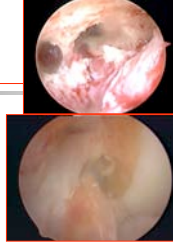


When do I use a Double Bundle ACLR

A. Amendola, MD
University of Iowa



Double bundle ACL

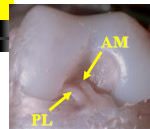
Rationale

- More anatomic
- Restore rotational stability
- ? Clinical efficacy
- ? Difficulty
- ? Complications

Outcome of ACLR

- Post traumatic OA
- Graft failure (7-10%)
- Failure to control instability
 - hyperlax knee (hyperextension)
 - Major meniscal deficiency
 - Repeated failures
 - Partial or minor Rotational instability

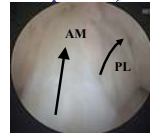
Anatomy of ACL



Fetus 16 weeks (40 specimens)



14 year-old female



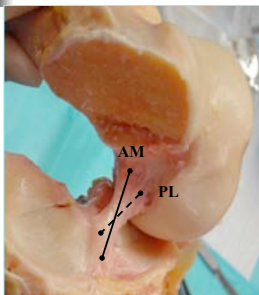
Adult



60 year-old knee

Courtesy of Freddie Fu

ACL Anatomy



ext

flexion

tibia



Laboratory data

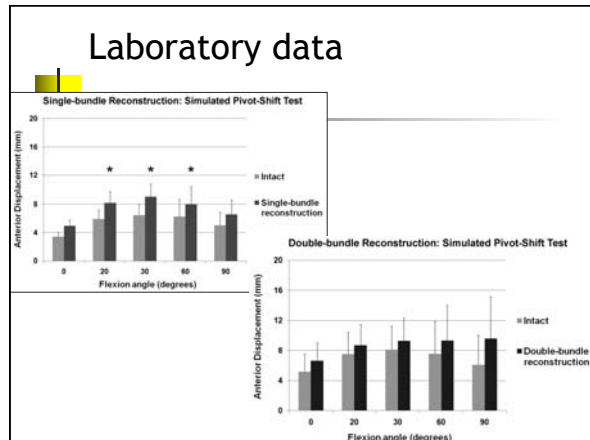
- In contrast to clinical data, many articles demonstrating benefit of DB ACLR
- Improvement in rotational stability
- Attributed to addition of PL bundle

Laboratory data

Comparative Kinematic Evaluation of All-Inside Single-Bundle and Double-Bundle Anterior Cruciate Ligament Reconstruction

A Biomechanical Study

Andrew G. Tsai, MSc, Coen A. Wijdicks, MSc, Michael P. Walsh, MD, and Robert F. LaPrade, MD, PhD



Literature Review

Treatment of Anterior Cruciate Ligament Injuries With Special Reference to Graft Type and Surgical Technique: An Assessment of Randomized Controlled Trials

Kristian Samuelsson, M.D., Daniel Andersson, M.D., and Jön Karlsson, M.D., Ph.D.

Journal of Arthroscopy, Oct 2009

Literature Review con't

- *Double-bundle reconstruction produces less rotatory laxity than single-bundle reconstruction*
- *There were no differences in clinical outcome when single-bundle and double-bundle anterior cruciate ligament reconstructions are compared*
- *Flawed RCT : difficult to make conclusions*

Literature review

Clinical Evaluation of Anatomic Double-Bundle Anterior Cruciate Ligament Reconstruction Procedure Using Hamstring Tendon Grafts: Comparisons Among 3 Different Procedures

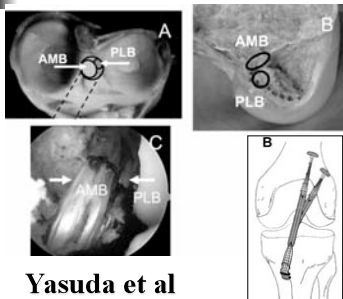
Kazunori Yasuda M.D., Ph.D., Eiji Kondo M.D., Hiroki Ichiyama M.D., Yoshie Tanabe RPT, M.S. and Harukazu Tohyama M.D., Ph.D.

Arthroscopy 2006

Literature review

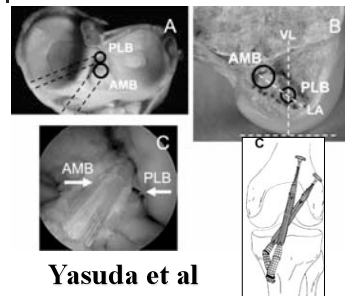
Yasuda et al

Literature review



Yasuda et al

Literature review



Yasuda et al

Literature review Yasuda et al

	1B	Rosenberg	Anatomic
Loss of knee flexion (< 10 degrees)	1 patient	2 patients	1 patient
Loss of knee extension	0	0	1
Pivot shift test (+)	9 patients	5 patients	3 patients
(++)	3	3	0

	The IKDC Evaluation (pts)		
A	10 patients	11 patients	16 patient
B	12	11	8
C	2	2	0
D	0	0	0

Rationale

- ACLR has poorer outcomes with
 - Hyperlax patients with amount of rotational laxity (hyperextension)
 - Revision ACL surgery
 - Collaterals have compensated with some increase in rotational laxity
 - Repeat ACL failure
 - Cause is unclear; alignment and slope are normal

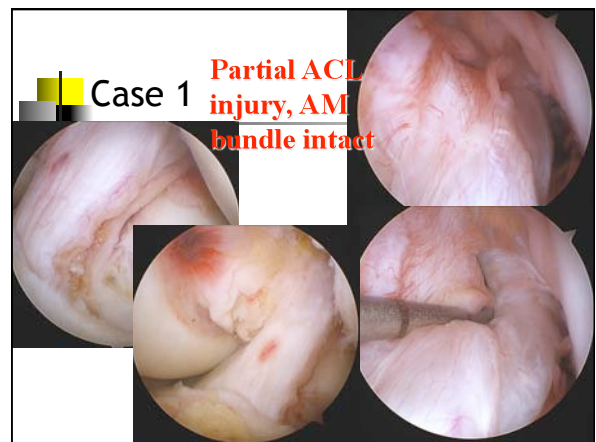
My Indications

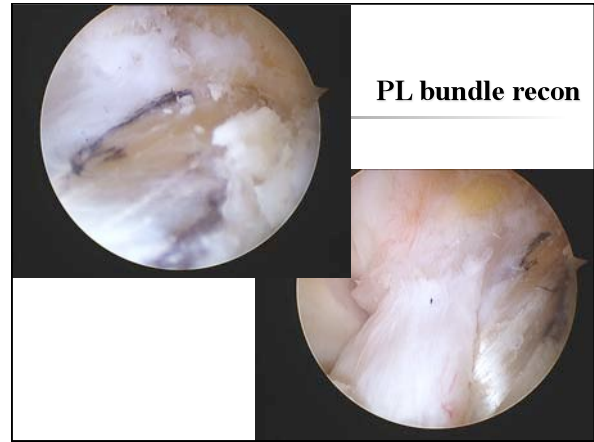
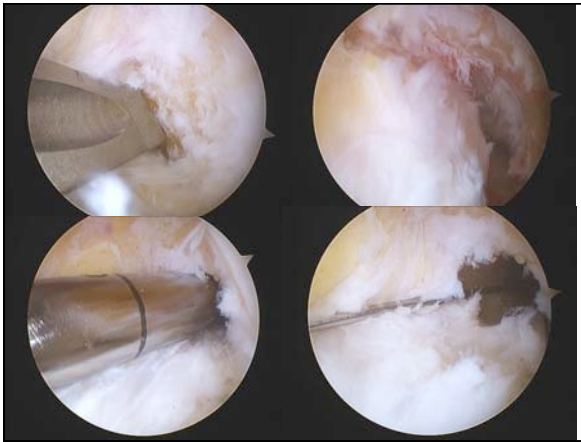
- Hyperlax patients
- Partial ACL injury
- Revision surgery *

* individualize depending on intrarticular findings and stability

Case 1

Partial ACL injury, AM bundle intact





Case 2

- 1 yr post ACLR , pivoting episode, medial meniscal tear
- Gr 2 lachman/Some end point
- MRI : ACL graft intact, vertical

Case 2 con't

Vertical ACL graft intact

ACL graft left in place, ACL revision

Meniscal repair

Double Bundle ACL

■ **Conclusions :**

- Anatomically makes sense
 - Anatomic reconstruction of tibial and femoral footprints
- Helps restore rotational stability
 - Hyperlax knees; chronic with excessive laxity
- ? Clinically superior
 - Needs further investigation

UI Sports Medicine

