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Pediatric Failed Meniscus Repair in >5000 Arthroscopic Meniscus Repairs

SCORE Sports Cohort Outcomes Registry

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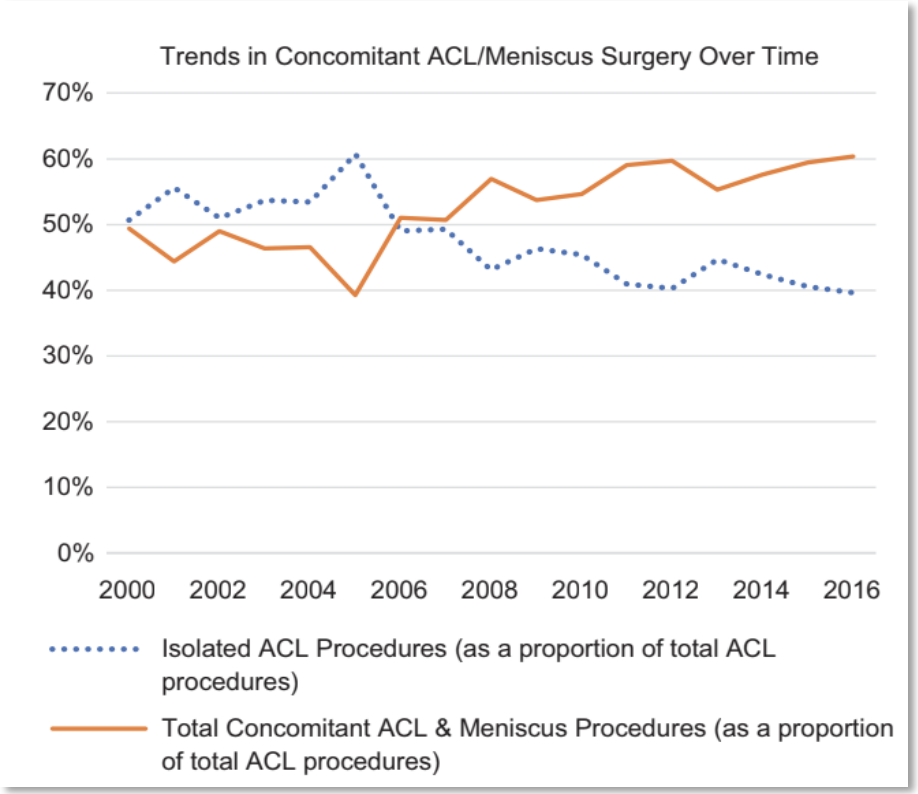
Background

- The incidence of pediatric meniscus repair is increasing.[1]
- Previous failure rate in this population is reported 0-44%, with reported risk factors for failure including tear type, meniscal laterality, and tear location.[2]
- No previous prospective cohort has been analyzed for FAILED meniscus repair.



Cruz 2019

Purpose

To establish the incidence and factors associated with FAILED meniscus repairs utilizing a large, surgeon driven, multi-center prospective quality improvement registry.

Methods

- Retrospective review
  - Sports Outcome Cohort Outcome Registry (SCORE)
  - 08/2018 to 08/2024
  - 43 surgeons from 27 institutions
  - Consecutive cases, patients ≤ 19 years
- Patient demographics and postoperative rehabilitation data were collected
- Surgical data included meniscus repair characteristics were analyzed
  - Tear displacement
  - Tear type
  - Tear location
  - Tear zone
  - Repair technique
- Statistical analysis
  - Mann-Whitney was used for continuous variables.
  - Chi-square test of independence and Fisher's exact test was used for categorical variables.
  - An adjusted p-value Bonferroni correction when a multi-level variable was analyzed.

Failed Repair

Symptomatic meniscus requiring reoperation

and/or

Evidence of repeat meniscus tear on advanced imaging

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Results - Demographics

- N= 5088 consecutive cases
  - Mean age 15.2 years
  - 3702 (72.8%) ACL R + MENISCUS REPAIR
  - 1386 (27.2%) ISOLATED MENISCUS REPAIR

	Meniscus Repair	
	Count	%
Total Cohort	5088	100%
ACL R + Meniscus Repair	3702	72.8%
Isolated Meniscus Repair	1386	27.2%

- No significant differences in sex, age, time of surgery, and postoperative rehabilitation between FAILED and NOT FAILED (p >0.5).
- Smaller BMI associated with higher rate of FAILED ISOLATED MENISCUS REPAIRS.

ISOLATED MENISCUS REPAIR			
	Failed Repair	No Failed Repair	P - value
BMI	23.3 ± 4.6	24.8 ± 5.8	**0.038**

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Results – Failure Rate by Procedure

- 2.7% Total cohort
  - 1.8% ACL R + Meniscus Repair
  - 5.3% Isolated meniscus repair

p < 0.001

- Medial meniscus repair FAILED at a higher rate across all procedures.

	Medial Meniscus		Lateral Meniscus		
	Count	%	Count	%	P - value
Total Cohort	81 / 1785	4.5%	38 / 2318	1.6%	**<0.001**
ACL R + Meniscus Repair	36 / 1207	3.0%	10 / 1620	0.6%	**<0.001**
Isolated Meniscus Repair	45 / 578	7.8%	28 / 698	4.0%	**0.012**

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Results – Higher Rates of Failed Repair

- No differences ($p > 0.05$).
  - Repair technique
  - Tear type

- Tear Location
  - Medial tears *in the posterior horn + body* failed at a higher rate in
    - TOTAL COHORT (8.0%, **$p < 0.001$**)
    - ISOLATED MENISCUS REPAIR (13.3%, **$p < 0.001$**)
  - Lateral tears *in the posterior horn + body* failed at a higher rate in
    - TOTAL COHORT (3.5%, **$p = 0.001$**).

- Tear Displacement
  - Medial tears *with anterior displacement* failed at a higher rate in
    - TOTAL COHORT (8.5%, **$p < 0.001$**)
    - ACL R + MENISCUS REPAIR (6.9%, **$p < 0.001$**).
  - Lateral tears *with anterior displacement* failed at a higher rate in
    - TOTAL COHORT (4.0%, **$p = 0.001$**)

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Results – Lower Rates of Failed Repair

- Tear Location
  - Medial tears in the *posterior horn* at a lower rate in
    - TOTAL COHORT (2.7%, **p < 0.001**)

- Tear Displacement
  - *Non-displaced* medial tears at a lower rate in
    - TOTAL COHORT (2.8%, **p < 0.001**)
    - ACL R + MENISCUS REPAIR (2.1%, **p = 0.005**).
  - Non-displaced lateral tears at a lower rate in
    - TOTAL COHORT (1.4%, **p = 0.002**)

- Tear Zone
  - Medial tears in the *red-red zo*ne at a lower rate in
    - ISOLATED MENISCUS REPAIR (3.0%, **p = 0.003**)

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Discussion/Conclusion

- Meniscus repair had an overall failure rate of 2.7%, and isolated meniscus repair failed at a higher rate than those performed with concomitant ACLR.
- All tear types in the medial and lateral meniscus, and all repair techniques in the medial and lateral meniscus had similar failure rates.
- Special attention to anteriorly displaced tears and tears of the posterior horn + body may be necessary.

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References

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UC San Diego School of Medicine

Rady Children's Hospital San Diego

SAMHS San Antonio Military Health System