

**Septic Arthritis After ACL
Reconstruction:
Retrospective Review and
Evaluation of Long Term
Outcomes**

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Introduction

- Infections after ACL reconstruction are rare, but can cause significant morbidity.





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Purpose

- Report incidence and clinical presentation of intra-articular infection after arthroscopic ACL reconstruction
- Assess long term outcomes of septic arthritis following ACL reconstruction after aggressive operative and long term antibiotic therapy

Methods

- 1803 consecutive ACLR over 6 years (1994-1999) performed by 7 fellowship trained surgeons at one institution were retrospectively reviewed (all autologous PT or HS grafts)
- Patients were located through billing database

Methods

- Inclusion: Culture positive joint aspirate within 6 months of index procedure.
- Compared the entire group to control populations
- 42 controls (matched for surgeon and year, otherwise random) were selected for more detailed comparison.
- Ages and gender of controls were the same as the entire population.

Methods

- Time to presentation
- Clinical symptoms and findings
- Patient demographics and graft type recorded
- Clinical management necessary to eradicate infection



Methods

- Patients were contacted at an average of 6.6 years (4.8-9.3) to evaluate long term outcomes
- Modified Lysholm knee scoring scale
- Activities of Daily Living questionnaire
- Subjective IKDC 2000 assessment

Results

- 21/1803 cases met inclusion criteria for an incidence of 1.16%
- Average age 24 years (14-37)
- 16 males and 5 female patients
- 14/21 (67%) contacted
- 8 Quadrupled HS grafts, 6 PT grafts
- 18/21 had other procedures

Diagnosis

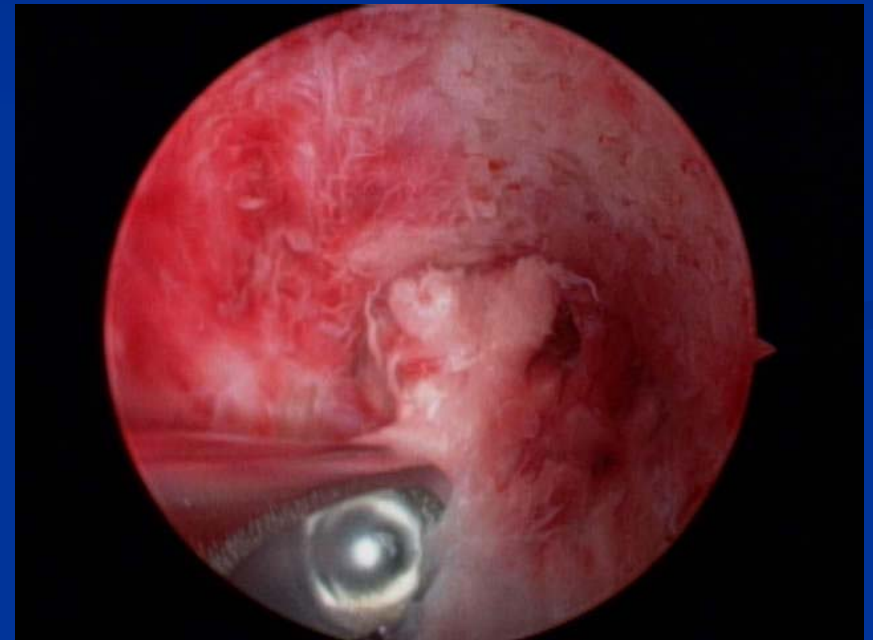
- Presented at average of 24 days post op (6 – 56)
- Spontaneously increasing pain and swelling in a previously benign knee.
- ESR 75, WBC 8.6.
- Joint Aspirate:
 - Cell count 59k (27k – 116k), 93% PMN.
 - Gram stain negative in 20/21.

Treatment:

- IV abx for 6 weeks. Oral abx 2 – 6 weeks
- Urgent arthroscopic I & D with graft retention
- Repeat I & D:
- Persistent fever, pain, swelling
- Gram negative organism
- Average of 2.0 arthroscopic irrigation / debridements were performed per patient

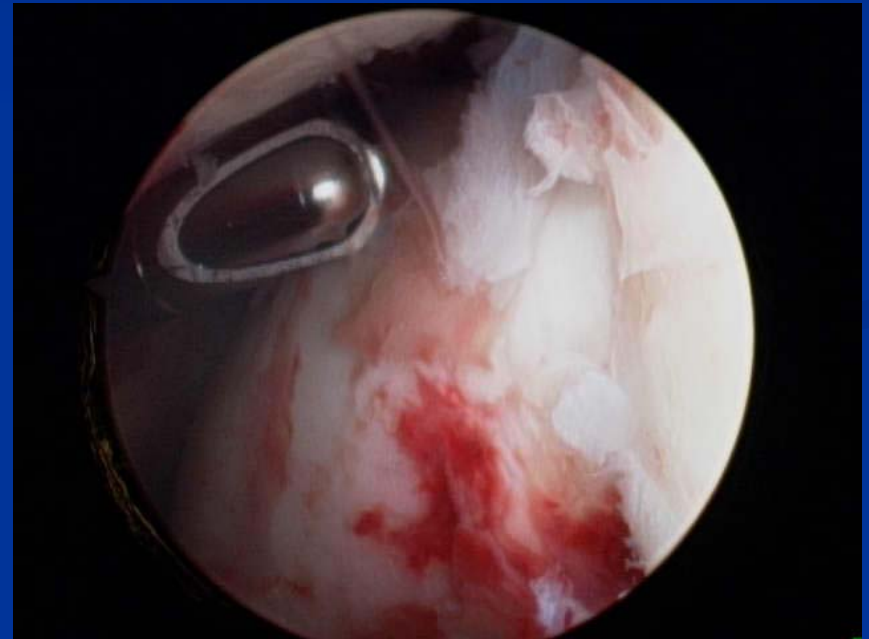
Pathogens

- All patients grew only one organism:
- *Staphylococcus epidermidis* 12 (8)
- *S. aureus* 5 (3)
- *Serratia marescens* 2 (1)
- *Enterobacter* 1 (1)
- *Enterococcus* 1 (1)



Results

- Mean modified Lysholm score 76.4 (18-100)
 - Fair range (poor – excellent)
- ADL Questionnaire 78.9% (30-100)
- IKDC 2000 70.6 (27.6 - 100)
 - Median 80 fair



Results

- 6/14 had graft removal
- 8/14 retained graft and hardware
- 6 patients who underwent graft removal showed lower scores on subjective evaluations
 - Lysholm $p=0.05$
 - ADL $p=0.07$
 - IKDC $p=0.12$

Results

- 5 patients returned for x-rays and exam
- All 5 had osteoarthritic changes radiographically primarily medial compartment narrowing



Results

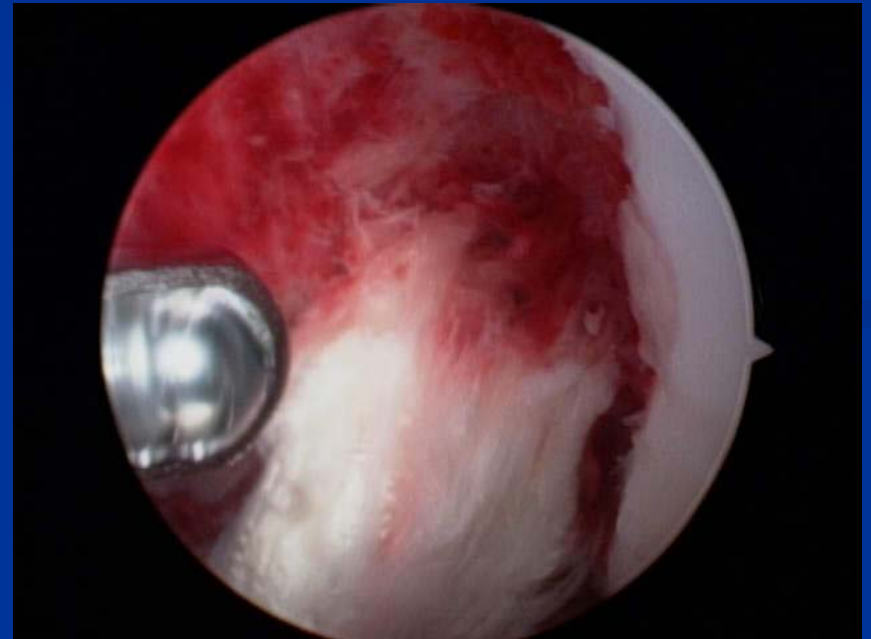
- There was a trend toward increased incidence of infection in:
 - *Males 76% vs 64% $p=0.125$
 - *Meniscus repair (arrows) 24% vs 11% ($p=0.123$)
 - *Aspiration for persistent “benign” post-op swelling (24% vs 12%) $p=0$

Results

- There was no difference in incidence of infection with:
- Graft source (patella tendon or hamstring)
- Graft fixation
- Number of implants
- Administration of postoperative intravenous or oral antibiotics
- Overnight stay

Clinical Outcome

- Grafts were retained in 20/21 at initial I & D
- Final graft retention in 13/21 cases



Results

	Cases	Controls
Final extension	0	H1
Final flexion	132	139
Time to final ROM	13.8 weeks	10.4 weeks
Time to max Activity	20.4 weeks	21.8 weeks
Time to work	17.2 weeks	6.0 weeks
Final activity = preinjury	16/21	

Discussion

- 1.16% incidence is similar to risk reported in literature (0.4 -1.7%)
- Staphylococcus epidermidis infection fared better in all subjective scores but no statistical significance due to small sample sizes
- Those who retained grafts fared better
- Patients took significantly longer to return to work

Discussion

- When compared to other non-infected controls our patients fared worse.... No duh
- Pinczewski 5yr results 180 pts
 - Median Lysholm 95 PT, 96 HS (ours 76.4)
- Fluhme 4 yr results 120 pts
 - IKDC 88 PT, 90 HS (ours 70.6)

Discussion

- Patellar tendon grafts fared slightly worse on Lysholm and IKDC evaluations and slightly better on ADL questionnaire (no statistical significance)
- Safe to say graft type doesn't affect outcome of this complication

Conclusion

- Intra-articular infection following ACL reconstruction causes significant morbidity even with early aggressive operative treatment and long term antibiotics

Thank You



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