

Migration of care in TJA

Steven B. Haas MD, MPH
Chief, Knee Service
John N. Insall Chair, Knee Surgery
The Hospital for Special Surgery
New York, NY



Disclosure

- **Smith & Nephew Orthopaedics**
 - Designer (Royalty income), Consultant and Research Support on Knee Products
- **APOS Therapy**
 - Medical Advisory Board
- **SandDance Technology**
 - Ownership
- **IMP**
 - Royalty

Migration of care in TJA in 2015

- Improved knowledge
 - Entire care pathway practices
- Improved technology
- Patient factors
 - Increasing life expectancy
 - Expanding indications
 - Millennium patient
 - No longer primarily geriatric orthopedics
 - More demanding patients
- ALL ROADS LEAD TO RAPID RECOVERY
 - Both in ASCs & Hospitals



Why do we care about rapid recovery?

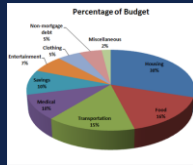
- Is it for the science?
- Current consensus is that mid-term to long-term results are similar regardless of short-term results
 - Available resolution of measurement tools?



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Why do we care about rapid recovery?

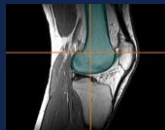
- "It's not about how much money you spend, it's about where you spend the money you have." - Fred Cushner, MD
- COST CONTAINMENT
 - Global endeavor
 - Decrease in healthcare \$
 - Decrease available patient resources
- If you're not careful:
 - Can affect patient care
 - Your quality
 - Disempowers surgeon



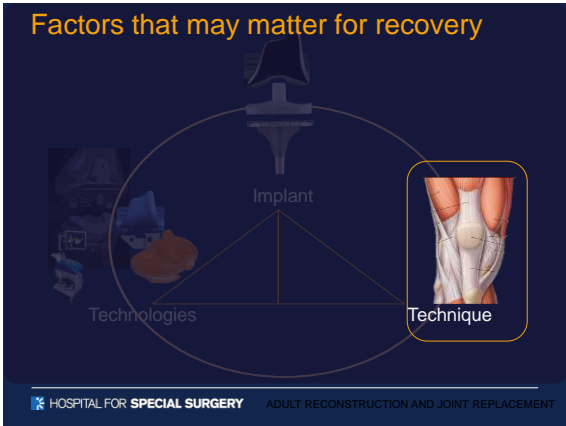
HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Why do we care about rapid recovery?

- COST CONTAINMENT = improve efficiencies
 - Technique
 - Implant cost
 - Pharmacy
 - OR utilization
 - Ancillary services
 - Nursing utilization
 - Discharge status
 - Acute Rehab
 - Nursing facility
 - Home
 - Hospital Length of Stay



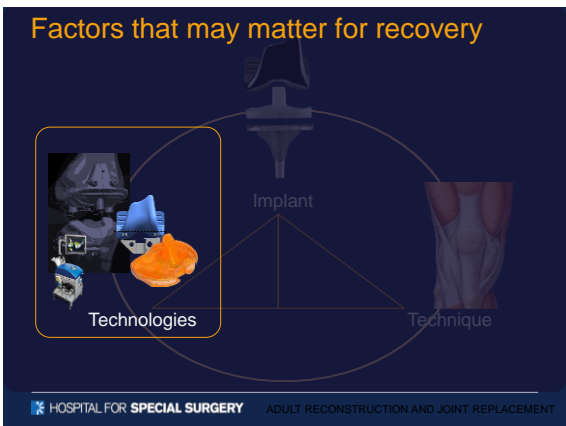
HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



Technique is important

- But not enough by itself
- MIS approaches
 - Most important to do the surgery well
- Blood conservation techniques
- Alternative anesthesia
- Multimodal pain control

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



New Technologies to Improve Efficiency & Outcome

•Visionaire – PSI



•FastPaK – Disposable Instruments



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

New Technologies that May Improve Outcome

•Orthosensor - Intraop Balancing Sensors



•Blue Belt – Robotic Navigated Surgery



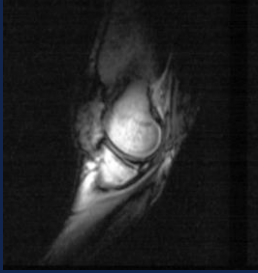
HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Factors that may matter for recovery



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

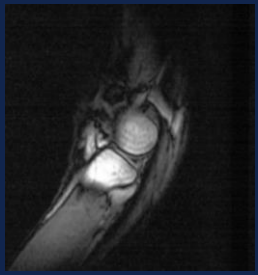
“Understanding Normal Knee Kinematics Better – A Dynamic MRI Study”
 A. Williams M.D. JBJS 2002



MEDIAL

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

“Understanding Normal Knee Kinematics Better – A Dynamic MRI Study”
 A. Williams M.D. JBJS 2002

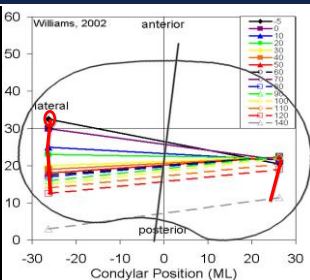


LATERAL

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

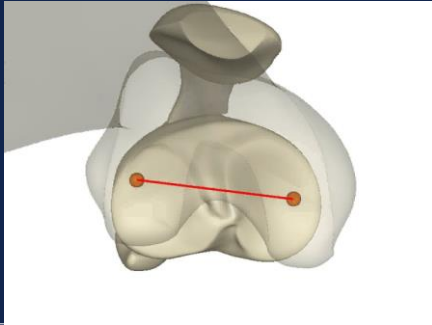
Kinematics – Normal Knee

- 0° (Full Extension)**
 - Screw-home (5° femoral internal axial rotation)
 - Posterior femoral condyle nearly flush with posterior tibia
- 0-90°**
 - Medial pivot (rollback + femoral external axial rotation)
 - Q-angle minimized (quad mechanism in straight line)
- 90-155°**
 - Posterior femoral translation
 - Axial rotation ceases



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Kinematics – Normal Knee



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Traditional TKA limitations

- Non-anatomic (abnormal) positioning
- Paradoxical motion (anterior sliding)



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Conventional TKA limitations

Non-anatomic (abnormal) motion

- Paradoxical motion (anterior sliding)
- No Rotation or even Lateral pivoting

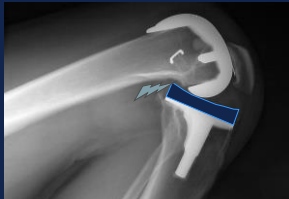
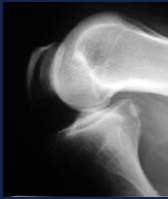


Conventional Knee

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Abnormal kinematic patterns

- Forward sliding of the femur
 - Posterior impingement
 - Extensor mechanism lever arm



HOSPITAL FOR SPECIAL SURGERY Wong J, Burge S, Bellmann J. Kinematics of posterior cruciate and stabilizing total knee replacements. J Bone Joint Surg Br. 2005 May; 87 (5) ADULT RECONSTRUCTIVE KNEE JOINT REPLACEMENT

Abnormal kinematic patterns

- Forward sliding of the femur
 - Posterior impingement
 - Extensor mechanism lever arm
- Axial rotation
 - Limited or Reverse femoral/tibial rotation ~ Q-angle

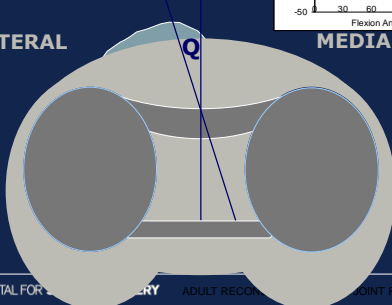


HOSPITAL FOR SPECIAL SURGERY Wong J, Burge S, Bellmann J. Kinematics of posterior cruciate and stabilizing total knee replacements. J Bone Joint Surg Br. 2005 May; 87 (5) ADULT RECONSTRUCTIVE KNEE JOINT REPLACEMENT

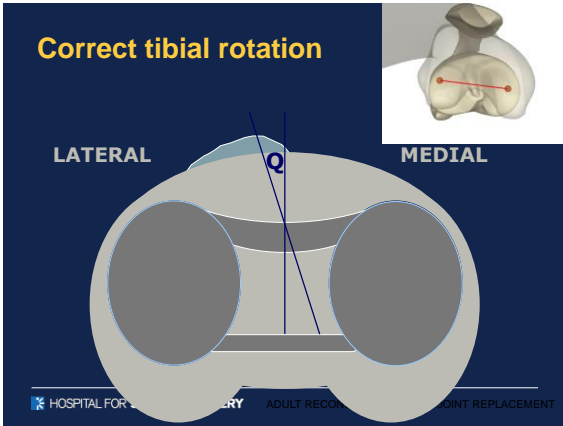
Reverse tibial rotation – lateral pivot

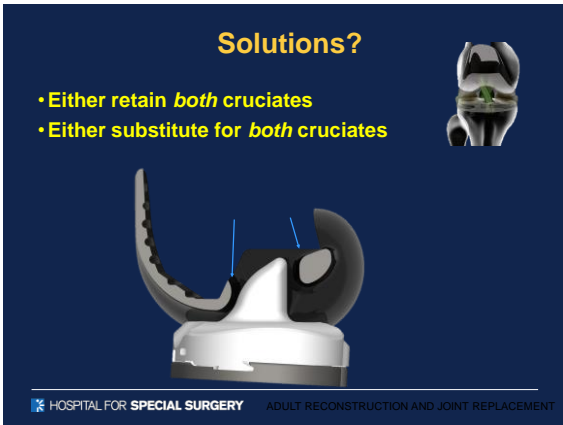
LATERAL

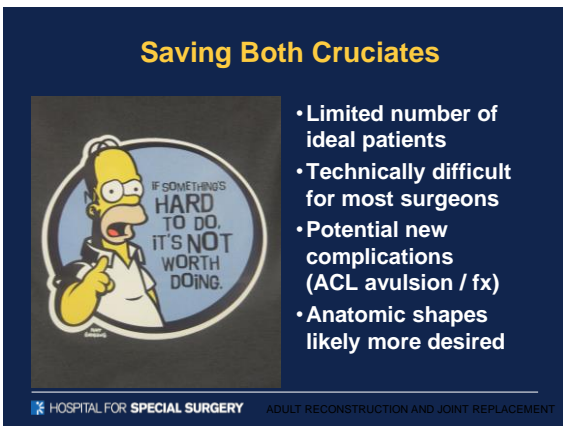
MEDIAL



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTIVE KNEE JOINT REPLACEMENT







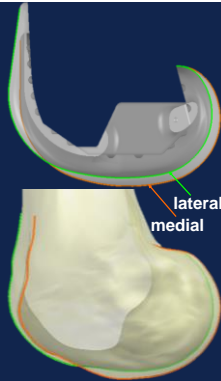
HYPOTHESIS

- As TKA is a surface replacement within an existing soft tissue envelope, we assume that the lack of restoration of normal anatomic contours and kinematic patterns is the reason for impaired function

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Normal anatomic contours

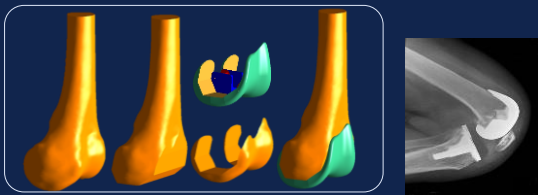
- CT and MRI antropomorphic data
- Computer modeling and simulation
- Femoral/Tibial geometry controlled with over 80 parameters



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Normal anatomic contour matching

- Reproduces Normal Kinematics Flexion and Stability
 - Precise Matching of Normal Anatomy
 - Most Anatomically Correct for Females & Males
 - Differing Tibial Geometry Medial / Lateral



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Anatomic contours matching



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Anatomic contours matching - tibia



High ML Conformity



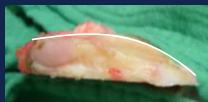
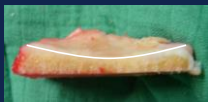
HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Anatomic contours matching - tibia

medial



lateral



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Anatomic contours matching

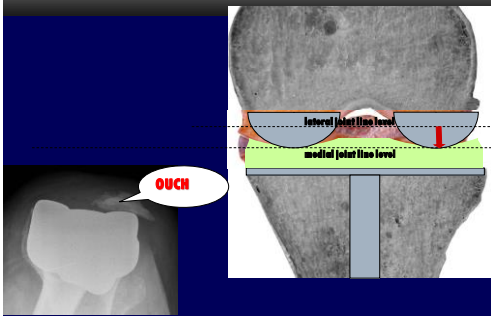
• Cupped medial compartment

• Sloped lateral compartment

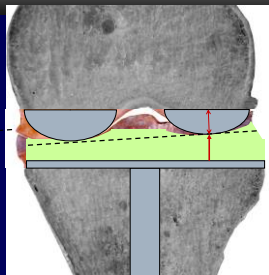


HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

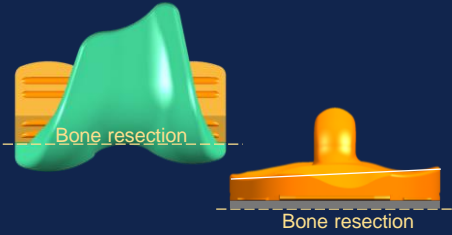
Normal Anatomy, TKA and Joint Line



Normal Anatomy, TKA and Joint Line



Anatomic contours matching



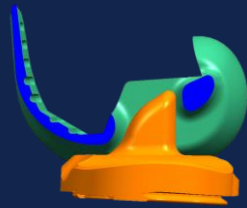
-If you want kinematic alignment, why not do it the right way?

- Avoid internal rotation of femur
- Avoid excessive valgus/varus tibia resections

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

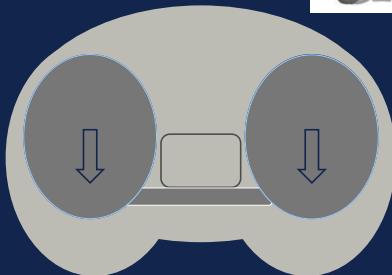
Anterior Cam

- Provides anterior stabilization during early gait (up to 20° flexion)
- Maximized contact area



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Designed Roll Back – Traditional PS knee



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Implant Conclusion



- While successful, TKR patients are frequently limited in higher level activity
- Traditional TKR do NOT reproduce normal kinematics
- JOURNEY II BCS is designed to allow for more normal kinematics
- Improvements in kinematics may lead to improved performance of higher level activity

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Overall summary

- Business of medicine affects your quality of care
- Rapid recovery model for TJA
 - Little to do with "kicking patients out"
 - More to do with adopting best clinical practices
- It's a clinical, scientific & financial shift
- TJA landscape is changing
- Multiple variables affect recovery speed
- We all are learning from each other's experiences
- NEW TECHNOLOGY CAN IMPROVE BOTH
 - Efficiency
 - Quality



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT


THANK YOU




ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Clinical Results & OR Efficiencies


David J. Mayman, MD
Associate Professor
The Hospital for Special Surgery
New York, NY



 HOSPITAL FOR SPECIAL SURGERY

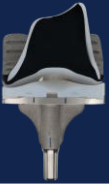
Disclosures


Consultant: Mako/Stryker
Consultant: Smith and Nephew
OrthAlign Stock Options

 HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY II TKA: Excelling in The Bundle

- Single Site Registry – Early reports
- 2 Single-Site: Early outcome reports
 - Dr. Bill Huang
 - Dr. Dave Mayman



 HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: Patient Satisfaction
Dr. Mark Snyder
Registry Experience

Mark A Snyder, MD
 Director, Orthopaedic Center of Excellence
 Good Samaritan Hospital
 Med Exec, Trihealth Orthopaedic & Spine Institute
 Cincinnati, Ohio

- Redcap Registry Database, level-3 data
- JOURNEY II BCS outcomes data at 1 year
- n = 56
- Mean age = 59

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: Patient Satisfaction
Dr. Mark Snyder
Registry Experience

- Pre-op EuroQol5: 50 (35 to 70)
- Post-op EuroQol5: 93 (60 to 100)
- Statistically insignificantly different from THA in young patients!

Mean flexion 130.7° (115° to 145°)

- Patient satisfaction (VAS 1-10 Scale) 9.4 (98.7 %)

- Risk Adjusted 30-day Readmission Rate: 0%
- Relevant Surgical Complication Rate: 0% (National range 4.6%)
- No transfusions, and no venous thromboembolisms

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: Patient Satisfaction
Dr. Mark Snyder
Registry Experience

- Pre-op UCLA activity score: 4.7 (3 to 6)
- Post-op UCLA activity score: 7.3 (6 to 9)
- Competes with THA and RHA improvements in patients
 - Groin pain after metal on metal hip resurfacing: a mid-term follow-up of a prospective cohort of patients. Illicial E, et al. HSS J 2012;8(3):257
 - Physical activity before and after primary total hip arthroplasty: A registry-based study. Lubbeke A, et al. Arthritis Care Res 2013 Aug 7 [Epub]
- At 1 year 88% in sports and 100% back to work!

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY II TKA: Excelling in The Bundle

- Single Site Registry – Early reports
- 2 Single-Site: Early outcome reports
 - Dr. Bill Huang
 - Dr. Dave Mayman



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: LOS Reduction

Bill Huang, MD

- Fellowship-trained arthroplasty surgeon
- Practices exclusively in hip and knee replacements
- Private practice in a community hospital
- Averages 250 TKR/UNI and 200 THA per year
- 50 revisions per year

- Almost exclusively PS TKR user
- 2007-2009 – Legion, Journey 1 BCS, & PFC Sigma RP
- 2009 - 2013 – Legion
- 2013 - 2015 – Legion & Journey 2 BCS

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: LOS Reduction

Bill Huang MD -- early outcome

Methods:

- Functional scores
 - Knee Society Score
- Radiographic follow-up
 - Pre op
 - 1 months
 - 4 months
- Complications
- Technical Data



Legion PS Primary PS

- n: 50
- Mean age: 61.9
- Average BMI: 34
- M/F ratio: 54%/46%



Journey 2 BCS

- n: 50
- Mean age: 60.4
- Average BMI: 36.1
- M/F ratio: 51%/49%

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: LOS Reduction

Bill Huang MD

LEGION Primary PS

- Tourniquet time: 42 minutes
- LOS: 2.4 days

ROM

- Pre Op: 6.8 – 110.1
- 1 month: 3.2 – 90.1
- 4 months: 0.66 – 122.4

Complications

- Wound issues: 2
- Infection: 0
- VTE: 0
- Reoperation: 0
- MUA: 3

JOURNEY II BCS

- Tourniquet time: 45 minutes
- LOS: 1.8 days

ROM

- Pre Op: 6.5 – 108
- 1 month: 3.7 – 108
- 4 months: 0.58 – 127.4

Complications

- Wound issues: 1
- Infection: 0
- VTE: 0
- Reoperation: 0
- MUA: 1

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: LOS Reduction

Bill Huang MD -- Knee Society Scores

Legion PS Primary PS

KNEE SCORE

- Pre Op: 42.8
- 1 month: 64
- 4 months: 87.6

FUNCTION SCORE

- Pre Op: 59
- 1 month: 76
- 4 months: 98

Journey 2 BCS

KNEE SCORE

- Pre Op: 43.2
- 1 month: 69.6
- 4 months: 92.6

FUNCTION SCORE

- Pre Op: 62
- 1 month: 79
- 4 months: 98

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: LOS Reduction

Bill Huang, MD

Early Outcome Experience

Key Points:

- JOURNEY II BCS Achieved:
 - Earlier, Greater ROM
 - Higher KS Scores
 - Less MUA rate
- Anecdotal Patient Comments:
 - Less pain and less narcotic usage in first 4 months
 - Less joint swelling/effusion in first 1 months
 - Easier getting up from seated position
 - Feels less "mechanical"

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY II TKA: Excelling in The Bundle

- Single Site Registry – Early reports
- 2 Single-Site: Early outcome reports
 - Dr. Bill Huang
 - Dr. Dave Mayman



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: Functional Improvement

David Mayman, MD
Early Outcome Experience

Methods:

- N= 200 retrospectively reviewed
 - 100 TKA with Legion
 - 100 TKA with Journey
- 113 females and 87 males
- Mean age 51 years (range 43-66)
- All patients underwent a clinical exam and post-operative ROM was recorded at 6 weeks

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

JOURNEY™ II BCS: Functional Improvement

David Mayman, MD

Results:

- Average ROM
 - Legion 96° (range 85-116)
 - Journey 119° (range 95-125)
- Average Pain (KSS)
 - Legion: 30
 - Journey: 37

Conclusion:

- There was a significant and clinically relevant improvement in flexion in patients who underwent a TKA with a JOURNEY II TKA implant (p<.0001)
- Patients who undergo a TKR with a Journey implant have better range of motion and less pain post-operatively at 6 weeks.
- This study suggests that an implant design that more closely replicates the normal anatomic joint line and knee kinematic patterns may help reduce some of the dissatisfaction following TKA.

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Efficiency Has Not Been Addressed

- Why do we have trial implants in the room for right and left knees?
- Why do we have trials for every size implant in the room?
- Relies on sterilizing many trays



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

What can we do to improve this?

Smith and Nephew has come up with three options to address as many surgeons and hospitals as possible

- **Option 1**
 - Template Derived Instrumentation
- **Option 2**
 - VISIONAIRE™
- **Option 3**
 - Disposable instruments with VISIONAIRE™

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

ADULT RECONSTRUCTION AND JOINT REPLACEMENT

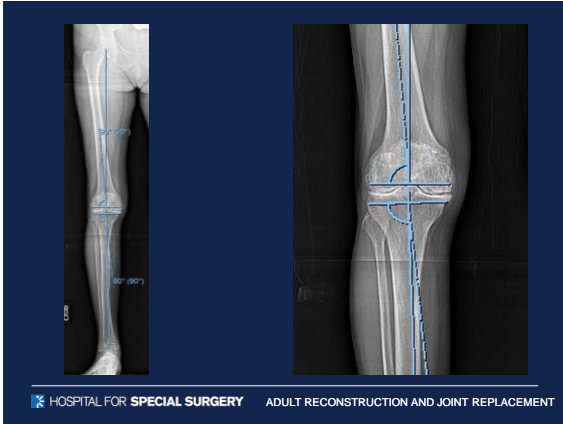
Pre-Operative Templating

HOSPITAL FOR SPECIAL SURGERY

Digital Templating

- Anticipate sizes of components
- Avoid leg length discrepancy
- Restore offset
- Avoid femoral fracture
- Avoid instability

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

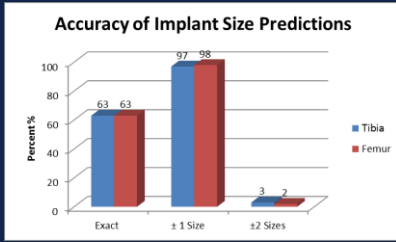
Accuracy of Digital Templating for TKA

- N=71 patients (76 knees)
- Standing anteroposterior and lateral knee digital radiographs
 - Calibrated using a 25mm calibration marker
- Templated sizes for the femoral and tibial components compared to implanted sizes



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Results



Tibia and Femur were both exact = 43/76 (63%)
 Tibia and Femur ± 1 size = 74/76 (97%)

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Template Derived Instrumentation

HOSPITAL FOR SPECIAL SURGERY

HSS OR MATERIALS MANAGEMENT: IMPLANT TEMPLATE AND CONTROL FORM

KNEE PROCEDURE

Surgeon: Dr. Mayman	OR Room:	
Patient Name: <input type="text"/>	RN:	Patient Sto
Date of Surgery: <input type="text"/>	Time:	

Side	: Right	
Technique	: <input type="text" value="OrthoAlign"/>	
Manufacturer	: Smith and Nephew	
Implant Design	: Legion PS	
Femur Material	: CoCr	
Femur Size	: 5 Range: Yes - Up and Down	Other pick: _____
Tibia	: Genesis II™	
Tibia Size	: 4 Range: Yes - Up and Down	Other pick: _____
Insert (Poly)	: Posterior Stabilizer	
Patella Type	: Genesis II™	
Patella Size	: 32 Range: Yes - Up and Down	Range pick: _____

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Instruments Picked From Plan



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

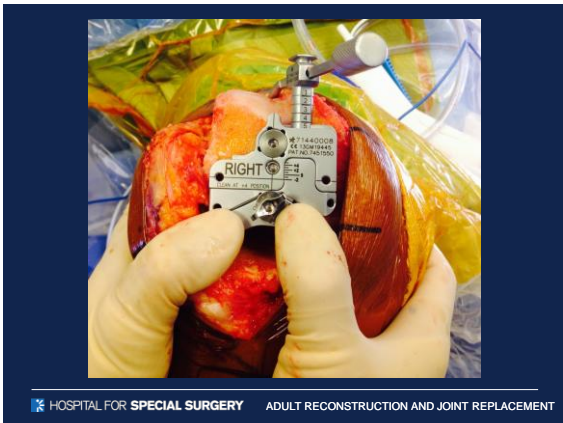


HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

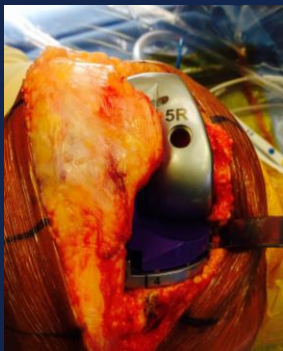








HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

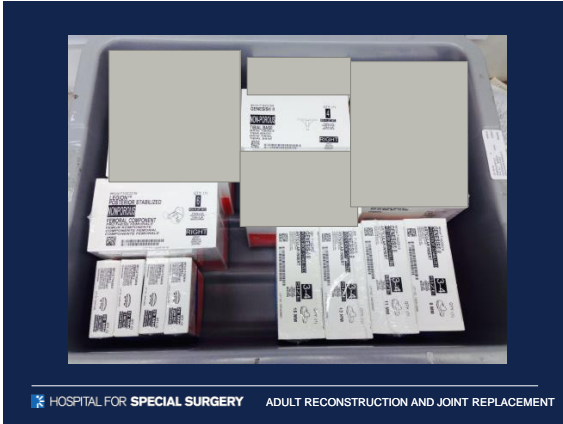
Ortho Secure™ e-Label™ Page 1

Right

Tibia	Femur	Patella	Tibial Insert
4 Primary NP Genesis II NonPorous Tibial Implant Within Expiration	5 PS CoCr Legion PS NonPorous Femoral Within Expiration	32 7.5mm Genesis II Resurfacing Patella Within Expiration	3-4 9mm PS Genesis II PS Articular Insert Within Expiration
Part Number: [input] Lot Number: [input]	Part Number: [input] Lot Number: [input]	Part Number: [input] Lot Number: [input]	Part Number: [input] Lot Number: [input]

NOTE: Implant lots may not represent actual part. **Confirm**

HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



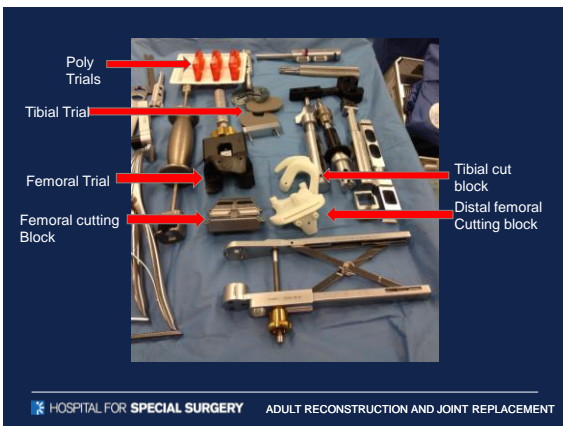
HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT

Disposables

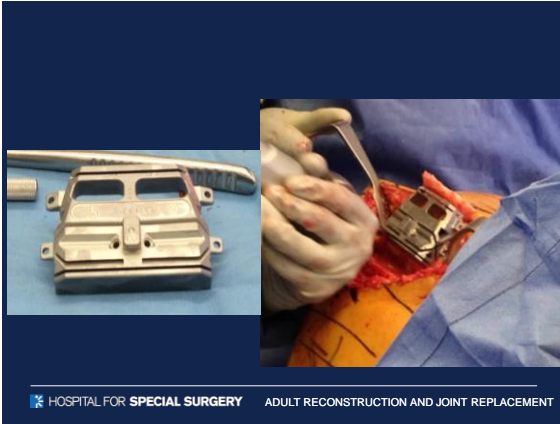
- Disposable instruments build on the experience of VISIONAIRE™ and takes efficiency in the OR to the next step

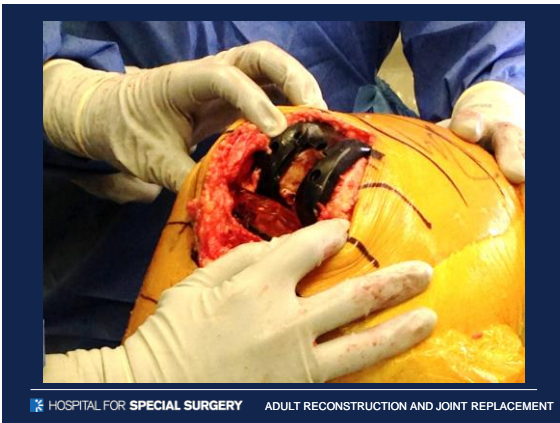


HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT



HOSPITAL FOR SPECIAL SURGERY ADULT RECONSTRUCTION AND JOINT REPLACEMENT





Summary

- Pre-operative templating is an accurate method for predetermining implants w/ 1 size
- Patient specific instrumentation of some sort can help improve the efficiency of delivery
- As demand increases and reimbursement decreases we need to improve efficiency while maintaining or improving quality.







Digging Your Way Through the Bundle

New Developments in CMS Policy 2015 and Beyond

Peter C. Geagan –Director of Commercialization, Smith & Nephew, Inc. 1

Inspired Leadership Facilitates Change

Do you know the true costs of your episode of care?

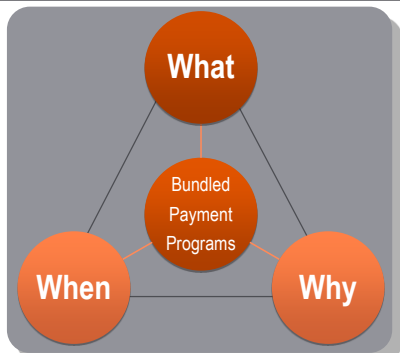
- “When TDABC is fully embraced we will know the **true** cost of an episode of care”
 – Michael Porter, Bishop William Lawrence University Professor at The Institute for Strategy and Competitiveness, Harvard Business School ¹
- “If **you** cannot measure your outcomes & quality, then **someone** will report what **they** measure and report it”
 – Dr. Joseph Iannotti, Professor and Chair Orthopaedic and Rheumatologic Institute, Clinical Transformation, Cleveland Clinic ¹

Culture Change Is Key

2

¹ Shifting From Volume to Value, AAOB Bundled Payment Summit, 5/28/15, Washington, DC

Agenda



3

BPCI Update Model 2–August 2015

BPCI Participant motivation:

1. Wanting to learn about payment reform
2. Pursuing the financial opportunities of BPCI
3. Urging of leadership and wanting to be innovative
4. BPCI opportunities to improve quality
5. Alignment with participation in other initiatives.

Early results Q4,2013: note –small sample size

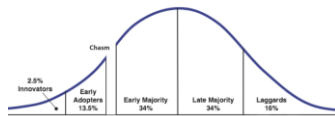
- Inpatient and PAC alignment with 23 of 24 Model 2 awardees
- Decrease in anchor LOS from 4.6 days to 4.3 days
- 90 Day Episode of care costs dropped from \$37,275 to \$32,369 – statistically significant
- 30 Day Unplanned Readmission ↓ from 8.6% to 6.7%
- Emergency Dept (no hospital admit) ↑ visits from 6.9% to 8.7%
- No change in Mortality rates

14

The Levin Group, CMS Bundled Payments for Care Improvement (BPCI) Initiative Models 2-4: Year 1 Evaluation & Monitoring Annual Report, Feb 2015

Tipping point –Law of Diffusion of Innovation

- "It's about making changes that matter clinically...if we get away from patient care & it's all about finances, we lose." –**Dr. Jim Weinstein**, CEO of Dartmouth/Hitchcock ¹
- "No one wants the low-cost/low-quality option" –**Dr. Daniel Murrey**, CEO of Orthocorolina ¹
- "If you cannot prove your outcomes and quality of care is better, then you will compete only on price" –**Dr. Joseph Iannotti**, Professor and Chair Orthopaedic and Rheumatologic Institute, Clinical Transformation, Cleveland Clinic ¹
- "How do you inspire change? Strong physician clinical process leadership integrated with administrative support" –**Dr. Mark Snyder**, Medical Executive Tri-Health Orthopedics and Spine Institute ¹
- "Make data denial impossible... & keep riveting people on the why (outcomes/efficiency improvement) to overcome the aversion to change." –**Michael Porter**, Richard Williams Distinguished Professor of The Institute for Strategy and Competitiveness



15

¹ Shifting From Volume to Value, ALOS Bundled Payment Summit, 5/28/15, Washington, DC
² "Crossing the Chasm" Geoffrey A. Moore, HarperBusiness, 1991.

CCJR: Brief overview

Lower Extremity Joint Specific

- With and without complications (DRG 469 470)

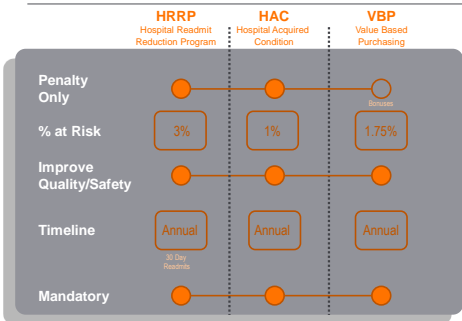
Mandatory Bundled Pay Program by CMS

- Hospital Controlled
- Fee - Weighted (shifting to Regional)
- 4 Outcome Measures
 - Readmissions
 - Complications
 - Patient Experience (HCAHPS)
 - Additional Financial Incentive for Functional PROs
- 75 MSA Covered Areas
- 20% Cap on bonus for savings to hospital
- 50% Cap on physician FFS



16

Quality Programs – Above and Beyond BPCI/CCJR 



<https://www.cms.gov/medicare/medicare-fee-for-service-payment/acuteinpatientpps/readmissions-reduction-program.html>
<https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/acuteinpatientpps/HAC-Reduction-Program.html>
<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/hospital-value-based-purchasing/index.html>

Affordable Care Act Penalty Avoidance 

2016 -Up to 6.75 % of total Medicare FFS Inpatient revenues hospital wide potentially at risk

Impact of Pay for Performance Programs

Table 9 illustrates the financial impact that a small hospital may experience under P4P. For example, consider the exposure and cost of the programs on a 119-bed hospital in Texas. Using MedPar 2013 data, this scenario does not take annual payment updates or increasing Medicare enrollment volumes into account, so the numbers are fairly conservative.

Table 9. Example of P4P Impact on a Small Hospital

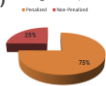
	Federal Fiscal Year 2013		Federal Fiscal Year 2014		Federal Fiscal Year 2015		Federal Fiscal Year 2016		Federal Fiscal Year 2017	
	At Risk	Dollars	At Risk	Dollars	At Risk	Dollars	At Risk	Dollars	At Risk	Dollars
Value Based Purchasing	1.00%	\$ 315,796	1.25%	\$ 364,745	1.50%	\$ 473,894	1.75%	\$ 552,643	2.00%	\$ 631,592
Readmissions	1.00%	\$ 315,796	2.00%	\$ 631,592	3.00%	\$ 947,389	3.00%	\$ 947,389	3.00%	\$ 947,389
Hospital Acquired Conditions					1.00%	\$ 315,796	1.00%	\$ 315,796	1.00%	\$ 315,796
and					1.00%	\$ 315,796	1.00%	\$ 315,796	1.00%	\$ 315,796
TOTALS BY YEAR:	2.00%	\$ 631,592	3.25%	\$ 1,026,338	5.50%	\$ 2,062,975	6.75%	\$ 2,131,624	7.00%	\$ 2,210,573
							6-YEAR TOTAL:	\$ 8,052,863		

8/1/15 - Press Ganey Associates Knowledge Brief Hospital Pay for Performance 2015 Update

Quality Programs - Affordable Care Act 

\$428 Million in Penalties experienced by Hospitals in 2015 (eroding FFS Medicare Inpatient Revenue)

Re-Admissions (HRRP) – up to 3% penalties for highest rates

- 2,610 were penalized in 2015 (433 more than 2014) 
- Potentially Avoidable Readmissions result in approx. \$17B Medicare spend
- 2015 - \$13.3 million was largest penalty for Single Hosp - Avg was -.63%¹
- Hip/Knee Replacements added as a measure in 2015 based on July 2010-June30 2013 data collection
 - The three main causes of 30 day readmissions (for TJA) were²
 - Wound complications
 - Surgical site infections (SSIs) – Most Costly
 - Medical issues

¹The Bottom Line of Hospital Readmissions. The Clendish Group Insights Blog, Matthew Smith, September 18, 2015.
²Cost Burden of 30-Day Readmissions Following Medicare Total Hip and Knee Arthroplasty. Joseph A. Bosco II, et al. The Journal of Arthroplasty 2013.

Quality Programs - Affordable Care Act

HACs – Hospital Acquired Conditions – ¾ of hospitals with lowest HAC rates held harmless, bottom ¼ get 1% penalty

- Domain 1: Pressure ulcer rate (PSI 3); Iatrogenic pneumothorax rate (PSI 6); Central venous catheter-related blood stream infection rate (PSI 7); **Postoperative hip fracture rate (PSI 8); Postoperative pulmonary embolism (PE) or deep vein thrombosis rate (DVT) (PSI 12);** Postoperative sepsis rate (PSI 13); **Wound dehiscence rate (PSI 14);** and Accidental puncture and laceration rate (PSI 15).
- Domain 2: Central Line-Associated Blood Stream Infection and **Catheter-Associated Urinary Tract Infection.**

VBP – Value Based Purchasing – 1.5% withheld for FY 2015; 1.75% for 2016

- 2016 Score Weighted as follows: Process of Care (SCIPs) (10%), Experience of Care (HCAHPS) (25%), Clinical Outcomes (AMI-HF-PN Mortality-CAUTI-CLABSI-SSI)(40%), Medicare spending per beneficiary-Efficiency (25%)

<http://innovation.cms.gov/>

Quality Metrics

CMMI released a list of quality metrics for monitoring

- Measures pull largely from existing reporting programs and fall into:
 - Case Mix
 - Utilization and Efficiency
 - Clinical Quality: Process
 - Clinical Quality: Outcome
 - Care Experience
- Measures are for hospitals, home health, SNF, IRF, and LTCH
- CMMI has not released information on evaluation and performance benchmarks
- 6 provider-submitted measures

Provider/Physician Response

- **BPCI/CCJR/HRRP/VBP/HACs** Creates visibility to Quality of care such as Complications/Readmissions/excessive Use of Post acute Resources (Bending the Cost Curve)
- **How will the Episode of Care Redesign process increase functional and quality of life and pain scores? (ICHOM) ***
- **Embrace Culture Change** driving Episode of Care Redesign
 - TDABC (Bozic/Porter), outcomes improvement data, and be willing to employ BPs from early adopters like HSS, CJRI, Geisinger, NOSA

**Shifting From Volume to Value, AOS Bundled Payment Summit, 5/28/15, Washington, DC The International Consortium for Health Outcomes Measurement (ICHOM), Slide 215.

