Fast Track Hip and Knee Replacement – Marginal Gains

Paul Partington
Arthroplasty Lead
Northumbria Trust
Fast Track Hip and Knee Replacement – Marginal Gains

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Arthroplasty Lead
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Fast Track Northumbria

• How we did it
• Results
• Current innovations
How we did it

• Copy someone else’s good ideas
Northumbria – Glasgow – April 08

- Physio
- Pre-assessment
- Surgeon
- Anaesthetists
- Pain team
- Ward nurses
- Matron

- Manager
How we did it

• Copy someone else’s good ideas

• Fundamentals – Team Effort
  – Change expectations
  – Anaesthesia
  – Pain control
  – Feedback
How we did it

• Copy someone else’s good ideas

• Fundamentals – Team effort
  – Change expectations
  – Anaesthesia
  – Pain control
  – Feedback
  – No change in surgery
Before Enhanced Recovery

• Pharmacological
  – General anesthesia (spinal / epidurals or general)
    Based on anesthetist preference and patient choice/consent
  – Patient controlled intra-venous analgesia (PCA)
  – No Tranexamic acid

• Procedural
  – I/V fluids till next day
  – Drains
  – Mobilisation next day

• Behavioral
  General patient and staff education
Before Enhanced Recovery

- Pharmacological
  - General anesthesia (spinal / epidural or general)
    Based on anesthetist preference and patient choice/consent
  - Patient controlled intravenous analgesia (PCA)
  - No Tranexamic acid
- Procedural
  - I/V fluids till next day
  - Drains
  - Mobilisation next day
- Behavioural
  General patient and staff education
Fast Track
Pre-operative

• Behavioral training: Length of stay
  – Early mobilisation and length of stay
    • Clinic discussion
  – Information pack and DVD.
  – Repeated
    • Pre-assessment
    • Ward staff
Admission:

- Staggered.
- Clear fluids up to 2 hours of surgery.
- Patient pre-warming.
  - NICE Guidance draft for every surgical patient – prevention of hypothermia.
Peri-Operative measures

• Patient walk into operation theatre.
Anesthesia: all anaesthetists

• Low dose spinal (0.25% chirocaine) + sedation / light GA
• Dexamethasone IV
• IV Paracetamol +/- 40 mg Parecoxib.
• Levobupicacaine (0.125%, 100 mls) into wide and layered field.
• Tunneled Epidural catheter with microbiological filter into the joint (TKR only)
  20ml bolus after skin closure
  3 post operative boluses
  **AmbIT** pump (Summit Medical Products, Sandy, UT)
  Scrub and nursing staff training to use the pump.
Peri-operative measures

• All surgeons

• Drains not used.

• Tranexamic acid as slow IV bolus at induction (periodically oral).
• Standardised wound dressing (Abuzakuk et al 2006 and Clarke et al 2009).

• TKA
  Single layered crepe bandage and a compressive cuff (Aircast Knee Cryo/Cuff: DJO UK Ltd., Guildford, Surrey, UK).
Peri-operative measures

• **Post operative Analgesia:**
  – Gabapentin (300mg BD for ten days)
  – Oxycontin (5-20mg BD for two days) followed by
  – Codeine PO4 or Tramadol (50-100mg QID)
  – Naproxen 500mg BD for 4 weeks + Lansoprazole.
    Or nefopam.

• **As required**
  – Zopiclone
  – Oxycodone 5-10mg 2 hourly – max 40mg/ 24 hours.
  – Morphine sulphate IV.
  – Ondansetron
  – Cyclizine
  – Senna.

• **Thromboprophylaxis:**
  – Tinzaparin (innohep: LEO pharma A/S, Ballerup, Denmark)
    • 4500 IU s/c OD
Post operative

- **Physiotherapy**
  3-5 hrs post op.
  7 days physiotherapy (previously 5 days).
  Trained nursing staff mobilise patients out of hours.
  Hands off nursing

- **Blood transfusion protocol**
  - Routine administration at Hb of 70mg/dl
  - Patients with cardiovascular disease – at Hb Less than 90mg/dl.
  - Hb b/w 90 and 100mg/dl: oral iron
Typical Discharge medications

• Tinzaparin 4,500 IU
• 28 days for THR and 14 days for TKR
• Gabapentin
• Paracetamol.
• Codeine
• Naproxen.
• Docusate
• Senna.
• Morphine sulphate oral solution.
Post discharge

• Nurse specialist ring patients at home to check they are well.
• District Nurse review wounds 2/52 and ROC.
• Physiotherapy review select patients at home.
Results
## Results in consecutive unselected 3000 Traditional Vs 3000 ER patients

Malviya 2011 & S Khan 2014 Acta Orthopaedica

<table>
<thead>
<tr>
<th>Similar</th>
<th>Less</th>
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<tbody>
<tr>
<td>• 30 day Return to theatre rate MI Stroke GI Bleed Pneumonia</td>
<td>• Length of stay 3 days ER Vs 6 days Traditional</td>
</tr>
<tr>
<td>• 60 day PE DVT</td>
<td>• Blood Transfusion 3 times less in ER Vs Traditional</td>
</tr>
<tr>
<td></td>
<td>• 30 days Death 5 ER Vs 16 Traditional</td>
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</tbody>
</table>
ER of 3000 procedures

11,400 bed days less in ER group

Saving of 3.5 millions
Additional Benefits

- Fewer deaths
- Fewer complications
- Better PROMS
Fewer Deaths and Complications
<table>
<thead>
<tr>
<th>Factor (n, (%))</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2016</th>
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<tbody>
<tr>
<td>N</td>
<td>1168</td>
<td>1667</td>
<td>2030</td>
<td>394</td>
</tr>
<tr>
<td>Mean LOS (days)</td>
<td>9.5</td>
<td>5</td>
<td>3.1</td>
<td>2.9</td>
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<tr>
<td>Death in 30</td>
<td>11(1%)</td>
<td>5(0.3%)</td>
<td>3(0.1%)</td>
<td>0</td>
</tr>
<tr>
<td>Death in 90</td>
<td>14 (1.2%)</td>
<td>11(0.6%)</td>
<td>4(0.2%)</td>
<td>0</td>
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<tr>
<td>DVT 60 days</td>
<td>12 (1%)</td>
<td>6 (0.4%)</td>
<td>5 (0.2%)</td>
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</tr>
<tr>
<td>PE 60 days</td>
<td>17 (1.5%)</td>
<td>19 (1.1%)</td>
<td>19 (0.9%)</td>
<td></td>
</tr>
<tr>
<td>Stroke 30 days</td>
<td>4 (0.3%)</td>
<td>5 (0.3%)</td>
<td>2 (0.1%)</td>
<td></td>
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<tr>
<td>GI bleed 30 days</td>
<td>6 (0.5%)</td>
<td>11 (0.7%)</td>
<td>4 (0.2%)</td>
<td></td>
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<tr>
<td>Renal + HDU 30</td>
<td>3 (0.3%)</td>
<td>17 (1%)</td>
<td>39 (1.9%)</td>
<td></td>
</tr>
<tr>
<td>MI 30 days</td>
<td>11 (0.9%)</td>
<td>6 (0.4%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Pneum 30 days</td>
<td>14 (1.2%)</td>
<td>13 (0.8%)</td>
<td>4 (0.2%)</td>
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</tbody>
</table>
45-day mortality in 2011-0.20% - Lancet 2014
Better PROMS
Primary Knee Replacements: Oxford Knee Score Health Gain Score

Improved: 3.5 points
Current Innovations
AMBULATORY HIPS

NORTHUMBRIA THR PATIENTS DISCHARGED ON DAY 1

Can we discharge on day 0?
Realisation

• Many patients
  – Operation afternoon
  – Home next morning

• Not far to move to
  – Operation morning
  – Home afternoon / evening
# Patient Characteristics for Early Discharge

<table>
<thead>
<tr>
<th></th>
<th>Day 1 Discharge</th>
<th>Length of Stay &gt;2</th>
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</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>63.1</td>
<td>68.2</td>
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<tr>
<td><strong>Sex</strong></td>
<td>53.5% Male</td>
<td>39.4% Male</td>
</tr>
<tr>
<td><strong>Charlson Score (Mean)</strong></td>
<td>0.32</td>
<td>0.42</td>
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<tr>
<td><strong>1st THR</strong></td>
<td>5.1%</td>
<td>94.9%</td>
</tr>
<tr>
<td><strong>2nd THR</strong></td>
<td>9.5%</td>
<td>90.5%</td>
</tr>
</tbody>
</table>
‘...Age (OR 2.46), living situation (living alone vs cohabiting OR 2.09) significantly associated with increased length of stay...’
‘...Pain, dizziness, and general weakness were the main clinical reasons for being hospitalized at 24 and 48 hours postoperatively...’
Day surgery- message

• Clinic consultation
  – Sow the seeds of fast track & day case surgery
  – “How long will I be in hospital?”

• Pre-op / consent / post op. ward round
  – ‘You might get home today’
  – ‘Blood clots may kill, which is why we will get you out of bed as soo’
AMBULATORY HIPS

• **CRITERIA FOR DAY 0**
  – YOUNG
  – NO SIGNIFICANT CO-MORBIDITIES
  – (PREVIOUS THR WITH SHORT LENGTH OF STAY)
  – LIVE WITHIN ACCEPTABLE DISTANCE FROM BASE SITE

• **PLAN**
  – OFFER POSSIBILITY IN CLINIC
  – 1ST ON LIST
  – FAST TRACK MOBILISATION AND ANALGESIA
  – TRANSPORT ORGANISATION
  – SAFETY NET FOR EARLY REVIEW
First planned patient

- Mid sixties, female
- Keen to go home on the day of operation
  - Clinic
  - Pre-assessment
  - Ward
The day came

• 1st on the list
• Low dose spinal
• Standard surgery
  – LA infiltration etc
  – No drains (of course)
  – Early mobilisation
  – Discharged (bloods OK, physio happy, not too far)
Follow-up

• Delighted patient
  – Happy with her hip
  – Happy with experience
  – No complications
Follow-up

• Delighted patient
  – Happy with her hip
  – Happy with experience
  – No complications

  – Admits she was very, very keen not to stay in hospital and leave her dog at home alone for the first time ever...
2015

• Breeding programme for puppies
• Issue puppy at the time of entering waiting list
• Reinforcement in PAC
  – Emphasise need to not leave puppy home alone for even one night
• Reinforcement on the ward

• Result- day case joint replacement surgery!
2016

• Progress
2016

• Progress
• Day case surgery without puppies
2016

• Progress
• Day case surgery without puppies
• Puppy project abandoned
2016

- Progress
- Day case surgery without puppies
- Puppy project abandoned
2016

• Progress
• Publicity
  – Expectation
  • Patients
  • Staff
  • GPs etc

New hip and home ...
... on the same day

A Northumbrian man has become
the second person in the county
to have a hip replacement operation
and go home the same day.

Builder and keen golfer Len Smith
has suffered from wear and tear in his
joints over many years.

Having already had both his knees
replaced at Wansbeck hospital, he was
continuing to suffer chronic pain in his
left hip. His consultant orthopaedic
surgeon Paul Partington advised
that a full hip replacement would
be necessary and to Len’s surprise, that
this could be done without the need
to stay in hospital overnight.

Len, from Bedlington in north
Northumberland, came into Wansbeck
Hospital for the procedure in April. He
had a spinal anaesthetic to numb the
lower half of his body so he was fully
awake and talking to the surgeon and
anaesthetist during the operation.

Once back on the ward, Len was keen
to get out of bed and start his recovery
as soon as possible.

“People couldn’t believe it when I
got straight up,” Len said.

“When Mr Partington phoned the
ward to see how I was, the staff said
‘If we knew where he was we’d tell you!’ I
was out with the physiotherapist and I
asked if I could walk further.

“He told the staff I might as well go
home if I was already up.”

Commenting on the operation and
his choice to have a day-case pro-
ter, Len said: “I’m active with work
and my golf, I was just keen to get
done and get back to normal. Obvi-
ously the surgeon has to select patients
carefully but he knew I was fit and
determined.

“The pain in my hip which I had
been enduring 24/7 for many years
was unbearable and much worse than
the initial pain I felt after the operation.

“I was out and about the next day
and on the golf course the following
Monday. Eight weeks in I’ve never
looked back. Eventually the other hip
will need doing but I’ve no hesitation
in having it done this way again. It’s
fantastic.”

Mr Partington said: “We carried
cut our first day-case hip replacement
last year and we’re planning for this
to become increasingly regular.

“We already have a national reputa-
tion for short length of stay following
joint replacement with our fast-track
techniques, and hopefully day-case
surgery will become more and more
common when we can reliably identify
good candidates.

“Len was suitable as a highly-
motivated, fit patient who was keen
to have his surgery as a day-case. Other
important factors were that he did not
live too far away and had support from
his wife who was happy with the idea
of same day discharge.

“We’d encourage patients to con-
sider this option because if they are
otherwise fit and well, they can be in
and out of hospital quickly and start
their recovery in their own surround-
ings.”

The trust has one of the largest orth-
opaedic departments in the region
with short waiting times and surgeons
recognised as some of the best in the
UK. Since last June, around 3,000 peo-
ple have chosen to have their planned
orthopaedic procedure at Wansbeck
General Hospital.

Export help and support is available
round the clock to get patients up on
their feet as soon as possible and back
home quickly with the right support in
place. For extra peace of mind, the trust
runs a 24-hour dedicated hotline to help
answer patients’ questions about their
wound or rehabilitation after leaving
hospital.
2016

• To date
  – Hips
  – Knees
  – Revision hip
  – Scheduled in diary
Increase Numbers – how?
Discharge Hurdles

• Physiotherapy
  – Mobility
  – Stairs/Steps
  – Hip precautions

• OT
  – Transfers
  – Self care etc.

• Xray

• Blood tests

• Dry wound
Discharge Hurdles

• Physiotherapy
  – Mobility
  – Stairs/Steps
  – Hip precautions

• OT
  – Transfers
  – Self care etc.

• Xray
• Blood tests
• Dry wound
Hip Precautions

Acta Orthopaedica

Removal of restrictions following primary THA with posterolateral approach does not increase the risk of early dislocation

Kirill Gromov, Anders Troelsen, Kristian Stahl Otte, Thue Ørsnes, Steen Ladelund & Henrik Husted

To cite this article: Kirill Gromov, Anders Troelsen, Kristian Stahl Otte, Thue Ørsnes, Steen Ladelund & Henrik Husted (2015) Removal of restrictions following primary THA with posterolateral approach does not increase the risk of early dislocation, Acta Orthopaedica, 86:4, 463-468, DOI: 10.3109/17453674.2015.1028009

To link to this article: http://dx.doi.org/10.3109/17453674.2015.1028009
Do We Need Hip Precautions after primary total hip replacement?

Jane Harrison

With thanks to
Dr Daniel Skinner and Mr Giles Stafford

Agile Conference October 2015
## Precautions Vs No Precautions

<table>
<thead>
<tr>
<th>Precaution</th>
<th>Operations</th>
<th>Dislocations</th>
<th>No Precaution</th>
<th>Operations</th>
<th>Dislocations</th>
</tr>
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<tbody>
<tr>
<td>Inpatient</td>
<td>3289</td>
<td>10</td>
<td>1156</td>
<td>0</td>
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</tr>
<tr>
<td>Discharge - 6/52</td>
<td>3289</td>
<td>16</td>
<td>1156</td>
<td>4</td>
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<tr>
<td>6/52 – 6/12</td>
<td>3289</td>
<td>13</td>
<td>1156</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6/12- 12/12</td>
<td>3289</td>
<td>9</td>
<td>1156</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

3289 Operations  
48 Dislocations  
Rate of 1.46%  

1156 Operations  
6 Dislocations  
Rate of 0.52%
Precautions Vs No Precautions

An NHS Treatment Centre operated through a Partnership between: St George’s Healthcare NHS Trust; Kingston University Hospital NHS Trust; Croydon Healthcare NHS Trust and; hosted through Epsom & St Helier University Hospitals NHS Trust.
Hip Precautions - now

• Move any way, avoid extremes
• No need for higher furniture
• Stop using walking aids when they fell able
• Sleep on side, into bed either side
• Avoid testing ROM, allow to return naturally
• Allow bending
Anticipated problems

• Uncertainty while new guidance beds in
• Physiotherapy folklore outside Trust
• Patient folklore, previous hip, friends
Anticipated problems

• Uncertainty while new guidance beds in
• Physiotherapy folklore outside Trust
• Patient folklore, previous hip, friends
Anticipated problems

- Uncertainty while new guidance beds in
- Physiotherapy folklore outside Trust
- Patient folklore, previous hip

- Who / what do we blame when a hip dislocates?
Xrays

• Trip to Xray on day of surgery
  – On bed / chair
  – Porter
  – Time off ward
    • Physio / practice mobilisation
    • Analgesia refinement
    • OT
    • Blood tests
    • Transport planning
  – Moving and handling in Xray
  – Delays in Xray for other patients
X-rays

• Why?
  – Fractures
  – Dislocations
  – Education
  – Reflection
  – Future reference
X-rays

• Why?
  – Fractures
  – Dislocations
  – Education
  – Reflection
  – Future reference
Q1. Do we all review all of our Xrays, before the patient is discharged home?

Q2. When was the last time you took a patient back to theatre, or changed their post operative regime after X-ray in a primary, cemented joint replacement?
CURRENT CONCEPTS REVIEW

Intraoperative Periprosthetic Fractures During Total Hip Arthroplasty

Evaluation and Management

By Darin Davidson, MD, MHSc, Jeffrey Pike, MD, Donald Garbuz, MD, MHSc, FRCSC, Clive P. Duncan, MB, MSc, FRCSC, and Bassam A. Masri, MD, FRCSC

Intraoperative periprosthetic fractures are becoming more common given the increased prevalence of revision total hip arthroplasty and increased use of cementless fixation.

Risk factors for intraoperative periprosthetic fractures include the use of minimally invasive techniques; the use of press-fit cementless stems; revision operations, especially when a long cementless stem is used or when a short stem with impaction allografting is used; female sex; metabolic bone disease; bone diseases leading to altered morphology such as Paget disease; and technical errors at the time of the operation.

Appropriate treatment of intraoperative periprosthetic fractures does not compromise the long-term results of total hip arthroplasty unless the bone damage precludes stable fixation of the implant.

Total hip arthroplasty is a highly successful procedure with a high likelihood of excellent long-term results and a relatively low risk of complications. One of the major complications of total hip arthroplasty is periprosthetic fracture. Although both postoperative and intraoperative fractures occur, it is the former that have received the greatest attention in the literature. Despite this, the prevalence of intraoperative periprosthetic fractures is increasing. It is imperative that the modern reconstructive hip surgeon be familiar with the classification and treatment of these complications. Only intraoperative fractures will be considered in this review.

In one study, an intraoperative femoral fracture was encountered during 1% (238) of 23,980 primary total hip arthroplasties compared with 7.8% (497) of 6349 revisions, and subsequent studies have demonstrated similar results. In the study mentioned above, the rate of periprosthetic fracture during primary total hip arthroplasty was 5.4% (170 of 3121) when a cementless femoral component was used compared with 0.3% (sixty-eight of 20,859) when a cemented stem was used. Other studies demonstrated a prevalence of intraoperative fracture of 1.2% (seven of 605) when a cemented stem was used and 3% (thirty-nine of 1318) when a cementless femoral component was used. The variability in
Proposal

• No post operative Xray for THR or TKR
  – *Cemented primary* joint replacements (GIRFT)
    [We only do cemented hips]
  – No intra-operative concerns

• X-ray at follow up & discharge appointment
Summary

• Easier than you think
• Established expectation
• Surgeon
  – Sow the seed

• Remove obstacles / delays

• Most important person
  – Ward Nurse Practitioner
    • Supportive encouragement and reassurance