised due to recurrent instability of patella

CONCLUSIONS

- Arthrex Retrobutton can be used in MPFL reconstruction with good graft fixation on patella
- However it can potentially cause anterior knee pain due to its prominence underneath the skin. In this situation, we recommend removing it at least 9 months after surgery to ensure that the graft fixation has healed
Materials and Methods

A prospective randomised control trial - commenced in November 2011.

Number of patients: 289 patients - either an AGC or Vanguard TKA.
Follow-up: Between 6 weeks - 2 years (Mean-12.7 months)
Follow-up >1 yr: 126 patients (63 in each group)
Follow-up >2 yrs: 60 patients (30 in each group)
Outcome was primarily assessed by - Range of movement (ROM), Kujala, Oxford, AKSS and Noble & Weiss score.

Results

<table>
<thead>
<tr>
<th></th>
<th>At 2 years</th>
<th>AGC</th>
<th>Vanguard</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROM (Flexion)</td>
<td>0.5-110°*</td>
<td>1.2-118°*</td>
<td></td>
</tr>
<tr>
<td>Kujala</td>
<td>71.2</td>
<td>68.8</td>
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<tr>
<td>OKSS</td>
<td>37.9</td>
<td>36.7</td>
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<tr>
<td>AKSS (Knee)</td>
<td>88.5</td>
<td>87.2</td>
<td></td>
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<tr>
<td>AKSS(Function)</td>
<td>73.5</td>
<td>76.8</td>
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</table>

Conclusion

We haven't been able to demonstrate any difference in functional outcomes between the two groups as yet.
Two-stage Revision for Infected Total Knee Arthroplasty (TKA): results using a modified Articulating Knee Spacer (0012)

Authors: Al-Tawil K, Arvinte D, Sood MK, Institution: Bedford Hospital. Email: karam15@doctors.org.uk

Revision Hip & Knee Unit, Department of Orthopaedics, Bedford Hospital, UK

**Introduction**

- Deep Infection in Total Knee Arthroplasty occurs in 0.5-2% of cases
- Two-stage revision is the gold standard
- Spacers inserted at the first stage can be static or articulating
- Articulating spacers maintain knee mobility between stages
- Non-stemmed spacers can migrate and cause soft-tissue damage and further bone loss

**Objectives**

- To report the results of our modified stemmed articulating spacer with particular reference to spacer migration.

**Patients & Methods**

- 9 consecutive patients requiring a 2 stage revision.
- All knees were aspirated in theatre prior to 1st stage to identify the organism to allow for organism specific antibiotics to be incorporated into the spacer
- Intravenous antibiotics given for a minimum of 2 weeks, with another 4 weeks thereafter with an oral agent if available. Otherwise intravenous antibiotics were administered through a Hichmann line.
- The spacer was produced intraoperatively with cement using a mould (Biomet spacer) with tibial and femoral cement stems, produced using a syringe as a mould, were incorporated.
- Stems were incorporated in order to extend the delivery of antibiotics into the intramedullary canal and to reduce the chance of migration. The spacers were secured with “late” cement and additional cement was used to help balance the knee.
- Patients were allowed to mobilise partially weight bearing using crutches for the period between 1st and 2nd stages.

**Results**

- Infection eradicated in all cases. Average Oxford knee score 35.4
- No spacer migration was observed in any case and there was minimal spacer related bone loss
- All patients were partially weight-bearing between stages.
- 8 infection free cases at mean of 3.5 years post 2nd stage

<table>
<thead>
<tr>
<th>Case</th>
<th>Organism</th>
<th>Follow up (Months)</th>
<th>Interstage (Months)</th>
<th>Interstage mobility</th>
<th>Infection clear</th>
<th>Oxford Score</th>
<th>Knee flexion</th>
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<tbody>
<tr>
<td>1</td>
<td>Staph aureus</td>
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<td>Yes</td>
<td>Yes</td>
<td>19</td>
<td>&lt;90 (68)</td>
</tr>
<tr>
<td>2</td>
<td>No organism</td>
<td>51</td>
<td>3</td>
<td>Yes</td>
<td>Yes</td>
<td>45</td>
<td>&gt;90</td>
</tr>
<tr>
<td>3</td>
<td>Mixed growth</td>
<td>38</td>
<td>9</td>
<td>Yes</td>
<td>Yes</td>
<td>29</td>
<td>&gt;90</td>
</tr>
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<td>4</td>
<td>Staph aureus</td>
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<td>2</td>
<td>Yes</td>
<td>Yes</td>
<td>44</td>
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<td>5</td>
<td>Gram +ve Cocci</td>
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<td>4</td>
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<td>Yes</td>
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<td>&gt;90</td>
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<td>58</td>
<td>3</td>
<td>Yes</td>
<td>Yes</td>
<td>42</td>
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<td>5</td>
<td>Yes</td>
<td>Yes</td>
<td>37</td>
<td>&gt;90</td>
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<td>8</td>
<td>None</td>
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<td>17</td>
<td>Yes</td>
<td>Yes</td>
<td>RP</td>
<td>RP</td>
</tr>
<tr>
<td>9</td>
<td>None</td>
<td>56</td>
<td>8</td>
<td>Yes</td>
<td>Yes</td>
<td>Arthrodesis</td>
<td>Arthrodesis</td>
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</table>

- Incorporation of a cemented stem reduces spacer migration with subsequent soft tissue damage and bone loss with added antibiotic delivery into the canal.
- Additional cement allows the creation of a “custom spacer implant” to balance the knee and allow near normal knee movement between stages.
- The technique is simple, cost-effective and effective.
- Limitations included a small cohort and only postoperative Oxford knee scores

**References**

- Hart W et al. Two-stage revision of infected total knee replacements using articulation cement spacers and short-term antibiotic therapy. JBJS. 2006. 88-B:1011-1015
Enhanced Healing of Anterior Cruciate Ligament Reconstruction Using an Autologous Stem Cell Therapy (0014)
Rachel Oldershaw¹, Michael McNicholas², David Deehan³
¹University of Liverpool; ²Aintree University Hospital NHS Foundation Trust; ³Newcastle Surgical Training Centre, Newcastle upon Tyne Hospitals NHS Foundation Trust; Email: lrao1@liverpool.ac.uk

INTRODUCTION
• Integration of soft tissue grafts following ligament reconstruction is slow
• Delayed healing impacts on return to sport / occupation activity and increases the risk of chronic disease
• Mesenchymal Stem Cells (MSCs) can augment clinical outcomes by accelerating repair following surgery
• Study Aims: to develop an autologous stem cell therapy that accelerates ACL following surgical reconstruction

HYPOTHESIS
• MSCs are harvested from haemarthrosis fluid
• MSCs populations are expanded and combined with an injectable material for delivery at surgery

RESULTS
1) Harvest of MSCs is improved with low oxygen
   Enhanced Number of MSCs
   Enhanced Bone Formation

2) Injectable biomaterial supports cell survival and bone formation
   Live MSCs on Microparticles
   Electron Microscopy Bone Formation

3) MSCs are biocompatible with titanium screws used in ACL surgery (poster 0033)

CONCLUSIONS
• Protocols for harvesting and culturing MSCs have been optimised
• MSCs can be combined with injectable biomaterial
• Pre-clinical testing to demonstrate safety and efficacy has been funded by the MRC UK Regenerative Medicine Platform
Introduction.

Total knee arthroplasty (TKA) and Total hip arthroplasty (THA) are well-recognised and proven interventions for patients with advanced arthritis, being both efficacious and cost effective. Studies to date demonstrate a steady increase in the prevalence of primary TKA and revision TKA in the United States between 1990 and 2000. The observed increase in revision surgery has been attributed to a number of factors including a rise in primary procedures, population life expectancy, rates of obesity, and extending the surgical indications to a younger population cohort. US projections estimate that by 2030 the demand for primary TKA will grow by 673% and by 601% for revision TKR from their 2005 level. Projections for hip arthroplasty are more conservative with demand increasing by 174%, with revision hip arthroplasty growing to 137%. The population of England and Wales continues to increase from 56 million as determined by the mid 2011 census. Estimates from the Office of National Statistics predict a steady rise in population numbers to 64 million by 2030. The increase in total population numbers alongside a rise in older population cohorts is likely to have a direct impact on TKA and THA numbers over the coming years.

Methods.

We analysed data from The National Joint Registry to see if data extrapolated from our registry was comparable to predictions made in the US. We also present the alternative, extreme projection scenario where the incidence rate of female primary operations grows at an ever-increasing rate.

Results.

Figure 1: Projected total number of Knee Replacements in England and Wales

Figure 2: Projected total number of Revision Knee Replacements in England and Wales

Figure 3: Projected total number of Primary Hip and Knee Replacements in an extreme projection scenario in England and Wales

Figure 4: Projected total number of Revision Hip and Knee Replacements in England and Wales

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Predicted Growth % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(^{st}) TKR</td>
<td>451</td>
</tr>
<tr>
<td>1(^{st}) THR</td>
<td>802</td>
</tr>
<tr>
<td>Revision TKR</td>
<td>310</td>
</tr>
<tr>
<td>Revision THR</td>
<td>25</td>
</tr>
</tbody>
</table>

Conclusion.

Our study specifically analyses the joint replacement numbers in England and Wales, which we predict to be around 485176 and 720995 in primary knee and hip arthroplasty respectively in 2030. These imply cumulative growth predictions of the same magnitude as previously reported for the US. In keeping with this, we still support the consensus regarding the economic burden of arthroplasty in the future as a real and unaddressed problem. This has significant and serious implications for doctors, healthcare providers, politicians and patients to help plan and accommodate this increased demand for arthroplasty in the future.
Assessing the accuracy of the NJR surgeon and hospital profiles (20)
Nirav K Patel, Sheng Yang Qiu, David Ahearn, Vikas Vedi
Department of Trauma and Orthopaedics, Hillingdon Hospital, Uxbridge, Middlesex, UK

Introduction
- National Joint Registry data for individual consultants are released to the general public in 2013: www.njr.surgeonhospitalprofile.org.uk
- Contribute to national data on quality and outcome of joint replacements in the UK
- Perceived performance of consultants/trusts judged on NJR data

Current Practice
- Paper NJR forms completed in theatre after case by consultant/SpR
- Paper booklet left for theatre staff who are registered with the NJR data entry system for NJR database and data is entered into NJR

Aim
- Analyse data and data released to general public

To assess the accuracy of the NJR surgeon and hospital profiles for Hillingdon and Mount Vernon Hospitals

Results
- The rate of patient consent was 82% according to NJR data.
- 750 total cases recorded in hospital admission data with 60 (8%) not recorded in NJR.
- The rate of patient consent was 82% according to NJR data.
- The NJR requested data showed 687 cases whereas the NJR public website showed 672 cases.
- In May 2012, of 71 joint replacements in theatre logbooks, 68 (95.7%) cases are recorded in hospital admission data and 50 (70%) reported to NJR

Discussion
- Joint replacement numbers were under-reported to NJR possibly due to incorrect PID entry.
- In addition, hospital admission data did not fully reflect the actual number of operations performed compared to theatre logbooks.
- Significant ramifications for the perceived performance of surgeons and hospitals by the public alongside financial implications to hospitals from coding inaccuracies.

Recommendations
1. Analyse unreported cases with root cause analysis to identify reasons why they were missed.
2. Take care to complete consent field, especially at HH
3. Ensure that surgeons accurately complete an NJR form for EVERY joint replacement performed.
4. Feedback and appropriate retraining of staff involved in collection, collation and data entry of NJR forms.
5. Should surgeons be registered with NJR data entry systems and directly enter NJR online promptly on day of surgery to avoid delays and missed reporting.
6. Prospectively collect theatre log data / trust data and compare this with NJR data monthly to identify unreported cases promptly and for missed cases to be added to NJR with minimal delay.

Methods
- Retrospective analysis of data requested from the NJR and the NJR public website for a typical UK district general hospital from January 2012 to December 2012.
- This was compared to hospital admissions data for the same period and theatre logbook data for May 2012.
- Unreported cases were identified using comparative formulaic function analysis of patient identification numbers (PID).

Figure 1: Mount Vernon Hospital as per NJR website

Figure 2: NJR Data Mount Vernon Hospital (2012)

Figure 3: Trust internal data vs. NJR data
Is The Clinical Threshold For Revising A Unicompartmental Knee Arthroplasty Lower Than For Total Knee Arthroplasty? - A Single Surgeon Experience

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Andrew.Davies13@wales.nhs.uk
Poster no: 0021

Methods and Materials:
• Patients who underwent revision of UKA or TKA for unexplained knee pain between 2008 and 2012 were identified from the senior surgeon’s arthroplasty database.
• These cases were investigated thoroughly for cause of knee pain prior to surgery.
• Oxford Knee Score (OKS) and American Knee Society Scores (AKSS) were recorded prospectively by the senior surgeon pre-operatively and at each follow up.
• Pre and post op scores were compared in both groups and statistical analysis of the data was performed.

Results:

<table>
<thead>
<tr>
<th></th>
<th>UKR to TKR (n =12)</th>
<th>TKR to TKR (n= 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age (years)</td>
<td>59.8 (48 - 81)</td>
<td>69.0 (60 - 83)</td>
</tr>
<tr>
<td>Sex</td>
<td>5 males, 7 females</td>
<td>7 males, 7 females</td>
</tr>
<tr>
<td>Laterality</td>
<td>6R, 6L</td>
<td>7R, 7L</td>
</tr>
<tr>
<td>Time from initial surgery to revision (months)</td>
<td>29.8 (15 - 43)</td>
<td>47.0 (9 - 130)</td>
</tr>
<tr>
<td>Pre op OKS</td>
<td>33.63</td>
<td>37.50</td>
</tr>
<tr>
<td>Pre op AKSS function</td>
<td>30.83</td>
<td>23.57</td>
</tr>
<tr>
<td>Pre op AKSS knee</td>
<td>44.25</td>
<td>33.79</td>
</tr>
</tbody>
</table>

No significant differences in post-op knee scores between the two groups at last follow up (p>0.05).

All scores improved significantly from pre-op values (p<0.05, Wilcoxin-signed ranks test)

• Revised UKR and TKR do equally well as shown by knee scores following surgery.
Ongoing Knee Pain 1 Year Post TKR
Is Gait Abnormality a Factor?  (0022)

Mr J P Flanagan  The Chelmsford Knee Clinic  email: Tina. Williamson2@ramsayhealth.co.uk

- Up to 20% of patients have chronic pain following TKR.

- This study investigates the effect of changing a Quads Avoidance Gait pattern as clinically diagnosed by quads wasting and a lack of full extension at mid-stance.

- 22 patients with ongoing knee pain and a quads avoidance gait were taught to use their quads to drive their knee back into full extension at mid-stance, having landed on a slightly bent knee.

- Oxford Knee Scores (OKS) were taken at initial consultation and at 3 months.

  OKS: Initially: Mean 20.9 (sd 9.2)
  3 months: Mean 34.1 (sd 8.9) ANOVA p < 0.001

- The chronic pain of patients post TKR can be significantly improved by altering their gait pattern.
Improving consenting process for total knee replacement: A complete audit cycle

WC Lee¹, S Balasubramanian², V Kumar², M Sunkara², R Reddy²
¹Singapore General Hospital, Singapore, leewuchean@yahoo.com ²George Eliot Hospital, Nuneaton

Introduction

• Litigation claims following total knee replacement (TKR) is rising globally due to inadequate counselling of risks during consent taking.¹
• Good consenting process include documentation of benefits and risks discussion.
• There is a risk of inadequate documentation with generic handwritten consent forms. Improvement is needed.

Method

Audit standard

• Risks of TKR endorsed by the British Orthopaedic Association:²
  Pain, bleeding, deep venous thrombosis, stiffness, prosthesis wear, infection, pulmonary embolism, altered leg length, altered wound healing, joint dislocation, nerve and blood vessel damage, bone damage, death

Data Collection

• Prospective 30 consecutive elective primary TKR April-June ‘14 (Pre-implementation of change) & June-August ‘14 (post-implementation of change)
• Review of consent forms
• Patient survey to recall benefits and risks

Results

Change Implemented

• Sticker label with all risks printed on it

Significantly improved documentation for most risks. (Graph 1)
Significantly improved recall of benefits of surgery

No significant improvement in recall of risks

Discussion & Conclusion

• Rare risks still needs to be discussed if the adverse outcomes are severe.³
• Poor recall of risks is well known.⁴-⁶ If the risks are not documented, they may not have been discussed and increases the chance of successful litigation.⁴
• Use of this sticker label is cheap, logistically feasible, sustainable, and can be applied to other elective procedures.⁴

Graph 1: Documentation of risks pre- & post-implementation of change

<table>
<thead>
<tr>
<th>Pre-implementation of change (n=27)</th>
<th>Post-implementation of change (n=29)</th>
<th>p</th>
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<tbody>
<tr>
<td>Pain relief</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Improve mobility</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Recalled 0 risk</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Recalled 1 risk</td>
<td>16</td>
<td>14</td>
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<tr>
<td>Recalled 2 risks</td>
<td>5</td>
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<td>Recalled 2 risks</td>
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<td>Recalled 1 risk</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Recalled 2 risks</td>
<td>5</td>
<td>14</td>
</tr>
</tbody>
</table>

Mean Age ± SD (n=27) 68 ± 10 vs 76 ± 10, p=0.75
Male (%) (n=27) 11 (40.7) vs 14 (48.3), p=0.57
ASA 1 & 2 (%) (n=27) 17 (63.0) vs 21 (72.4), p=0.61

References

A total of 197 consecutive surgeries were performed by a single senior operator (FG)

All prostheses were implanted between Dec 2002 and Nov 2013

Visits @ pre-op, immediate post-op, 3 weeks, 3, 6 & 12 months thereafter

The prosthesis is a fixed bearing CoCr femur & all-poly tibia

35 lateral & 160 medial Unis; 2 patients received TKA

191 implants are still in situ

Estimated KM survivorship of 97.2% or 0.48 revisions/100 observed years

Longest follow-up of 11 years

KM of 2.8% @ mean 4.25 years fu

Mean Post op flexion 124 Deg

93% very satisfied or satisfied

Disclosure: No funding was provided for this study. Dr Gougeon acknowledges the assistance of his co-authors in the final statistical analysis of data & preparation of this poster

<table>
<thead>
<tr>
<th>Parameter</th>
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<tr>
<td>HKA angle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral surgery</td>
<td>188° [180°-190°]</td>
<td>183° [180°-190°]</td>
</tr>
<tr>
<td>KSS score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knee score</td>
<td>58 [36-77]</td>
<td>88 [76-100]</td>
</tr>
<tr>
<td>Function score</td>
<td>67 [15-100]</td>
<td>85 [71-100]</td>
</tr>
</tbody>
</table>
We have successfully managed unicompartmental knee arthritis using an offloader brace. It is easy to use and can delay the need for surgery.

Clinical pathway setup in 2012 at Royal Cornwall Hospital. Included - isolated medial or lateral compartment osteoarthritis in flexible joint Excluded - inflammatory disease, severe malalignment and morbid obesity.

Patients were assessed at 6 and 12 months for symptoms, visual analogue pain score (VAS), compliance, satisfaction and Oxford Knee Score (OKS).

We reviewed 113 consecutive patients (118 knees). Average age 59 years
94 medial and 24 lateral compartment osteoarthritis

71 patients (72 knees) experienced excellent pain relief. The OKS improved from 28.6 to 20.7 and VAS reduced from 6.7 to 4.9 (average BMI 28.8).

27 patients (28 knees) had some relief of symptoms. The average OKS reduced from 25.1 to 23.7 and VAS from 6.8 to 6.5 (average BMI 28.4).

15 patients (18 knees) were disappointed and had discontinued its use. The OKS had increased from 27.5 to 29.1 (average BMI 27.8)

Patient expectations generally correlated well with favourable outcome. There was a slight correlation with OKS and no correlation with BMI.

Low compliance was due to patient prejudice and poor fit.

A committed occupational therapist and one to one care is essential for conservative management of knee arthritis.

In appropriate cases bracing does offer short-term pain relief and improved function.
The Osteogenic Response of Mesenchymal Stem Cells is Controlled by the Topography of Titanium Metal Surfaces

Rachel Oldershaw1, Michael McNicholas2, David Deehan3

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INTRODUCTION

- Mesenchymal Stem Cells (MSCs) can augment clinical outcomes by accelerating repair following surgery
- Our clinical interest is enhanced integration of soft tissue grafts (e.g. ACL Reconstruction)
- Study Aims: to investigate the behaviour of MSCs with titanium (Ti) metal surfaces
- We have compared the osseous response of MSCs cultured on Ti discs and Ti screws used in surgery

METHODS

- MSCs were harvested from haemarthrosis fluid and cultured under pro-bone forming conditions on:
  A  Discs
  B  Smith and Nephew, RCI Screws

RESULTS

1) MSCs attached and formed bone on both Ti surfaces
2) Greater proliferation on Ti discs
3) Greater bone formation on Ti screws

CONCLUSIONS

- MSCs are biocompatible with Ti surfaces
- Presently, there is no reason to believe an adverse event would occur when combining MSCs with Ti implants
- However, MSC response is influenced by implant shape - and this must be considered when using MSCs for different clinical indications
Introduction

- Designed to address failures of previous PFA
- Based on asymmetric trochlear geometry of Genesis II TKA
- Oxinium components

Methods

- Consecutive series of Journey PFJ 2005-2009
- Inclusions: symptomatic PFJ OA, intact ligaments, fixed flexion deformity ≤ 10°

Results

- 101 implants in 83 patients
- 79% ♂; 12% bilateral procedures
- Complete outcomes of 90 (89%) implants
- 88% survivorship at mean 7 years

PROM Progression

- Preoperative
- 2-5 Years
- 5 + Years

Survivorship

- All 12 revisions were to TKR
- 5/12 revisions in first 20 implants
- 8/12 revisions due to tibiofemoral OA progression
- Mean time to revision 50 months (10-99)

Discussion

- Largest series of Journey PFA
- 74/101 implants by design surgeon (JHN) via lateral parapatellar approach
- Good improvement from preoperative scores

Conclusions

- Journey PFA gives a good medium-term functional outcome with 88% survivorship at 7 years
An investigation into how and why physiotherapists strengthen hamstrings following anterior cruciate ligament reconstruction (0041)

Sarah Gardner, Solomon Abrahams
gardsk@talk21.com

**Introduction**
Superior outcomes with hamstring grafts mean they are commonly used for anterior cruciate ligament reconstruction. Evidence of ongoing hamstrings weakness and neuromuscular problems highlights the importance of rehabilitation.

**Aim**
Are physiotherapists managing ACL reconstructions effectively?

**Materials/Methods**
An anonymised questionnaire was developed. Physiotherapists were recruited via Twitter, iCSP, Frontline magazine and trust letters to complete a paper or online questionnaire.

**Results**
From 204 physiotherapists who took part-

- **Fig.1.** Rehabilitation approach chosen

- **Fig.2.** Why hamstrings strengthening important after surgery

Physiotherapists felt hamstrings strengthening was **most important** at 3-6 months and **least important** at 0-3 months.

Physiotherapists chose the Gluteals (169), Gastrocnemius (143) and Quadriceps (108) as the top groups which assist the hamstrings by decreasing anterior tibial translation.

**In terms of exercise selection,** physiotherapists favoured-

- **Isometric hamstrings** (42%) in the **early stage**
- **Squats** (18%) in the **intermediate stage**
- **Lunges** (11%) in the **later stage**
- **Hurdle hops/jumps** (17%) in the **return to sport stage**

**Discussion**
The study demonstrates inconsistency about why it is important to strengthen hamstrings after ACL surgery and when this is most relevant. It shows some confusion amongst physiotherapists about muscles which assist the ACL. Although there was appropriate exercise selection in the early stages, this was not always the case in later stages.

The study highlights a need for graft specific rehabilitation and improved physiotherapy education on late stage rehabilitation.
The contribution of medial structures to the stability of cruciate-retaining and posterior-stabilised total knee arthroplasty (0043)

Kiron Athwal, Hadi El Daou, Christoph Kittl, Andrew Davies, David Deehan and Andrew Amis

1The Biomechanics Group, Department of Mechanical Engineering, Imperial College London, Email: k.athwal12@imperial.ac.uk

- Robotic cadaveric study with 8 knees: Deley PFC Sigma CR and PS implants used
- Sequential cutting of the deep MCL, superficial MCL and posterior medial capsule (PMC) was performed

- sMCL consistent role in restraining:
  - valgus (62% on average across flexion)
  - internal-external rotations (22% and 37%)
  - anterior translation (24%).
- PMC restrained at low flexion angles
- dMCL restrained in external and valgus rotation

- Important to preserve the sMCL during arthroplasty to maintain stability in different planes of motion
  → where possible, surgeons should minimise MCL release in varus patients
- PS knee did not offer more valgus stability than CR in medial deficient knees
  → a more constrained implant would be required
Anatomy, imaging and treatment of the anterolateral ligament (ALL): a systematic review of the evidence (0044)

J Bassett¹,², T Boutefnouchet², D Greenish¹, P Thompson², T Spalding², A Sprowson²,³
¹University of Birmingham, ²University Hospital Coventry and Warwickshire, ³University of Warwick

Correspondence to Mr J Bassett: james.bassett1@nhs.net

Introduction

• Deficiency of the ALL is thought to contribute to anterolateral rotatory instability
• Positive pivot shift in patients with anterior cruciate ligament rupture

Methods

• Searches were completed using OVID and EMBASE for ALL and other nomenclature from the literature

Results

• Historical papers poorly describe a ligament on the anterolateral aspect of the knee
• Many different names and descriptions
• Recent papers show significant differences in ALL dimensions using ANOVA

Conclusions

• More detailed anatomical and biomechanical assessments required
• Correlation between clinical and radiological findings needed
• Trials required to assess treatment options

80 papers from EMBASE/OVID

- Paper not in English: 28
- Abstract appropriate: 47
- Abstract not relevant: 5

- Paper not relevant: 9
- Paper included: 36
- Abstract only: 2

Figure 1 (Left) – Dissection lateral aspect of knee (completed at University of Birmingham) – ALL (anterolateral ligament), BFT (Biceps Femoris Tendon), ITB (Iliotibial Band), LCL (Lateral Capsular Ligament)

Figure 2 (Above) – Results of OVID/EMBASE searcher
Does a screw across the physis matter in paediatric ACL reconstruction?

Baldwin MJ, Dodds RA. (Poster No. 046)

Introduction
- Conservative management of paediatric ACL rupture results in a poor outcome
- Transphsyeal reconstruction with avoidance of fixation crossing the physis is accepted as safe
- Author’s current practice - short RCI screw in

Study Aim
- To determine if a crossing implant results in evidence of growth plate injury (GPI)

Method
- Retrospective review - 34 consecutive patients
- All ≤ 17 yrs and skeletally immaturity
- Post-op radiology and clinic letters reviewed

Results
- 6 patients with screw crossing tibial physis
- In all cases screw “migrated” into metaphysis
- No clinical deformity or functional limitation

Conclusion
A longer screw would increase fixation strength, avoid supplementary staples and not cause GPI

Day 10
Month 21
Introduction:
MPFL reconstruction is a well recognised procedure for recurrent patella dislocation.

Aim: To evaluate patient outcome when using a synthetic ligament.

Methods:
Technique:
The MPFL was reconstructed using a polyester teraphthalate ligament passed through a patella drill hole, sutured under the retinaculum and fixed to the femur at the isometric point via a staple.

Assessment:
Pre- and Post-operative Patellofemoral pain & knee instability scores
• Crosby & Insall
• Kujala (0-100)
• Shelbourne (0-100)

Data:
14 procedures. (13 patients). 9 female, 4 male. Mean age 23.9 yrs.
Average follow-up of 5.5 months.

Results:
• 92% post-operative outcomes rated as good or excellent
• Increase in the average kujala score by 21 points
• Increase in the average shelbourne score by 17 points

Conclusion:
MPFL reconstruction using a synthetic ligament is a safe & effective procedure for recurrent patella dislocation.
High patient satisfaction and early post-operative patella stability achieved.
Early Operative Experience of Using a 70-Degree Arthroscope and Flexible Reamers in ACL Reconstruction (0054)

Jonathan Kosy, Vipul Mandalia  Exeter Knee Reconstruction Unit, Royal Devon and Exeter Hospital  
Jonathan.kosy@nhs.net

70-Degree Arthroscope

Better View of Footprint... Without Overcrowding

30-Deg AL Portal  30-Deg AM Portal  70-Deg AL Portal

Flexible Reamers

No Need for Hyperflexion ... Better Flow

View Along Tunnel

Femoral  Tibial

Results

55 Prospective Patients
65 Age and Sex-Matched Controls
-30-deg arthroscope, Straight Reamers

9% Longer Femoral Tunnel
36.9 (+/- 3.87) mm to 40.1 (+/- 3.49) mm  
p<0.01

No Change Femoral Tunnel Angle

Potential Improvement Femoral Aperture Shape
ePosters

Available now on the BASK website

www.baskonline.com
Outcomes of combined tibial tuberosity transfer and medial patellofemoral ligament reconstruction for recurrent patella instability (0055)

G Pemmaraju1, J Bassett1,2, G Nagra1, R Abbas1, S Chugh1, E Mughal1
1Royal Wolverhampton NHS Trust, 2University of Birmingham
Correspondance to Mr J Bassett: james.bassett1@nhs.net

Introduction
- Patella instability is multifactorial
- Can be associated with pathomechanics from anatomical variance

Aim
- Assess outcomes of a combined MPFL reconstruction (images 1-4) + TT transfer (5-8)

Methods
- 24 patients (27 knees) included with recurrent patella instability and failed conservative management
- All assessed radiologically with MRI/CT
- TT:TG distance > 20mm or 15-20mm with trochlear dysplasia
- Operated on by single surgeon in one unit
- Standardised post-op rehabilitation
- Post-op Kujala scores completed – Mean 87.1 [68-98]
- Mean follow up 31 months [20-47]

Conclusion
- MPFL reconstruction + TT transfer is a successful operation for patients with TT:TG >20mm
- Results in patients with trochlear dysplasia more modest
Standing anteroposterior radiographs in full extension cannot determine the pattern and severity of arthritis within the knee

Hamilton TW¹, Sanaullah A², Pearce O², Webber J², Khalik M², Mohammed K², Murray DW¹, Pandit H¹ & Flynn J²

¹Nuffield Orthopaedic Centre, Oxford UK ²Milton Keynes General Hospital, Milton Keynes, UK
Thomas.Hamilton@ndorms.ox.ac.uk (No. 0062)

Background
Standing anteroposterior (AP) radiographs in full extension have been used for almost 50 years to evaluate the pattern and severity of arthritis within the knee, however their utility has yet to be fully defined.

Aim
To investigate whether standing AP X-rays in full extension can determine the pattern and severity of arthritis within the knee.

Methods
Following local approval in a series of 50 patients undergoing total knee replacement the joint space width (JSW) of the medial and lateral tibiofemoral compartments was measured from the pre-operative standing AP radiographs in full extension. At the time of operation the status of the medial and lateral compartments was graded by the operating surgeon using a modified Weidow Score.

Results
Medial compartment JSW decreased as observed grade of arthritis increased, however, in 75% of patients this did not reach 0mm even in the presence of full thickness defects on the tibia and femur. Figure 1. In the lateral compartment no significant difference (p=0.57) was seen in JSW between those patients who had normal cartilage and those that had full thickness cartilage loss on the tibia and femur. Figure 2.

Conclusion
Standing AP radiographs in full extension cannot determine the pattern and severity of arthritis within the knee, particularly in the lateral compartment. The optimum radiographic assessment of the knee remains to be defined.

Acknowledgements: Supported by the NIHR Biomedical Research Centre, based at Oxford University Hospitals Trust, Oxford. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.
Medium- to long-term evaluation of a contoured focal resurfacing prosthesis system (HemiCAP®) in the knee of UK patients

Lily Li¹, Akash Patel², Humam Jundi¹, Harish Parmar¹
¹East and North Hertfordshire NHS Trust, UK ²Imperial NHS Trust, UK
XL228@doctors.org.uk

Introduction

• HemiCAP® is a focal resurfacing system
• Matched, contoured articular prosthesis
• For treatment of localised articular damage not appropriate for arthroplasty or biological repair

Methods

• Prospective evaluation
• One consultant orthopaedic surgeon
• Standardised post-op rehabilitation
• Outcomes:
  • KOOS₄ score
  • VAS
  • osteoarthritis grade
  • re-operations/complications
• Compared with early results from 2005-2008

Results

• 6 pts (5 medial, 1 lateral)
• Mean follow-up 74 months
• Mean age 44.8 years
• Mean pre-op KOOS₄ 39.1
• Mean 22-month follow-up KOOS₄ 79.6
• Mean latest follow-up KOOS₄ 71.3
• Mean VAS at latest follow-up 8.8
• There was no loosening or implant migration
• No increase in osteoarthritis grade.
• One underwent revision (UKR after 3y)

Conclusion

• Joint-preserving HemiCAP® system provides good analgesia and functional improvement in both the short and longer-term.
• We believe this is one of the longest follow-up series to date.
Antimicrobial Peptides (AMPs) in Human Synovial Periprosthetic Joint Infection Membrane (0065)

Banke IJ, Stade NI, Prodinger PM, Mühlhofer H, Graichen H, Burgkart R, von Eisenhart-Rothe R, Gollwitzer H

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2 Asklepios Orthopädische Klinik Lindenlohe, 92421 Schwandorf, Germany

Objective

Differentiation between septic and aseptic loosening of (total) joint replacement is of utmost importance for successful exchange arthroplasty. However diagnostic tools show insufficient accuracy in the clinically common and challenging chronic low-grade infections. Reliable biomarkers are lacking. Antimicrobial peptides (AMPs) are part of the innate immune response towards microbial growth. Recently we could show significant intraarticular levels of human cathelicidin LL-37 and β-defensin-3 (HBD-3) in periprosthetic joint infection (PJI) synovial fluid with high diagnostic accuracy. The objective of the present study was to evaluate human synovial PJI membrane for these promising biomarkers, which may significantly facilitate histological diagnosis of PJI.

Material and methods

In this prospective controlled clinical trial (diagnostic level II) consecutive patients with coagulase-negative staphylococcal PJI (n=8) and control patients with aseptic loosening of total hip (THR) and knee (TKR) replacements (n=9) according to the criteria of the Musculoskeletal Infection Society or primary arthroplasty (n=8) were included. Semiquantitative immunohistochemical analysis of the AMPs HBD-2, HBD-3 and LL-37 in PJI membrane and isolated synovial cells based on total Allred and immunoreactive Remmele and Stegner score was performed. For statistical analysis SPSS19.0/R2.11.1 (p<0.05) was used.

Intraoperative resection of synovial PJI membrane for immunohistochemical analysis in total hip replacement loosening.

Results

The AMPs HBD-3 and LL-37 were significantly elevated (up to 11x) in synovial membranes with PJI compared to aseptic loosening. The area under the curve (AUC) in a receiver operating characteristic curve analysis was equal to 1.0 for both scores. Isolated synovial cells from synovial membranes showed comparable results with a significant HBD-3/LL-37-increase up to 4x in PJI.

Conclusion

For the first time in human synovial periprosthetic joint infection membrane a significant semiquantitative increase and excellent diagnostic accuracy of two AMPs in septic loosening of THR is shown. Our results implicate AMPs as promising biomarkers for the histological diagnosis of PJI.

Literature

Inconsistencies In The Enhanced Recovery Programmes Across the NHS

Nagra NS, Hamilton TW, Murray DW, The BONE Collaborative, Pandit HG
Nuffield Orthopaedic Centre, Oxford University Hospitals NHS Trust, Oxford University Clinical Academic Graduate School (OUCAGS)
navig.nagra@msd.ox.ac.uk (N° 0070)

Background
Enhanced Recovery Programmes (ERPs) have been demonstrated to be clinically and cost effective, significantly reducing patient morbidity and mortality across a range of surgical specialties.

Aim
Identify variations in current ERPs for primary knee arthroplasty across the NHS and establish adherence to local policies within individual trusts.

Methods
Directed through the British Orthopaedic Network Environment (BONE), twenty NHS trusts offering elective knee arthroplasty completed a pro-forma to establish the composition of their knee arthroplasty ERP and performed a fifteen patient (per centre) audit to assess compliance.

Results
• Sixteen centres completed the audit. Figure 1.
• A large contrast of content and detail of ERPs within different centres was noted.
• Pre-operative education was provided in 88% of centres, although content and delivery varied.
• There was wide variation in anaesthetic technique recommended as part of the ERP with nerve blocks seldom advised.
• The use of analgesic, anti-inflammatory and anti-fibrinolytics drugs varied between centres with regards to dose and timing of delivery in the peri-operative period.
  • Gabapentinoids was used in 75% of ERPs.
  • Tranexamic acid was used in 60% of ERPs.
  • Peri-articular local anaesthetic infiltration was used in 60% of ERPs.
• Adherence to ERPs varied significantly between centres (XX to XX).

Discussion
Significant variations exist in the content and delivery of ERPs with many components lacking an evidence base, and poor uptake of those components that have been demonstrated to be effective. Furthermore, despite guideline compliance with ERP protocols is poor.

To improve patient care a gold standard evidence-based ERP should be established, and used across the NHS.

To become involved please visit the BONE Collaborative
www.bone.ac.uk

Figure 1: Geography of centres participating in audit
Outcomes of Patients Over 65 Undergoing Knee Arthroscopy in the Presence of Radiological Osteoarthritis
(e-poster number 0072)
M.A. Lea, E.W. Yates, G.J. McLauchlan. Lancashire Teaching Hospitals Trust. Email: matthewlea@doctors.org.uk

Introduction

- NICE guidance (IPG230) currently recommends knee arthroscopy and debridement but not just washout for the treatment of OA (1)
- Recent update to NICE guidelines suggests mechanical symptoms a reason for knee arthroscopy
- Moseley NEJM 2002 – Randomised controlled trial of 180 patients. No statistically significant difference at 2 years when assessing pain relief and knee function (2)
- Cochrane Review 2009 – Probably does not improve pain or ability to function compared to placebo (sham surgery) (3)

Aims

- Describe how effective knee arthroscopy is in managing symptoms in this population
- Identify any correlation between the x-ray findings, arthroscopy findings and clinical outcome
- Show how many patients underwent TKR within 1 year?

Methods

- Bluespier was used to identify knee arthroscopy patients between Jan 2009 – Aug 2013.
- Retrospective analysis of the >65 group.
- Pre-op symptoms – pain, mechanical
- X-ray findings: Grade of OA (Kellgren-Lawrence classification) single observer
- Arthroscopy findings: Grade of OA (Outerbridge classification), meniscal tear
- Post-op symptoms (worse, no change, improved)

Results

- 3866 patients, 422 (11.8%) were 65 or over and 404 had radiological OA
- The average age of the study group was 72 (65 – 92.7) years
- 182 males and 222 females
- Pain 404 (100%), Mechanical symptoms 168 (41.2%)
- 294 (72.8%) had meniscal tears at arthroscopy

<table>
<thead>
<tr>
<th>Kellgren Lawrence Grade (worst compartment)</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44</td>
</tr>
<tr>
<td>2</td>
<td>44</td>
</tr>
<tr>
<td>3</td>
<td>257</td>
</tr>
<tr>
<td>4</td>
<td>59</td>
</tr>
</tbody>
</table>

Fig 1. Chart to show radiological grading (worst compartment)

Fig 2. Chart to show symptoms at first follow up (mean 71 days)

Conclusion

- Fewer than half of patients improved at first follow up
- 10% of patients were worse
- Those who improved at first follow up have a low conversion rate to TKR at 1 year(2%)
- Mechanical symptoms did not appear to have an effect on outcome
- Meniscal pathology had no effect on outcome
- These patients should be consented cautiously

References

A reliable visual aid when planning high tibial osteotomy according to first principles
NG Farrar*, T Wellens, M Chan and R Pydisetty
St. Helen’s and Knowsley NHS Trust
e-poster 0073 *ngfarrar@doctors.org.uk

Methods
- Doctors of 3 different grades (ST8, SHO, F1) performed 12 sets of planning for HTO twice 2 weeks apart according to first principles adapted from Dror Paley.
- Intra and inter rater reliability co-efficients were compared using Pearson’s method.

Results
- Intra-observer reliability high for opening angle and medial distance (0.883-0.981).
- Inter-observer reliability high for opening angle and medial distance (0.692-0.949).

Conclusions
- This planning method is simple, reproducible and reinforces the first principles of correction.
- This method can produce a useful visual ‘aide memoir’ to take to theatre.
Aim
To develop a tool to identify patients suffering adverse events following high volume low complication rate surgery.

Methods
Tool based on PAS coding identified 335 patients undergoing knee arthroscopy (2008-2012) with at least one of:
• unexpected overnight stay
• clinic attendance < 7 days
• A&E attendance < 28 days
Control group (209) of remaining 2034 without any factors was sampled for comparison

Results
• 335 / 2369 (14.1%) patients identified as +ve by tool
• 294 case notes analysed with 59 true complications (14 major)
• 8 / 209 in control group had true complication (all minor)
• Length of stay / readmission significant predictors of true complication (p<0.001)

<table>
<thead>
<tr>
<th>Complications</th>
<th>Tool + ve</th>
<th>Tool - ve</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Yes</td>
<td>67</td>
<td>78</td>
<td>46.2%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>268</td>
<td>1956</td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>Yes</td>
<td>16</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>319</td>
<td>2034</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Major Complications identified by Tool

Conclusion
The tool identified all major complications by review of only 14% of case notes. It also identified areas to make significant efficiency savings in the Trust.
Simultaneous Bilateral High Tibial Osteotomy

A case control series demonstrating early equivalence of simultaneous surgery against a staged approach

Middleton PR, Phelan SM, Elson DW, Dawson MJ. Cumberland Infirmary, Carlisle, UK
Enquiries to: paulmiddleton1@hotmail.co.uk (Abstract Number: 0075)

Introduction: A simultaneous bilateral HTO procedure offers a potentially quicker recovery versus staged bilateral procedures.

Methods: 5 Bilateral HTO’s were matched against 5 unilateral HTO’s. Post operative PROMS were compared.

Conclusions: Simultaneous bilateral HTO is safe with no adverse outcomes recorded. Early outcomes are statistically equivalent. Simultaneous surgery offers shorter overall hospital stay with obvious health economic benefits. Simultaneous recovery also offers convenience and less time off employment compared to staged recovery periods.

Results:

Length of hospital stay was equivalent (1.6 vs 1.4 days)

Conflicts of Interest: None

Analysis: The study showed no significant differences in pain scores and patient-reported outcomes between simultaneous bilateral and unilateral HTOs. The results support the safety and feasibility of simultaneous bilateral HTO in the appropriate patient population.
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2-in-1 Single Stage Revision for Infected Total Knee Replacement: 5 – 8 Year Follow Up (0077)

Richard W Parkinson, Waggas Jamil, Kim Howard
(drwjamil@doctors.net.uk)

Introduction
Current literature supports two-stage revision as the gold standard treatment for infected total knee replacement. We report the 5-8 year follow up clinical results of “2 in 1” single stage revision.

Method
From June 2006 to January 2014, 24 patients had 2 in 1 revision total knee replacement for infection by the senior author. The infective organism(s) was isolated by arthroscopic synovial biopsy prior to revision. Standard single stage procedure included: - Explantation - Debridement - 15 minute interval - Re-prep and re-draping - Rescrubbing - Re-implanting new prostheses

All the patients received IV antibiotics for 1 week and PO antibiotics for 5 weeks, specific to the organism(s) cultured from the arthroscopy samples were continued for further 6 weeks.

Results
The sample constituted 15 (62.5%) men and 9 (37.5%) women. Mean age was 72 years. Preoperative and postoperative WOMAC, SF12 & OHS scores were recorded. No significant change in these scores was seen after the first 12 months post operatively. 7 of our cohort had discharging sinuses.

Discussion
A post-operative infection after total knee replacement is a rare but devastating complication. The burden of disease is added to by 2 major operations in a 2-staged procedure. In our cohort of 2-in-1 revisions all patients had eradication of infection; confirmed (clinically and biochemically at 6 weeks post op) and all discharging sinuses healed fully. No tibial tubercle ostetomies or patellar turn downs were required. Limitations of our study include relatively small numbers but with long follow up, all were first time revisions, there were no cases of MRSA/ VRE and no plastic surgical input was required. We would therefore not currently advocate this procedure for re-revision surgery.

Conclusion
With no re-revisions required, our results for the “2 in 1” single stage revision for infected total knee replacement are at least as good as the traditional 2 stage procedure and should be considered in revision knee arthroplasty surgery. Benefits include avoiding stiffness and arthrofibrosis due to a staged procedure with cement spacers; overall reduced length of stay and cost, one major operation instead of two and quicker recovery.

References
IS BLOOD LOSS REDUCED BY DELAYING THE FIRST ADMINISTRATION OF A DIRECT THROMBIN INHIBITOR FOR THROMBOPROPHYLAXIS IN ELECTIVE TOTAL KNEE REPLACEMENT (0081)

Ms, Monika Rezacova, Mr, Yegaprun Kalaharaje, Mr, Vineet Batta
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INTRODUCTION

Patients facing major orthopaedic operations, including total knee and total hip replacement, are at risk of venous thromboembolism. Dabigatran etexilate is a new oral, direct thrombin inhibitor, clinically approved for prophylaxis of thromboembolism in patients undergoing elective orthopaedic joint replacements. The primary aim of this study was to examine the correlation between the dabigatran administration initiation time (0-4 h vs. > 4 h post-surgery) and the respective blood loss in patients undergoing elective total knee replacement.

METHODS

Patients selected for the study were split into two groups differing in the time of DE administration initiation (0-4 h vs. > 4 h post-surgery). The formula of Nadler was used for the quantitative determination of the peri-operative blood loss in these patients.

Criteria:

Patients aged 40 years or older who underwent an elective total knee replacement were eligible for enrolment in this study. Patients selected in this retrospective cohort study went through their TKR surgery between 1st January 2010 and 31st May 2012, performed by a single surgeon at single hospital in the UK.

RESULTS

Of 71 patients initially enrolled for the study, 52 patients were finally included in the analysis. Out of these 52 patients, there were a total of 18 males and 34 females. The descriptive data of these patients is presented in Table 1. The patients were split into two groups of 21 patients (DE administration between 0-4 h post-surgery) and 31 patients (DE administration > 4 h post-surgery). Patients older than 73 years or with renal impairment received dose of 75 mg initially and 150 mg from day 2 onwards. Patients with no impairment or under the age of 73 should receive 110 mg initially and 220 mg from day 2 onwards.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MALE</th>
<th>FEMALE</th>
<th>AGE (years)</th>
<th>BMI</th>
<th>LENGTH OF STAY (days)</th>
<th>BLOOD LOSS (litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 h</td>
<td>61</td>
<td>15</td>
<td>71</td>
<td>33</td>
<td>5</td>
<td>0.331</td>
</tr>
<tr>
<td>&gt; 4 h</td>
<td>12</td>
<td>10</td>
<td>70</td>
<td>32</td>
<td>5</td>
<td>0.331</td>
</tr>
</tbody>
</table>

| TABLE 1: Patients' characteristics |

There was no significant difference in the calculated mean blood loss between the two groups. The calculated mean blood loss for the 0-4 h group was 331 ml, compared with 331 ml in the > 4 h group (p > 0.05). This showed no reduction in bleeding even with a delayed DE administration.

CONCLUSION

The efficiency and safety of DE administration was comparable at both times (0-4 h vs. > 4 h post-surgery) and no clinically significant disadvantage concerning peri-operative blood loss could be observed when performing an early administration initiation of DE.
Background
NHS England encourages hospitals to collect the Oxford Knee Scores (OKS) before and 6 months following Total Knee Replacement.

Objective
To examine differences between hospitals with highest and lowest changes in OKS.

Methods
• April 2013 to March 2014 Patient Reported Outcome Measures (PROMs) data from the HSCIC website were examined;
• Hospitals with >100 records, performing above or below the 95% control limits on the case-mix adjusted health gain measurement for the OKS were identified and categorised into best or worst performing hospitals (BPH or WPH);
• Medians for each question in the OKS were calculated for both groups, and differences between them evaluated.

Results
• 10 sites were above and 10 sites were below 95% control limits.

Conclusion
• Pre-surgery, for 11 out of 12 questions there was no difference between BPH and WPH;
• 6 months post-surgery, only for 3 questions did the BPH outperform the WPH, and the difference was only one point per question;
• Is this difference between BPH and WPH clinically significant?
• To be the best, the WPH have to improve by only one point for just 3 questions.
A nurse-led (and consultant supported) daily surgical site infection (SSI) clinic for post-operative lower limb arthroplasty patients was commenced. The aims were to provide timely and expert assessment of surgical wounds and empower patients and colleagues to access help. The service aimed to be cost neutral, reduce deep infections and 30-day readmission rates.

**Method**
A “wound” bleep provided daily access to the SSI clinic for colleagues and patients. Data was collected over a 2 years (October 2012-14) on the dates of referral, surgery and assessment. Information regarding presentation, intervention and ongoing plan acted as a handover tool. Rates of deep infection and 30-day readmission were compared before and after the clinic.

**Results**
395 patients underwent 586 reviews

**Time from referral to review:**
Mean 1.6 days (range 0-11 days)
107 patients (27%) required ≥2 appt.

**Readmission for infection:**
0.88% before the clinic
0.68% after the clinic

<table>
<thead>
<tr>
<th>Source of referral</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthroplasty class</td>
<td>120</td>
</tr>
<tr>
<td>Physios</td>
<td>7</td>
</tr>
<tr>
<td>Nurses</td>
<td>23</td>
</tr>
<tr>
<td>GP</td>
<td>4</td>
</tr>
<tr>
<td>District nurses</td>
<td>7</td>
</tr>
<tr>
<td>Patients</td>
<td>74</td>
</tr>
<tr>
<td>Unknown</td>
<td>103</td>
</tr>
</tbody>
</table>

**Conclusion**
This service supplements enhanced recovery and an emphasis to reduce length-of-stay. The source of referral was variable; at least 92 referrals came from outside the hospital, potentially reducing A&E attendance. Time from referral to expert assessment was rapid. The impact on readmission rates for wound problems was minimal.
Introduction:
ACL rupture in patients with open physes is relatively uncommon and challenging. We report a case of a 5 year old child with a complete tear of the ACL who underwent direct repair, 5 weeks post injury, and internal brace rather than reconstruction; a technique initially described by Professor Gordon McKay1.

Technique:
EUA of the knee demonstrated a significantly positive Lachman and grade 3 pivot shift test, diagnostic arthroscopy with a standard 30º scope, identified a clear ACL rupture with an empty lateral wall but with a good remnant, normal chondral surfaces and a partial thickness tear to the upper surface of the lateral meniscus. Direct repair was achieved by approximating the ACL remnant back to its femoral attachment, once a good hold was achieved with an arthroscopic suture passer, and supplemented by an “internal brace”. The surgery was all epiphyseal on the femoral side and trans-physeal on the tibial side using 3.4mm tunnels.
Post-operatively the patient was placed in a brace for four weeks set in extension to facilitate direct healing but allowed knee mobilisation 3-4 times per day up to 90º out of brace. At the four week mark she was fully weight bearing and was demonstrating an 80º of active knee flexion and full extension.

Results:
At 3 months an EUA & second look arthroscopy was undertaken with removal of hardware, revealing a completely healed ACL and a stable knee (normal Lachman & negative pivot shift test). The patient returned to all her normal activities without limitation at 4 months with an MRI scan confirming a healed ACL ligament.

Conclusion:
We believe that in selected cases where there is a good ACL remnant direct repair should be undertaken as an alternative to conventional reconstructive surgery which requires prolonged rehabilitation.

Differences in Knee Mechanics between Customized, Individually Made BKR and Off-the-shelf TKR Patients during Walking

Henry Wang, Jonathan Foster, Natasha Francksen, Jill Estes, and Lindsey Rolston

Ball State University, University of Kentucky, Henry County Center for Orthopedic Surgery; hwang2@bsu.edu

Introduction
It is reported that 30% of knee osteoarthritis (OA) patients have bi-compartmental disease. The majority of these patients undergo total knee replacement (TKR). The IDuo system is a customized, individually made bi-compartmental knee replacement (BKR) treating OA of the medial/lateral and patellofemoral compartments. The BKR features the following benefits: an intact contralateral compartment, retained anterior and posterior cruciate ligaments, and anatomical knee symmetry. It is surmised that the BKR knee will have similar knee mechanics to that of a normal healthy knee during daily activities. To date, there is no information regarding knee mechanics during level walking with a BKR. There are no in-vivo biomechanical comparisons between a BKR limb and a limb with an off-the-shelf TKR.

Purpose
To examine the differences in knee mechanics between three groups of participants during walking: (1) patients with unilateral BKR, (2) patients with unilateral TKR, and (3) healthy controls.

Methods
To date, 23 participants have been recruited. Seven patients (63 ± 10 years; 100 ± 3 kg; 1.73 ± 0.12 m) received TKRs (Parsons, Zimmer Inc.) (post-op: 14 ± 5 mo). Four patients (63 ± 7 years; 93 ± 18 kg; 1.66 ± 0.06 m) received BKRs (Duo, ConforMIS Inc.) (post-op: 19 ± 4 mo). Twelve healthy participants (57 ± 6 years; 82 ± 12 kg; 1.75 ± 0.11 m) served as controls. Participants walked at a self-select speed in a gait laboratory. 3D motion capture was performed at 100Hz and ground reaction forces were collected at 2000Hz. Knee joint kinematics and kinetics were calculated during the stance of walking. MANOVA was performed at α = 0.05.

Results
No significant differences in walking speed, peak knee extensor moment, peak knee power absorption, and peak knee power production between the BKR and control groups were observed (P > 0.05) (Table 1). In contrast, compared to the control group, the TKR group showed slower walking speed, less peak knee extensor moment, less peak knee power absorption and production (P < 0.05). Compared to the BKR group, the TKR group demonstrated less peak knee power absorption and production (P < 0.05). In addition, the TKR group showed a trend of less peak knee extensor moment than that of the BKR group (P = 0.08).

Table 1: Means (SDs) of walking speed, peak knee extensor moment, peak knee power absorption, and peak knee power production of the BKR, TKR, and control groups.

<table>
<thead>
<tr>
<th>Gait Variables</th>
<th>BKR</th>
<th>TKR</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking Speed (m/s)</td>
<td>1.34(0.04)</td>
<td>1.18(0.3)</td>
<td>1.48(0.18)</td>
</tr>
<tr>
<td>Peak Knee Extensor (Nm/kg)</td>
<td>0.64(0.11)</td>
<td>0.6(0.15)</td>
<td>0.81(0.22)</td>
</tr>
<tr>
<td>Peak Knee Power (W/kg)</td>
<td>-1.6(0.29)</td>
<td>-1.18(0.22)</td>
<td>-1.8(0.39)</td>
</tr>
<tr>
<td>Peak Knee Power Production (W/kg)</td>
<td>0.53(0.44)</td>
<td>0.54(0.23)</td>
<td>1.04(0.28)</td>
</tr>
</tbody>
</table>

Discussion
Normal walking speed and sagittal plane knee mechanics appear to be achievable outcomes with customized BKR surgeries. In this study, the BKR patients demonstrated comparable walking speed and peak knee extensor moment and power to the healthy control participants during stance phase of walking. Off-the-shelf TKR patients walked significantly slower than healthy controls with less knee extensor moment and power produced. In addition, compared to the BKR knees, the off-the-shelf TKR showed deficits in peak knee extensor moment and power during walking. It is possible that the design features of the customized BKR implant are a factor that leads to knee mechanics which are more similar to the controls.
Patient satisfaction following secondary patellar resurfacing after Total Knee Arthroplasty: Results from an arthroplasty register

CJ Thomas¹, V Patel², CN Esler², RU Ashford²

1. University Hospitals of Coventry & Warwickshire
2. University Hospitals of Leicester

Introduction
There remains a significant lack of consensus regarding the third compartment of the knee in arthroplasty. Whilst strong evidence supporting primary patellar resurfacing remains elusive [1,2,3], some studies have demonstrated reduced rates of revision when the patella is primarily resurfaced [4,5], however the possibility of catastrophic complications has led some to suggest that selective resurfacing may be the solution [6].

Despite this, anterior knee pain remains a relatively common complication of bi-compartment TKA [7,8], for which some would consider secondary patellar resurfacing the next step. A number of relatively small studies have considered the role of secondary resurfacing for patients who report anterior knee pain following bi-compartment TKA [6, 9, 10, 11, 12, 13, 14] however it is difficult to draw any strong or significant conclusions from them.

We sought to determine whether patients undergoing secondary resurfacing benefitted from the procedure.

Methods
We assessed patients’ post-operative satisfaction with secondary patellar resurfacing following bi-compartment total knee arthroplasty (TKA) via a postal questionnaire. All patients included in the Trent and Wales Arthroplasty Register (TWAR) for secondary patellar resurfacing were invited to participate using patient reported outcome measures including the Oxford Knee Score (OKS), a modified Kujala (patello-femoral) score, the EuroQual EQ-5D-3L and EuroQual visual analogue score for overall health.

The Trent and Wales Arthroplasty Register Practically all patients who receive a primary or secondary arthroplastic procedure of the hip or knee are reported to the Trent and Wales Arthroplasty Register (TWAR). TWAR was established in 1990. The register now supports 118 surgeons at 31 hospitals. The TWAR receives all data directly from consultant surgeons at the time of operation, a proportion of which is independently verified by clerks from the Trent Arthroplasty Audit Group (TAAG). Participation is by consent only following the 1998 Data Protection Act. Neither pre nor post-operative patient-related outcome measures (PROMs) are recorded in the register.

Results
We identified 192 patients from the register who had undergone secondary patellar resurfacing over a 20-year period. 30 had died according to death register checks, leaving 162 patients. 88 of 162 (54%) questionnaires were completed; 3 did not wish to participate, 10 were returned and 61 were unaccounted for. The mean age at resurfacing was 67 (min 42, max 81). 52% were female. The median time to follow-up was 55 months (min 18, max 236). Median time to secondary resurfacing was 28 months (min 7, max 126).

• Only 43% of patients responded that they felt the secondary resurfacing resolved the problem of pain in the front of their knee (54% no, 3% unsure),
• Despite this 57% were satisfied with the resurfacing (38% dissatisfied, 5% unsure),
• 13% had, or were awaiting, further surgery on the same knee at time of response (81% not, 5% unknown),
• All PROMs were significantly better for those who felt that the resurfacing had worked:
  • OKS 29 vs. 16, p <0.05
  • Modified Kujala 51 vs. 32, p <0.05
  • Eq5D-3L 0.616 vs. 0.384, p <0.05
• All PROMs were independent of age, gender, time to follow-up and time to secondary resurfacing (all p >0.40).

Conclusions
Based on PROMS, secondary patellar resurfacing produces a satisfactory outcome in 2 in every 5 patients. Further work is required to understand which groups benefit from patella resurfacing so that the best surgical candidates can be more carefully selected. In the meantime patients must be made aware of what outcomes can be reasonably expected.
BACKGROUND: All poly tibia (APT) has equivalent results to metal backed tray (MBT) but is cheaper with less backside wear.

METHOD: Retrospective analysis of prospectively collected data in 708 patients

RESULTS:

97.26% survival rate for any revision
97.42% survival rate for aseptic loosening
99.19% survival for tibial aseptic loosening only

Improved SF12 and WOMAC scores
Improved arc of motion and muscle strength

DISCUSSION:
1. Outcomes of APT is comparable to MBT with low aseptic loosening rates and good survival rates.
2. Cheaper cost more attractive in current economic climate
How Good Are We At Consenting? Comparing Standards In Practice To National Guidelines

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Stoke Mandeville Hospital, Buckinghamshire Healthcare NHS Trust, Oxford University Clinical Academic Graduate School (OUCAGS)
navraj.nagra@msd.ox.ac.uk (No. 0097)

Introduction
Proper consenting is an important part of Good Medical Practice and provides protection for Doctors - ‘If it’s not written down, it didn’t happen’. Litigation is an increasing problem (£14m/5 years in the NHS). Knee arthroscopy has a 4.7% complication rate (infection occurs in 0.84%).

Aim
To determine the accuracy of our consenting of patients for complications of arthroscopic procedures of the knee against BOA national guidelines.

Methods
• Retrospective review of 33 electronic patient records and 31 consent forms.
• Elements of consent were compared to ‘gold standard’ BOA guidelines.

Results
• Average age: 50.4 years, 16♀:15♂
• 10% did not consent for infection, 42% not for damage to structures (Figure 1)
• <20% consented for pain or swelling
• 10% had illegible components (Figure 2)

Take Away Message
Use of procedure specific ‘Pro-Forma’ consent forms could improve quality and accuracy of consenting.
- We are gathering patients’ perspectives of these and planning re-audit.

References
British Orthopaedic Association Consent Forms available from: www.orthoconsent.com
Short-term Outcome of Revision Knee Arthroplasty using Distal Femoral Replacement for Periprosthetic Fractures (0101)
Girgis EF, Coleridge SD, McAllen CJP and Keenan JN
Derriford Hospital, Plymouth, UK
e_f_girgis@hotmail.com

Introduction:
Complex distal femoral peri-prosthetic fractures after previous knee replacement in elderly patients with comminution and poor bone quality are a challenging and increasingly encountered problem. Distal femoral replacement has been used in very distal fractures when associated with the above criteria. The bone stock in the distal fragment can be too deficient to allow good distal locking screws purchase when internal fixation is used to treat this category of fractures.

Aim:
The purpose of this study is to assess the outcome of distal femoral replacement in supracondylar periprosthetic fractures around previous total knee replacement.

Patients and Methods:
Our theatre database search identified 14 patients with a mean age of 82 years (70-94) who underwent distal femoral replacement between 2009 and 2014 for distal femoral periprosthetic fractures. Most patients had significant co-morbidities including dementia in five patients. Three patients had failed locking plates due to non-union. All the 14 pre-operative radiographs showed periprosthetic fractures with the lowest fracture line below the upper end of the femoral component (Su classification, type 3). Eleven fractures were multi-fragmentary. Clinical and radiological records were retrospectively reviewed. The mean clinical follow-up was 15 months (1.5 - 43). Functional outcome was assessed using a questionnaire with median time of 18 months (5 - 45) from the date of surgery.

Results:
The median of maximum post-operative knee flexion was 100° (90°-135°). Eight patients returned to their pre-fracture level of mobility or better. Dementia was the main factor that negatively affected the functional outcome in four patients. The mean post-operative Oxford Knee Score was 22 (7-40). The mean EQ-5DL (UK) was 10 (6-12). All last follow-up radiographs showed no signs of loosening. One patient died post-operatively from broncho-pneumonia.

Discussion:
The main indication for distal femoral replacement in our patients was the poor bone quality with severe comminution. Our results showed that distal femoral replacement gave satisfactory outcome with relatively low rate of complications. We recommend the use of distal femoral replacement in elderly patients with Su classification type 3 periprosthetic fractures in the presence of poor bone stock where internal fixation is deemed to fail.
CPD points at BASK

4 CPD points for education +
1 point per hour free papers relevant to practice
Make reflective notes
Complete post meeting SurveyMonkey feedback

No survey = No certificate
Analysis of Payments for Primary Joint Replacements.  
A Case Against Further Tariff Reductions for These Procedures  

D Rolton, J Jhaj, B Lotz, A Ahmed, L Brunton, S Deo  
Great Western Hospitals NHS Foundation Trust

Introduction
• We hypothesise that the current OPCS/HRG remuneration system would fail to reflect the procedures undertaken.

Methods
• 352 TKRs performed over a 1 year period were analysed.  
• 2.6 % required a rotating hinge for disease severity.

Results
• 3 OPCS codes allocated to all types of TKA.  
• No distinct code for hinged constrained TKR as a primary procedure.  
• 11% of hinged TKA and 40% of patella resurfacings correctly coded to generate higher tariff.  
• Estimated loss of £140k.  
• Complex Procedures -> comorbidities  
  > complications  
  > length of stay

Conclusions
Our analysis confirms that Hospital trust carrying out the most complex cases incur a significant loss for each case. As the burden of this work increases and the more profitable work moves away from traditional centres the financial reward should mirror this.
The Financial Implications for Complex Primary Knee Arthroplasty Surgery to a UK District General Hospital

D Rolton, J Jhaj, B Lotz, A Ahmed, L Brunton, S Deo
Great Western Hospitals NHS Foundation Trust

Introduction
• We set out to analyse the costs to a district general hospital of undertaking complex primary knee arthroplasty cases requiring a constrained implant

Methods
• Total costs were calculated including implant cost theatre time and in patient stay.
• This was compared with tariff remunerated

Results

![Bar chart showing average total cost to hospital compared to average tariff received by hospital]

Conclusions
• Hospitals undertaking the most complex incur a significant loss for each case (£4905)
• As the level of this work increases and the more profitable work moves from traditional centres the financial reward should mirror this.
Radiographic Assessment of Anterior Cruciate Ligament Integrity (0107)

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1. The Robert Jones & Agnes Hunt Orthopaedic Hospital, Oswestry / 2. Nuffield Orthopaedic Centre, Oxford

Background
Total ACL is a contraindication to performing medial unicompartmental knee replacement (UKR). ACL integrity can be determined by analysis of the medial tibial wear pattern on lateral radiographs (see Figs. 1 and 2). Keys et al1 were able to predict ACL integrity on AP and lateral radiographs with 95% accuracy. The aim of this study was to assess the reliability and reproducibility of knee radiographs in predicting ACL integrity.

Methods
The AP and lateral radiographs of 100 patients who had undergone knee replacement surgery were assessed for ACL integrity by 2 senior consultant orthopaedic surgeons and 2 knee fellows on two separate occasions. Of these 100 patients, 80 were ACL intact and had undergone total knee replacement or combined ACL reconstruction and mobile Oxford UKR, while 20 were ACL deficient and had either undergone total knee replacement or combined ACL reconstruction and mobile Oxford UKR. Inter and intra-observer variability was measured as well as sensitivity, specificity and accuracy to see whether plain radiographs were a useful diagnostic tool in assessing ACL integrity.

Results (see Table 1)
The intra-observer reliability was moderate (0.57) while the inter-observer reproducibility was only fair (0.22). In comparison to MRI, the sensitivity of knee radiographs was low (0.38), as were the accuracy and specificity.

Kappa analysis for rater agreement.

<table>
<thead>
<tr>
<th>Kappa Value</th>
<th>Agreement Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; -0.01</td>
<td>Poor agreement</td>
</tr>
<tr>
<td>-0.01 - 0.20</td>
<td>Slight agreement</td>
</tr>
<tr>
<td>-0.21 - 0.40</td>
<td>Fair agreement</td>
</tr>
<tr>
<td>Moderate agreement</td>
<td>0.41 - 0.60</td>
</tr>
<tr>
<td>Substantial agreement</td>
<td>0.61 - 0.80</td>
</tr>
<tr>
<td>Almost perfect agreement</td>
<td>0.81 - 1.00</td>
</tr>
</tbody>
</table>

Table 1

<table>
<thead>
<tr>
<th>Rater</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
<th>Diagnostic Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>WJ</td>
<td>0.35</td>
<td>0.85</td>
<td>0.37</td>
<td>0.84</td>
<td>0.75</td>
</tr>
<tr>
<td>SHW</td>
<td>0.40</td>
<td>0.61</td>
<td>0.38</td>
<td>0.85</td>
<td>0.74</td>
</tr>
<tr>
<td>AB</td>
<td>0.25</td>
<td>0.65</td>
<td>0.29</td>
<td>0.82</td>
<td>0.73</td>
</tr>
<tr>
<td>AP</td>
<td>0.45</td>
<td>0.82</td>
<td>0.39</td>
<td>0.86</td>
<td>0.75</td>
</tr>
</tbody>
</table>

PPV: positive predictive value, NPV: negative predictive value

Conclusion
Plain radiographs are a poor imaging modality at detecting ACL integrity. MRI scanning and surgical inspection remains a more predictable method at detecting suitable candidates for UKR.

References
Tourniquet or No Tourniquet for Total Knee Arthroplasty: A Single Surgeon Study

Anil Haldar, Amgad Nakhla
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Department of Trauma and Orthopaedic Surgery

Introduction
A survey of members of the American Association of Hip and Knee Surgeons reported that 95% of responders use a tourniquet in total knee arthroplasty (Berry et al. 2010). The main benefit of tourniquet use is a reduction in bleeding into the surgical field. Many surgeons believe this improves visibility, which permits better surgical technique and can reduce operating time (Smith et al. 2009). Other studies have reported reduced intra-operative blood loss in knee arthroplasty performed with a tourniquet (Zhang et al. 2014).

However, there is also evidence suggesting tourniquet use in total knee arthroplasty can be detrimental, with complications such as skin blistering, muscle injury, nerve palsies and post-operative stiffness having been reported (Zhang et al. 2014). Particularly, several studies have focussed on increased rates of venous thromboembolism in total knee replacements performed with tourniquets (Hernandez et al. 2012).

Given the variance in opinion, we would like to present our single-centre, single surgeon experience of total knee arthroplasty performed with and without a tourniquet.

Objectives

- To estimate and compare blood loss after total knee arthroplasty performed with and without a tourniquet
- To report and compare the incidence of symptomatic venous thromboembolic events after total knee arthroplasty performed with and without a tourniquet

Methods

Data was retrospectively collected on 164 consecutive total knee replacements performed by a single surgeon at our centre between May 2012 to June 2014.

Bloods loss was estimated using pre- and post-operative haemoglobin (Hb) levels. Symptomatic venous thromboembolic events were noted based on positive radiological findings - deep vein thromboses (DVTs) evidenced by doppler ultrasound and pulmonary emboli (PEs) found on CT pulmonary angiography (CTPA).

Results

A single surgeon performed 46 consecutive total knee replacements with a tourniquet, followed by 116 total knee replacements without a tourniquet at our centre.

Of the 46 patients who had total knee replacements with a tourniquet, the average fall in Hb on day one post-surgery was 27g/L. Average total fall in Hb was 34g/L. 3 patients developed below knee DVTs (6.5%).

Of the 116 patients who had total knee replacements without a tourniquet, the average fall in Hb on day one post-surgery was 26g/L. Average total fall in Hb was 34g/L. 3 patients developed venous thromboemboli (2.6%), 1 PE and 2 DVTs.

<table>
<thead>
<tr>
<th></th>
<th>With tourniquet (n=46)</th>
<th>Without tourniquet (n=116)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Fall in Hb Day 1 Post-Op</td>
<td>27 g/L</td>
<td>26 g/L</td>
</tr>
<tr>
<td>Average Total Fall in Hb</td>
<td>34 g/L</td>
<td>34 g/L</td>
</tr>
<tr>
<td>Incidence VTEs</td>
<td>6.50%</td>
<td>2.60%</td>
</tr>
</tbody>
</table>

Discussion

Our results suggest that in total knee arthroplasty performed with or without a tourniquet, there was no appreciable difference in blood loss on day 1 post-surgery or total blood loss.

However, the incidence of DVTs and PEs in the tourniquet cohort was 2.5 times that observed in the total knee replacement without tourniquet group (RR = 2.5).

Our findings therefore support suggestions made in the literature that tourniquet use can increase the risk of venous thromboembolic events (Hernandez et al. 2012, Zhang et al. 2014). Tourniquets may increase venous stasis and directly contribute to venous endothelial damage in the operated leg. In an intra-operative setting, where the patient may already be hypercoaguable, the risk of venous thrombus development is therefore raised, as per Virchow’s triad (Zhang et al. 2014; Kyrie et al. 2009).

Despite these results, we acknowledge that our study is limited by size and therefore a larger study-sample is required to draw more meaningful conclusions.

Conclusion

We conclude that the use of a tourniquet in total knee arthroplasty potentially increases venous thromboembolic risk, without significantly reducing blood loss.
Introduction
We undertook an analysis of the coding and operation notes for our total knee replacements (TKR) to see how accurately data was captured.

Results
• 13 descriptive methods written in the operation notes
• 3 OPCS codes for replacements & 7 different operation types (most common: Cemented Cruciate Retaining with No Patella Resurfacing (51%)
• The written operation title fully accurately reflected the actual operation undertaken in only 10%

Methods
• Retrospective analysis
• 352 TKR performed over a 1 year period
• Patient demographics, theatre activity, operation notes, and coding databases were analysed and merged

Conclusions
Written, descriptive and coding terms for TKR are inconsistent and inaccurate and should be standardised to optimise communication with other professions, improving patient and commissioning awareness and total procedure cost accuracy. We would recommend adoption of a more detailed coding schedule which better reflects modern TKR practice.
Mid To Long-Term Survivorship of AVON Patellofemoral Replacement For A Single Centre (0115)

Simon Middleton, Laura Tillotson, Peter Schranz, Vipul Mandalia.
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Introduction: Patellofemoral replacement in appropriately selected cases gives excellent results\(^1\). With over 10 years experience our objectives were: 1. To study the survivorship of AVON PFJ replacement with conversion as an end point and 2. Evaluate the radiographic progression of arthritis.

Methods: Retrospective case series of all PFJ’s performed at EKRU. Notes, radiographs and patients were assessed in dedicated research clinics.

Results:

<table>
<thead>
<tr>
<th>Sex and age</th>
<th>Patients</th>
<th>PFJ’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Mean age 62 (34-78)</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>Female Mean age 59 (41-82)</td>
<td>47</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>72</td>
<td>87</td>
</tr>
</tbody>
</table>

Conversion:

6.8% \([n=6]\) to TKR for disease progression. 1 trochlear malpositioning had femoral component exchange. No infection or loosening. Mean to conversion 3.7 y \((1.9\text{ to }8.8\text{ years})\).

Progression:

28.3% \([n=21]\) show radiographic evidence of progression on Kellgren Lawrence score. Of those that progressed 85% \([n=18]\) increased 1 on KL score, 15% \([n=3]\) increased by 2

Conclusions: We have a comparable conversion rate to other centres performing this operation \(^1,2\). The majority of radiographic progression is of mild severity suggesting appropriate selection of cases for PFJ replacement surgery.


BASK 2015. Abstract ref: - 0115
Introduction

Osteochondral fractures of the patellofemoral joint are a rare complication of patellar dislocation in the young athlete. We present radiological and clinical outcomes of a single-surgeon series of patients who have undergone fixation of large patellofemoral osteochondral fracture (OCF) using bioabsorbable pins (OrthoSorb (TM), DePuy Orthopaedics).

Methods

We identified 7 operations for PFJ OCF in 6 patients from a single surgeon’s logbook. All patients underwent open reduction and internal fixation of the osteochondral fragment with bioabsorbable pins. Patients were followed up with MRI scan and clinical outcome scores to determine the outcomes of fixation.

Results

6 patients (4 Males, 2 Females) with a median age of 15 years had OCF involving the patella (4 medial facet, 2 middle third) and 1 the lateral trochlea. The median defect diameter was 14.5mm (range 8.8 - 24.4mm). The median time from injury to surgical intervention was 8 days (range 1 - 48 days). We obtained post-operative MRI scans for 6 out of 7 knees operated. Scans took place at a median interval of 229 days (range 173 - 370 days) after surgery. All scans showed resolution of bony oedema and healing at the fracture site, without any loose bodies. It was noted that for 3 of the medial facet fractures had thinning or irregularity of cartilage present at the fracture site after fixation. The majority of patients returned to recreational sport.

Conclusions

Very large osteochondral fractures are a potentially devastating injury in the young athlete. In our series prompt internal fixation has been associated with consolidation of fractures radiologically, without residual oedema or loose body within the knee joint. Clinical outcomes in the main were satisfactory.
Post Operative Bleeding Episodes after Primary Total Knee Replacement

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University Hospital of Wales, Cardiff, UK

Introduction

-The incidence of bleeding following primary TKR has increased with the use of chemical thromboprophylaxis.
-This has led to increased rate of wound related complications and increased need for blood transfusion.
-Withholding doses of chemical thromboprophylaxis agent has been used to limit these complications.

Objectives

To comparing Clexane, Apixaban and Rivaroxaban in terms of:
• frequency and volume of bleeding episodes
• Need for blood transfusion
• Return to theatre
• VTE events

Methods

-Prospective study
-Over a period of 14 weeks
-Between February and May 2014

-The wound dressings of these patients were assessed daily to look for signs of bleeding and classified into: Mild (< a 50p size coin), moderate (> a 50p size coin) or Severe (blood seeping through the dressing)

Results

<table>
<thead>
<tr>
<th>Drug</th>
<th>Total no. of TKR</th>
<th>Average age</th>
<th>Male : Female</th>
<th>Average BMI</th>
<th>ASA 1</th>
<th>ASA 2</th>
<th>ASA 3</th>
<th>ASA 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apixaban</td>
<td>64</td>
<td>69 years</td>
<td>50 : 50</td>
<td>33</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clexane</td>
<td>45</td>
<td>34.1</td>
<td>56 : 44</td>
<td>33</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivaroxaban</td>
<td>23</td>
<td>17.4</td>
<td>61 : 39</td>
<td>33</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Distribution of bleeding episodes and doses omitted

<table>
<thead>
<tr>
<th>Drug</th>
<th>mild</th>
<th>moderate</th>
<th>severe</th>
<th>omitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apixaban</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Clexane</td>
<td>11</td>
<td>11</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Rivaroxaban</td>
<td>5</td>
<td>3</td>
<td>11</td>
<td>4</td>
</tr>
</tbody>
</table>

There was no statistical significance in distribution of bleeding episodes or doses omitted due to bleeding (chi squared test)

Conclusion

-Although a small study, groups were comparable
-Incidence of severe bleeding was 8%
-Incidence of bleeding problems following TKR was similar in the Apixaban, Rivaroxaban & Clexane groups
-Daily review of bleeding episodes did not correlate with need for transfusion suggesting that better outcome measures are needed for future studies
-Clexane appears to be superior in terms of reducing VTE event and need for blood transfusion
-Rivaroxaban appears to be superior in terms of lower rate for return to theatre

References

Introduction

We assessed a selection of video content currently available on YouTube relating to Total Knee Replacement (TKR).

The internet provides immediate access to a wealth of medical resources that can be accessed by patients and standardised all-Wales consent forms now include a checkbox for provision of patient information in video form.

YouTube is a widely known and accessible video streaming site, with over one billion unique monthly users and is likely to be one of the modern patient’s first points of call for further self-education regarding TKR.

Method

The top 50 videos using the search term “total knee replacement” were identified on a single date using default search criteria. These were reviewed by a specialist orthopaedic resident and content graded for accuracy based on 4 criteria: The procedure demonstrated, understandability of information, patient expectations and risk/benefit information.

Basic video metrics such as length, video quality were noted, as were the video sources in terms of production and geographical location.

Results

In total we identified 64,800 videos using the search term above. All videos contained information relevant to TKR in humans and over half of these were either live or computer simulated demonstrations of surgery. Most contained information relevant to patients although a number appeared to favour surgical practitioners as the target audience.

The mean video length was 14 minutes, 35 seconds. Most videos (30/50) were not presented in a high-quality video format. Twenty-seven videos were graded as “highly accurate” and 18 as “mostly accurate.” The significant majority of videos originated from the USA.

Discussion

Video information has been demonstrated to have a beneficial effect on physiological stress of patients undergoing surgery ¹, as well as on patient decision-making with regards to surgical intervention ².

Our study has identified the clear interest in video content regarding THR online and that current media is accurate. If an institution were to consider producing patient video information then we would recommend this be concise, patient-focused and of high audiovisual quality.
The effect of alignment on the measurement of lateral joint space width in the knee

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¹Nuffield Orthopaedic Centre, Oxford UK ²Milton Keynes General Hospital, Milton Keynes, UK
Thomas.Hamilton@ndorms.ox.ac.uk (No. 0120)

Background
X-ray alignment affects interpretation of joint space width (JSW) within the knee. This is of particular important for unicompartmental replacement where the retained compartment should have preserved full thickness cartilage, best demonstrated by stress X-ray.

Aim
This study investigates the effect of X-ray alignment on the measurement of the lateral JSW in the arthritic knee.

Methods
Following local ethical approval two dimensional ‘synthetic’ coronal plane X-rays were created at a range of alignments using high resolution CT data from 10 patients undergoing TKR for medial compartment disease (3D-DOCTOR, Lexington, Massachusetts, USA). Alignment of the anterior and posterior rims of the medial compartment was defined as 0 degrees with JSW normalised relative to this measurement. Minimum JSW in the lateral compartment was measured by assessors blinded to the orientation of the image.

Results
JSW decreased in an asymmetrical pattern as alignment moved away from optimum, due to differing convexities of the proximal tibia and distal femur.

At three degree mal-alignment, the mean mal-alignment recorded in a separate study of standing X-rays the lateral JSW was significantly less than the true JSW recorded at optimum alignment (85.7%, SD20.1, p=0.04).

Conclusion
Mal-alignment significantly affects the measurement of lateral JSW within the knee. X-rays should be alignment to the tibial plateau to permit an accurate interpretation of the pattern and severity of arthritis within the knee.

Acknowledgements: Supported by the NIHR Biomedical Research Centre, based at Oxford University Hospitals Trust, Oxford. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.
BASK 2016

30th – 31st March 2016
Liverpool
www.baskonline.com
Aims: To quantify the difference between the sizes recommended by Patient specific cutting guides (PSCG) and the actual implants used in a commonly used system (Signature materialise, Biomet®) using preoperative MRI scans.

Methods: 98 consecutive cases between Nov 2010 and Oct 2012 reviewed. All postoperative radiographs reviewed.

Results:
- 29 cases (33 implants) where per operative size was changed
- 4 cases the surgical size of implant was 2 sizes different from the recommended
- 69 (70%) out of 98 cases the recommended implants were used
- 10 cases had notching of the anterior femoral cortex, in 9 of these the recommended femoral size was used

Conclusions:
- This is the first study with a two-size difference in implant sizing (in 4% cases)
- First study quantifying notching of femur with PSCG.
- We recommend that the system is a guide and clinical judgement for implant size should be employed during surgery.
Decongestive Lymphatic Therapy for Lymphedema in Primary Total Knee Arthroplasty Reduces Surgical Site Infection Rates

(0124)

Avtar Sur, Amol Chitre, Simon Bridle, Philip Mitchell. Correspondence E-mail: avtarsur@doctors.org.uk

**Background**
- 31% complication rate of knee arthroplasty in patients with lymphedema (83 TKRs in 63 patients)\(^1\)
- 10 superficial wound infections (12%)
- Six deep infections (7%)
- Three deep vein thromboses (3.6%)
- Challenging patient subgroup
- High complication rate

**St George’s Hospital Pathway**
- Admission two weeks pre-operatively for primary TKR
- Decongestive Lymphatic Therapy 2-3 times per week (Skin Care, Exercise, Manual Lymphatic Drainage, Intermittent Pneumatic Compression)
- TKR
- Decongestive Lymphatic Therapy post op till discharge and as an outpatient

**Results**
- St George’s Hospital Pathway
  - Admission two weeks pre-operatively for primary TKR
  - Decongestive Lymphatic Therapy 2-3 times per week (Skin Care, Exercise, Manual Lymphatic Drainage, Intermittent Pneumatic Compression)
  - TKR
  - Decongestive Lymphatic Therapy post op till discharge and as an outpatient

**Gender**
- Average Age
- Side
- 13 females
- 72
- 8 right
- 3 males
- 12 left

**Prophylactic Antibiotics**
- Closure
- 16 cases – Co-amoxiclav
- 2 cases – Vancomycin/Gentamicin
- 1 case – Vancomycin
- 1 case - Cephradrine
- 16 cases - clips
- 4 cases – 3.0 monocryl

**Complications**
- 1 superficial wound infection (5%)
- Required 2 weeks oral co-amoxiclav

**Conclusion**
With appropriate pre-operative optimisation of lymphedema with a dedicated lymphedema service, these patients can be offered a total knee arthroplasty with a reduced complication risk.
Simplified registration in navigated total knee arthroplasty: a randomised controlled trial

NC Sciberras, M Almustafa, BRK Smith, AH Deakin, DJ Allen, F Picard. Golden Jubilee National Hospital, Clydebank, G81 4DY. frederic.picard@gjnh.scot.nhs.uk

Aim
To determine if simplified TKA navigation software
- maintained accuracy of component positioning
- decreased registration and operative times

Methods
- Prospective RCT - ISRCTN:71883082
- 220 patients randomised to Original (4.3) or Simplified (Smart) software
- Registration and operative (skin-to-skin) time recorded

Results
- 220 TKAs
  - 20 exclusions

Patient demographics

<table>
<thead>
<tr>
<th></th>
<th>4.3 (n=101)</th>
<th>Smart (n=99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M:F</td>
<td>53:48</td>
<td>50:49</td>
</tr>
<tr>
<td>Age</td>
<td>67.9</td>
<td>69.1</td>
</tr>
<tr>
<td>BMI</td>
<td>30.8</td>
<td>31.1</td>
</tr>
<tr>
<td>Pre-op OKS</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Pre-op alignment</td>
<td>3.6° varus</td>
<td>3.7° varus</td>
</tr>
</tbody>
</table>

Results cont.
- Mean post-op MFT angles equivalent
  - Mean difference - 0.2°  p = 0.407
- Component positions similar
- Mean registration time
  - Smart - 2 min 30 s
  - 4.3 - 3 min 23 s  p < 0.001
- Mean operative time
  - Both 72 min  p = 0.855

Conclusions
- did not alter component accuracy
- did shorten registration time
- did not reduce overall surgical time
Outcome of primary total knee arthroplasty in morbidly obese patients

AH Deakin, GJ Love. Golden Jubilee National Hospital, Clydebank, G81 4DY. angela.deakin@ginh.scot.nhs.uk

Aim

To determine whether TKA patients with BMI > 40 had similar outcomes to other patients

Methods

All elective primary TKA patients in 2009

Outcomes
- Length of stay (LoS)
- Oxford knee score (OKS, 0-48)
- Patient satisfaction
- Related problems and complications (requiring readmission)

Patients divided into three groups
- BMI>40 (morbidly obese)
- BMI<=30 (non-obese)
- BMI between 30-40 (obese)

Results

1014 TKRs
- 54% female
- mean age 69
- mean BMI 32

Of these 7.7% had BMI > 40

Higher BMI patients had different demographics and outcomes

<table>
<thead>
<tr>
<th></th>
<th>BMI&lt;=30</th>
<th>30&lt;BMI&lt;=40</th>
<th>BMI&gt;40</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>381 (35.8%)</td>
<td>555 (54.7%)</td>
<td>78 (7.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gender</td>
<td>47% female</td>
<td>55% female</td>
<td>78% female</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean Age</td>
<td>71</td>
<td>68</td>
<td>64</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median LoS</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>0.042</td>
</tr>
<tr>
<td>Mean OKS – 1yr</td>
<td>38</td>
<td>38</td>
<td>34</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Very satisfied – 1 yr</td>
<td>84%</td>
<td>84%</td>
<td>72%</td>
<td>0.054</td>
</tr>
<tr>
<td>Not satisfied – 1 yr</td>
<td>6%</td>
<td>6%</td>
<td>3%</td>
<td>0.635</td>
</tr>
<tr>
<td>Any post-op problems</td>
<td>13%</td>
<td>14%</td>
<td>30%</td>
<td>0.001</td>
</tr>
<tr>
<td>Related complications</td>
<td>7%</td>
<td>7%</td>
<td>12%</td>
<td>0.303</td>
</tr>
</tbody>
</table>

Conclusion

In this cohort morbidly obese patients had lower OKS and a higher risk of complications after TKA. However there was no increase in patients reporting an unsatisfactory outcome (Poster No. 127)
Optimum clinical patient care
all Orthopaedic staff in daily senior review
46.4% of case
All Orthopaedic wards and outliers
Timely discharge
Education needed on CUSP sheet documentation
Accurate legible management plan
Underperforming areas: No date and time, wrong

Method
• Case-note audit
• All Orthopaedic wards and outliers
• 3 afternoons during October 2014

Results
• 62% of patients had a documented daily senior review
• 46.4% of case-notes had completed CUSP sheets for everyday of admission
• 1.4% of case-notes contained a full complement of up to date CUSP sheets for each day from admission that were completed correctly
• Underperforming areas: No date and time, wrong Consultant, boxes left blank, SHOs signing forms
• Poor documentation most at weekends and operative day

Recommendations
• Education needed on CUSP sheet documentation
• Up to date CUSP sheets available on all wards
• Utilise all Orthopaedic staff in daily senior review

Introduction
Documented daily senior review is important for:
1. Optimum clinical patient care
2. Accurate legible management plan
3. Timely discharge

Objectives
Are all Orthopaedic patients, elective and trauma, receiving a daily senior review and are the Comprehensive Unit-Based Safety Programme Toolkits (CUSP) fit for purpose?
**Introduction:**
The most important predictor of clinical outcome in anterior cruciate ligament (ACL) reconstruction is tunnel placement in close anatomical position of original ACL footprint. Anatomically placed tunnels restore better normal knee kinematics than non-anatomically placed tunnels.

**Purpose:**
The aim of this study was to compare post operative radiographs of single bundle anterior cruciate ligament (ACL) reconstruction done by two different techniques.

**Methods:**
- Single bundle arthroscopic ACL reconstruction
- 37 patients by a single surgeon.
  -18 transtibial drilling technique
  -19 anteromedial portal drilling technique.

Radiographic parameters calculated on the post operative radiographs.
- Femoral tunnel position
- Tibial tunnel position and
- The graft inclination angle

**Results:**
- Posterior femoral tunnel - Mean of 82% (SD 4) along the Blumeensaat's line in the anteromedial group and 75% (SD 6) in the transtibial group (P value <0.001)
- The femoral tunnel was more lateral in the lateral femoral condyle when the anteromedial drilling technique was used. (P value 0.025).
- The graft inclination angle in the coronal plane - Mean of 26.9° (SD 3.7) in the anteromedial group and 24.5° (SD 3.5) in the transtibial group
- Tibial tunnel placement - Mean of 50% (SD 6) posterior along the tibial plateau in transtibial group and 45% (SD 6) posterior in anteromedial group (P value 0.009)

**Discussion:**
It is possible to be more lateral on the lateral femoral condyle and more posterior along the Blumeensaat’s line by the anteromedial drilling technique as compared to the transtibial technique and thus be close to the anatomical centre of the ACL.

**Conclusion:**
This study suggests that anteromedial portal drilling technique helps in placement of the graft in a more anatomical position.
**Introduction**
Post operative blood tests are conventionally carried out on the first post-operative day. Following joint arthroplasty, the haemoglobin value can fall by up to 53g/dL, highlighting the urgency for this investigation(1). The aim of our study was to determine if there was a significant difference between day 1 and day 2 haemoglobin levels.

**Methods**
- We conducted a retrospective cohort study undertaken between Dec 2012 and Apr 2013.
- All patients who underwent full blood count testing at both 24 and 48 hours consecutively following joint arthroplasty surgery were included in the study.
- Data categories included:
  1) The actual haemoglobin levels (Day 1 + 2)
  2) Whether a transfusion had taken place
  3) Indication for the transfusion.

**Results**
- 61 patients met the inclusion criteria
- Female to male ratio of 46:15, with an average age of 67.2 years.
- Haemoglobin levels fell from 24 to 48 hours postsurgery on average by 0.39 g/dL (95% CI 0.056-0.725 g/dL).
- Using the paired students t-test this was a significant change (p=0.0231).
- The Hb drop resulted in 5 transfusions on the 48hr haemoglobin after controlling for symptomatology.

**Discussion**
Transfusion rates in joint arthroplasty surgery are reported to range from 0% to 67%(2,3).
Thresholds for transfusions are often dependent on a combination of clinical and biochemical variables however most centers will adhere to a haemoglobin range of between 7.0-10.9g/dL as an acceptable indicator for patient transfusion requirement(3).
Whilst Haemoglobin levels are routinely taken on Day 1, our study illustrates the importance of checking haemoglobin on Day 2 as well to identify patients in need of transfusion.

**Conclusion**
To our knowledge no study in the current literature has evaluated the optimal time for post-operative haemoglobin testing following joint arthroplasty surgery. Our study has demonstrated a significant case for 48 hour full blood count testing following knee arthroplasty surgery.

**References**
Acute Correction of INR for Patients Requiring Urgent Orthopaedic Trauma Surgery
Are We Getting it Right? (No. 0136)

Alexandra Colby¹, Clifford Butcher²
Orthopaedic Clinical Fellow¹, Consultant Orthopaedic Surgeon²
University Hospital Aintree, Liverpool
alexandra.colby@nhs.net

Objectives
• To evaluate current practice for INR reversal against current local guidelines
• To assess if there is significant delay to operative treatment if incorrect INR correction is employed?

Guidelines

<table>
<thead>
<tr>
<th>INR</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;1.5 and &lt;1.9</td>
<td>Give 5mg Vit K</td>
</tr>
<tr>
<td>&gt;1.5 and &lt;4.1</td>
<td>Give 5mg Vit K, Give Octaplex 2 Bottles</td>
</tr>
<tr>
<td>&gt;4 and &lt;6.1</td>
<td>Give 10mg Vit K, Give Octaplex 2 Bottles</td>
</tr>
<tr>
<td>&gt;6</td>
<td>Give 10mg Vit K, Give Octaplex 25mg/Kg</td>
</tr>
<tr>
<td>&gt;12</td>
<td>Give 10mg Vit K, Give Octaplex 25mg/Kg</td>
</tr>
</tbody>
</table>

For surgery < 12 hours
For surgery 12-24 hours

Reassess INR at 12hrs treat according to INR

Results
• 35.3% had correct INR reversal as per guidelines
• Of 64.7% who had incorrect INR reversal:
  • 27% - incorrect dose of Vitamin K
  • 82% - no further Vitamin K on reassessment
  • 27% - no/incorrect Octaplex given
  • 18% - wrong/unspecified route of Vitamin K
• 1 patient had delay to surgery as a direct result of incorrect INR reversal

Method
• Retrospective/prospective audit on all Orthopaedic trauma admissions between August to December 2013
• Sample Size = 17 patients

Recommendations
• Informative poster in clinical areas
• Redesign guidelines
• Re-audit in 6-12 months time – currently in progress
A direct observation study comparing the clinical assessment of acute knee injuries between specialists and non-specialists (0137)

C. Ayre\textsuperscript{1,2}, M. Hardy\textsuperscript{1}, A. Scally\textsuperscript{1}, G. Radcliffe\textsuperscript{2}, S. Guy\textsuperscript{2}

\textsuperscript{1}University of Bradford; \textsuperscript{2}Bradford Teaching Hospitals

Email: c.a.ayre1@bradford.ac.uk

**Background**

- Diagnostic accuracy of acute knee injuries varies between ‘specialists’ (soft tissue knee surgeons) and ‘non-specialists’.
- Unclear whether differences in approach to clinical assessment occur.

**Aims**

- To determine whether differences exist in the clinical assessment of acute knee injuries between ‘specialists’ and ‘non-specialists’.

**Methods**

- Direct observation study- patient blinding.
- Subjective question items (e.g. swelling, giving way, locking) and objective clinical test items (e.g. valgus stress, Lachman, McMurray) recorded on checklist.

**Subjects**

- 40 assessments observed (20 each group).

**Results**

- Groups similar at baseline for levels of pain ($p=0.86$), function ($p=0.94$), and days since injury ($p=0.59$).

**Conclusions**

- All acute knee injury assessments are NOT the same- differences in approach to clinical assessment exist.
- Specialists obtained more detail on injury history.
- Specialists performed more objective clinical examination tests.
Background

• Delayed diagnosis of ACL injury increases risk of meniscal injury.
• Little is known regarding the factors influencing delay.

Aims

• Determine the contribution of factors influencing time to diagnosis and specialist consultation.
• Determine whether acute knee clinics reduce diagnostic delay.

Methods

• Prospective multi-site service evaluation (5 NHS hospital trusts; 194 ACL injuries).
• Patient interview and medical notes review.

Results

• Delay to diagnosis significantly lower in sites with an acute knee clinic (Median =15 days vs 97.5 days; p<0.0001)

Patient delay

• 10% of patients waited ≥ 6 weeks to present.
• No significant difference in patient delay between standard service and acute knee clinic (Median =1day; p=0.23).

Clinic waiting list delay

• Waiting list delay lower in site with acute knee clinic (Median=18.5 vs 31 days; p=0.02).

System delay

• Inappropriate early discharge accounted for the majority of delay.

Conclusions

• Acute knee clinics reduced delay to diagnosis and specialist consultation.
• The major contributors to delayed diagnosis were inappropriate discharge and delayed referral.
• In a minority of cases delayed patient presentation was a significant feature.

Acknowledgements:
S Calder (posthumous), A Cohen, B Hopton, J Newman, R Pacheco, J Smith, R Venkatesh, O Wall
Can Meniscal Allograft Transplantation Reduce Osteoarthritis Progression? A Systematic Review

Nick Smith (nickasmith@doctors.net.uk), Ben Parkinson, Matt Costa, Tim Spalding
University Hospitals Coventry and Warwickshire (poster number: 0145)

Introduction
Meniscal allograft transplantation improves patient reported outcome measures and has been shown to restore joint biomechanics. It is often stated that it is likely to be chondroprotective but supporting evidence is lacking.

Aim
Perform a systematic review of meniscal allograft transplantation studies using joint space width change as the primary outcome measure, in order to determine the likelihood of a chondroprotective effect.

Methods
Used PRISMA guidelines for systematic reviews. Searched main databases (Medline, Embase and CENTRAL). Mean joint space changes were calculated using weighted means.

Eligibility criteria
• Humans of any age.
• Clinical studies.
• Meniscal allograft transplant by any method.
• Minimum 1 year follow up.
• Must have measured joint space width change from baseline.

Results
428 meniscal allograft transplantations across 16 studies. No RCTs. Weighted mean joint space loss 0.032mm at a mean follow up of 4.5 years. 2 studies used the contralateral knee as controls – no significant differences.

Conclusion
Clinically insignificant joint space loss indicates a potential chondroprotective effect (previous study shows a yearly loss of 0.7mm associated with increased risk of OA).

Limitations
• Joint space width – insensitive measure
• Meniscal allograft insertion may have a confounding effect.
• No high quality studies. MRI may provide a more sensitive future measure (cartilage volume, bone shape change).

Acknowledgements
This research was supported by Arthritis Research UK (grant number 20149)
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Application details on website
Proposers must be BASK members

www.baskonline.com
Bi-compartmental Arthroplasty with a One-Pieced Customized Device: Early Experience and Patient Outcomes

Tom Minas, MD, MS, Tim Bryant, RN, Andreas H. Gomoll, MD
Brigham & Woman’s Hospital, Cartilage Repair Center, HMS, Boston MA USA; tminas@partners.org

INTRODUCTION
Bi-compartmental osteoarthritis (OA) of the knee is common, especially in young arthritis. TKA surgery has been the standard of care to date, but recently, bi-compartmental arthroplasty with dual implants (UKA+PFJ) or a single-piece, off-the-shelf implant have been performed with mixed results. Early failures as high as 30% from tibial loosening and patellar clunk have occurred in these devices. Another alternative is a customized, individually made, bi-compartmental system (medial-patellofemoral and lateral-patellofemoral), that has been developed to deal with this challenging patient population (iDuo, ConforMIS, Inc., MA-USA) (Figure 1). The objective of the study was to determine the early outcomes for patients implanted with this device.

METHODS
Since 2010, 31 patients (34 knees), consisting of 21 females and 10 males, were operated at an average age of 47 years. The cohort consisted of 26 medial and eight lateral iDuo implants. Patient satisfaction testing, pain assessment, and survival analysis was conducted on the patients at 30 months mean follow-up.

RESULTS
At a mean of 30 months follow-up, all 34 knees are well functioning with zero failures. 97% rated their knee better post-op, including 91% patients who rated their results as good or excellent. Additionally, if given the choice to undergo the procedure again, 97% of patients indicated that they would have opted to do so (Figure 2). 82% patients reported a pain level between 0 and 3 on the Visual Analog Scale (VAS) scale.

DISCUSSION
This study presents the early experience and patient outcomes of a customized, individually made bi-compartmental arthroplasty. Results suggest that patients implanted with this device are highly satisfied post-op. This technology provides an alternative treatment approach for patients exhibiting bi-compartmental OA of the knee who otherwise would have undergone traditional TKA or bi-compartmental arthroplasty with dual implants.
Customized, Individually Made Unicondylar Knee Replacement: A Prospective, Multicenter Study of 2-Year Clinical Outcomes

Raj Sinha, MD; Joseph Burkhardt, DO; Gregory Martin, MD; David Mack, MD; Richard Dauphines, MD; Michael Levine, MD; C. Lowry Barnes, MD

STAR Orthopaedics, Southern Michigan Orthopaedics, JFK Medical Center, North Cyprus Hospital, Monterey Peninsula Surgery Center, Orthopedic Associates of Pittsburgh, Arkansas Specialty Orthopaedics, lbarnes@arspecialty.com

INTRODUCTION

Over the past decade, the number of unicompartmental knee arthroplasties (UKA) performed has increased by 30%. Patients tend to prefer this treatment option as it is shown to provide better function and range-of-motion (ROM). While they do offer benefits, UKAs often have to be revised. To address this, a customized, individually-made (CIM) UKA offers patient-specific fit and positioning, reducing the incidence of underhang and component malpositioning, common causes of tibial loosening and subsidence. The purpose of this study was to assess clinical and patient-reported outcomes utilizing this CIM unicompartmental knee replacement (UKR) prosthesis.

METHODS

A prospectively recruited cohort of 118 patients were implanted with 120 CIM UKR (110 medial and 10 lateral) at 8 centers (Table 1). Patients who were diagnosed with unicompartmental osteoarthritis of the medial or lateral compartment and consented to take part in the study were included. Patients with a BMI > 35, compromised cruciate or collateral ligaments, or who had a varus/valgus deformity >15° were excluded from the study. Using the Knee Society Knee and Function Scores, WOMAC and VAS Pain scales as well as ROM tests, patients were assessed preoperatively, at 6-months postop, 1 year post-op and 2 years post-op. Patients were also asked about their satisfaction level and if the movement of their implanted knee felt natural.

Table 1: Patient demographics of the study population

<table>
<thead>
<tr>
<th>Knees / Patients (N)</th>
<th>120 / 118</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Gender (Male/Female)</td>
<td>78 / 40</td>
</tr>
<tr>
<td>Mean Age at Surgery (years)</td>
<td>65 [33 - 84]</td>
</tr>
<tr>
<td>Mean Body Mass Index (BMI)</td>
<td>28 [18 - 38]</td>
</tr>
</tbody>
</table>

RESULTS

Range-of-motion was improved by an average of 11° from 120° preoperatively to 131° at 2 years post-op (117° at 6 weeks, 129° at 6 months, and 129° at 1 year). Patients demonstrated marked improvements from baseline scores across all measured domains. A total of 88 patients have reached their 2-year follow-up visit to date. Average scores at the 2-year interval are as follows: KSS Knee Score - 94, KSS Function - 91, scaled WOMAC - 90, and VAS Pain - 1.3 (Figure 1). Additionally, 99% of patients said they were satisfied with their UKR (89% reporting they were very or extremely satisfied) and 99% stated that the movement of their knee felt natural (Figure 2). To date, 2 patients have undergone revision for tibial loosening yielding a mechanical revision rate of 1.67% at the 2 year post-operative interval.

DISCUSSION

As the number of UKAs performed each year increases, ensuring patient satisfaction is critical. The 2-year follow-up data collected on this CIM UKR is promising as 99% of patients reported that they were satisfied with their CIM UKR and 89% reported that the movement of their knee felt natural. Additionally, this data compares favorably to published scores for traditional, off-the-shelf unicompartmental implants.

Presence of osteoporosis as a risk factor for peri-prosthetic fracture following lower limb arthroplasty (0156)

Ring J, Squire E, Burke J, Keenan O, Johnson DS
Stepping Hill Hospital  drjow@hotmail.com

Background
• Annual increase in lower limb arthroplasty numbers
• 300,000 fragility fractures per year in UK
• 1:2 women and 1:5 men over age 50 sustain one

Aim
Assess whether osteoporosis time of primary arthroplasty is risk factor for future peri-prosthetic fracture

Method
Assessed 2 groups for osteoporosis risk at time primary op:
• Lower limb arthroplasty patients (200) – prospective
• Periprosthetic fracture patients (122) – retrospective

Results
Lower limb arthroplasty – All 200 reviewed
  • 97 TKR and 103 THR reviewed
Periprosthetic fracture – sample of 50 reviewed
  • 15 TKR, 2 rev TKR, 24 THR, 3 rev THR, 5 hip hemiarthroplasty, 1 unknown

No difference between the two groups with respect to age, sex, BMI and ASA grade

FRAX scores showed significantly greater risk of osteoporosis at time of primary surgery in those who went onto fracture (p = 0.0029)

Discussion
• Osteoporosis risk at time of primary surgery is greater in those subsequently sustaining a peri-prosthetic fracture
• Osteoporosis may be a risk factor for subsequent fracture

We recommend osteoporosis screening at pre-op assessment for primary hip or knee arthroplasty
KineSpring® system or Medial Opening Wedge High Tibial Osteotomy for active patients with symptomatic medial gonarthrosis? Early and midterm results (0157)

e-mail: Leonidas@doctors.net.uk

A diagnosis- and age-matched cohort study of patient Oxford Knee Scores (OKS) prior to and following medial opening wedge High Tibial Osteotomy (HTO) or KineSpring® system insertion

**Inclusion Criteria**
- Age 30 – 65 years
- Less than 10° varus, 10° hyperextension or 5° fixed flexion deformity
- Kellgren-Lawrence GIII-IV MTFC OA with < GII LTFC & PFJC OA
- Failed conservative management

**Exclusion Criteria**
- Age > 65
- Significant deformity
- Inflammatory arthritis
- Clinical instability

**Results**

<table>
<thead>
<tr>
<th></th>
<th>HTO</th>
<th>KineSpring®</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>12 (87%)</td>
<td>6 (60%)</td>
<td>n/a</td>
</tr>
<tr>
<td>Females</td>
<td>2 (13%)</td>
<td>4 (40%)</td>
<td>n/a</td>
</tr>
<tr>
<td>Age (mean years)</td>
<td>50.3</td>
<td>49.4</td>
<td>P=0.607</td>
</tr>
<tr>
<td>Length of stay (mean days)</td>
<td>1.5</td>
<td>1.6</td>
<td>P=0.707</td>
</tr>
<tr>
<td>Unaided mobilization (mean weeks)</td>
<td>9.6</td>
<td>5.1</td>
<td>P=0.006</td>
</tr>
<tr>
<td>Return to work (mean weeks)</td>
<td>14</td>
<td>12.7</td>
<td>P=0.326</td>
</tr>
<tr>
<td>Re-operations due to symptoms</td>
<td>1 (7%)</td>
<td>8 (80%)</td>
<td>P=0.007</td>
</tr>
</tbody>
</table>

**Conclusion**

The KineSpring® system provides better early postoperative recovery and function, but is associated with significantly lower Oxford Knee Scores and more re-operations than medial opening wedge High Tibial Osteotomy in the midterm.
Hospital Outcomes and Cost for Patients Undergoing a Customized Individually Made TKA vs Off-The-Shelf TKA

Introduction

Despite excellent survivorship, published literature suggests that an average, 15-39% of patients are dissatisfied with the result of their TKA.1 Newer technologies may improve the value of care delivered to TKA patients by providing better clinical outcomes at similar or lower total cost of care. The purpose of this study was to compare a variety of the hospital outcomes between patients undergoing TKA using either a Customized Individually Made (CIM) TKA (ConforMIS Total) or a Standard Off-The-Shelf (OTS) TKA.

Methods

A retrospective review was conducted for consecutive TKA patients treated in a single institution, by the same surgeon, between March 2010 and November 2013. The study sample consisted of 245 TKA hospitalizations, having received either CIM TKA (126) or OTS TKA (122). A subset of 19 hospitalsizations in the CIM arm and 30 hospitalizations in the OTS arm were for bilateral procedures. Data collected included: patient demographics, length of procedure, length of hospital stay, blood transfusion rates, patient discharge disposition, adverse event rates at discharge and total hospital cost. Hospital costs were calculated from billed charges and were adjusted into 2013 US Dollars by using the appropriate annual value for the hospital-specific cost/charge index for all hospitalizations under DRG 470. To calculate the total cost of care, pre-operative CT charges were included for the CIM/TKA group. Rehabilitation cost was calculated for each group based on their discharge status. Uni-variate differences in selected outcome measures between the two study arms were assessed with Chi-square analysis or Fisher’s exact test for discrete variables and Student’s t test for continuous variables. A p-value of <0.05 was considered statistically significant in this study.

Results

There were no statistical differences in the demographics (age, sex, BMI) between the two arms. The CIM implant showed significantly lower transfusion rates (2.4% vs 10.9%, p=0.009). The adverse event rate of discharge was significantly lower in the CIM arm than the OTS arm (1.6% vs 13.9%, p=0.001). Differences in length of stay reached borderline significance (CIM 3.0 vs OTS 3.2, p=0.057), with a significantly larger number of patients in the CIM group being discharged in <3 days (p=0.034) (Figure 1). When discharge disposition was analyzed, it was seen that a significantly lower percentage of patients in the CIM group were discharged to acute care facilities (2.4% vs 13.9%, p<0.001). After adjusting for inflation, total inpatient cost between the two groups was not statistically different (CIM $16,192 vs OTS $16,240, p=0.913). When total cost of care was calculated, it was confirmed that patients in the CIM group experienced an average savings of $923.59. Additionally, comparing a subset of the data among patients receiving a simultaneous bilateral TKA, it was seen that comparison categories had similar trends but analysis was limited due to a small sample size (Figure 2).

Discussion

Risk adjusted odds-ratios indicate that patients in the OTS arm were 4 times more likely to experience a transfusion and 3.7 times more likely to have an adverse event than patients in the CIM arm. Patients treated with a CIM implant showed a trend towards a shorter length of stay and a better discharge disposition than patients in the OTS arm. Previous studies have reported an associated cost of $2,200 per incident of blood transfusion along with $16,000 cost associated with discharge to acute care facilities.3,4 Therefore, the lower transfusion rates and better discharge disposition with the CIM TKA seems to provide a better value proposition for hospitals and insurers, when compared to OTS TKA. These improved outcomes for the CIM group were achieved without an increase in hospital costs and a net savings of $923.59 per patient in total cost of care, after including the cost of the pre-op CT scan for the CIM-TKA group. Future studies need to be conducted to examine the potential hospital savings associated with lower inventory management and sterilization cost savings with the single packaging CIM implant.


Figure 1: Comparison of key outcomes between OTS and ConforMIS TKAs for all hospitalizations. * indicates statistical significance.

Figure 2: Comparison of key outcomes between OTS and ConforMIS simultaneous bilateral TKAs. * indicates statistical significance.
Does Morphine Sulphate (slow release) Deliver Equivalent Results To Oxycodone (modified release) In An Enhanced Recovery Knee Arthroplasty Pathway? (0163)

S Parker, A Ved, G Roberts, M Forster, S White. Llandough Hospital, Cardiff. scottpark@doctors.org.uk

Introduction
• Multi-modal analgesia central to ERAS
• No evidence for oral analgesia of choice
• Oxycodone more expensive than MST

ERAS Pathway
Pre-op. Pregabalin
Intra-op. Spinal +/- opiate
Magnesium
Dexamethasone
Ondansatron
Tranexamic acid
Local Anaesthetic
Infiltration
Paracetamol
NSAID
Long Acting Opiate ★

Methods
Prospective
4 months consecutive cases
55 patients
★ Surgeon 1 – Oxycontin bd
★ Surgeon 2 – MST Continus bd

Outcomes:
Length of Stay, Pain Scores, Physiotherapy days lost

Results

<table>
<thead>
<tr>
<th></th>
<th>Oxycontin</th>
<th>MST</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS</td>
<td>4.7 (P=0.11)</td>
<td>6.26</td>
</tr>
<tr>
<td>Lost Physio due to pain</td>
<td>0 days</td>
<td>8 days</td>
</tr>
</tbody>
</table>

Pain Scores (0-3)

Oxycontin Group
• Reduced Length of Stay
• Significant Reduction Pain by Day 3
• Improved physio participation
• May be more cost effective than cheaper MST in ERAS pathway
Introduction
The Miniaci method is used, as an alternative to commercial software programmes, in planning high tibial osteotomies (HTO). However, the accuracy of this remains unknown.

Method
• Comparison was made between planned and actual corrections, for HTO using digital radiography and the Miniaci method.
• The planned correction was measured on long leg radiographs, and the achieved correction measured at 3 months.

Results

Deviation from intended correction as % of tibial width

<table>
<thead>
<tr>
<th>Deviation</th>
<th>Number of osteotomies</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - &lt;5</td>
<td>0</td>
</tr>
<tr>
<td>5 - &lt;10</td>
<td>20</td>
</tr>
<tr>
<td>10 - &lt;15</td>
<td>30</td>
</tr>
<tr>
<td>15 - &lt;20</td>
<td>10</td>
</tr>
<tr>
<td>20 - &gt;20</td>
<td>8</td>
</tr>
</tbody>
</table>

123 patients underwent HTO
Within 5% of the intended HTO = 32
Within 5-10% = 51
Within 10-15% = 22
Within 15-20% = 10
8 patients had a correction over 20%

Conclusion
67.5% of cases were corrected to within 10% of that intended using the Miniaci method
85% of patients were corrected to within 15%

This study serves as a benchmark for planning HTO using the Miniaci method

References
The established alignment goal of total knee replacement surgery is to recreate a neutral mechanical axis ± 3°. This RCT was designed to compare the accuracy of component alignment in knee replacement surgery using patient-matched instrumentation (PMI) compared with conventional IM jigs.

Table 1: Patient characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard (N=25)</th>
<th>PMI (N=52)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>65±10</td>
<td>67±12</td>
</tr>
<tr>
<td>M:F</td>
<td>3:12</td>
<td>9:31</td>
</tr>
</tbody>
</table>

Table 2: Component alignment (Perth CT protocol)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard (N=25)</th>
<th>PMI (N=52)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronal Plane</td>
<td>2°±1.9</td>
<td>1.4±0.9</td>
<td>0.56</td>
</tr>
<tr>
<td>Sagittal Plane</td>
<td>1.3±1.5</td>
<td>1.9±1.5</td>
<td>0.96</td>
</tr>
<tr>
<td>Tilted Plane</td>
<td>1.8±0.7</td>
<td>1.3±0.6</td>
<td>0.08</td>
</tr>
<tr>
<td>Femoral Rotation</td>
<td>13±2.1</td>
<td>13±2.1</td>
<td>0.64</td>
</tr>
<tr>
<td>Femoral Antetrior Plane</td>
<td>0±0.5</td>
<td>0±0.5</td>
<td>0.91</td>
</tr>
<tr>
<td>Femoral Posterior Plane</td>
<td>0±0.5</td>
<td>0±0.5</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Table 3: Outliers >3°

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard (N=25)</th>
<th>PMI (N=52)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronal Plane</td>
<td>9.4%</td>
<td>7.4%</td>
<td>0.71</td>
</tr>
<tr>
<td>Sagittal Plane</td>
<td>1.9%</td>
<td>1.9%</td>
<td>0.99</td>
</tr>
<tr>
<td>Tilted Plane</td>
<td>3.8%</td>
<td>3.2%</td>
<td>0.28</td>
</tr>
<tr>
<td>Femoral Alignment</td>
<td>15.2%</td>
<td>24.1%</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Our results agree with the current literature in showing no statistical improvement in component alignment or the percentage of outliers using patient-matched instrumentation. There was a higher percentage of sagittal plane outliers in the PMI group.

References
Get your coding right

Write clearly
Enter patient details / date on every page
Record all diagnoses / procedures in full
Record co-morbidities every admission
Record organism if infection
Don’t use abbreviations
Don’t use “?” diagnosis – describe symptoms
Does preservation of the infrapatella fat pad improve patient recorded outcome measures in total knee replacement?

Partridge TCJ*, Muller S, Emmerson KP, Carluke I, Partington PF, Reed MR  
*tom.partridge@doctors.org.uk

Background

Removal of the infrapatella fat pad remains controversial amongst orthopaedic surgeons performing total knee replacement (TKR).1,2 Some would argue the fat pad has an important role in the blood supply to the patella tendon, biomechanics of the knee and as an inflammatory modulator. Others would advocate its removal for improved access and visualisation. One study has reported better outcomes when the fat pad is preserved. This study aims to determine if the default removal of the infrapatella fat pad affects patient outcome in TKR.

Methods

Patient reported outcome measures (PROMs) in the form of Oxford Knee Score (OKS) and health status (EQ5D) were prospectively independently recorded by patients undergoing TKR, pre-operatively and at 6 months. This was correlated with consultant default practice of removing, partially removing or preserving the infrapatella fat pad.

Conclusions

The mean PROMs improvement scores for fat pad preservers were significantly better than those for excisers (OKS p = 0.020), (EQ5D p = 0.026). This study finds that patients report better outcomes if their surgeons default to preserving the infrapatella fat pad when performing knee replacement.

Implications

The publication of trust PROMs and the possibility of performance based remuneration makes self-evaluation of practice ever more important. In the absence of a randomised trial surgeons should consider fat pad preservation.

References

How many of the expectations that patients have of their total knee replacement are fulfilled at one year?

AH Deakin, MA Smith, E Smith, J McAllister, M Sarungi. Golden Jubilee National Hospital, Clydebank, G81 4DY. martin.sarungi@gjnh.scot.nhs.uk

Introduction

Patients who have very high expectations of TKR surgery are more likely to be disappointed after surgery

Aim

To quantify the expectations that Scottish patients had of their TKR that were fulfilled at one year post-operation

Methods

- 197 TKR patients completed validated questionnaire prior to surgery and 174 answered at one year whether expectations had been fulfilled
- 17 expectations rated from very important to not having expectation
- Patients were recruited from across Scotland

Results

- Mean number of expectations per patient was 14 out of 17
- Mean number of completely fulfilled expectations was 7 (0 to 16)
- Across cohort expectations were
  - 48% completely fulfilled
  - 38% somewhat fulfilled
  - 12% not fulfilled at all

Conclusions

Less than 50% of expectations were completely fulfilled

Most fulfilled expectations: pain relief; mobility; straightening leg; improved daily activities

Least fulfilled expectations: kneeling; squatting; paid work; sexual activity
A discoid lateral meniscus is an anomaly of the meniscus. Classical radiological features associated are:
- a squared-off appearance of the lateral femoral condyle
- widened lateral femorotibial joint space
- cupping of the lateral tibial plateau
- obliquity of the lateral tibial plateau articular surface
- high fibular head
- hypoplasia of the lateral intercondylar spine

To evaluate whether any of these radiological features can be consistently used with reliability and repeatability to diagnose a discoid lateral meniscus.

Method & Materials

- AP view radiographs of 100 knees in patients with arthroscopically proven discoid meniscus were studied.
- Ages 20-45y, mean age of 25.3y.
- 100 normal knees were used as a control group (similar characteristics).
- Blind study where 25 different observers, amongst a spectrum of people who would look at x-rays in orthopaedics, looked at these x-rays trying to identify the ones that illustrate a lateral discoid meniscus.

Results

Overall success rate: 55% (Range: 33-71%)
With Interobserver variation: 54.5%
And intraobserver variation: 67% (Range: 33-92%)

Conclusion

- No statistically significant correlation was found between any of these radiological features and the presence of a discoid lateral meniscus.
- No X-ray radiological feature can be consistently used with reliability and repeatability to diagnose a discoid lateral meniscus.
Generalized Ligament Laxity and Revision Medial Patellofemoral Ligament (MPFL) Reconstruction: is there a link? (0175)

Muhammad Adeel Akhtar, Lisa White, Anthony Hui

Knee Injury Clinic, Orthopaedic Department, James Cook University Hospital, Middlesbrough

Introduction

MPFL reconstruction is performed for recurrent patellar instability. This study was performed to assess the incidence of generalized ligament laxity (GLL) in patients undergoing revision MPFL reconstruction.

Material and Methods

Patients undergoing MPFL reconstruction between January 2009 and July 2014 under the care of a specialist knee surgeon were identified. Demographic details, functional outcomes, graft used and causes of failure were studied. The Beighton score was used to define the incidence of GLL. A Beighton score of greater than 4 was classified as generalised ligamentous laxity.

Results

Total number of patients undergoing MPFL reconstruction was 108. 3 patients (2.7%) had revision MPFL reconstruction. The mean age for 2 female and 1 male patient was 16 years. The primary graft used in all cases was semitendinosus autograft. The mean time for graft failure was 16 months without any trauma. The mean Beighton score was 6 and all patients had GLL.

The revision graft used was synthetic ligament (LARS) and there were no further episodes of patella instability. The mean KOOS score improvement was 18 points following revision as compared to 33 points after primary reconstruction. The mean IKDC score improvement was 32 points as compared to 31 points after primary reconstruction.

Conclusions

We studied the incidence of failure following MPFL reconstruction at 5 year which was 2.7%. All patients undergoing revision MPFL reconstruction had GLL and their grafts stretched out without any trauma. The use of allograft or synthetic graft may be beneficial in patients with generalized ligament laxity.
Functional Outcomes following Medial Patellofemoral Ligament (MPFL) Reconstruction for Patellar instability (0176)

Muhammad Adeel Akhtar, Lisa White, Anthony Hui

Knee Injury Clinic, Orthopaedic Department, James Cook University Hospital, Middlesbrough.

Introduction
Recurrent patellar instability is common in young and active population and affects activities of daily living and participation in sports. Surgical treatment is indicated following the failure of the non-operative management. Our aim was to study the functional outcomes following MPFL reconstruction for patellar instability.

Material and Methods
Patients undergoing surgery between January 2009 and July 2014 under the care of a specialist knee surgeon at a teaching hospital were identified. Demographic details, length of rehabilitation, functional outcomes and complications were studied. The Knee Injury and Outcome (KOOS) Score and International knee Documentation Committee (IKDC) Score was recorded.

Results
Total number of patients was 108. The mean age for 56 female (52%) and 52 male (48%) patients was 24.5 years (range 12-58). 5 patients had bilateral MPFL reconstruction. The mean length of rehabilitation was 3.2 months (range 0-11 months). The mean KOOS score before stabilization was 44 (range 4-86) and following MPFL reconstruction was 77 (range 49-100) with improvement of 33 points. The mean IKDC score before stabilization was 38 (range 2-81) and following MPFL reconstruction was 69 (range 37-95) with improvement of 31 points. 3 patients (2.3%) had further episodes of instability and required revision MPFL reconstruction.

Conclusions
We studied the functional outcomes following MPFL reconstruction for patellar instability. There was improvement in functional scores. The failure rate was 2.7%. We recommend MPFL reconstruction for recurrent patellar instability following failure of rehabilitation programme to improve functional outcomes.
Local Differences in the Alignment of Osteoarthritic Knees in the North West of England (0177)

Sampath SA1,2 Tigar B3 Rohan Chitkara4

1The Bluespot Knee Clinic, 2Manchester Metropolitan University, 3Liverpool Hope University, 4University of Manchester

email: Mr.Sampath@bluespot.com

- Osteoarthritis is the most common type of arthritis
- Anecdotal evidence suggests regional differences in knee alignment in the United Kingdom
- Null hypothesis: There are no local differences in the distribution of knee alignment in patients who presented for TKA in the NORTHWEST of England

Methods:
- 625 consecutive knees having TKRs
- Orthopilot™ (BBraun Aesculap)
- Birthplace NW of England
- Exclusions:
  - Previous fracture
  - BMI >40
- After Exclusions: 526 knees
- Kolmogorov-Smirnov test

Conclusions:
- Blackpool patients have a greater range of alignment at presentation for TKR compared with Manchester patients
- This study demonstrates the potential value of the data collected during computer aided orthopaedic surgery for revealing underlying alignment patterns in patients
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Recent choice of options provided

- Enhanced Tariff Option
- Default Tariff Rollover

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Epidemiology of First Time Patella Dislocations and Functional outcomes following rehabilitation in South Tees (0178)

Muhammad Adeel Akhtar, Lisa White, Anthony Hui
Knee Injury Clinic, Orthopaedic Department, James Cook University Hospital, Middlesbrough

Introduction

Traumatic patellar instability is common in young and active population. Our aim was to study the epidemiology and functional outcomes following rehabilitation for patellar dislocation.

Material and Methods

Patients undergoing rehabilitation for first time patellar dislocation between 2010 and 2014 were identified from a prospective physiotherapy database. Demographic details, length of rehabilitation and functional outcomes were studied. The Knee Injury and Outcome (KOOS) Score and International knee Documentation Committee (IKDC) Score was recorded.

Results

Total number of patients was 226. 102 (45%) were female and 124 (55%) male with a mean age of 20 years (range 11-69). The mean number of physiotherapy session was 4.6 (range 0-20). The mean length of rehabilitation was 1.6 months (range 0-6 months). 63 patients (28%) successfully completed their rehabilitation and were discharged, 15 patients (7%) were listed for surgery and 143 patients (64%) did not attend to complete their rehabilitation. The mean KOOS score on referral to physiotherapy was 51 (range 10-93) and at last follow up was 80 (range 40-100) with improvement of 29 points. The mean IKDC score was 44 (range 13-83) at the start of treatment and 80 (range 59-95) at the last follow up with improvement of 36 points.

Conclusions

We studied the epidemiology and functional outcomes following primary patellar dislocations. The mean KOOS score improved by 29 points and the mean IKDC score improved by 36 following rehabilitation. 64% patients did not attend to complete their rehabilitation. We recommend a flexible rehabilitation programme with an open access policy following first time patellar dislocation.
Outcome of use of femoral and tibial metaphyseal sleeves in revision knee arthroplasty

Jean-Pierre St Mart, Paul Whittingham-Jones, Neil Davies, Tim Waters

Objectives:
• To assess outcome from use of metaphyseal sleeves for bone defects in both tibia and femur.

Method:
• 50 revision knees (48 patients) for either septic or aseptic loosening.
• Average age 69 years.
• Mean follow up 35 months.

• All femur/tibia were graded Type II or III bone defects using the Anderson Orthopaedic Research Institute grading system.

Results:

<table>
<thead>
<tr>
<th>Sleeves</th>
<th>Number of knees (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIBIA ONLY</td>
<td>26 (52%)</td>
</tr>
<tr>
<td>FEMUR ONLY</td>
<td>19 (38%)</td>
</tr>
<tr>
<td>BOTH</td>
<td>5 (10%)</td>
</tr>
</tbody>
</table>

• All knee radiographs at final follow-up showed well-fixed osteointegrated components.

Complications

<table>
<thead>
<tr>
<th>Complications</th>
<th>Number of knees (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial wound infection</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>MUA with good improvement ROM</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Complex regional pain syndrome</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Revision of prosthesis</td>
<td>2 (4%)</td>
</tr>
</tbody>
</table>

• The average pre-op Oxford Knee Score was 22 (12 to 38) and 38 (12 to 45) post-op.

Conclusions:
• Porous titanium sleeves are a good option when managing large metaphyseal bone loss in revision knee arthroplasty.
• Functional outcome scores are comparable to more traditional bone grafting revision techniques with minimal post-operative complications.
KNEE REPLACEMENTS HAVE ABNORMAL PATELLA TRACKING (No. 0185)

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Introduction
When problems occur following knee replacement they usually relate to the patello-femoral joint (PFJ) and may be due to abnormal patella tracking.

The aims were (a) to compare patella tracking after knee replacement and in the normal knee and (b) to compare trochlear geometry in knee replacement and the normal knee.

Methods
Patello-femoral kinematics were assessed using a combined Motion Analysis and UltraSound system (MAUS) in 20 TKR patients, 20 PFJR and 20 normal subjects during a squat exercise.

The bony and cartilagenous trochlea geometries from 3T MRI scans of 20 normals were compared with both symmetrical and anatomical TKR femoral components and PFJ replacement geometries. Following segmentation and standardized alignment, the path of the apex of the trochlea groove was measured using customized Matlab software.

Results
In normal subjects the patella moved laterally with increasing flexion (12mm/90º SD 4mm). This was not recreated in the “anatomical” TKR (p=0.03) or PFJR (p<0.01). After engagement the patella moved medially in flexion in both TKR (3.6mm/90º SD 8mm) and PFJR (1.8mm/90º SD 7mm). There was no difference between TKR and PFJR (p=0.27).

In normal knees the trochlear groove apex was directed laterally with increasing flexion for both cartilage and bone. Both the “anatomical” TKR and PFJR had a medially orientated trochlea, whilst the “symmetrical” TKR showed a neutral straight path. The differences were significant (p<0.05).

Conclusions
We present a new technique for measuring functional 3D patello-femoral kinematics in native and replaced knees. Our data suggests that patello-femoral tracking after knee replacement using standard modern designs is very abnormal. This may explain why PFJ problems are common. The abnormalities in tracking were probably due to the geometry of the trochlear and therefore could be improved by modifying the design.
Impact Of BMI And ASA Grade On Length Of Stay Following Primary Total Knee Replacement (0187)

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Introduction

Increasing number of studies investigating surgical patients have reported longer length of stay (LOS) in hospital after an operation with higher ASA grades. However, the impact of Body Mass Index (BMI) on LOS in hospital post Total Knee Replacement (TKR) remains a controversial topic with conflicting findings in reported literature. In our institution, we recently adopted a weight reduction program requiring all patients with raised BMI to participate in order to be considered for elective TKR surgery.

Objectives

To investigate the relationship between BMI and ASA grade and their effect on LOS in hospital post elective primary THR.

Methods

A retrospective analysis was conducted on all elective primary TKR patients between November 2013 and May 2014.

Results

Two hundred and thirty six TKR were analysed. Mean LOS in BMI groups <30, 30-40 and >40 were 6.0, 6.4 and 6.0 days, respectively (p = 0.71). Mean LOS in ASA groups 1-2 and 3-4 were 5.8 and 7.6, respectively (p < 0.01).

Study Demographics

<table>
<thead>
<tr>
<th>Total primary THR</th>
<th>Male:Female</th>
<th>Right:Left</th>
<th>Bilateral</th>
<th>Age at operation</th>
<th>LoS</th>
</tr>
</thead>
<tbody>
<tr>
<td>236</td>
<td>58%:42%</td>
<td>64:56</td>
<td>2</td>
<td>Mean 68.7 (SD 10.01)</td>
<td>Average 6.19 (SD 3.43)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Range 43 to 96</td>
<td>Range 2 - 28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BMI Average 32.9 (SD 6.33)</td>
<td>Range 19 - 51</td>
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</tbody>
</table>

LOS was compared in BMI groups <30, 30-40 and >40 and ASA grades 1-2 and 3-4. ANOVA and independent t-test were used to compare mean LOS between BMI groups and ASA grades, respectively.

Difference between BMI groups is NOT statistically significant (ANOVA p=0.714)

Difference between ASA groups is statistically significant (T-test p=0.04)

Discussion & Conclusion

Our study included a reasonable number of primary TKR. This was enough to detect a positive relationship between ASA grade and LOS. However, our data further adds to the evidence that high BMI alone is not a significant factor in prolonging LOS after a primary TKR. Therefore, this should be taken into account when allocating resources to optimise patients for surgery.

Conclusion

In patients undergoing primary TKR, ASA grade is a better predictor of LOS than BMI.

References

The St Leger Knee replacement: A minimum follow up of ten years
Jean-Pierre St Mart, Alex Liddle, Paul Whittingham-Jones, Tim Waters

Objectives:

• To evaluate long-term follow up and survivorship of St Leger knee replacements implanted in a North West London hospital.

Method:

• 78 knees (44 female, 12 males-11 bilateral) implanted between 1998 and 2004.
• Average age 68 years (43 to 89).

Conclusions:

• St Leger knee replacement performed poorly compared to other knee replacements on the joint registry.
• Most of our revisions were due to aseptic loosening and associated with usage of a 7mm liner.

<table>
<thead>
<tr>
<th>Reason for revision</th>
<th>Number of knees (%)</th>
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<tbody>
<tr>
<td>Aseptic loosening</td>
<td>18 (23%)</td>
</tr>
<tr>
<td>Infection</td>
<td>3 (4%)</td>
</tr>
<tr>
<td>Component mismatch</td>
<td>1 (1%)</td>
</tr>
</tbody>
</table>

Kaplan-Meier cumulative survivorship using revision for any reason was 75% at 10 years (CI: 63-84%).

Cumulative survival

• All 14 revised for aseptic loosening, showed gross osteolysis and loosening underneath the tibial tray.
• 57% of primaries revised had used a 7 millimeter at initial implantation.
This is, to our knowledge, the first such case described in the literature. During first reconstruction, ipsi-lateral autograft was of such poor quality that hamstring tendon reconstruction, ipsilateral was used leaving only allografts reconstruction for the second episode of dislocation. Surgeons should anticipate these events and consider the role of allograft in ligamentous repair.

1st episode of dislocation
- Patient was 38 years old
- Fallen from standing height whilst getting out of bathroom
- Presented with right knee deformity, hypoesthesia along the common peroneal nerve distribution and absent dorsalis pedis and posterior tibial pulses. However, the foot was warm and pink.
- Diagnosis: anterior dislocation of the right knee, promptly reduced under sedation.

2nd episode of dislocation
- CT angiogram did not visualised anterior tibial or peroneal arteries and a vascular surgeon opinion was sought. The patient was closely monitored and no vascular intervention was necessary. 
- Pre-operative MRI showed complete rupture of ACL, PCL, LCL and posterolateral corner.
- The following day, the patient underwent right knee posterolateral corner reconstruction.
- Intraoperatively, use of tourniquet was avoided given the history of potential vascular injury. Hamstring tendon auto-graft harvested from ipsi-lateral side was very thin and weak, therefore, contra-lateral gracilis and semitendinosus tendon was also harvested and used to reconstruct postero-lateral corner.
- Patient was kept on IROM brace locked at 30 degrees for 4 weeks postoperatively. She then commenced physiotherapy exercises and weight bearing with crutches for another 2 weeks.
- By three months postoperatively she returned to her normal level of activity with minimal instability symptoms. Sensation returned to normal.

Introduction
Tibiofemoral Knee dislocation is a rare but serious limb-threatening injury. Without prompt recognition and management, amputation or long term functional impairment may result. We present an unusual case of bilateral sequential knee dislocation secondary to low energy trauma in a patient with Systemic Lupus Erythematosus (SLE) and anti-phospholipid syndrome (APS). She was on regular Prednisolone, Azathioprine, Hydroxychloroquine, Aspirin, Calcium and Vitamin D.

Case Relevance
- Although we did not perform histopathological evaluation, macroscopically both hamstring tendons were very thin and tenuous.
- Senior author elected to use allograft as there was no suitable auto-graft alternative for reconstruction.

Discussion
- Risk factors in those with Ultra-low velocity knee dislocations are associated with an increased rate of concomitant neurovascular injuries and postoperative complications.
- Under sedation in ED, the dislocation was reduced. Distal pulses remained diminished, and ankle-brachial pressure index was 0.8, therefore vascular imaging was performed. - CT angiogram showed good arterial flow. - Pre-operative MRI scan showed complete ACL and PCL rupture, high grade MCL tear, LCL avulsion of the fibular head and injury to biceps femoris, popliteus and gastrocnemius.
- Patient underwent postero-lateral corner and medial collateral ligament reconstruction using gracilis tendon allografts, as there was no suitable auto-graft option. She made uneventful recovery and currently engaging well with her rehabilitation and physiotherapy program.

Conclusions
- A female patient with high BMI and connective tissue disease such as SLE or Anti-Phospholipid Syndrome may be at a higher risk of sustaining low energy bilateral knee joint dislocation.
- It is possible that, an underlying tendon or ligament structural abnormality is a contributing factor. Histological analysis is such patients may shed more light into this. Furthermore, treating surgeon may opt to use synthetic or allograft when undertaking reconstruction in such patients.

References
7. Female patient with high BMI and connective tissue disease such as SLE or Anti-Phospholipid Syndrome may be at a higher risk of sustaining low energy bilateral knee joint dislocation.
Aim: To review the functional results of patients who have undergone treatment for tibial spine fractures.

Methods: 39 patients with type III Meyers and Mc Keever tibial spine avulsion fractures underwent single cortical screw fixation between 2003 to 2009. Tegner and Lysholm knee scores and KT-1000 knee testing was performed 1 year post-op.

Results:

34 patients were reviewed 1 year post tibial spine fixation. 5 patients were lost to follow-up.

17 patients failed fixation: mean KT-1000 score (3.9±0.6mm), Tegner (3.4±1) and Lysholm (46±15). The remaining 17 patients had successful fixation with normal KT-1000 (1.0±0.8) along with excellent knee outcome scores: follow-up Tegner (8.2±1.2) and Lysholm (94±6).

The mean age of the two groups was (43±8) and (25±8) with a similar M:F ratio (13:4 vs 12:5). Regression analysis demonstrated that age was a discriminating value for success(<0.001). See Fig 1.

13 patients that failed fixation went on to have ACL reconstructions with good follow-up Tegner (8.9±0.8) and Lysholm (94±5) results; 4 declined further surgery.

Conclusion: Age is an independent factor for predicting success with single cortical screw fixation.
Midterm results of CR in gross deformities. (0198)

Dr Kunal Makhija, Dr Nilen Shah

**Background**: A grossly deformed knee is believed to be an indication for PS-TKA. However, the role CR-TKA in such knees is unclear in the literature. Considering the obvious advantages of CR, we analysed the mid term follow up of CR knees in gross deformities.

**Materials and Methods**: 1590 patients (1740 knees) underwent TKA between January 2011 to December 2012, out of which 570 knees had gross deformity (varus > 15°, FFD > 10°, valgus > 10°, recurvatum > 10°). CR-TKA was performed for 540 knees and were included in our study. Subvastus approach was used for all knees. Average age being 68 years, mean BMI being 32 and average weight 70 kgs. Intraoperatively, POLO test was used to ensure PCL stability, further confirmed by direct palpation. Femoral roll-back was found adequate.

**Results**: 95% of grossly deformed knees underwent CR-TKA. Mean pre-operative knee score was 45 which improved to 94 at mid-term follow-up at 18 to 36 months. There were no incidence of component loosening or instability. Three knees needed secondary resurfacing of patella. Lateral radiographs showed consistent roll-back in all except for 3 knees which had femoral roll-forward.

**Discussion**: PS-TKA have shown to yeild good results in gross deformities, however the role of CR had been unclear. Contrary to popular belief, in our opinion, greater the deformity, greater is the need to retain the PCL. Balancing the flexion extension space is easier and involves lesser resection of distal femur. Hence, its bone preserving. For valgus knees, PCL acts a medial stabilizer. In recurvatum deformity, the posterior capsule being stretched out, retaining PCL has prime importance. Our retrospective mid term follow up have shown good results. However, long term analysis is necessary to highlight the survivorship.

**Conclusion**: CR-TKA would be considered for knees with gross deformity for its aforementioned advantages.
Subvastus approach for Revision TKA (199)

Dr Kunal Makhija, Dr Nilen Shah

Background: Subvastus approach for Total Knee Arthropalsty (TKA) allows a faster recovery. It is traditionally not utilized for revision surgeries because of difficulty in exposure of the knee and eversion of the patella. It is considered to have limited indications. We hypothesized that revision TKA should not really pose a problem as the exposure gained is adequate with added advantage of preserving the extensor mechanism, thereby allowing faster functional recovery. We present an analysis of the use of subvastus approach for revision TKAs.

Materials and methods: 50 patients (50 knees) 37 females + 13 males with mean age 68 years underwent revision total knee arthroplasty (TKA) by subvastus approach between January 2006 to January 2013. All patients were prospectively evaluated by pre- and postoperative Knee Society and function score. The average follow-up was 24 months (range from 1 to 3 years) with minimum 1 year follow-up. The indications for revisions were aseptic loosening (20 knees), infection (12 knees), instability (12 knees) and peri-prosthetic fractures (6 knees). Constrained condylar prosthesis (43 knees), hinged prosthesis (6 knees) and custom made prosthesis (1 knee) were fixed using the subvastus approach. Infected knees underwent one or two staged revisions.

Results: The approach provided adequate exposure in all revisions. The average Knee Society score improved from 42 to 83 and the function score from 48 to 65. The complications included medial collateral ligament injury (one case), patellar tendon avulsion (one case) and mal-tracking patella (one case). Average hospital stay was 4 days. Average blood lose was 400 ml.

Conclusion: Our results compare favourably with other reported series on revision TKA. The subvastus approach can be considered for revision TKAs.