

Welcome to FOCAL: Fellows Orthopaedic Continued AAHKS Learning

The session will begin shortly.



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How to Review a Research Manuscript:

From Randomized Trials to Database Studies and Meta-Analyses

An Example-Based Webinar

AAHKS Focal Committee

August 31, 2020

Introductions



Michael A. Mont, MD
Lenox Hill Hospital
Northwell Health



Hytham S. Salem, MD
Lenox Hill Hospital
Northwell Health

Tonight's Agenda

1. Michael Mont

- Introduction to FOCAL committee

2. Michael Mont

- How I write a manuscript
- How I review a manuscript

3. Viktor Krebs

- How I Review Meta-Analyses

4. James Browne

- Big Data: The What, the Where,
and the How

5. Michael Mont

- 25 Reasons to Reject a Manuscript

6. Viktor Krebs

- What I look for to accept a manuscript

7. James Browne

- What I look for to accept a manuscript

8. Group

- Sample Abstracts as “cases”

9. Michael Mont

- JOA mentorship program

Guest Speakers

JOA Associate Editor



Viktor Krebs, MD
Cleveland Clinic

JOA Associate Editor



James A. Browne, MD
University of Virginia

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Acknowledgements– FOCAL Committee Chair



William G. Hamilton, MD
FOCAL Committee Chair

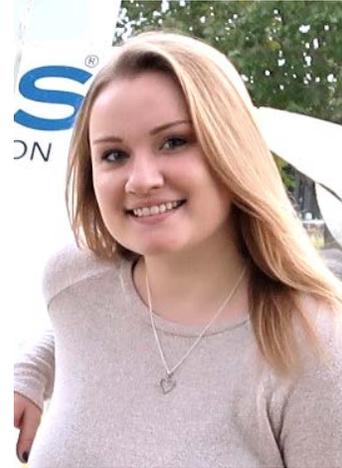
Acknowledgements – AAHKS Staff



Michael J. Zarski, JD
Executive Director



Renalin J. Malvar-Ledda
Senior Director of Events and
Operations



Natalie R. Loper
AAHKS Project Specialist



Sigita Wolfe
Senior Director of Education
and Science

FOCAL Committee Mission Statement

“The FOCAL Committee shall plan and oversee programs and activities that enhance adult reconstruction training as the foundation for providing excellent patient care over an entire career”

FOCAL Initiative of AAHKS

Fellows **O**rthopaedic **C**ontinued **AAHKS** **L**earning Initiative

- New committee to enhance training
- Elective surgery restrictions → online fellowship courses
- Approximately 60 webinars during COVID crisis
- FOCAL Committee to build on this initiative
- Improve adult reconstruction fellowship training across U.S.
- Can be utilized by all AAHKS members

Committee Composition

FOCAL Committee Chair



William G. Hamilton, MD
Fellowship Director

Anderson Orthopaedic Research Institute

FOCAL Committee Vice Chair



Vivek M. Shah, MD
Fellowship Director
Brigham and Women's Hospital

Committee Composition: Liaisons

YAG Liaison

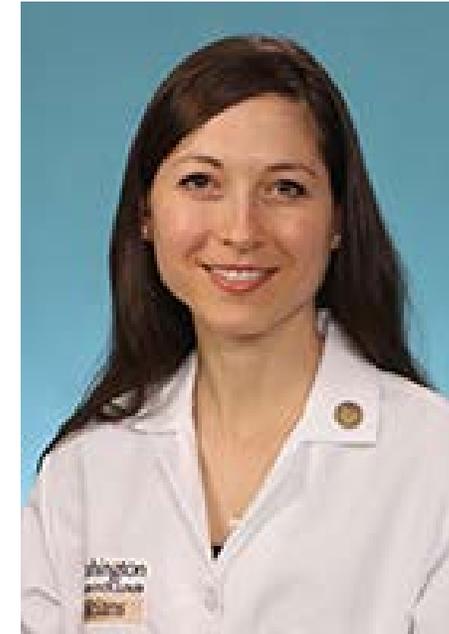
AAHKS Young Arthroplasty Group Past Chair



Jeffrey K. Lange, MD
Instructor of Orthopaedics
Brigham & Women's Hospital

WIA Liaison

AAHKS Women in Arthroplasty Committee Member



Cara A. Cipriano, MD, MSc
Assistant Professor
Washington University

Committee Composition: Members

FOCAL Committee Member



Eric M. Cohen, MD
Assistant Professor
Brown University

FOCAL Committee Member



Thomas G. Myers, MD, DPT
Assistant Professor
University of Rochester

FOCAL Committee Member



Michael A. Mont, MD
Fellowship Director
Lenox Hill Hospital

JOA Reviewer Mentorship Program

- Interested in getting started as a journal reviewer?
- Stay tuned for details at end of lecture
- If unable to attend entire lecture, e-mail Natalie Loper (NLoper@AAHKS.org)

Editor-in-Chief
John Callaghan



Assistant Editor-in-Chief
Michael Mont



Deputy Editors



David Backstein



James Browne



Viktor Krebs



Bo Mason



Michael Taunton

Social Media
Editor



Chad Krueger

Peer Review



Taylor Bowen
(Peer Rev Ed)



Abigail Cook Dommer
(Editorial Asst)

**Before discussing how to review a
manuscript, you need to know how
to write one first...**

How to write a manuscript- Title Page and Abstract

Title Page

- Title of the manuscript
- Authors
- Affiliated Hospital

Abstract

- Blank at first and write from completed paper
- Placeholder if previously written, then edit

Introduction (3-4 paragraphs)

- **First paragraph-** Dive directly into topic/problem that is going to be addressed
- **Second paragraph-** Describe possible controversy in field or lack of literature on topic
- **Third paragraph-** “Because of lack of literature on X.....we aim to study Y”
 - What are we looking at?
 1. Overall survival?
 2. Clinical outcomes (what clinical results i.e. KOOS, HSS)
 3. Radiographic outcomes (what kind i.e. lucencies? Alignment?)
 4. Complications?

Methods

- **Paragraph 1: Protoplast**
 - Brief description of study
 - Inclusion and exclusion criteria led us to this group plus matching group using these criteria
 - Was IRB approval needed?
 - How many centers?
 - Follow up?

Methods

- **Paragraph 2:** Describe clinical metrics being done or used (possibly more than one paragraph for something like a new drug or device)
 - Who did what?
 - What did you do?
 - Rating system
 - What time intervals?
 - Clinical complications

Methods

- **Paragraph 3: Radiographic**
 - Who did the evaluation?
 - What time intervals?
 - What did they look at?
 - What were they looking for or at?
 - May need to define radiolucencies or describe

Methods

- **Paragraph 4: Data analysis**
 - How was data collected?
 - What company was used (write company city state and country)?
 - What statistical analyses were used and why?
 - What is being compared?
 - What are being compared specifically and to what and how?
 - Set a p value
 - Survivorship analysis

Results

1. Overall survival?
2. Clinical outcomes (what clinical results i.e. KOOS, HSS)
3. Radiographic outcomes (what kind i.e. lucencies? Alignment?)
4. Complications?

Discussion

- **Paragraph 1:** Repeat reason for performing study (paraphrase paragraph 2 and 3 of intro)
 - Summarize results and touch on the importance of findings
- **Paragraph 2:** Limitations of study (size, retrospective, follow-up time, database study etc.)
 - Describe that despite the limitations, this information is fruitful for this topic that hasn't been looked at before
- **Paragraph 3:** Compare findings to literature where it agrees
 - Compare results found in your research to papers with similar findings

Discussion

- **Paragraph 4:** Compare findings to literature that disagrees
 - Why is there disagreement?
 - i.e. sample size difference, type of study, etc.
- **Paragraph 5:** Summary of the results we found and can touch on future studies or further studies
 - Discuss a little about what we find and what can be done further
 - End with the importance of this paper specifically to the orthopedic society

Title: A minimum 9 year follow up study of MOM hip arthroplasty

Manuscript Region of Origin: Heligoland

Abstract:

Introduction: Total hip arthroplasty is considered a landmark surgery for hip pathologies. With increasing life expectancy and demand at younger age, clinicians are pushing forward to unveil a better performing implants to reduce revision burden. Metal on metal hip arthroplasty had promising early advantage over the conventional metal on polyethylene arthroplasty. But complications due to metal ion interactions led to surveillance of device performance.

Methods: We present a retrospective analysis of 27 Metal on metal arthroplasty with 9 years follow up. Patient demographics, metal ion levels, radiological and functional assessment and their interrelations were evaluated.

Results: Mean age of the study population was 40.48 years. 60% of the patients underwent Total hip arthroplasty and the rest had surface replacement. Higher ion levels were noted in surface replacement group. Also surface replacement group had poorer functional scores. The mean cup abduction angle was 41.320. The cup abduction angle showed a positive correlation with the chromium ion levels. The mean cup abduction angle was higher in patients with normal MRI finding. Patients with MRI features of 'Adverse Reaction to Metal Debris' had higher metal ion levels.

Conclusion: Patients with cup inclination lower than 400 had MRI findings of Adverse Reaction to Metal Debris. Metal on metal patients with normal MRI findings had higher functional score and low metal ion levels. The higher failure rate of Metal on metal system is due to patients' response to metal ion levels aggravated by technical factors like cup abduction angle.

Thank You

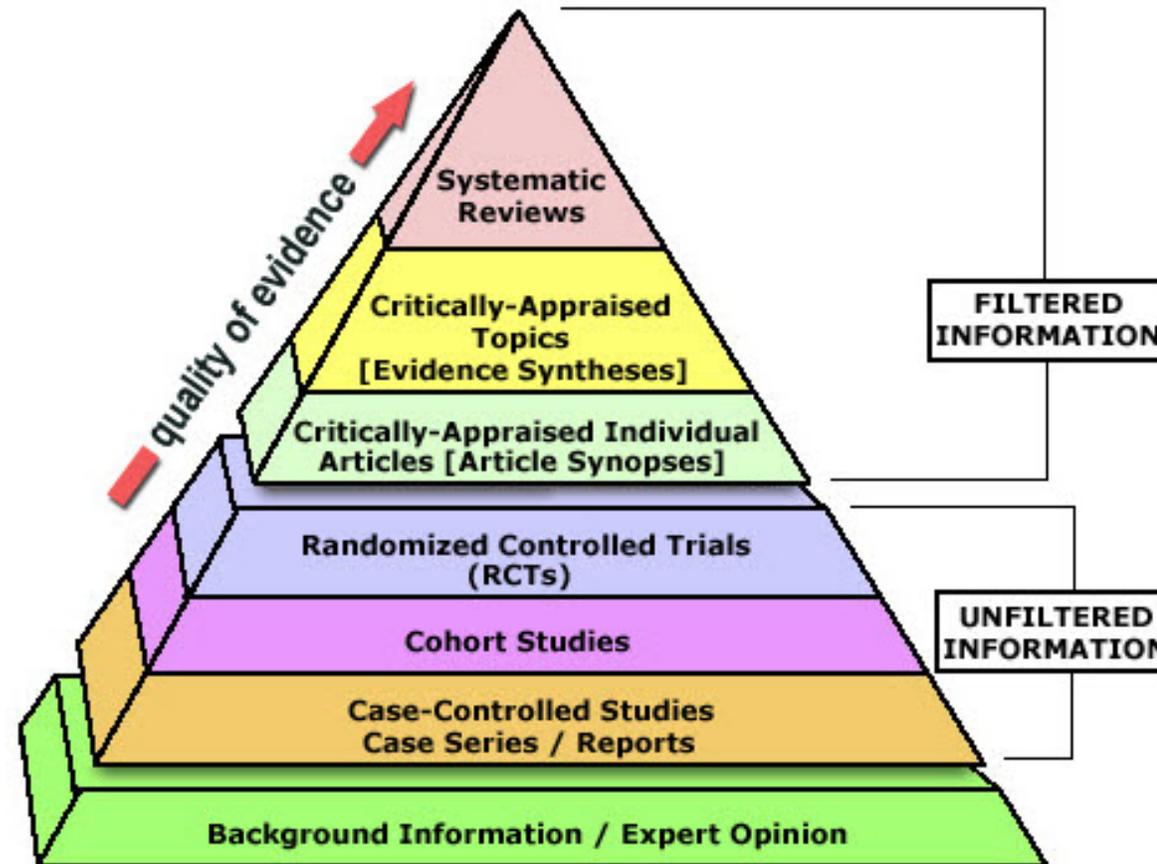


*How I Process
Systematic Reviews and Meta-Analyses*

Viktor Krebs M.D.

***Cleveland Clinic
Department of Orthopaedic Surgery***

Evidence Pyramid



EBM Pyramid and EBM Page Generator, copyright 2006 Trustees of Dartmouth College and Yale University. All Rights Reserved. Produced by Jan Glover, David Izzo, Karen Odato and Lei Wang.

High Quality Evidence Processing

Systematic Review

- ***The entire process of selecting, evaluating, and synthesizing all available evidence***
- ***An exhaustive summary of scholarly literature related to a particular research topic or question***
- ***Written by a panel of experts after reviewing all the information from both published and unpublished studies***

High Quality Evidence Processing

Meta-Analysis

- ***The statistical approach to combining the data derived from individual studies included in a systematic-review***
- ***The use of pooled data to integrate the results of included studies to come to new statistical conclusions***
- ***Conclusions produced by meta-analysis are statistically stronger than the analysis of any single study, due to increased numbers of subjects, greater diversity among subjects, or accumulated effects and results***

The Bottom Line!

Not all Systematic Reviews include Meta-Analysis

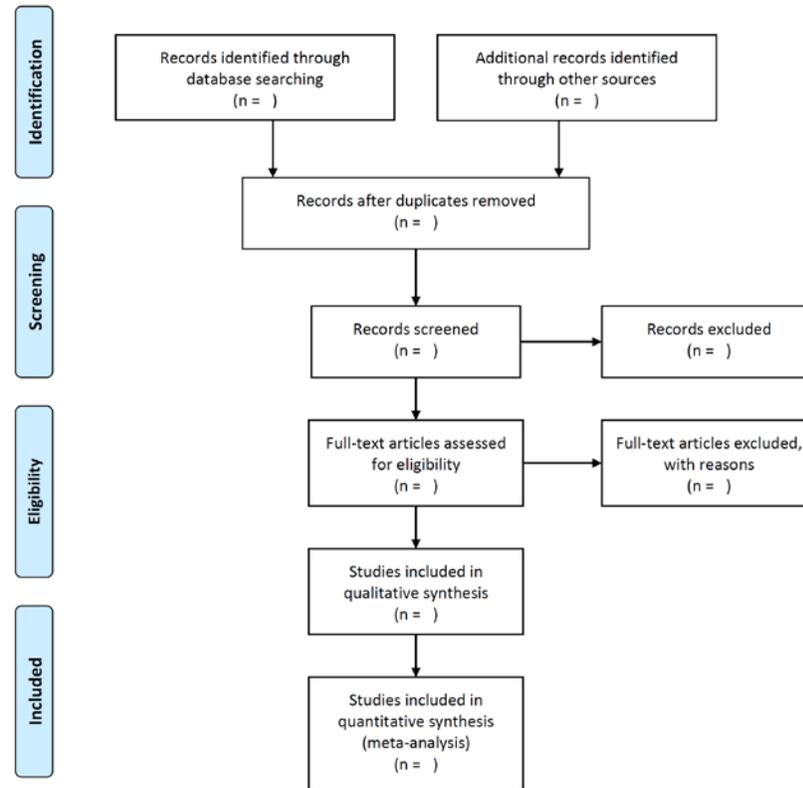
All Meta-Analyses are found in Systematic Reviews

PRISMA

Preferred Reporting Items for Systematic Reviews and Meta-Analyses



PRISMA 2009 Flow Diagram



PRISMA Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I ²) for each meta-analysis.	

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see item 15).	
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

Limitations of Systematic Reviews and Meta-Analysis in the Arthroplasty Literature

***The majority of meta-analyses have
methodological limitations***

- *but still have important information*

***The ultimate quality depends on the quality of
the primary studies on which it is based***

- *pooled high-quality randomized trials = EBM/EBT*



A commentary by James D. Stoney, FRACS, FAOrthA, is linked to the online version of this article at jbjs.org.

The Usefulness of Meta-Analyses to Hip and Knee Surgeons

Kwan J. Park, MD, Bradley S. Lambert, PhD, Landon D. Brown, MD, Daniel T. Le, MD, Kalyan Chaliki, BS, Joshua Lee, BS, Ayane Rossano, BS, Kaitlin Benjamin, BS, Michael R. Moreno, PhD, and Stephen J. Incavo, MD

Investigation performed at the Department of Orthopedics and Sports Medicine, Houston Methodist Hospital, Houston, Texas

Background: Comprehensive systematic reviews of results from homogenous or heterogeneous clinical trials, meta-analyses are used to summarize and to interpret studies. Proponents believe that their use can increase study power and improve precision results. Critics emphasize that heterogeneity between studies and bias of individual studies compromise the value of results. The methodology of meta-analyses has improved over time, utilizing statistical analysis to reduce bias and examining heterogeneity. With an increasing trend of meta-analyses in orthopaedic literature, this study aimed to investigate quality and clinical utility of meta-analyses for total knee arthroplasty and total hip arthroplasty.

Methods: A systematic review of total knee arthroplasty and total hip arthroplasty meta-analyses in 3 major orthopaedic journals from January 2000 to August 2017 was performed. Three authors independently reviewed eligible meta-analyses. A quality assessment was conducted using the Oxman-Guyatt Index. Reporting quality was assessed using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). Two high-volume, fellowship-trained, attending surgeons specializing in total hip arthroplasty and total knee arthroplasty independently, in a blinded fashion, reviewed 24 of the highest-scored meta-analyses.

Results: There were 114 studies meeting eligibility criteria, 25 published from 2000 to 2009 and 89 published from 2010 to 2017, a 3.6-fold increase. The mean Oxman-Guyatt Index score was 3.89 points, with 12 high-quality studies, 87 moderate-quality studies, and 15 low-quality studies. The mean PRISMA score for all meta-analyses was 22.2 points, with 79% classified as low to moderate. Only 23 studies listed the Level of Evidence, and 8 were Level-I studies and 9 were Level-II studies. Studies with >15 randomized controlled trials were associated with higher PRISMA and Oxman-Guyatt Index scores. In 12 articles, we were unable to decipher the types of studies included. Only 39.4% of studies showed the risk of bias. Of the 24 studies identified as high quality per the PRISMA statement, 71% were determined to be either clinically unimportant or inconclusive.

Conclusions: The number of total hip arthroplasty and total knee arthroplasty meta-analyses has markedly increased over the past decades. The majority of published meta-analyses from 3 major orthopaedic journals were not performed in accordance with established PRISMA guidelines.

Clinical Relevance: Many published meta-analyses are low to moderate quality, and clinicians should cautiously draw conclusions from poorly executed meta-analyses.

Read all literature cautiously and use manuscripts based on high level evidence to make clinical decisions

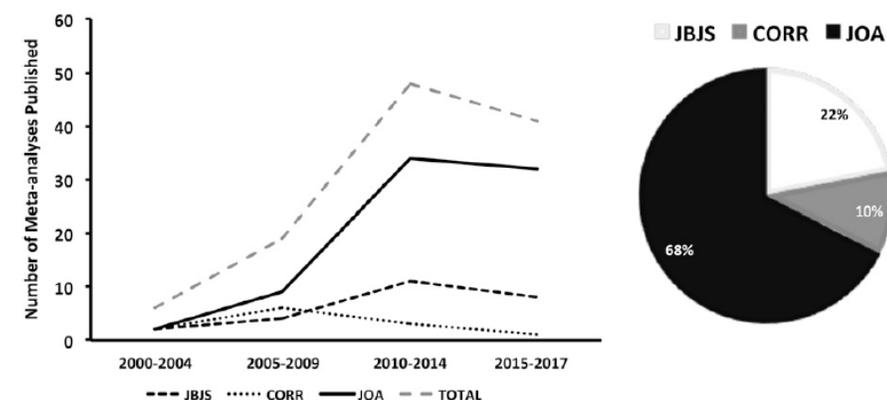


Fig. 1
The number of meta-analyses published per year from JBJS, CORR, and JOA between 2000 and 2017.



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Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

The Efficacy and Safety of Acetaminophen in Total Joint Arthroplasty: Systematic Review and Direct Meta-Analysis

Yale A. Fillingham, MD ^{a,*}, Charles P. Hannon, MD, MBA ^b, Greg A. Erens, MD ^c, Kyle Mullen, MPH ^d, Francisco Casambre, MPH ^d, Vidya Visvabharathy, MPH ^d, William G. Hamilton, MD ^e, Craig J. Della Valle, MD ^b

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ABSTRACT

Background: Oral and intravenous (IV) acetaminophen has become widely used perioperatively as part of a multi-modal pain management protocol for primary total joint arthroplasty (TJA). The purpose of our study is to evaluate the efficacy and safety of acetaminophen in support of the combined clinical practice guidelines of the American Association of Hip and Knee Surgeons, American Academy of Orthopaedic Surgeons, Hip Society, Knee Society, and American Society of Regional Anesthesia and Pain Management. **Methods:** We searched MEDLINE, EMBASE, and the Cochrane Central Register of Controlled Trials for studies published prior to September 2019 on acetaminophen in primary TJA. All included studies underwent qualitative and quantitative homogeneity testing followed by a systematic review and direct comparison meta-analysis to assess the efficacy and safety of acetaminophen.

Results: In total, 1287 publications were critically appraised yielding 17 publications representing the best available evidence for analysis. Oral and IV acetaminophen demonstrates the ability to safely reduce postoperative pain and opioid consumption during the inpatient hospital stay. No evidence was available to assess the efficacy and safety of oral acetaminophen after discharge.

Conclusion: Moderate evidence supports the use of oral and IV acetaminophen as a non-opioid adjunct for pain management during the inpatient hospitalization. Strong evidence supports the safety of oral and IV acetaminophen when appropriately administered to patients undergoing primary TJA. Although there is lack of robust evidence for use of acetaminophen following discharge, it remains a low-cost and low-risk option as part of a multimodal pain regimen.

What to Look For

Journal Pre-proof

Perioperative mortality after cemented or uncemented hemiarthroplasty for displaced femoral neck fractures – a systematic review and meta-analysis

Christopher Fenelon, MB BCh BAO MCh MRCSI, Evelyn P. Murphy, MB BCh BAO MCh MRCSI, Eoghan Pomeroy, MB BCh BAO MCh FRCSI, Robert P. Murphy, MB BCh BAO MSc MRCPI, William Curtin, MB BCh FRCSI, Colin G. Murphy, MB BCh BAO FRCSI

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DOI: <https://doi.org/10.1016/j.arth.2020.08.042>

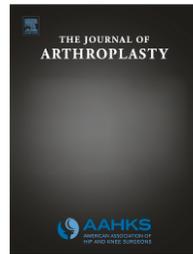
Reference: YARTH 58318

To appear in: *The Journal of Arthroplasty*

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Abstract

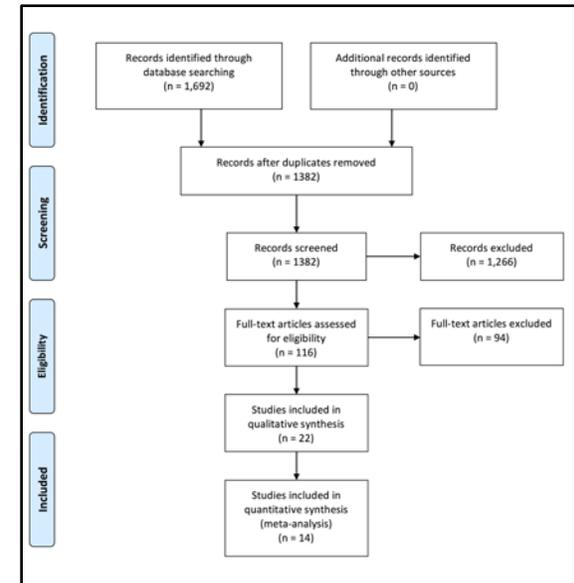
Background: Debate surrounds the use of cemented or uncemented prostheses for the treatment of displaced femoral neck fractures (FNF). Many guidelines recommend the use of the cemented hemiarthroplasty (CHA). Proponents of CHA point out the increased re-operation rate while proponents of uncemented hemiarthroplasty (UHA) highlight the increased mortality rate in the perioperative period.

Aim: To systematically review the literature to evaluate perioperative mortality after hemiarthroplasty (HA) for displaced FNF.

Methods: A systematic review and meta-analysis was performed of MEDLINE, Cochrane Library and EMBASE databases evaluating perioperative mortality following HA for displaced FNF. Randomised control trials (RCTs) and observational studies were included comparing current generation stem designs. A meta-analysis was performed on studies that directly compared the different modes of fixation.

Results: Twenty-two studies were included (seven RCTs and 15 observational studies), with a total of 183,167 HA for treatment of a displaced FNF. Fourteen studies were included in the meta-analysis. There was a higher cumulative odds of death within the first 48 hours in those with CHA compared with UHA (OR 1.64, 95% CI 1.35, 2.00, $p = <0.01$). No difference was found in mortality at 7 days, 30 days and one year.

Conclusion: CHA is associated with an increased mortality rate within the first two days of surgery with no difference at 7 days, 30 days and one year. Surgeons should consider tailoring their stem choice based on the physiological status of the patient when planning HA for FNF. Techniques to reduce the risk of BCIS should be employed.



Thank You!

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***Cleveland Clinic
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UNIVERSITY
of VIRGINIA

ORTHOPAEDIC SURGERY

AAHKS FOCAL Lecture 2020

Big Data: The Where, The What & The How

James A. Browne, MD

Associate Professor

Vice Chair of Clinical Operations

Division Head of Adult Reconstruction

University of Virginia





American Association of Hip and Knee Surgeons: Board member

AJRR/AAOS: Board or committee member; financial support

DJO Surgical: IP royalties; Paid consultant

Heron Therapeutics: Paid consultant

Journal of Arthroplasty: Editorial or governing board; financial support

Journal of Bone and Joint Surgery - American: Financial support

Norvartis: Paid consultant

OsteoRemedies: Paid consultant

Radlink: Stock or stock Options

Saunders/Mosby-Elsevier: Publishing royalties

Southern Orthopaedic Association: Board or committee member

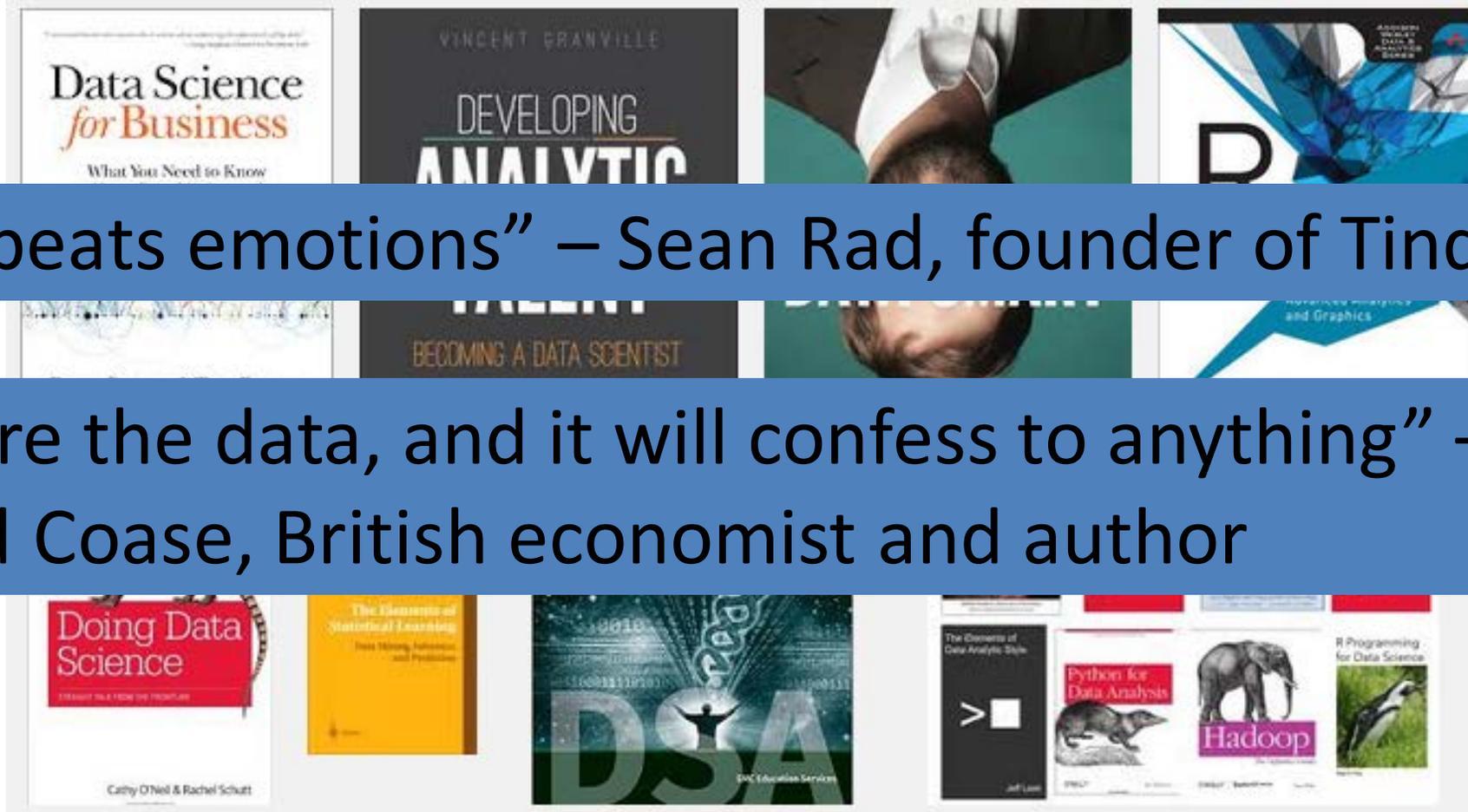




Big Data is Transforming Medicine

“Data beats emotions” – Sean Rad, founder of Tinder

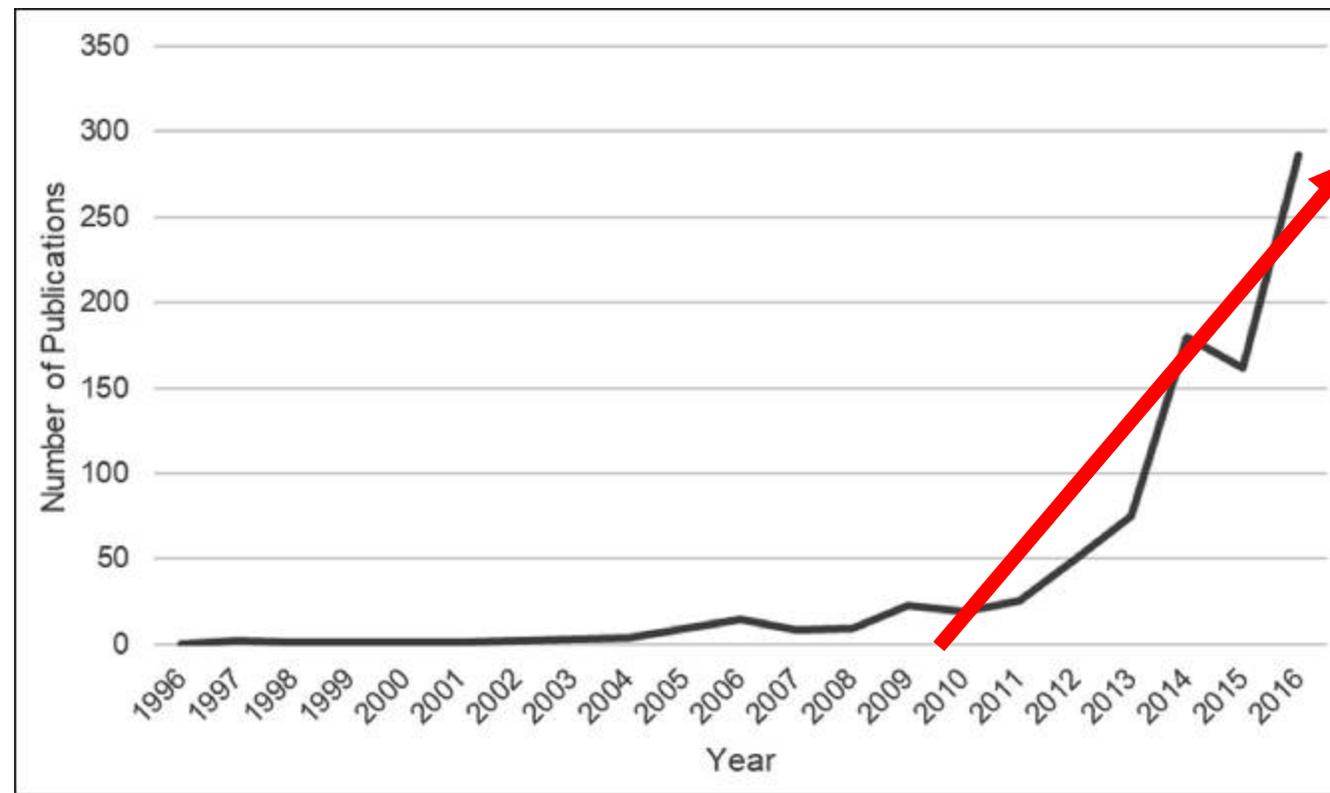
“Torture the data, and it will confess to anything” – Ronald Coase, British economist and author





Large Administrative Databases

Exponential increase in these studies in the literature



*Skepticism of
administrative
database research*





Large Administrative Databases

- Routine data collected during healthcare for administrative purposes
- Major benefit is sample size - increased certainty and less likelihood of bias
- “Real world” timely data
- Inexpensive
- Can provide insight into questions that cannot be studied with an RCT





Example: Intraarticular Injections

The Journal of Arthroplasty 30 (2015) 1879–1882

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org



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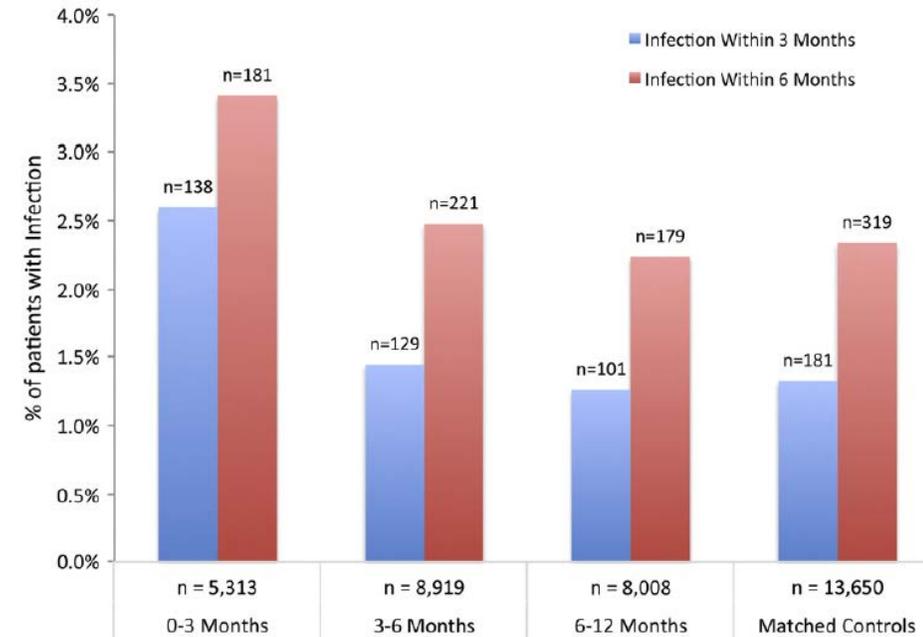
Does Timing of Previous Intra-Articular Steroid Injection Affect the Post-Operative Rate of Infection in Total Knee Arthroplasty?

Jourdan M. Cancienne, MD, Brian C. Werner, MD, Luke M. Luetkemeyer, MD, James A. Browne, MD

Department of Orthopaedic Surgery, University of Virginia Health System, Charlottesville, Virginia



- Injection within 3 months of TKA increased incidence of postop PJI
- 35,890 *matched* TKA patients





Databases Differ

- CMS/Medicare – general population 65 and over
- Nationwide Inpatient Sample – inpatient only
- NSQIP (American College of Surgeons National Surgical Quality Improvement Program) – from the patient's chart with onsite reviewers, 30 days, small sample of hospitals
- Private (Humana, United) – pharmacy data and labs

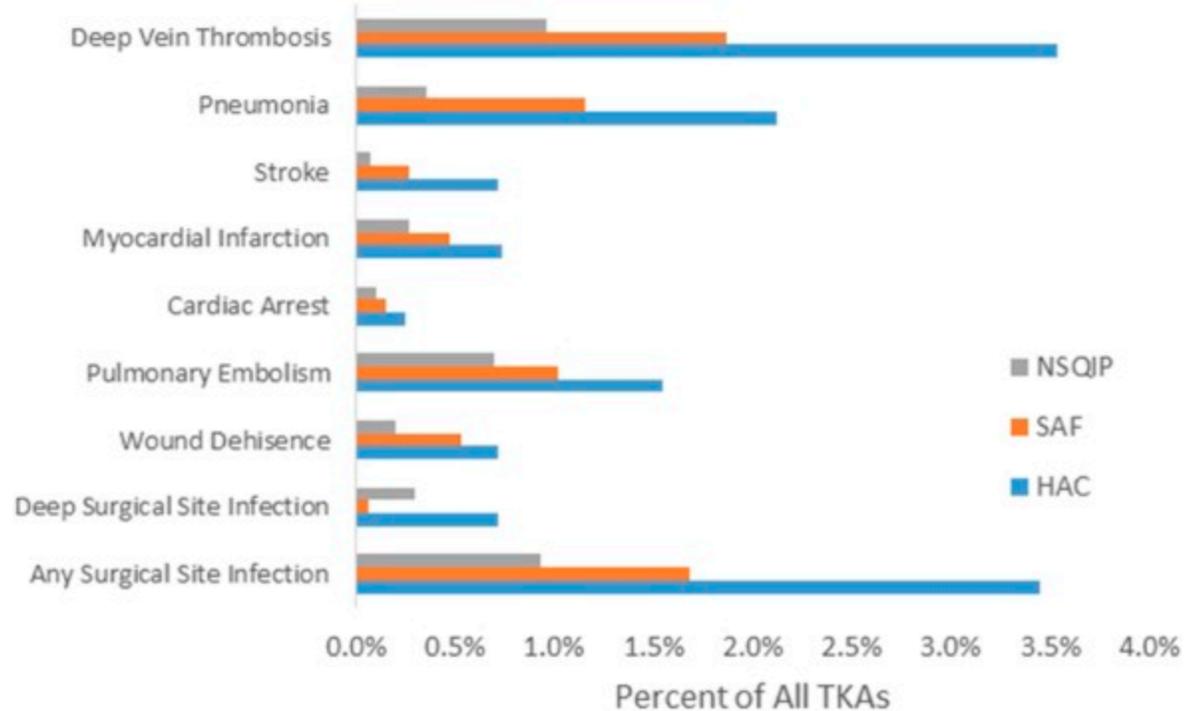


Not all databases are appropriate for all research questions





Different Database Methodologies



Different methodologies mean different results





Validity of Administrative Data

ORIGINAL REPORT

WILEY

Validation of body mass index (BMI)-related ICD-9-CM and ICD-10-CM administrative diagnosis codes recorded in US claims data

Eric M. Ammann  | Iftekhar Kalsekar | Andrew Yoo | Stephen S. Johnston

Pharmacoepidemiol Drug Saf. 2018;27:1092–1100.

- Compared Medicare insurance claims with EHR
- BMI-related diagnoses in 14.6%
- Sensitivity of code for obesity was 25.5%
- ICD-10-CM more sensitive than ICD-9

Varies by database (NSQIP probably the best)





- ICD-9 did not capture laterality!
- Fixed with ICD-10
- Critically important when dealing with revisions, infections, etc

The Timing of Injections Prior to Arthroscopic Rotator Cuff Repair Impacts the Risk of Surgical Site Infection

Brian Forsythe, MD, Avinesh Agarwalla, BS, Richard N. Puzzitiello, BS, Shelby Sumner, MPH,
Anthony A. Romeo, MD, and Randy Mascarenhas, MD, FRCSC



J Bone Joint Surg Am. 2019;101:682-7





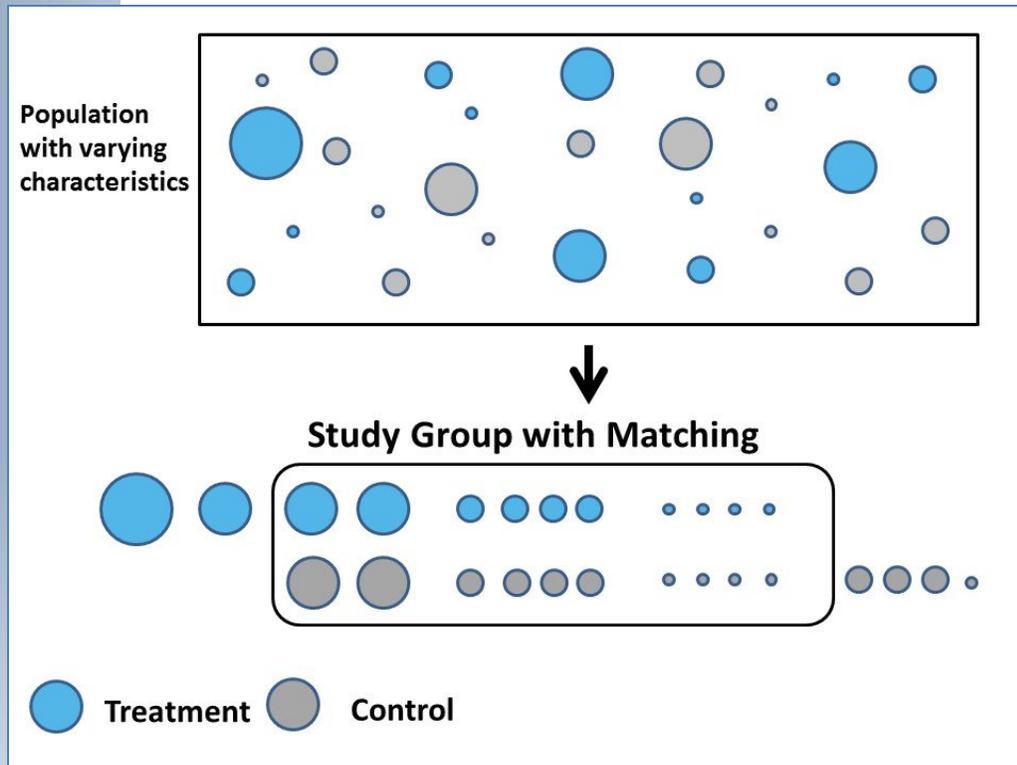
- An attempt to account for the covariates that predict the outcome
- Reduces bias due to confounding by developing “well-matched” samples of treatment group and controls
- *Unobserved covariates may not be accounted for and may unleash hidden bias!*

This DOES NOT replicate a randomized experiment!





Propensity Score Matching



1. Logistic regression to identify covariates
2. Develop an score for predicted probability based on these covariates
3. Match each treatment patient to control based on propensity score

Advantage is matching a large number of covariates with one single score (avoids losing a large number of observations)





Statistical Versus Clinical Significance

- Statistical significant without information is meaningless and does not speak to the importance or size of the finding (the \$5 lottery winner)
- The p value is very misunderstood (some journals have attempted to try to ban their use)
- With large data, p values quickly go to zero and everything becomes “statistically significant”!
- The confidence interval should be considered more than the p value

“9 of every 10 articles published in the leading journals make the fatal substitution of equating statistical significance to importance” – S Ziliak, “The Cult of Statistical Significance”





- Systematic collection of data on a defined population
- Can include richer data than administrative claims database including implants, treatment, PROMs, etc (more robust list of variables)
- “Real world” patient outcome surveillance for safety or quality
- Accrual of data can be slow and expensive
- Sampling methods may limit generalizability
- Still subject to confounding, data accuracies





Success Stories

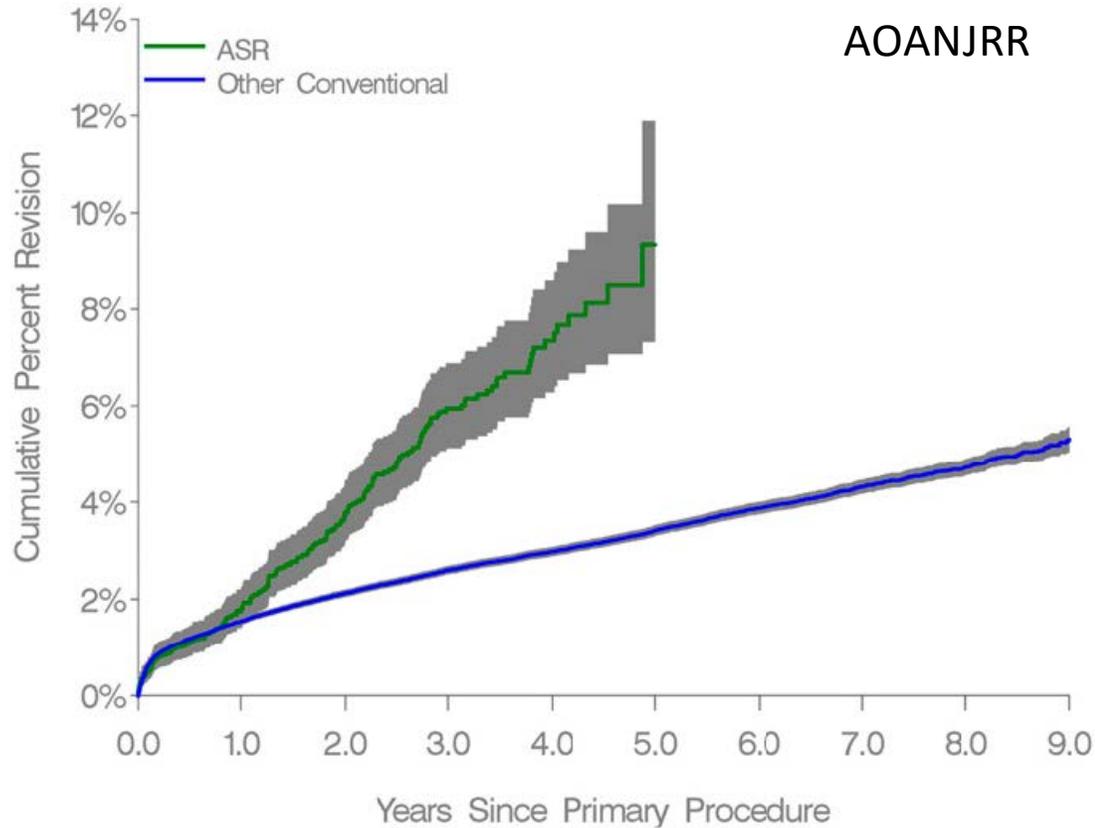


Fig. 1
Cumulative revision rate of primary conventional total hip arthroplasties.

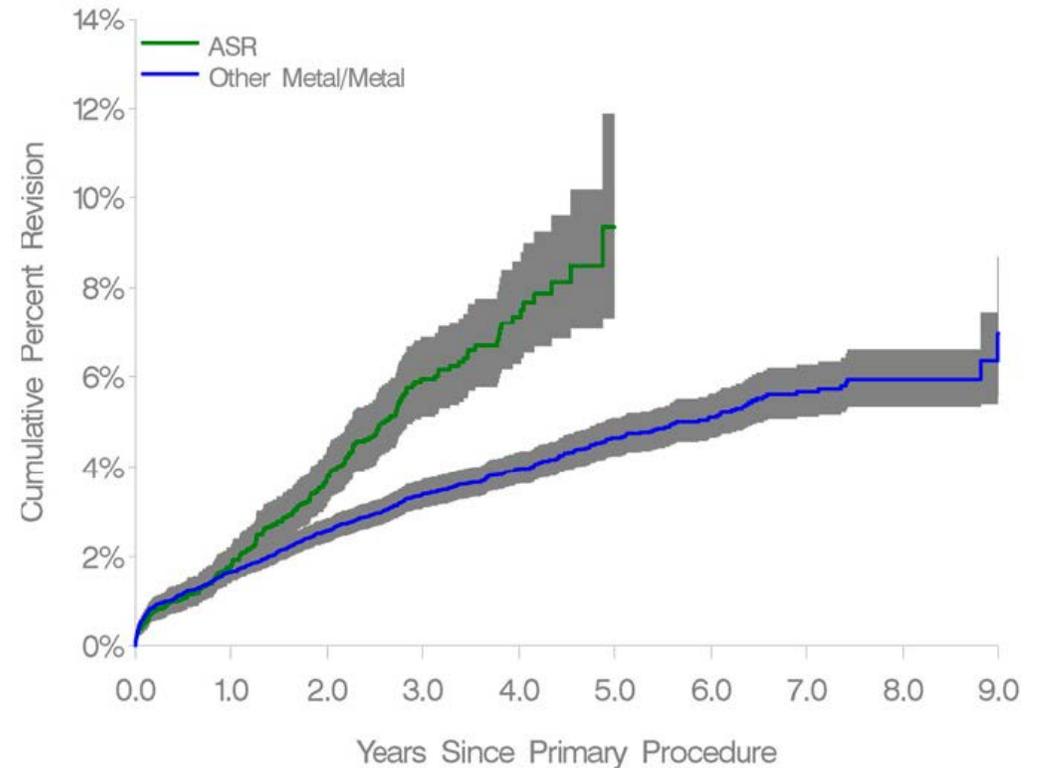
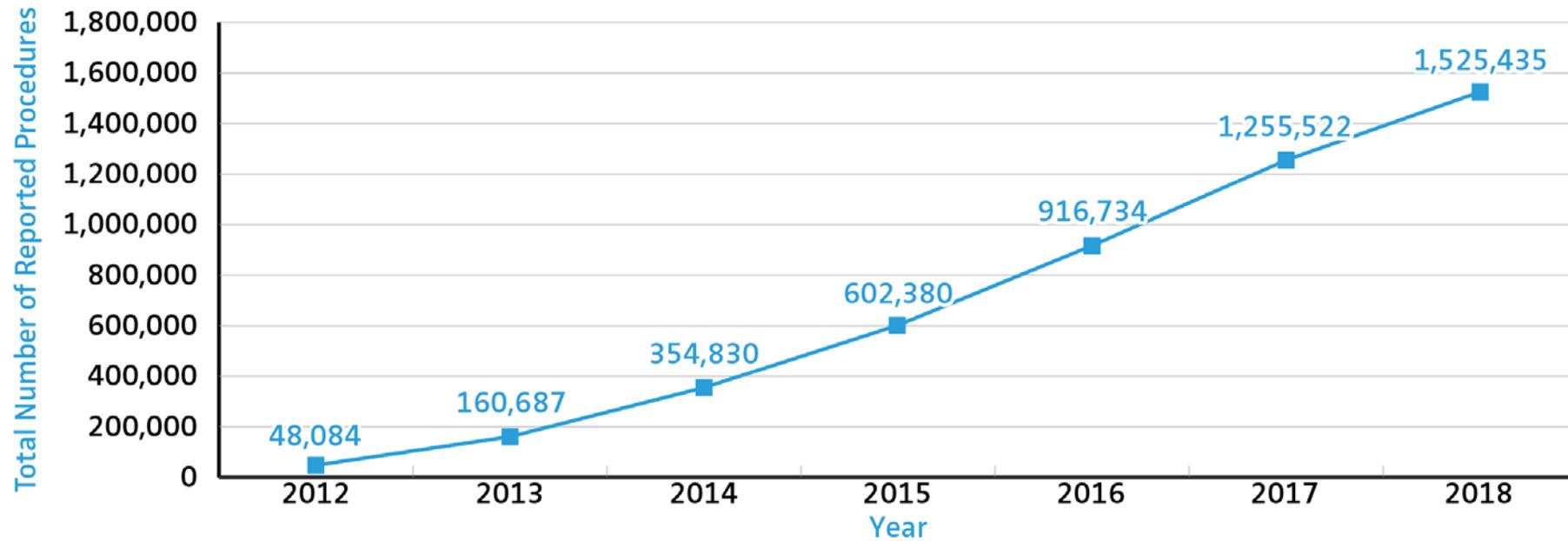


Fig. 2
Cumulative revision rate of metal-on-metal primary conventional total hip arthroplasties.



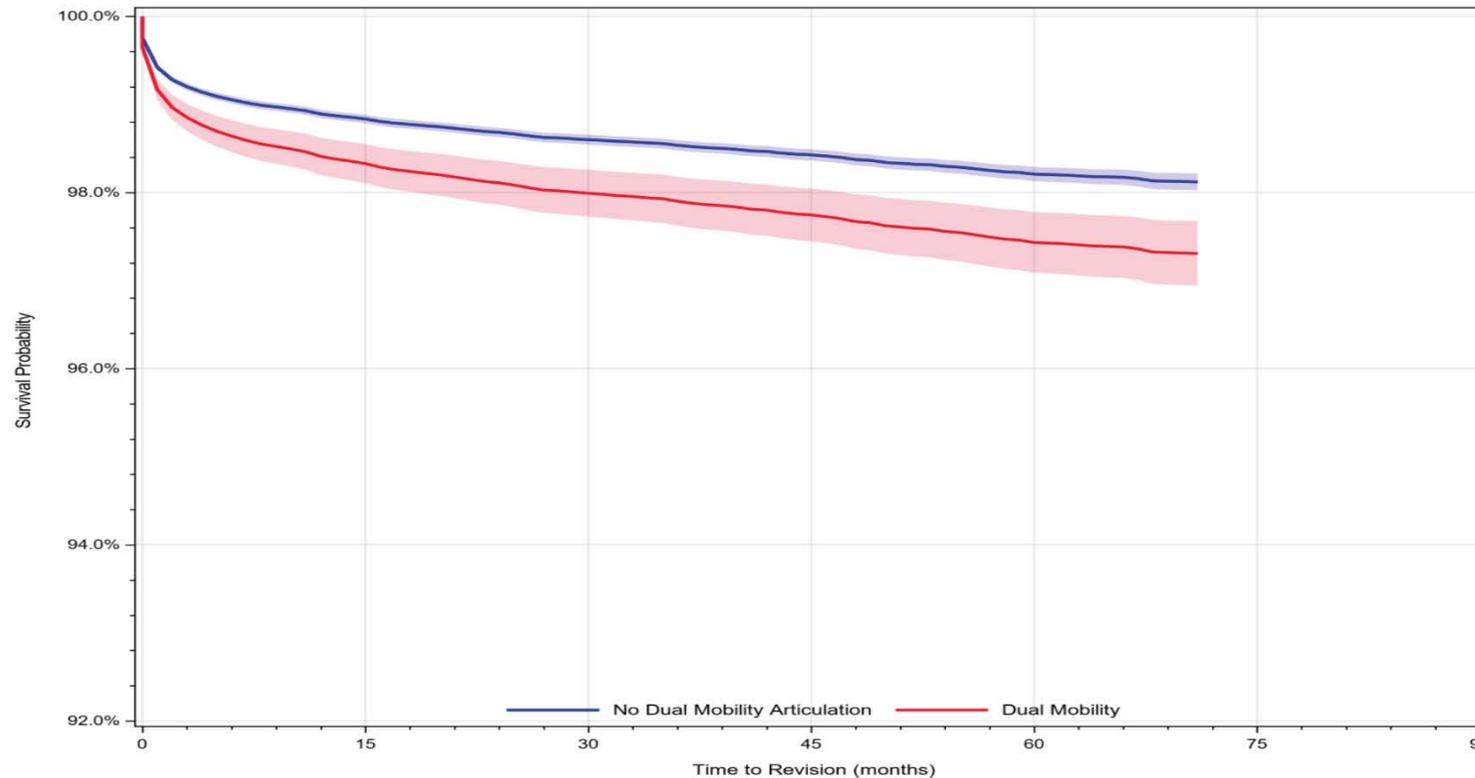
AJRR Cumulative Procedural Volume by Year, 2012-2018 (N=1,525,435)



©2019 AAOS American Joint Replacement Registry



Figure 2.16: Survivorship of Dual Mobility Used for Elective Primary Total Hip Arthroplasty for Patients ≥ 65 Years of Age with Primary Osteoarthritis and an Endpoint of Revision, 2012-2018



Adjusted for
Age and Sex

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Conclusions

- Big problems sometimes need big data
- Administrative data studies and registries are complimentary and can help give insight on important issues
- Administrative data studies should be seen as hypothesis-generating (not hypothesis-testing)
- Always be wary of “association not causation” and p value concerns with big observational data!
- National joint registries are uniquely positioned to serve as an early warning system (support AJRR!)



Points to Consider for rejecting manuscripts

1. Negative result study that does not add to the literature
2. Appears to be an advertisement
3. Combined hip and knee
4. More of a techniques-paper than a study
5. Historical data with LOS of 8 and 10 days have little relevance, as LOS are now 1 to 3 days
6. Complications (dislocations, PJIs, etc.) that are too high, makes the study less meaningful
7. Same exact or similar study published multiple times already
8. Conclusions do not match with Methods and Results
9. If study has so few complications / adverse events, it either becomes less believable, or has been performed by too great a surgeon, so has less relevance to the general arthroplasty surgeon or readership
10. A series of patients with no comparative cohort has little meaning
11. Clinical study performed with no radiographic analysis, which would be appropriate
12. Data mining studies that are obvious with risk factors leading to worse results (e.g. patients with CHF would have higher complication rates)

Points to Consider for rejecting manuscripts

13. Database studies (NSQIP, NIS, PearlDiver, etc.) studies should have over 10,000 or 100,000 patients
14. There may be a bias of 1 surgeon performing a procedure
15. Meta-analyses and Systematic reviews should have more than a few studies
16. Less than 2-year follow up
17. We do not accept case reports
18. Already have many similar studies in pipeline
19. RCT, but only on 30 patients. Not enough power
20. Long-term follow up, but medicine has substantially changed during that time period
21. Limited relevancy for readership
22. LOS are now 1 to 3 days
23. Needs an English editor
24. Retrospective reviews are prone to biases / confounding
25. Results are self-evident

What I Look for in a Manuscript

High Level Evidence
Limited Bias

New Information
Definitive Conclusions
Influence Practice

- ***Positive outcomes***
- ***Negative outcomes***

Support Standard of Care/Practice Guidelines



What I Like to See in a Manuscript

- Interesting, relevant, and original question being asked
- Well written and concise text that is easy to comprehend
- Abstract should stand alone
- Methods should be a blueprint to reproduce the study
- Mitigation of bias is present (including financial)
- Discussion focused and not rambling
- Conclusions supported by the data (no overinterpretation)



Title: A Meta-Analysis of Flexed Knee Position for TKA Wound Closure

Manuscript Region of Origin: Sealand

Abstract:

Background: Previous studies have suggested that the knee position during joint closure in TKA has influence on postoperative range of motion (ROM), but the conclusion is not uniform. The purpose of our study is to investigate whether knee position during wound closure in total knee arthroplasty (TKA) has effect on postoperative ROM.

Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines, we searched databases PubMed, Cochrane library, EMBASE and Web of science from 1998 to May 31, 2018, using the keywords "total knee arthroplasty", "knee position" and "wound closure" to identify randomized clinical trials or prospective clinical trials.

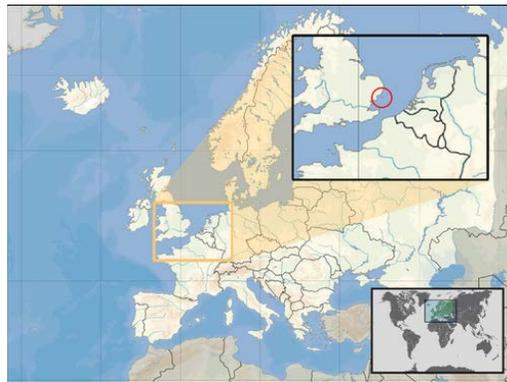
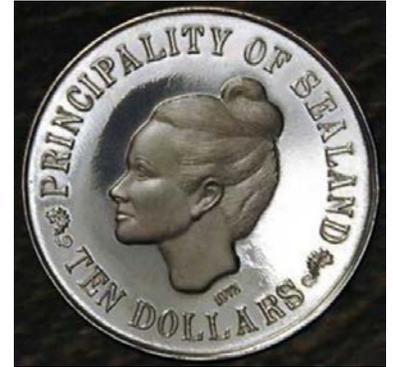
Results: A total of 6 randomized trials and 1 prospective trial involving 576 participants (618 knees) fulfilled the inclusion criteria with 289 patients (310 knees) in the flexion group and 287 patients (308 knees) in the extension group. There was significant difference in ROM between flexion group and extension group in 4 weeks subgroup. However no significant difference was observed in ROM between flexion group and extension group in 6 months subgroup.

Conclusion: In this meta-analysis, knee position in flexion during surgical wound closure is associated with better ROM in short term, but the current evidence is not sufficient to prove that wound closure in flexion has better ROM than wound closure in extension ROM in the medium and long term. The large sample of high quality RCT researches is essential to identify the association between the knee position during wound closure in TKA and knee functional recovery.



Sealand

- **Location:** 7.5 mi off the coast of Suffolk, U.K.
- **Total area:** 0.0015 sq mi
- **Population:** 27 (claimed)
- **Actual population:** 4
- **Maximum occupancy:** 300





Sealand

- Considered an independent sovereign state by its owners
- No diplomatic recognition from any other country



“The Sealand Half-Marathon”



Become a Duke or Duchess

£499.99

Title (Required)

Choose an option

Title Holders Full name (Not including Title)*

Please Enter Full Name

Add Sealand Identity Card*

Please Select Option

Add A Piece Of Sealand Territory?*

Please Select Option
 Yes (£19.99)
 No

- 1 +

ADD TO CART

Heligoland

- **Location:** 29 mi off the German coastline
- **Total area:** 0.7 sq mi
- **Population:** 1,265



Heligoland



Title: A Meta-Analysis of Flexed Knee Position for TKA Wound Closure

Manuscript Region of Origin: Sealand

Abstract:

Background: Previous studies have suggested that the knee position during joint closure in TKA has influence on postoperative range of motion (ROM), but the conclusion is not uniform. The purpose of our study is to investigate whether knee position during wound closure in total knee arthroplasty (TKA) has effect on postoperative ROM.

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Title: Length of Stay After of Total Knee Arthroplasty (TKA): A Retrospective Database Analysis

Manuscript Region of Origin: Heligoland

Abstract:

Background: Although total knee arthroplasty (TKA) procedures are increasing, patient satisfaction is still inferior compared to total hip arthroplasty. The MAVERICK® Knee System was designed to reduce pain and improve function, leading to greater patient satisfaction and decreased resource utilization in TKA. The objective of this study was to compare length of stay (LOS) of TKA with MAVERICK Knee versus PRS® Knee implants.

Methods: A retrospective chart review analysis in a German center was conducted between 2008 and 2016. All patients without prior ipsilateral knee operation, treated with a cemented PRS or MAVERICK Knee were included. Endpoints captured included gender, age, availability of home support, prior contralateral TKA, ASA grade and LOS. Statistical analyses included chi-squared test for differences in patient demographics and two-sample t-test for difference in LOS.

Results: Mean LOS in the MAVERICK Knee group (n=79) was 8.8 days (SD: 1.79) compared to 10.1 days (SD: 1.91) in the PRS Knee group (n=79). No significant differences in gender, age, availability of home support, prior contralateral TKA, or ASA grade between both cohorts were observed. The 2.1 days reduction was statistically significant ($p < 0.001$; 95% CI 2.1 - 1.3). A sensitivity analysis outlined the impact of the study duration: Even when assuming that 1.4 days reduction resulted from the observed national LOS decrease, the remaining 0.8 reduction in days LOS reduction was still significant ($p < 0.01$).

Conclusion: When comparing two cohorts with similar sociodemographic and medical factors, LOS of MAVERICK Knee

Title: Does Operating Room Temperature Increase the Risk of Prosthetic Joint Infection ?

Manuscript Region of Origin: Sealand

Abstract:

Background: Many pathogens of importance, including the Staphylococcal species of concern in orthopedics, demonstrate seasonal variations influenced by environmental factors. The aim of this study was to investigate the role of humidity as a risk factor for deep prosthetic joint infection (PJI) following total knee arthroplasty (TKA) in a tropical Australian hospital.

Methods : A retrospective cohort study of all TKA's performed over a 12-year period was conducted at the author's institution. Univariate analysis was used to individually assess for a range of risk factors including humidity >60% and apparent temperature >30°C (86°F). Odds ratios (ORs) were reported. P-values <0.25 were considered as potentially important risk factors.

Results: 1,322 primary TKA's were performed with a deep PJI incidence of 2.3%. Factors increasing the risk of deep PJI were humidity >60% (P-value: 0.232), apparent temperature >30°C (86°F) (P-value: 0.156), male gender (P-value: 0.057) and American Society of Anesthetists score (ASA) (Pvalue:0.088).

Conclusion: Humidity and apparent temperature may be potentially important risk factors for infection following TKA.

Title: Does removal of previous hardware increase the risk of prosthetic joint infection following total hip arthroplasty

Manuscript Region of Origin: Heligoland

Abstract:

Background: Hardware removal preceding total hip arthroplasty may increase the risk of prosthetic joint infection (PJI). Whether hardware removal and total hip arthroplasty (THA) should be performed as a single- or two-stage procedure remains controversial. This comparative retrospective study aims to identify the incidence of PJI following either single- or two-stage THA and hardware removal.

Methods: All patients that underwent hardware removal and THA from January 2004 up until March 2016 were retrospectively reviewed. Data on known risk factors for PJI at the time of surgery was retrieved.

Results: 74 patients underwent THA and hardware removal (26 two-stage surgery and 48 single-stage surgery). There were no significant differences between both groups regarding known risk factors. The incidence of PJI was 8.9% in the single-stage group and 5.1 in the two-stage group ($p=0.315$).

Conclusion: Despite a lack of statistical power and the absence of a statistically significant difference, single-stage surgery may predispose to PJI. We recommend a two-stage surgical procedure regarding hardware removal and THA in patients that are expected to tolerate this surgical strategy.

Title: Evaluation of a Novel Templating Software Package for Cemented Total Hip Arthroplasty

Manuscript Region of Origin: Sealand

Abstract:

Aim: To assess a large, multi-surgeon dataset of cemented total hip arthroplasties, that had been templated using software. This assessment compared preoperative templated predictions with what was implanted, with regards to (1) femoral prosthesis size (2) offset, and (3) acetabular cup size.

Methods: A database of total hip arthroplasties performed by four surgeons between the dates 07/11/2011-31/10/2014 was interrogated. The data was refined so that only primary cemented collarless, polished, tapered stem hip arthroplasties, fully templated on a correctly calibrated pelvic radiograph were included. This provided 198 cases. The predicted software template was compared to actual implanted component sizes.

Results: With regards to the femoral stem, the software was exactly correct in 69.1% and accurate to within 1 size in 95.78% of cases. With regards to the femoral offset, the software was exactly correct in 87.01% and accurate to within 1 size in 99.72% of cases. With regards to the acetabular cup size, the software was exactly correct in 59.8% and accurate to within +/- 2mm in 85.15% of cases.

Conclusion: Templating software offers an accurate prediction of the femoral prosthesis size and offset, as well as acetabular cup size. Preoperative insight into likely component sizes and offset provides the operating surgeon with many benefits; Templating the pelvic radiograph is a method of cognitive rehearsal, provides insight into potentially challenging aspects of the upcoming surgery, may highlight intraoperative issues where there is a large intraoperative deviation from what is templated, and enables efficient stock keeping for the healthcare institution.

Title: Analyzing a Peer-to-Peer Messaging Mentorship Platform used in a Joint Arthroplasty Service

Manuscript Region of Origin: Heligoland

Abstract:

Aim: The purpose of this paper was to objectively study the effect of peer-to-peer mentorship on decision-making and impact on patient care across academic and private adult reconstruction practices via the use of group secured messages.

Methods: Between 2015-2017, a HIPAA compliant messaging system was established between five previous adult hip and knee reconstruction co-fellows in order to discuss complex cases. Data collected from each case included patient demographics (age and sex), history and physical examination, relevant imaging in orthogonal planes, and preliminary diagnosis and treatment plans. Data collected from group responses included nature of additional inquiries, literature citations, operative recommendations, and sample imaging of similar cases previously treated.

Results: The group consisted of 3 private practice surgeons and 2 academic surgeons. Data was collected on 269 cases discussed during the study period. None of the patients had any HIPAA violations. The mean number of reviewers who commented on a case was 2.6, with at least 1 response in 97% of cases. In 43% of the cases, the peers confirmed the initial treatment plan. However, in 57% of the cases, an alternative treatment plan was recommended and executed. The case distribution was 89 primary and 184 revision procedures including 168 hips, 98 knees, 3 ankles, 2 shoulders, and 2 pelvises.

Conclusion: In the majority of cases exchanged between young surgeons via a group messaging system, a significant impact on patient care was appreciated. In a technology-driven era, peer-to-peer advisory for difficult cases via a rapid feedback method allows for substantial improvement in patient care, particularly for surgeons not practicing at a large academic medical center with access to several partners and multiple opinions.

Title: What are acceptable functional outcomes following hip surgery?

Manuscript Region of Origin: Sealand

Abstract:

Background: Patient-reported outcome measures (PROM's) play an important role in evaluating the functional outcome results of surgical and non-surgical treatments of the hip joint.

Methods: Nine hundred healthy volunteers were requested to fill in the modified HHS (mHHS), the UCLA, the HOOS and the WOMAC score. Between September 2012 and December 2017, 132 peri-acetabular osteotomies were performed in 114 patients with symptomatic developmental dysplasia of the hip (DDH). After exclusion, This left 31 patients with a PAO procedure in 11 male and 20 female patients. The mean time of follow-up was 31 months (range, 13 to 59). Pre- and postoperative radiographic analysis of the lateral centre-edge angle and the acetabular index was conducted in all cases on a proper pelvic AP radiograph. The functional questionnaires were asked. We investigated the influence of different confounding variables in order to (1) obtain recommendations when outcome scores are being compared between 2 cohorts and (2) to define a normative reference level of 'hip-healthy' functionality. This normative level of functionality was used as a target level of functionality following a hip procedure such as the peri-cetabular osteotomy.

Results: All functional outcome scores significantly improved one year following a PAO. Patients were thus much better than pre-operatively but only 54% achieved the 95% functionality of the normative population based upon the mHHS and UCLA score. The results were even worse for the HOOS subscales.

Conclusion: This approach puts the results and expectations of our surgical procedures in a different but potentially more realistic perspective in terms of expectations and goals.

Title: The effect of of extension stem size on outcomes of revision total knee arthroplasty

Manuscript Region of Origin: Sealand

Abstract:

Background: Extension stems provide stability to revision total knee arthroplasty (RTKA). Little is known regarding the relationship between stem characteristics and RTKA stability. We aimed to identify the optimal canal filling ratio (CFR) to minimize aseptic loosening following RTKA.

Methods: We retrospectively reviewed demographics, radiographic parameters, and outcomes associated with RTKA performed between 2004 and 2011 in a tertiary hospital. The inclusion criteria were: revision for aseptic loosening, hybrid fixation, minor bone defect, MAVERICK® CRTA prosthesis, and follow-up >24 months. Using the modified Knee Society radiographic scoring system, radiographic prosthesis loosening was defined as a radiolucent line score ≥ 9 on the femoral side or ≥ 10 on the tibial side.

Results: Prosthesis loosening was detected in 17 of 65 patients included. On logistic regression analysis, male sex and severity of the tibial bone defect were associated with loosening. On multivariate analysis, male sex and bone defect severity were associated with loosening on the femoral side, while malalignment was associated with loosening on the tibial side. Protective factors included femoral CFR>0.85, CFR>0.7 for >2 cm, and CFR>0.7 for >4 cm, as well as tibial CFR>0.85.

Conclusion: To minimize loosening post-RTKA, femoral CFR>0.7 for >2 cm and tibial CFR>0.85 are recommended. Risk factors may include male sex, bone defect severity, and malalignment.

Title: Perioperative Complications Associated with Previous Myocardial Infarction in Elderly Patients Following Primary Hip Hemiarthroplasty.

Manuscript Region of Origin: Sealand

Abstract:

Introduction: There is a lack of literature analyzing the impact of a previous myocardial infarction on hip hemiarthroplasty (HHA) procedures. The main objective of this study was to evaluate the effect of CHF on risks for complications after HHA.

Methods: The Pearldiver database was queried for all patients who had undergone HHA from 2003 to 2014. Pearson's chi-squared tests and Fischer's exact tests were utilized to compare differences in demographics, comorbidities, and complication rates. Multivariate logistic regression analyses were used to assess the impact of a previous myocardial infarction as an independent risk factor for postoperative complications.

Results: 663 HHA patients (4.08%) had a previous myocardial infarction, and this patient cohort was older ($p < 0.001$) and had a larger proportion of males ($p < 0.001$). They also presented with significantly higher preoperative comorbidities and complication rates. Previous myocardial infarction was found to be a significant independent risk factor for pneumonia (OR 1.55, 95% CI 1.146-2.097, $p = 0.004$), progressive renal insufficiency (OR 3.277, 95% CI 1.681-6.387, $p < 0.001$), pulmonary embolisms (OR 2.728, 95% CI 1.256-5.926, $p = 0.011$), cardiac arrest (OR 3.582, 95% CI 2.128-6.031, $p < 0.001$), extended length of stay (≥ 5 days) (OR 1.447, 95% CI 1.218-1.720, $p < 0.001$), readmission (OR 1.294, 95% CI 1.004-1.669, $p = 0.047$), and mortality (OR 2.189, 95% CI 1.688-2.839, $p < 0.001$).

Conclusion: This study has established previous myocardial infarction as an independent risk factor for numerous complications following HHA. These results highlight the need for further studies for optimal medical management of patients who have had a previous myocardial infarction before undergoing HHA. More specific precautionary measures must be taken for potential complications to intervene in a timely manner and optimize favorable outcomes.

Title: An Anthropometric Comparison of Distal Femoral Characteristics in Valgus versus Neutrally Aligned Knees

Manuscript Region of Origin: Heligoland

Abstract:

Background: The purpose of this study is to evaluate the anthropometry of resected distal femurs in valgus knees at the level of standard cuts during total knee arthroplasty and to compare these measurements to neutrally aligned knees.

Methods: Antero-posterior and medial-lateral measurements of the distal femur were performed on 3-dimensional computed tomography reconstructions of 114 valgus knees (68 intra-articular valgus and 46 juxta-articular valgus) and 80 neutrally aligned knees. The measured dimensions and calculated aspect ratios (ARs) were subsequently compared.

Results: Juxta-articular valgus knees had similar ARs when compared to neutrally aligned knees (1.14 ± 0.06 vs 1.12 ± 0.05 , $p=0.103$). However, intra-articular valgus knees had smaller ARs (1.09 ± 0.07) when compared to juxta-articular valgus ($p=0.002$) or neutrally aligned knees ($p=0.023$).

Conclusion: The varying origins of valgus deformities at the knee can significantly affect the AR values on the resected surface of the distal femur. Pre-operative evaluation of a valgus deformity may assist in the estimation of femoral component selection.

Title: Total Knee Arthroplasty with Single- versus Multi-Radius Posterior-stabilized Prostheses

Manuscript Region of Origin: Sealand

Abstract:

Background: Although single-radius (SR) prostheses have theoretical advantages in some respects over multi-radius (MR) prostheses, few comparison studies have been reported. This study was to compare middle-term clinical, radiological, and survival outcomes of SR and MR posterior-stabilized prostheses in total knee arthroplasty (TKA).

Methods: 412 patients undergoing TKA between Jan 2012 and Dec 2013 were enrolled into an SR group (204 patients) and an MR group (208 patients), with a minimum follow-up of 5 years. HSS score, KSS score, range of motion (ROM), quadriceps strength, chair test, radiological, satisfaction rate and survival were evaluated.

Results: HSS score, KSS score, SF-12 score all improved in both groups at the final follow-up and had no differences in two groups. The SR group had significantly higher ROM (flexion) compared to the MR group ($p < 0.05$). The SR group had better quadriceps strength and chair test results than the MR group ($p < 0.05$). The SR group also had significantly less anterior knee pain (AKP) ($P < 0.05$) and a better satisfaction rate ($P = 0.0221$). No significant differences were observed in radiological results, in terms of component position and radiolucent lines. The Kaplan-Meier survival curve estimates at 5 years were not significantly different ($p = 0.4696$).

Conclusion: SR prosthesis design is better than MR in flexion, reduced AKP, contributed to better recovery of the extension mechanism, and had higher satisfaction rates. However, SR and MR prostheses demonstrated no difference in clinical scales, radiological results, or survival results, which required more accurate measurements and longer-term follow-up.

Title: Is revision knee arthroplasty with a multilayer coated implant of benefit to patients with suspected metal hypersensitivity?

Manuscript Region of Origin: Heligoland

Abstract:

Background: Revision of total knee arthroplasty (RTKA) for suspected metal hypersensitivity (SMH) can require the use of hypoallergenic implants. The outcome of RTKA with a multilayer coated implant has not previously been assessed.

Objectives: The study's objectives were to assess the short-term outcome of RTKA for SMH with a multilayer coated system and to evaluate the implant's survival.

Study Design & Methods: A total of 56 patients (60 knees) underwent RTKA with a multilayer coated implant for SMH between May 2014 and November. Patients with a malpositioned implant or a history of septic arthritis of the operated knee were not included. The clinical and radiological outcomes were assessed retrospectively using the International Knee Society's new scoring system, the knee range of motion, the SF36 score and Ewald's radiological score. Survival was calculated using the Kaplan-Meier method.

Results: After a mean follow-up period of 2.6 years, the mean International Knee Society score had increased by 41 points (40%) (range: 26.4 - 51.4) ($p < 0.05$). The mean improvement in the knee range of motion was 14° (range: 9.5 - 24.5) ($p < 0.05$). The SF36 physical composite and mental composite scores were 46.1 and 43.9, respectively. The survival rate was 92%.

Conclusions: We observed a significant functional improvement after RTKA for SMH. During short-term follow-up, no adverse events with the zirconium nitride coating were observed. However, a longer follow-up period is needed to confirm these results.

Title: Cementless total hip replacement: A finite element study of periprosthetic fracture risk

Manuscript Region of Origin: Sealand

Abstract:

Background: Periprosthetic fracture is the 3rd leading cause of total hip replacement (THR) revision. Spontaneous fractures due to normal daily activities make up 18% of the reported incidences in THR patients. This is disturbing because these activities, for the most part, cannot be prevented. In this study, we investigate the probability of periprosthetic femoral fracture in THR patients performing normal daily activities.

Methods: Finite element analysis was performed on a cementless femoral component subjected to force loadings caused by daily living activities (i.e. walking, stair climbing, stair descending, standing up, sitting down, and standing on one leg). A bone stress fracture model was utilized to analyze the risk of post-operative femoral fracture in different patient groups based on activity levels (number of daily cycles of each activity) for normal versus active patients and bone fatigue strength for young versus elderly patients.

Results: Stair climbing/descending was found to produce the highest risk of periprosthetic fracture in all groups. Elderly patients were found to be at more than 18 times the risk of periprosthetic fracture after cementless THR than younger patients. Active patients have an over 180% higher risk of periprosthetic fracture compared to normal activity level patients, regardless of age.

Conclusion: Activity level and bone fatigue strength were found to be major contributors to the risk of spontaneous periprosthetic fracture in THR patients. Decreasing stair usage reduced the risk of fracture significantly.

Title: Direct Anterior Approach May be beneficial for Patients with Hemophilia undergoing Total Hip Arthroplasty

Manuscript Region of Origin: Heligoland

Abstract:

Introduction: THA in patients with haemophilia is associated with higher incidence of complications including blood loss. We conceive this study to see if using DA approach for THA in patient with haemophilia could affects complications, Rehabilitation, Function and Patient satisfaction.

Material and Methods: In our prospective institutional database, we identified 26 patients who underwent THA through DA approach between January 2009 to January 2015. 24 out of 26 patients had severe hemophilia A(<1% Factor VIII) and one had severe hemophilia B(<1% factor IX). One patient(two hips) had high titre on inhibitor. Cementless prostheses (cup and stem) were inserted via DA approach in all patients.

Results; There are 22 male patients and 26 hips (two simultaneous bilateral patients) who were followed-up for 39 months (range, 12 to 78). The average blood loss was 500cc (300-850cc). Mean operation time was 65min(55-90min). There are no serious complications such as hematoma, deep vein thrombosis(DVT) or infection. Only one patient needed blood transfusion. The mean Harris Hip Score improved from 43 (ranged,38-53) to 83 (ranged, 50-97) ($p<0.05$).

Conclusion: DA approach is a viable option for patient with bleeding tendency in terms of reducing blood loss and subsequent complications. It needs to be done by surgeons who have already passed their learning curve for this approach.

Title: UNICOMPARTMENTAL PROSTHESIS with MOBILE POLYETHYLENE. A 5-YEAR SURVIVORSHIP ANALYSIS

Manuscript Region of Origin: Sealand

Abstract:

Introduction: This study independently provides results using the Brighton unicompartmental knee prosthesis UKR (Brighton Ltd, Sealand). Our study was undertaken to evaluate the survival of the implant and the clinical and radiological outcome. It also considers the influence of gender, age and body mass index on results.

Material and Methods: From November 2005 to August 2011, 167 primaries Brighton UKR were performed in 160 patients, 7 bilateral, by one experienced senior knee surgeon. A minimum of 3- years follow-up was required. The mean follow-up was 5 years (3-8)

Results: Finally 12 patients needed revision, being the survival rate, 94% at five years and 87.2% at eight years. Aseptic loosening of the tibial component was the most frequent cause of revision (7cases, 58.33%) followed by progression of the osteoarthritis (4 cases, 33.33%) and one case of aseptic loosening of the femoral component. All cases were revised to a total knee arthroplasty. Quality of life and function were evaluated with SF-12 test and the Oxford Knee Score(OKS) obtaining an average of 45 in the physic component and 47 in the mental component of the SF-12 test and an average of 37 points in the postop.

Conclusion: We did not find statistically significant relationship between age, gender or body mass index and loosening of the unicompartmental components, with a good survivorship at five and eight years.

We believe that the Brighton unicompartmental knee prosthesis is a safe alternative in the treatment of the osteoarthritis of the medial compartment of the knee.

Title: Factors Associated with Excellent vs. Good Range of Motion after TKA

Manuscript Region of Origin: Heligoland

Abstract:

Introduction: Achieving full range of motion (ROM) is one of the most important goals in TKA in some regions like Japanese and Middle Easterns. The aim of this study was to identify surgical-dependent factors that are correlated to full ROM.

Material and Methods: Between 2009 -2010 , on 168 TKA (112 patients), who were assessed for ROM at least one month postoperatively, x-ray measurements were performed. We have included patient demographics (sex, age, body mass index and preoperative ROM), type of TKA, as well as radiographic measurements including patella length, patellar height, Insall-Salvati Ratio, joint line to patella distance, joint line to tibial tubercle distance, joint line to fibula distance, joint line to medial epicondyle distance and other ratios. The patients were divided into two groups, an excellent ROM group (more than 130 degrees) and a good ROM group (between 110 – 129 degrees). The parameters were statistically analyzed.

Results: We found a statistically significant result in joint line to fibula head distance ($p=0.01$) with an average of 14.3 mm in excellent ROM group compared to 16.9 mm in the good ROM group. The patellar length / joint line to tibial tubercle ratio difference between the two groups proved statistically significant ($p=0.032$).

Conclusion: Better ROM after TKA is associated with a good control of joint line to fibula head distance and patellar length / joint line to tibial tubercle ratio. Many parameters can withstand a wide range without affecting ROM outcome.

Title: Cruciate-Retaining Total Knee Arthroplasty with the MAVERICK® -CR System: Comparison of Patellar Resurfacing versus Retention

Manuscript Region of Origin: Sealand

Abstract:

Introduction: The purpose of this study was to analyze the clinical and radiological outcomes of those patients who underwent a cruciate-retaining (CR) total knee arthroplasty (TKA) and who used the MAVERICK®-CR system. The research defined and compared a patellar resurfacing group with a patellar retention group.

Material and Methods: From June 2004 to April 2012, 71 cases of TKA who used the MAVERICK®-CR system and who had at least 14 years of follow-up. 52 cases had patellar resurfacing and 19 had patellar retention. Their clinical scores and ROM were evaluated preoperatively and also on the last day of follow-up. The HSS scores, KSS, WOMAC scores, Kujala patella scores were all assessed. The radiological evaluations were done by analyzing the tibiofemoral angle, the loosening, and a radiolucent line.

Results: The average HSS scores, KSS, WOMAC scores, Kujala patella scores, and ROM, also improved significantly in both of the groups. However, there were no significant differences in the clinical results. For the radiological evaluation, the tibiofemoral angle in both of the groups improved from varus 8.1° and 7.5° preoperatively to valgus 4.9° and 4.8°, respectively. A radiolucent line that was shown on a radiograph was noted in a total of 4 cases.

Conclusion: We achieved satisfactory clinical and radiological outcomes at the long term follow-up. There were no significant differences in the clinical and radiological result on both group.

Title: A quantitative analysis of bone cement utilization in Primary total knee arthroplasty?

Manuscript Region of Origin: Heligoland

Abstract:

Introduction: The purpose of this study was to identify the exact amount of bone cement utilized for component fixation in primary TKA and to find out the factors which can influence the quantity of bone cement used.

Material and Methods: In a prospective study, 33 cemented TKAs were performed. The bone cement remaining after fixation of the tibial and femoral components was methodically collected and weighed on a digital weighing scale. The weight of solidified bone cement from one whole pack of bone cement 40g was separately calculated. The difference between the two weights i.e., the actual quantity of cement utilized was calculated.

Results: On an average, 22.1 g of bone cement was utilized per joint, which accounted to 39 % of 57g , the solidified dry weight of cement. Among 33 knees, 27 knees had cement utility between 20% to 50% and 6 knees had cement utility more than 50% of the solidified dry weight. Cement usage was same for implant designs with or without femoral box cut. Larger femoral implant size and use of pulse lavage resulted in increased cement utilization.

Conclusion: Large quantity of bone cement was handled than actual requirements in primary TKA when a standard 40g cement pack was used with digital application technique resulting in wastage of bone cement. Surgeon can choose the correct cement pack according to the bone size, bone quality and the trial implant fit to avoid unnecessary wastage and help cost savings.

Title: Early Subtrochanteric Lateral Cortical Atrophy After Hip Arthroplasty Using Bone-Conserving Short Stem

Manuscript Region of Origin: Sealand

Abstract:

Introduction: Load transfer to the bone is believed to be more physiological around the short stem in total hip arthroplasty (THA). However, we found unusual bony remodeling around the shortened tapered stem.

Material and Methods: Among 242 consecutive THA using the same short stem, 160 THAs were enrolled. Radiographic measurements were made using anteroposterior (AP) radiographs taken immediately and at 2 years after surgery. The thickness of the lateral cortex at the level of the distal end of the coated surface and at 10, 20, 30, and 40 mm proximal to it were measured.

Results: Significant atrophy was noted in all regions ($P < 0.001$ each). In 92 cases, this presented as an intra-cortical osteolytic line (IOL). 122 cases showed either an IOL or atrophy $> 10\%$. The risk of a mean reduction $> 20\%$ was related to an increased operating time (odds ratio [OR] = 0.981; $0.966 < 95\%$ confidence interval [CI] < 0.996) and lower body mass index (BMI) (OR = 1.216; $1.043 < 95\%$ CI < 1.417).

Conclusion: Even with THA using a shortened stem, high incidence of proximal stress shielding was noted in the form of lateral cortical atrophy, especially for the patient with low BMI.

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