

PCL Avulsion: Indications & Open Technique



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Disclosures

Fellowship Support – Arthrex

Fellowship Support – Smith & Nephew

**Associate Editor – Orthopaedic
Journal of Sports Medicine**

**Editorial Board – American Journal of
Sports Medicine**

Editorial Board – Journal of Knee Surg.

Albuquerque, New Mexico

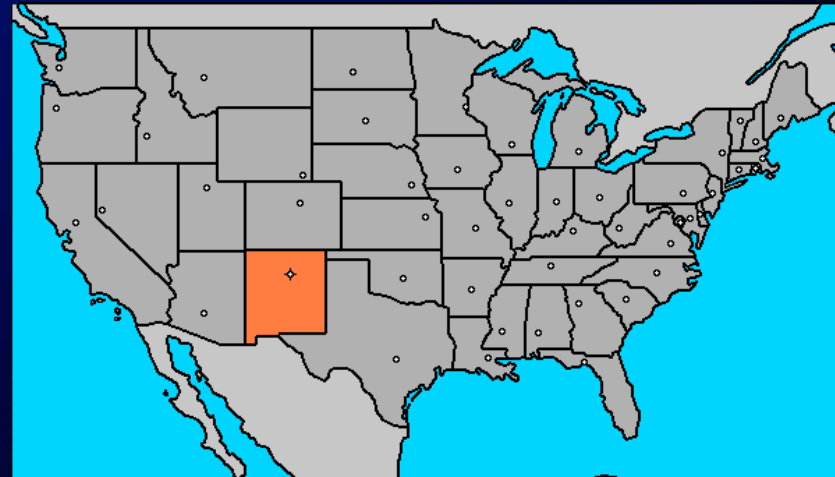
$\frac{1}{2}$ Area of France

High & Dry

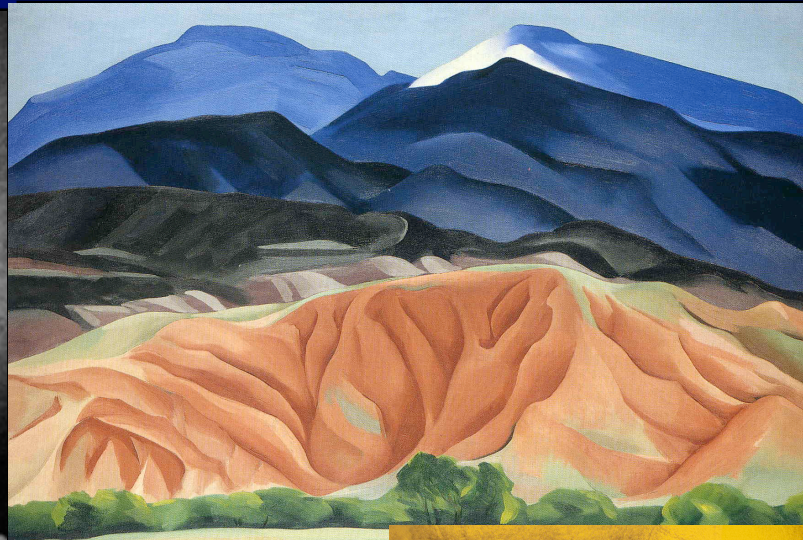
1,800 m 22cm/yr

2 Million People

**Almost 50% in
Albuquerque Area**



New Mexico



My Journey to Val D'Isere

Albuquerque, NM



Lyon



PCL Avulsion

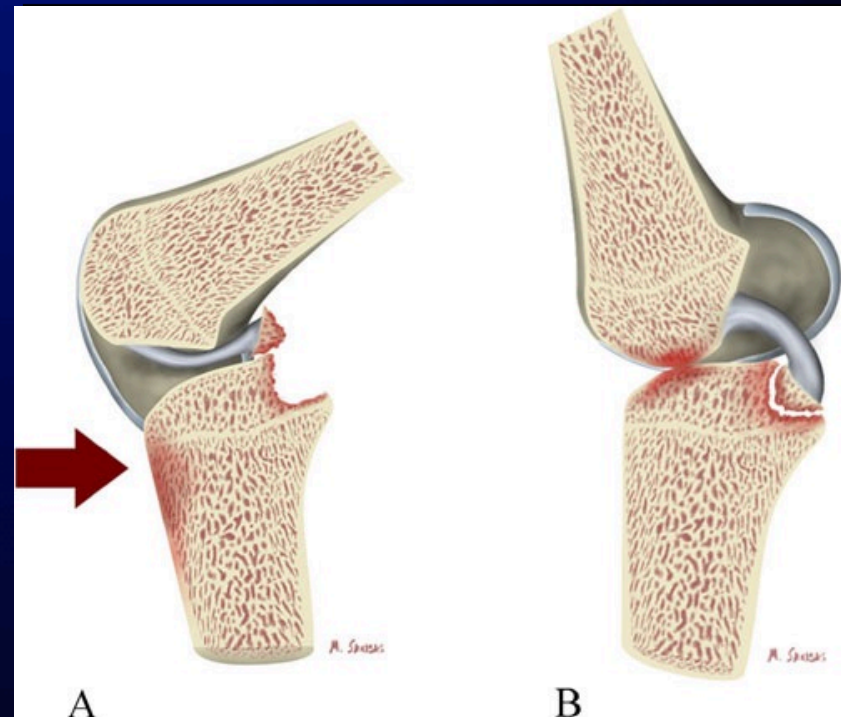
Rare Injuries

Mechanism

MVC

Bicycle

Fall



Meyers, JBJS 1975

Classification

Type I

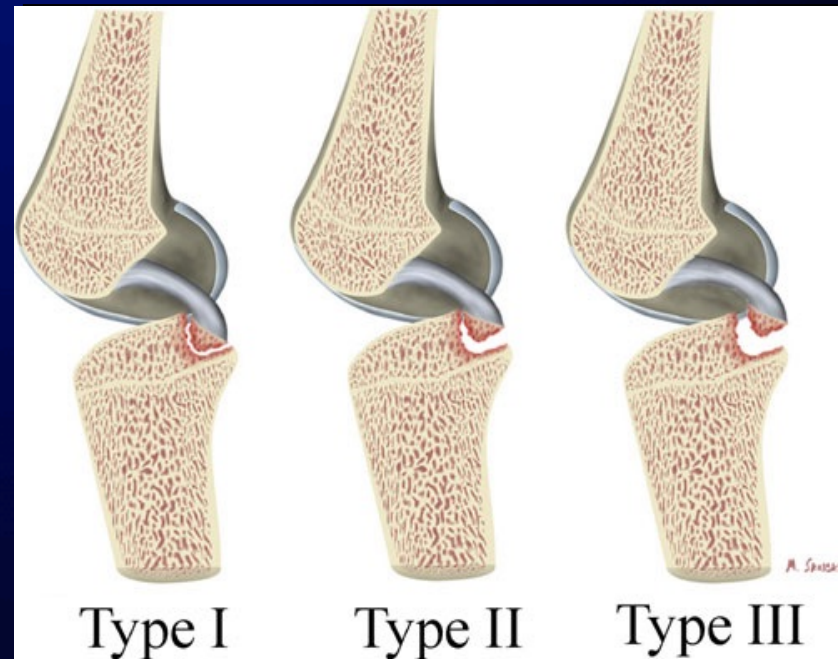
Non-Displaced

Type II

Hinged

Type III

Displaced



White, Emerg Radiol 2013

Diagnosis

Physical Exam

Posterior Drawer

Other Ligaments

Radiographs

A/P

Lateral



Diagnosis

CT Scan

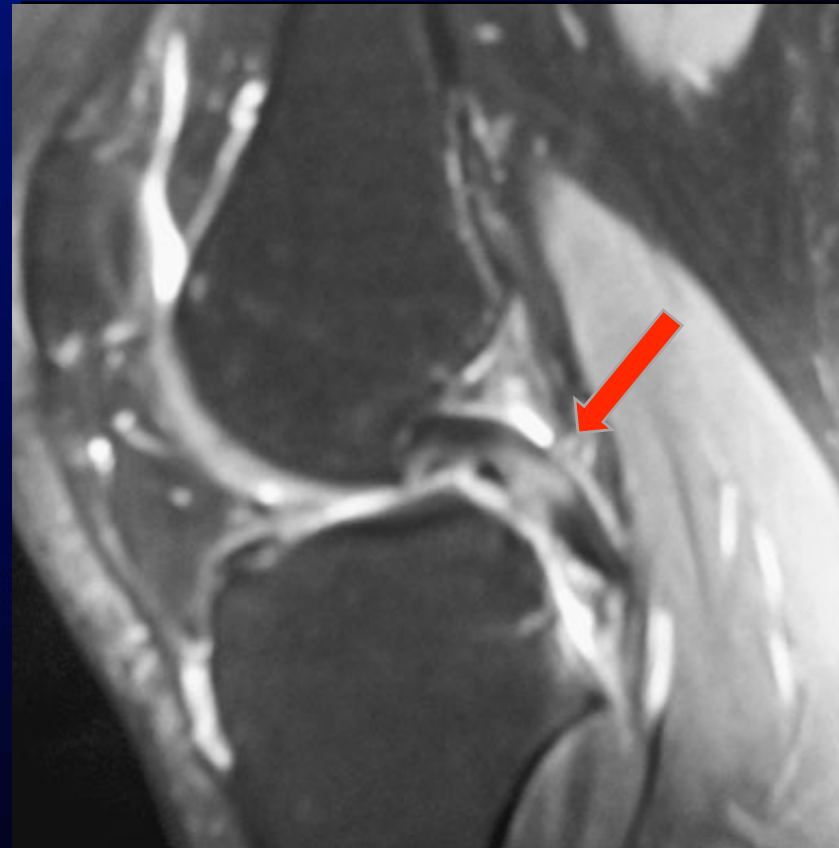
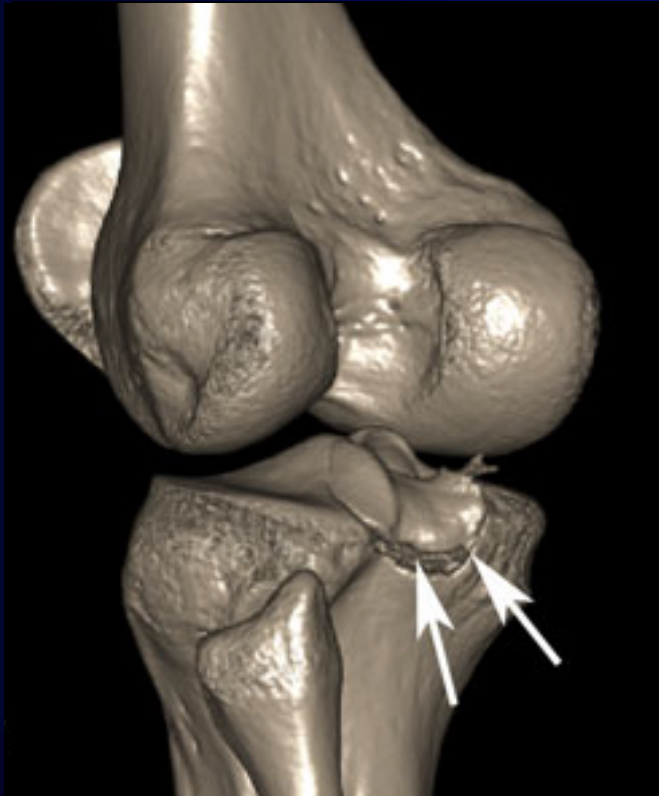
True Size
Comminution

MRI

Occult Injury
Other Ligaments



Diagnosis



Treatment

Non-Operative

4 of 5

“Minimally Displaced”

Went on to

Non-Union

Results of

Acute > Chronic



Meyers, JBJS 1975

Torisu, Clin Orthop 1979

Bali, KSSTA 2012

My Indications

**Fix All
PCL Avulsions
As Soon
As Patient's
Condition
Allows**

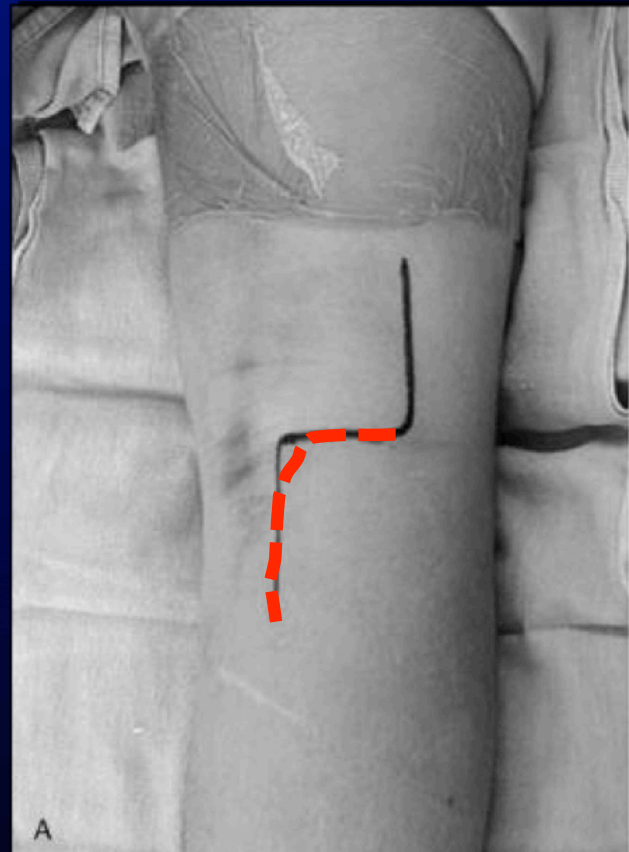


Open Technique

Prone

**Posteromedial
Approach**

**Hockey Stick
Incision**

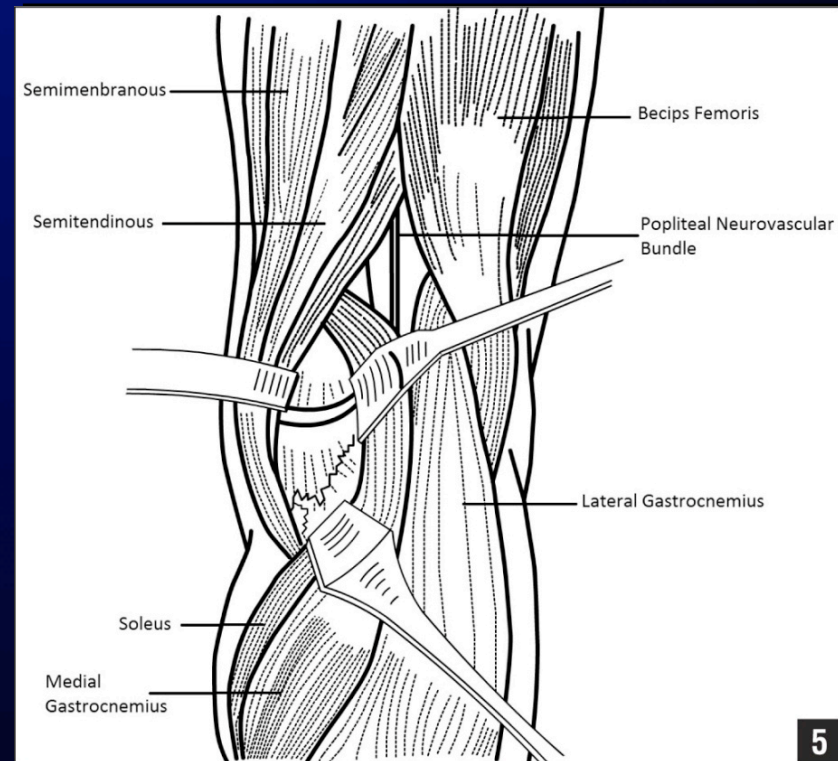


Burks, Clin Orthop 1990

Open Technique

**Develop
Interval Between
Semitendinosus
& Medial Gastroc**

**Retract Gastroc
Medially**



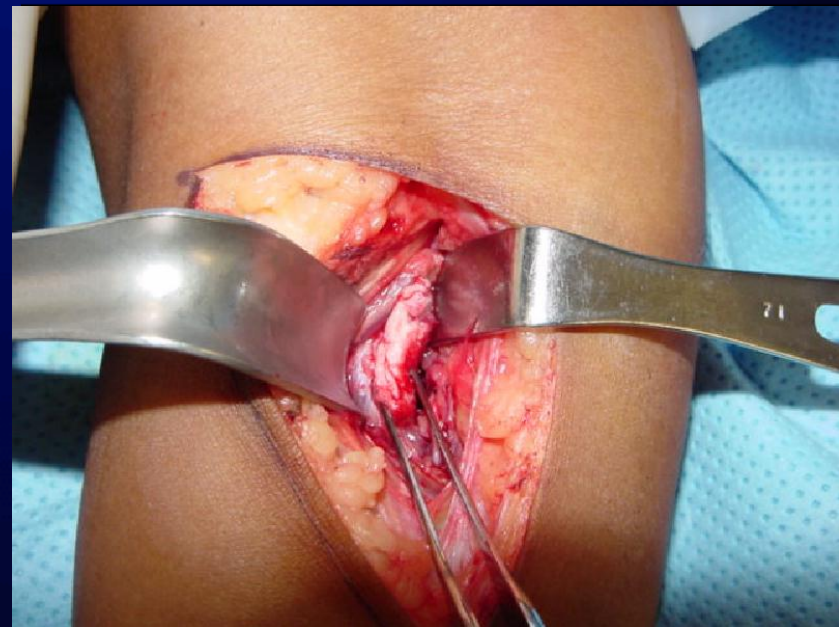
Burks, Clin Orthop 1990

Open Technique

**Posterior
Capsulotomy**

**Mobilize and
Reduce Fragment**

Traction Suture



Open Technique

Fix with Guide Pin
Confirm with C-arm
4.0 mm Cannulated
Screw & Washer
Angled Distally

Tie Suture Around
Screw & Washer



Comminuted Fragment

**Can Pass
Sutures Through
PCL and
Through Drill
Holes in
Proximal Tibia**



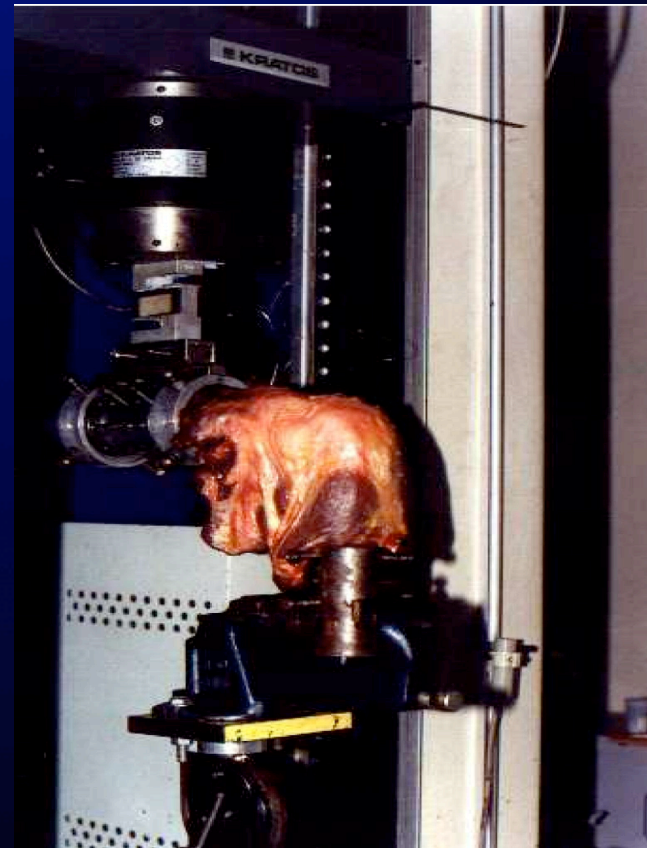
Biomechanics

No Difference Screw Fixation (A) vs Suture Fixation (B)

TABLE 1. *Tibial Posterior Displacement*

	Group A			Group B		
	Intact	Injured	Repaired	Intact	Injured	Repaired
Mean (mm)	9.25	19.21	12.07	10.01	20.13	14.94
Minimum (mm)	4.57	13.79	6.55	6.36	16.32	7.54
Maximum (mm)	13.50	24.54	19.90	13.11	27.91	24.06

NOTE. No statistically significant difference was found between groups A and B ($P = .229$).



Sasaki, Arthroscopy 2007

Pediatric Patients

**Same Approach
But
Keep Screw in
Epiphysis
Use Fluoroscopy**



Rehabilitation

**Brace in Extension
For 2 Weeks**

**Flexion < 90°
For 6 Weeks**

**Then Full Motion
And Strengthening**

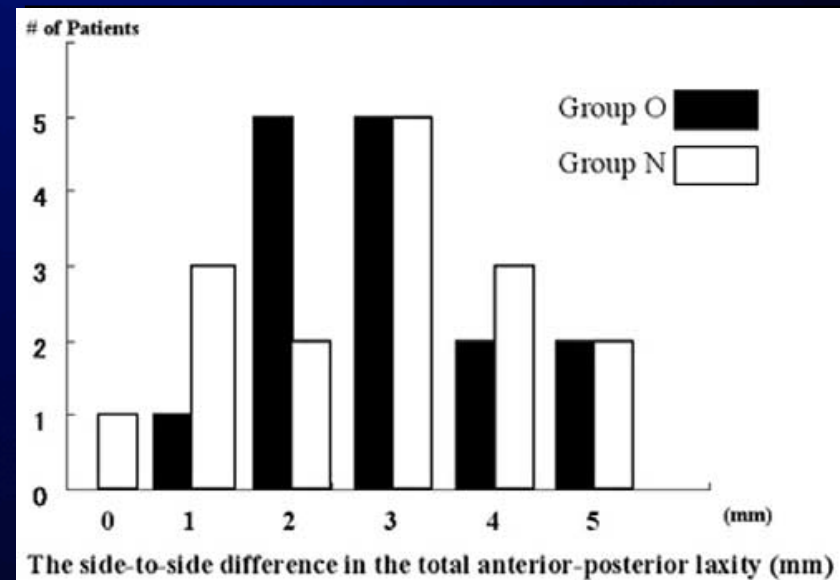


Outcomes

31 Patients

Mean Laxity
3.1 mm

Mean Lysholm
90



Inoue, Am J Sports Med 2004

Outcomes

10 Patients

1+ Drawer	80%
2+ Drawer	20%

Mean MFA = 14
0 (Best) – 100 (Worst)

High ISS Worse

1 Arthrofibrosis



Nicandri, J Ortho Trauma 2008

Outcomes

42 Patients

Good 64%

Fair 29%

Poor 7%

F/U 18 Months

Acute > Chronic



Bali, KSSTA 2011

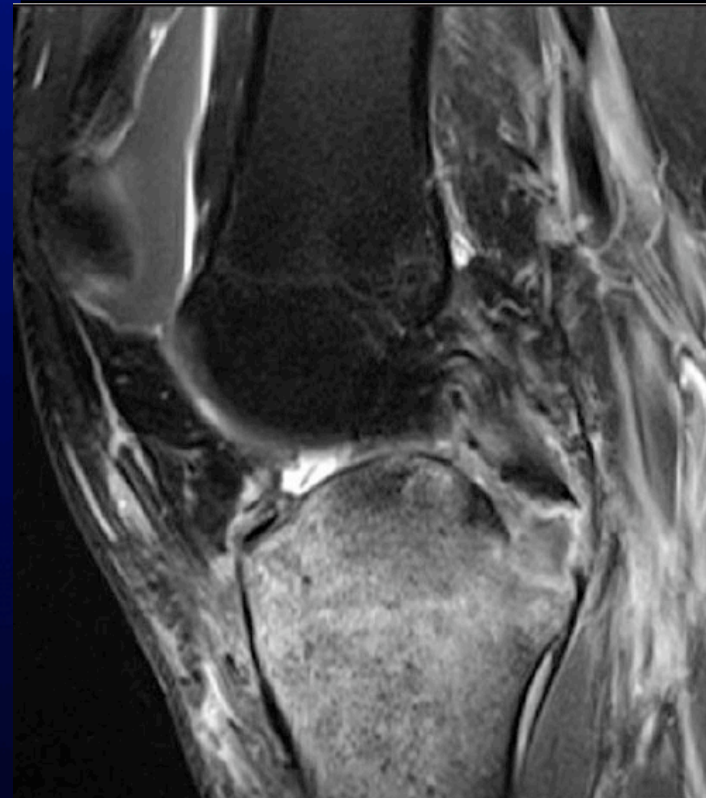
Occult Injury

**No Difference
In Outcomes**

Inoue

Worse Outcomes

Bali



Inoue, Am J Sports Med 2004
Bali, KSSTA 2011

Outcomes

Almost All Heal

1+ Laxity Common

**Good Functional
Results**



Scope vs. Open

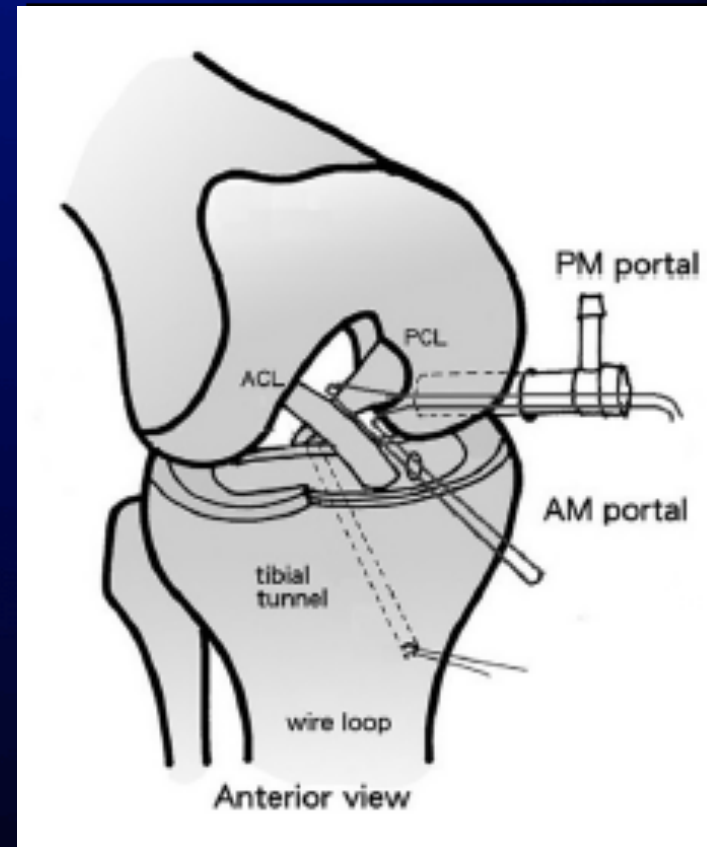
47 Patients

Equal Results
Lysholm

95.3 vs 94.8

0-3 mm Laxity

85% vs 74%



Sabat, Arthroscopy 2016

Why I Prefer Open

Easier

Faster

Cheaper

Equal Results



Thank You !!

