

5º CURSO INTERNACIONAL DE ORTOPEDIA PEDIÁTRICA
POSNA – SLAOTI – EPOS
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SÃO PAULO – BRASIL



What's new on Pediatric ACL reconstruction?

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Disclosures

- None

Introduction

- Potential devastating injury
- Significant time lost from sport
- Degeneration of the knee



Introduction

- Increasing frequency
- 2.3% per year for the past two decades
 - Increase in sports participation
 - Improved examination
 - Diagnostic methods

Beck NA, et al. ACL Tears in School-Aged Children and Adolescents Over 20 Years. *Pediatrics*. 2017 Mar;139(3).

Controversies

1. Prevention programs
2. Nonoperative versus operative treatment
3. Graft Selection
4. Surgical technique

1. Prevention programs

- Universal training program
- Strengthening proximal control exercises
- Could reduce the incidence of ACL injury

Sugimoto D, Myer GD, Foss KD, et al. *Br J Sports Med*. 2015;49:282–289.



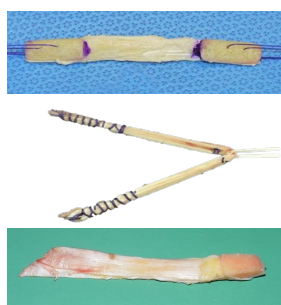
2. Nonoperative versus operative treatment

- Nonoperative tx
 - Continued instability
 - High rates of meniscal and chondral damage
 - Inability to return to athletic activity

Henry J, et al. Knee Surg Sports Traumatol Arthrosc. 2009;17:748–755.
Millet PJ, et al. J Arthrosc Relat Surg. 2002;18(9):955–959.
Lawrence TR, Argawal N, Ganley TJ. Am J Sports Med. 2011;39(12):2582–2587.

3. Graft selection

- Autograft
 - Hamstrings
 - Patellar BTB
 - Quadriceps
- Allograft



3. Graft selection

- Retrospective study
- ACLR 11–18 years
- Autograft (hamstring) or allograft (anterior tibial, posterior tibial, or peroneal)
- Risk of **graft failure is 4.4 times higher with allograft**

Engelman GH, et al. Am J Sports Med. 2014

3. Graft selection

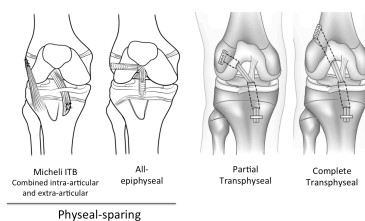
- Odds of failure for an allograft were significantly greater than the odds of failure for an autograft (odds ratio, 5.03; 95% CI, 1.38-18.33)

Krych AJ, et al. Arthroscopy. 2008;24(3):292-298.

- Weighted odds 39% greater among allografts compared with autografts (odds ratio, 0.61; 95% CI, 0.21- 1.79)

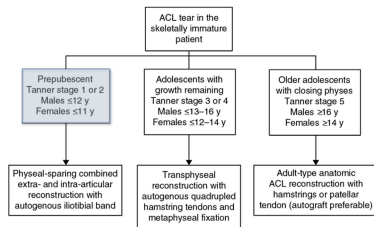
Carey JL, et al. J Bone Joint Surg Am. 2009;91(9):2242- 2250.

4. Surgical technique

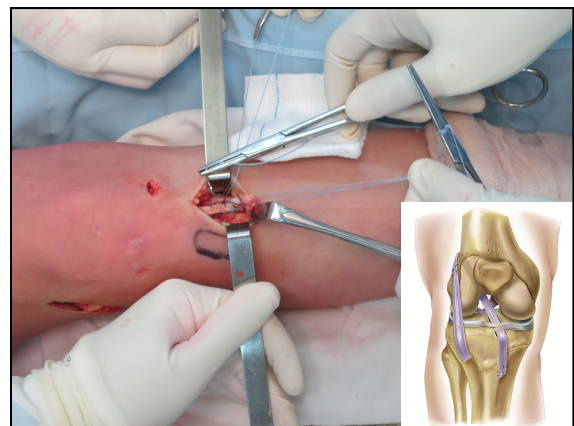
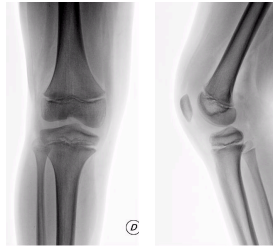


Improve anterior and rotational stability
Do not re-store normal kinematics

Preferred algorithm



Male 9+0
Tanner 1
Rugby
Complete ACL tear
Lachmann ++, Pivot shift ++
No meniscal-chondral injuries

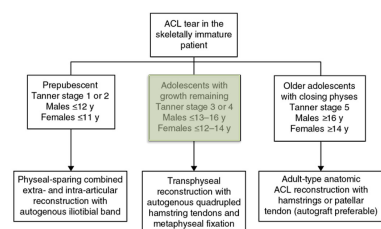


IT-Band advantages:

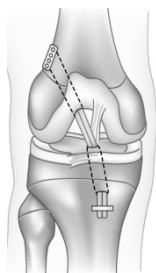
- Stronger graft
- No tunnels
- Best restores AP stability and rotational control
- Low revision rate

Kennedy A, et al. Am J Sports Med. 2011 May;39(5):964-71.

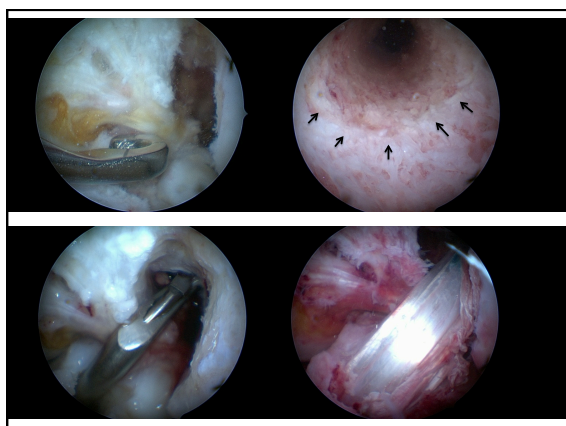
Kocher MS, Garg S, Micheli LJ. J Bone Joint Surg Am. 2005 Nov;87(11):2371-9.

Preferred algorithm**Complete transphyseal**

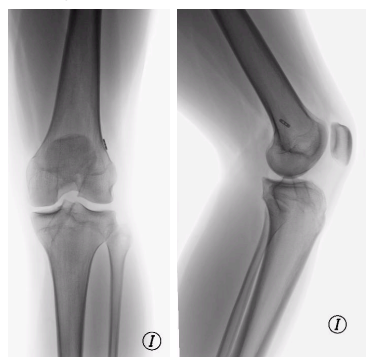
- Smaller, more vertical tunnels
- Metaphyseal fixation
- No hardware or bone blocks at the level of the physis



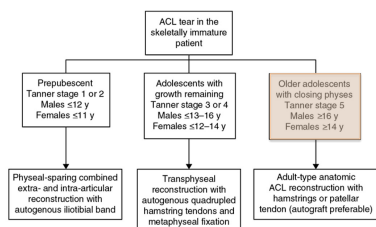
Male 13+2
Tanner 3
Soccer
Complete ACL tear
Lachmann ++, Pivot shift ++
No meniscal-chondral injuries



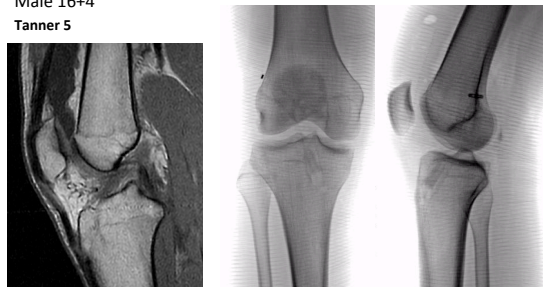
@3 years PO No angular deformity - LLD



Preferred algorithm



Male 16+4
Tanner 5



Anatomic single-bundle ACLR
(anteromedial portal technique)

Take home message

- Prevention programs are effective
- Early reconstruction decrease concomitant injuries
- Autograft lower failure rate
- Debate regarding the optimal surgical option
- Ongoing research will continue to refine the indications