Does Discharge Disposition Affect the Incidence of Arthrofibrosis in the Knee Arthroplasty Patient Population?

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Disclosures

- None

Background

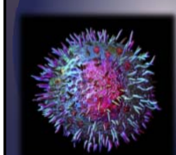
- Total knee arthroplasty (TKA)
  - Extremely successful
  - Increasing in prevalence and popularity
- Revisions related to arthrofibrosis
  - Decreasing
  - Significant percentage of large revision practices

Background

- Arthrofibrosis is a complex entity
  - Stiffness → ankylosis → arthrofibrosis
  - No universal definition
  - Flexion less than 90° and persistent flexion contracture
- For the purposes of this talk
  - Stiffness synonymous with arthrofibrosis
  - Etiology of postoperative stiffness not determined or evaluated

Background

- Pathoetiology
  - Mast cells, various reactive oxygen and nitrogen species, unchecked fibroblastic proliferation



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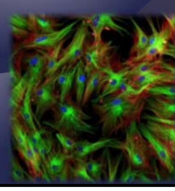


Background

- Incidence
  - 1.5 -12%
- Who's at risk?
  - No consensus
  - Multifactorial
  - Pre, intra, and postoperative factors

Background

- Treatment
  - MUA initial option
  - Best results if performed early

Purpose

- To assess the impact of patient disposition at discharge after TKA on the incidence of stiffness resulting in MUA
- Hypothesis
  - Patients discharged to home health care (HHC) would have a **lower** incidence of stiffness than those sent to a skilled nursing facility (SNF)
  - HHC companies with orthopaedic training would have a **lower** incidence of stiffness than those without
  - Patients discharged to HHC would have a **shorter time** to MUA and **better range of motion** prior to intervention compared to those in SNFs

Materials and Methods

TGH Tampa General Hospital

- Retrospective review
- Single institution over 3 years
- Four fellowship trained arthroplasty surgeons
  - Postoperative hospital based physical therapy was uniform
  - One surgeon used CPM
- Cross-referenced with those that underwent MUA within 12 weeks of the index procedure

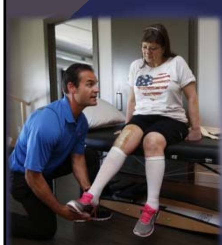
Materials and Methods

- Multiple variables examined
  - Age, sex, co-morbidities, surgery performed, length of stay, disposition, post discharge ROM, time to MUA
- Decision to manipulate
  - Flexion contracture & failure to achieve 90° of flexion by six weeks
- Analysis performed with IBM SPSS
  - Significance level of 0.05

Results

- 1491 primary TKA in 1435 patients, 45 TKA in 44 patients under MUA
- Those that had MUA were younger (60.4 vs 67.5 yo)
  - Significant ($p < 0.0001$)
- No difference in hospital length of stay
  - MUA 3.59 days vs Non-MUA 3.43 days

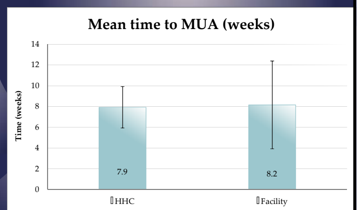
Results



- No difference in incidence of MUA for stiffness in those discharged to HHC vs SNF
- 3 home HHC represented in MUA group
  - 2/3 offered orthopaedic training
  - 1/3 no orthopaedic specific training
    - Incidence of MUA within that HHC was 6.9%
    - Significant ($p = 0.019$) compared to other two HHC services

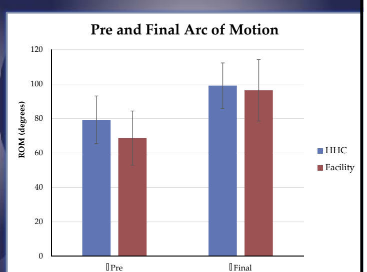
Results

- Within the MUA group, HHC vs SNF
  - HHC had **shorter** mean time to MUA
    - Not significant
    - Standard deviation



Results

- Within the MUA group, HHC vs SNF
  - Pre-manipulation arc of active range of motion (AROM)
    - **Greater** in HHC (79.2° vs 68.6°)
    - Significant
  - Post-manipulation arc of AROM
    - **Greater** in HHC (99.0° vs 96.4°)
    - Not significant
  - Delta arc of AROM
    - **Greater** in SNF (27.7° vs 19.2°)
    - Not significant



Results

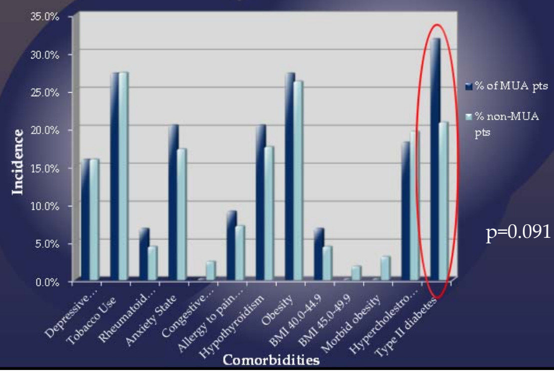
- TKA with computer assisted surgery (CAS) or robotic arm assisted surgery (RAAS), none required MUA
  - Significant (p= 0.0017)

Table 2. Type of Surgery Performed

Primary TKA Procedure	MUA pts	Non-MUA pts
Primary TKA	42	1135
Bilateral TKA	2	54
Computer assisted TKA	0	169
Robotic assisted TKA	0	33
Total	44	1391

Results

- Comorbidities

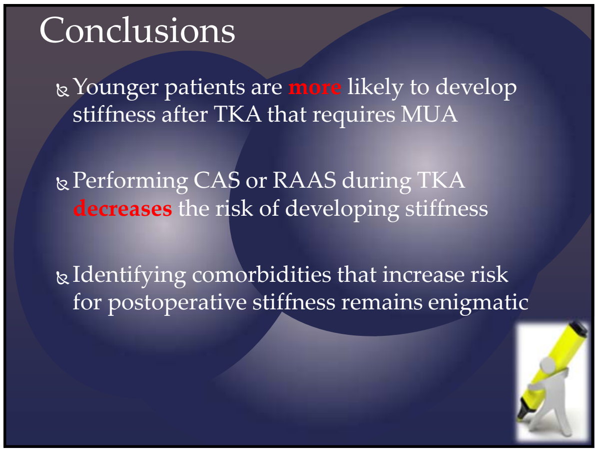


Limitations

- Retrospective design
- Various implants and techniques
- Comorbidities
  - Only those listed in prior studies included
- Etiology of stiffness not evaluated
  - Multifactorial
  - MUA used as surrogate for diagnosis of arthrofibrosis
  - No open biopsy or histological analysis to confirm presence of arthrofibrosis
- Pre/intra/postoperative analgesics/anti-inflammatories not considered

Conclusions

- Disposition to HHC or SNF **does not effect** the incidence of stiffness requiring MUA
- Those discharged to an orthopaedic specialty HHC company have a **lower incidence** stiffness requiring MUA
- Those discharged to HHC and requiring MUA have **better** pre-manipulation AROM and may have an opportunity to receive MUA **sooner** than those in SNFs


Conclusions
Younger patients are more likely to develop stiffness after TKA that requires MUA
Performing CAS or RAAS during TKA decreases the risk of developing stiffness
Identifying comorbidities that increase risk for postoperative stiffness remains enigmatic


Thank you