



# Repairing Lateral Meniscus Tears In Patients with Anterior Cruciate Ligament Reconstruction Ensures Low Rate of Symptomatic OA Compared to Lateral Meniscectomy at 9-Year Follow Up

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## INTRODUCTION

### Knee Osteoarthritis

- Increased Risk of OA Development After ACL Injury<sup>1,2</sup>
- 23-79.2% Medial OA
- 9-32% Lateral OA
- Risk Factors<sup>3,4,5</sup>
- Concomitant Meniscal Injury<sup>1</sup>
- Chondral Injury
- Alignment
- Higher BMI
- Older Age at Reconstruction
- Female Gender



### Treatment of Meniscal Injuries

- Meniscectomy
  - Increased Risk of OA
  - Proportional to Amount Removed<sup>6-7</sup>
  - Avoid Total & Subtotal Meniscectomy
- Meniscal Repair
  - 25-50% Lower Risk of Knee OA After Meniscus Repair<sup>8</sup>
  - Up To 20% of Patients Still Develop OA<sup>9</sup>
  - But Only 50% Of Meniscal Repairs Heal<sup>10</sup>

### Meniscal Repair + ACLR

- Improved Meniscal Healing<sup>11,12</sup>
- ACLR + Repair – 75-93%
- Repair Only – 50%
- Improved Knee Functional Outcomes<sup>2</sup>
- Higher IKDC & Tegner

## AIM

- To Determine The Incidence and Risk of Lateral OA in Patients After ACLR.
- To Investigate The Influence of Lateral Meniscus Repair Versus Meniscectomy.

## METHOD

### Patient Population

- Patients Undergoing Transtibial ACL Reconstruction
- Single Surgeon Consecutive Series (1999-2018)
- Autograft or Allograft BPTB
- Minimum 2-Year Follow Up
- Radiograph Imaging
- Lateral Meniscus Pathology

### Exclusion Criteria

- Revision ACLR
- Multi-Ligamentous Injuries

### Meniscal Pathology

- Operative Report/Arthroscopic Examination
- Presence of Lateral Meniscus Tear
- Meniscal Treatment - Video/OR Report
- Partial Lateral Meniscectomy
- Lateral Repair Technique
- All Inside
- Inside Out

### Radiographic Evaluation

- Preoperative Alignment
- Standard AP Weightbearing Views
- Tibio-Femoral Angle Measured<sup>13</sup>
- >180 = Valgus Alignment
- <180 = Varus Alignment

### Postoperative OA

- Postoperative OA
- Kellgren-Lawrence OA Classification System<sup>14</sup>
- Standard AP Weightbearing Views
- Grade 0 = No Presence of OA
- Grade 1
  - Doubtful Narrowing of Joint Spaces/Possible Osteophytes
- Grade 2
  - Definite Osteophytes/Possible Narrowing of Joint Space
- Grade 3
  - Multiple Osteophytes/Definite Narrowing of Joint Space/Some Sclerosis and Deformity of Bone Ends
- Grade 4 = Severe OA
  - Large Osteophytes/Marked Narrowing of Joint Space/Severe Sclerosis and Deformity of Bone Ends

### Statistical Analysis

- Analysis of Variance
- Assess Differences in Demographics
- Age, Alignment, Follow-up Time
- Chi-Square Tests
- Assess Differences in Incidence Rates
- Partial Meniscectomy vs. Meniscal Repair
- Statistical Significance
- p<0.05

## RESULTS

### Patient Demographics

- 107 Patients with ACLR
  - 55 Males
  - 52 Females
- Average Age at Surgery: 35.9±11.9 Years (16-59)
- No Significant Difference
  - Partial Meniscectomy vs. Repair (p=0.1437)
  - OS vs. No OA (p=0.0926)
- Average Follow Up: 8.6±5.0 Years (2-20)
- No Significant Difference
  - Partial Meniscectomy vs. Repair (p=0.7579)
  - OA vs. No OA (p=0.0792)

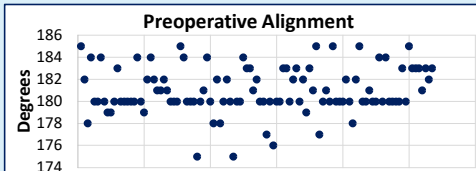
### Preoperative Alignment

- Average: 180.9 ±2.2
- Range: 5° Varus - 5° Valgus
- Neutral

### Lateral Meniscus Repair vs. Partial Meniscectomy

- 13 Patients With Lateral Repair
  - 0% (0/13) Developed OA
  - Repair Type
    - 11 All Inside
    - 2 Inside Out
- 51 Patients With Partial Meniscectomy
  - 27.5% (n=14/51) Developed OA
  - Significant Decreased Incidence of OA with Lateral Meniscal Repair (p=0.0340)

### Lateral Meniscectomy Conveys 6.2 Times Greater Risk of Developing OA Compared to Lateral Meniscus Repair



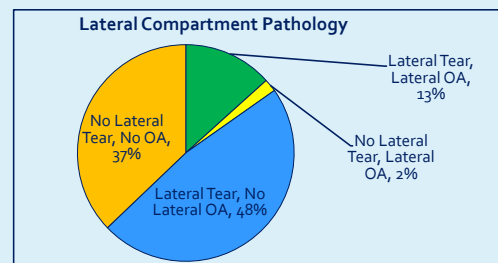
### Meniscal Pathology

- 59.8% (n=64/107) Patients Had Lateral Meniscus Tear

### Postoperative OA

- 15% (16/107) Patients Had Lateral Compartment OA
- 21.9% (14/64) Patients with Lateral Meniscus Tear Develop OA
- 4.7% (2/43) Patients without Lateral Meniscus Tear Develop OA
- p=0.015

### Patients With a Lateral Meniscus Tear are 4.7 Times More Likely To Develop OA Compared to Patients With No Lateral Meniscus Tear



## CONCLUSIONS

### Importance

- Biomechanical Analysis<sup>16</sup>
- Lateral Meniscus Load Transmission Through Lateral Joint
  - 70% in Extension
  - 85% at 90° Flexion
- Walking<sup>15,16</sup>
  - Decreased Peak Knee Flexion Angle
  - Significantly Smaller with Partial Meniscectomy Versus Repair
  - Increased Tibiofemoral Contact Forces in Lateral/Medial Compartment
  - Significantly Higher in Partial Meniscectomy Versus Repair

### ACLR Tear with Meniscus Injury

- Common Concomitant Injury
- Over 50% of Patients
- Lateral Meniscus Tear
- Greater Postoperative Osteoarthritis

### 4.7x More Likely Than No Lateral Meniscus Tear

- Partial Meniscectomy Increased Incidence of OA vs. Meniscal Repair
- Lateral Compartment
  - 0% w/ Meniscal Repair
  - 28% w/ Partial Lateral Meniscectomy
- Abnormal Knee Kinematics
  - May Explain Elevated OA Risk
  - Partial Meniscectomy vs. Repair

### Patients With Lateral Meniscectomy Have a 6.2 Times Greater Risk of Developing OA Compared to Patients With Lateral Meniscus Repair.

### Save & Repair the Lateral Meniscus!

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