

Pediatric ACL Reconstruction Living Donor Grafts

Joan C Monllau MD, PhD

Hospital del Mar ICATME. Hospital Universitari Dexeus Barcelona Spain











Universitat Pompeu Fabra *Barcelona*



Pediatric ACL Tear



MAIN CONCERNS





MAIN CONCERNS

Operative vs Non-operative
Growth disturbances (arrest)
Re-rupture rate

Operative vs Non-operative



Revision 17 studies (1983-1999) / 458 knees

Treatment	Unstable Knees (%)
Non-Op	91
Suture Repair	73
Extra-articular Recon	64
Intra-articular Recon	14

Operative vs Non-operative

Journal of

Athletic Training

Early Operative Versus Delayed or Nonoperative Treatment of Anterior Cruciate Ligament Injuries in Pediatric Patients

Kristina L. Dunn, MS, ATC, EMT-B*[†]; Kenneth C. Lam, ScD, ATC*; Tamara C. Valovich McLeod, PhD, ATC, FNATA*[‡]

Outcomes	Non-Op vs Op	
Instability	75% / 13.6%	
Risk of Meniscal Tear	2 times greater risk	
Return To Sport	43.75% / <mark>92%</mark>	
IKDC	87 / 95	







Physeal-Sparing (intra-articular)



Partial transphyseal

MacConkey 2011

Complete

transphyseal



MAIN CONCERNS

Operative vs Non-operative
 Growth disturbances (arrest)
 Re-rupture rate



Growth Disturbances









Fabricant 2013



Growth Disturbances





MAIN CONCERNS

Operative vs Non-operative
 Growth disturbances (arrest)
 Re-rupture rate



Small Graft Diameter & Graft Re-injury

ACL graft in youngers increases in length but does not increase in diameter



Re-rupture Rate





- Soft tissue
- Donor site pain
- Kneeling pain
- Muscle strength deficits
- Small grafts





The Grafts ALLOGRAFTS





Re-rupture Rate

graff

failure





- Retear rate → 8.9% vs 3.5% (auto's)
- < 18 years \rightarrow over a 10% difference
- Risk of failure 4.4 times higher with allografts

Kaeding 2011, Engelman 2014



MacConkey 2011



ACL R in Pediatrics

Fresh Allografts from Living Donors

Short communication

Living related donor allograft for revision anterior cruciate ligament reconstruction in a child: A case report $\stackrel{\text{tr}}{\approx}$

András Tállay^{a,*}, Mui Hong Lim^a, Hayden G. Morris^b

^a The Melbourne Knee Fellowship, Melbourne, Australia
^b The Park Clinic, Melbourne, Australia

Received 22 November 2007; received in revised form 25 February 2008; accepted 29 March 2008

✓ Single case I2y old lady
✓ Reinjury 4.5 months after ACL R
✓ Parents refusal to the use of allograft
✓ First use of living donor allograft
✓ Good results





2008



ACL R in Pediatrics

No frozen
Nor irradiated
Nor chemically treated



- Big graft diameter
- No donor site morbidity
- Keeps autograft for future

ACL Reconstruction in Pediatrics



Fresh Allografts From Living Donors



Operating Room I Parental ST harvesting Transportation to OR 2 (Vancomycin wrap)





Monllau 2017 (unpublished data)

Our Rationale (PAMI 2015)



		Estimated Remaining Growth		
Bone Age	Technique(s)	cms	Years	
< 10 girls < 12 boys	Extra-articular	> 7cms	> 6	
	All Epiphyseal	> 5cms	> 3-6	
11 – 13 girls 13 – 15 boys	Hybrid technique + LET OR Over the top technique	1 – 5cms	1 - 3	
<u>></u> 14 girls <u>></u> 16 boys	= Adults	< 1cm	< 1	R 123 123 123 123 123 123 123 123 123 123



ACL R in Pediatrics

Fresh Allografts From Living Donors Operating Room 2

Regular ACL R (partial Transphyseal & Over the Top)



Monllau 2017 (unpublished data)

Modified Zarins' Technique



ACL Reconstruction in Pediatrics

Fresh Allografts From Living Donor

- \checkmark Limited series (27 cases)
- \checkmark Partial transphyseal tech
- \checkmark FU 2 to 7y
- \checkmark Good clinical results
- \checkmark No complications
- $\sqrt{2}$ failures (so far)

Behave more like autografts

5y survival rate





5-Year Survival of Pediatric Anterior Cruciate Ligament Reconstruction With Living Donor Hamstring Tendon Grafts

Emma L. Heath,^{*†} MPhty, Lucy J. Salmon,[†] BAppSci (Physio), PhD, Robert Cooper,[‡] PT, Evangelos Pappas,[§] PT, PhD, OCS, Justin P. Roe,[†] MBBS, FRACS, and Leo A. Pinczewski,^{†‡} MBBS, FRACS *Investigation performed at the North Sydney Orthopaedic and Sports Medicine Centre, Wollstonecraft, New South Wales, Australia*









- ACL R in young population high failure rate
- Slightly lower with LDTG
- No donor site morbidity
- Own tendons intact
- No definite answer

22nd ESSKA CONGRESS

Join Us in Prague 20th - 22nd May 2026 esska.org



History Inspires Science

