

# Résultats des ligamentoplasties de LCP

Dr Etienne cavaignac



Introduction

Epidémiologie

Complications rapportées

Résultats des Plasties de LCP

Protocoles post-opératoires



# Epidémiologie des lésions du LCP

1,5 % à 13% des traumatismes du genou

Contexte sportif ou AVP

Prédominance masculine 73-97%

Ruptures isolées dans 3,5 % à 18 % des cas



*Chase S et al. PCL Tear : complète, partial, and associated with medial or lateral damage. ESSKA 2016, arthroscopy*

# Epidémiologie des lésions du LCP

Ruptures multi-ligamentaires plus fréquentes

Associant

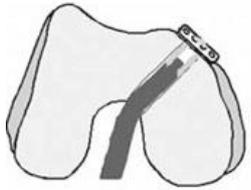
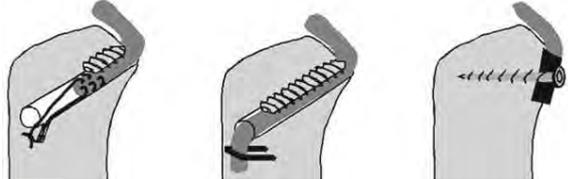
- PCL &**
- LCM 31%**
- LCA 46 %**
- PAPL 62 %**

Rupture : plein corps / désinsertion / fracture-avulsion

Lésions associées : contusions osseuses, lésions méniscales...

*Chase S et al. PCL Tear : complète, partial, and associated with medial or lateral damage. ESSKA 2016, arthroscopy : basic to advanced.*

# Nombreux choix



# Questions ?

- **Femoral tunnel:** single vs double
- **Femoral tunnel:** anatomic vs isometric
- **Tibial tunnel:** trans-tibial vs posterior inlay
- **Posterior portals:** No vs Postero-medial only  
vs both posterolateral and posteromedial
- **PCL remaining tissue:** preservation vs removal
- Single bundle vs double bundle reconstruction

# Complications rapportées

**Vasculaires** : dissection / lésion intimale Art. poplitée

**Nerveuses** : N. Fibulaire commun 12-29%, N. Tibial rare

**Cartilagineuses** : variable selon les séries

\* 11-28% d'Arthrose radiographique en l'absence de traitements chirurgical à 15 ans de recul

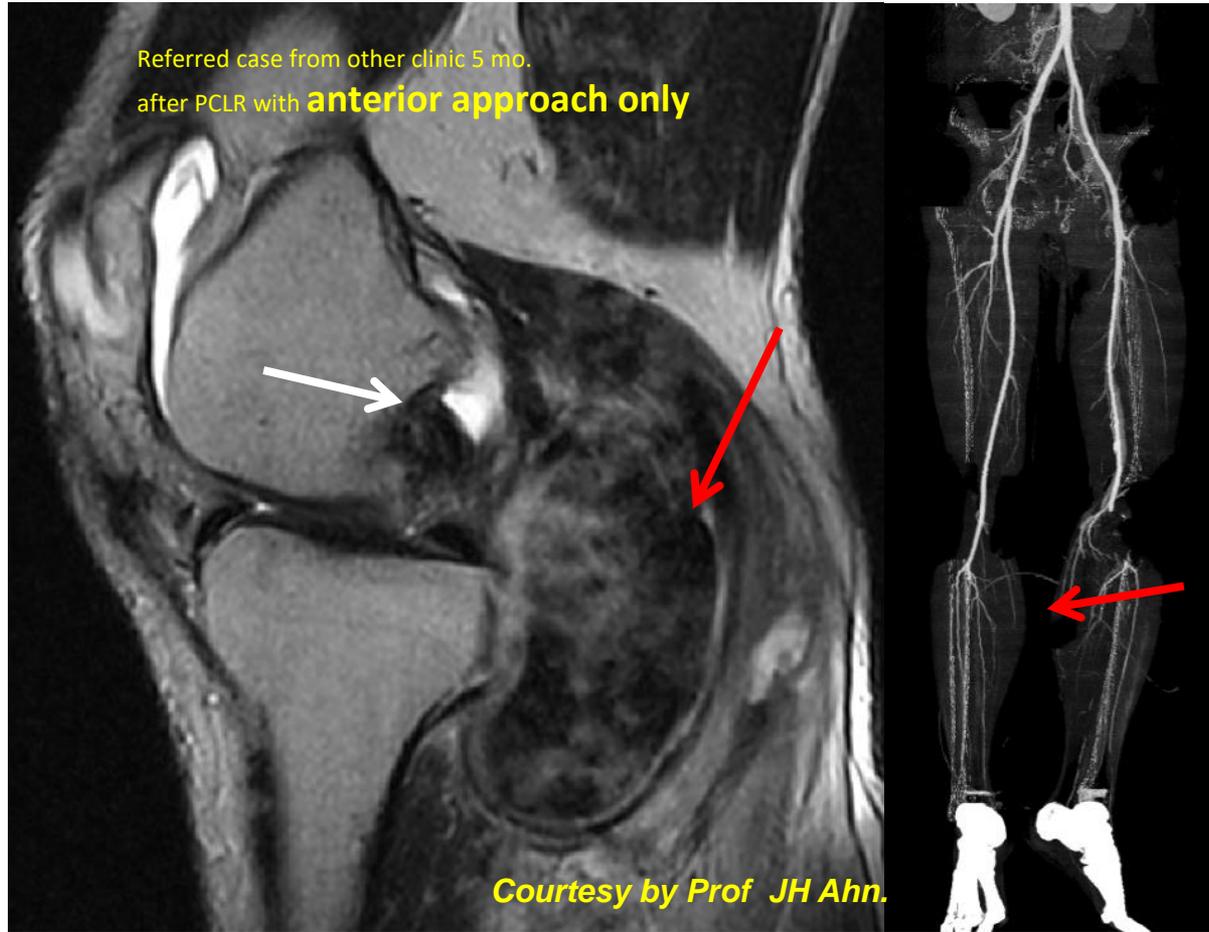
\* 17 -53% en l'absence de chirurgie

\* 36-59% après chirurgie

Pas de #  
Chir VS  
Fonctionnel ?

*Chase S et al. PCL Tear : complète, partial, and associated with medial or lateral damage. ESSKA 2016, arthroscopy : basic to advanced.*

Referred case from other clinic 5 mo.  
after PCLR with **anterior approach only**



*Shahrulazua, A., M. Rafedon, et al. (2014). "Delayed compartment syndrome of leg and foot due to rupture of popliteal artery pseudoaneurysm following posterior cruciate ligament reconstruction." BMJ Case Rep 214.*

# Neurovascular Safety

*AJSM, 2007*



**Increasing the Distance Between the Posterior Cruciate Ligament and the Popliteal Neurovascular Bundle by a Limited Posterior Capsular Release During Arthroscopic Transtibial Posterior Cruciate Ligament Reconstruction**

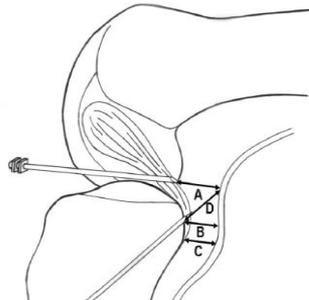
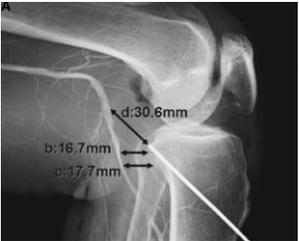
**A Cadaveric Angiographic Study**

Jin Hwan Ahn,\* MD, Joon Ho Wang,<sup>††</sup> MD, Sang Hak Lee,\* MD, Jae Chul Yoo,\* MD, and Woo Joo Jeon,<sup>‡</sup> MD  
 From the \*Department of Orthopaedic Surgery, Sungkyunkwan University School of Medicine, Samsung Medical Center, Seoul, Korea, and the <sup>†</sup>Department of Orthopaedic Surgery, Korea University School of Medicine, Ansan Hospital, Gyeonggi-do, Korea

- 10 cadaveric knee
- Angiographic lateral radiographs
- **Relationship & Distances between popliteal a. ~ PCL**

**Popliteal a. ~ Spinal needle : 22.8 mm**

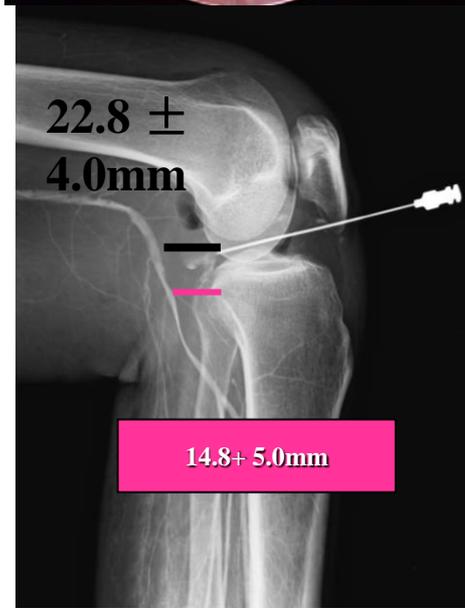
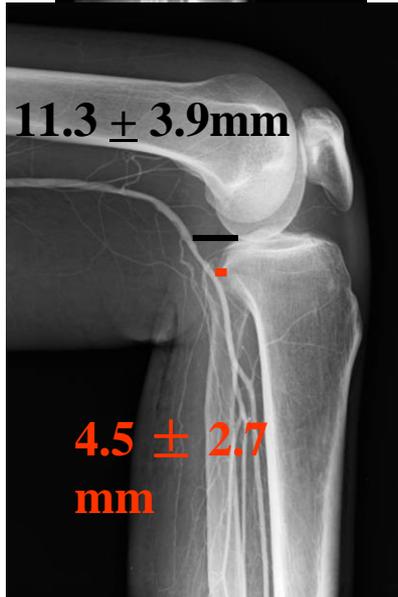
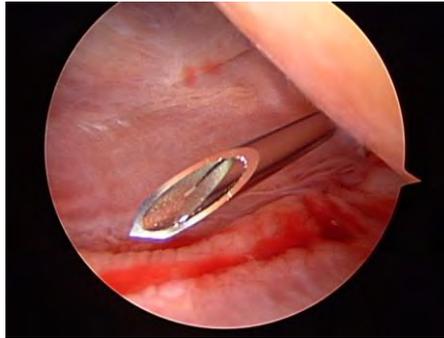
**Popliteal a. ~ Guide pin : 14.7 mm**

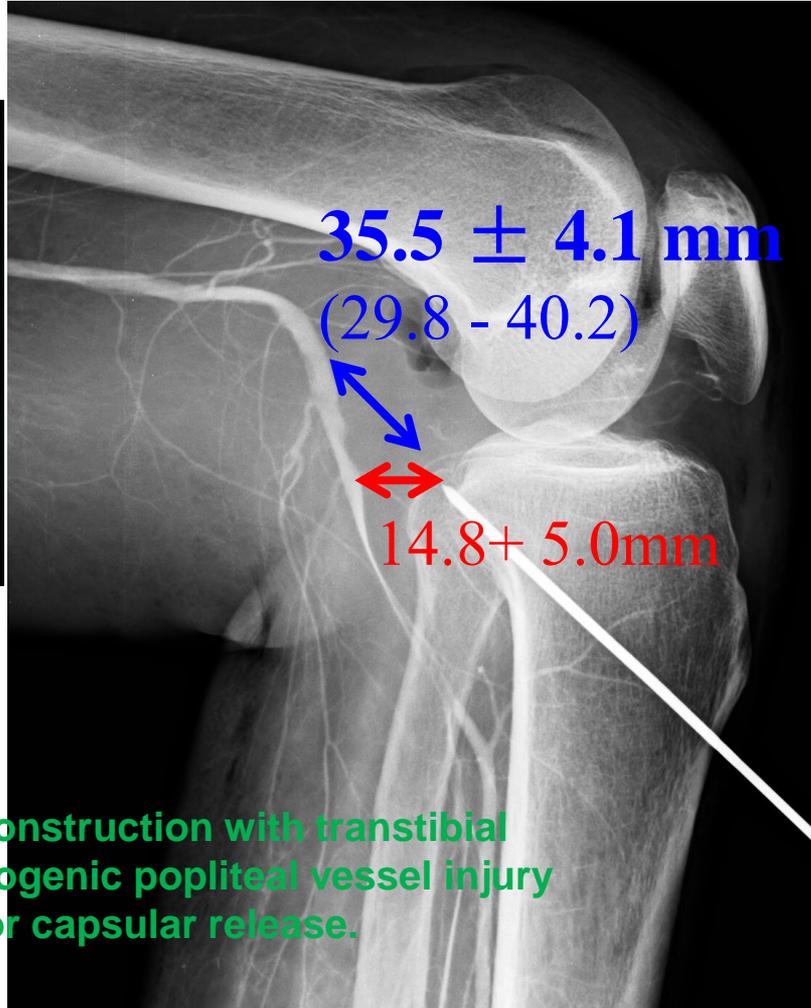


**Figure 4.** Four parameters (A-D) were measured on angiography. Parameter A was the distance from the popliteal artery to the spinal needle, Parameter B was the distance from the popliteal artery to the center of the depression, to which the PCL guide pin was aimed, Parameter C was the distance from the popliteal artery to the lower end of the depression, Parameter D was the distance from the popliteal artery to the guide pin.

**TABLE 1**  
 Measurement Results for the PCL and the Popliteal Artery<sup>a</sup>

Parameter	Extension	Flexion	Pump Injection	PTS Portal	Posterior Release	Pin Insertion
A		11.3 ± 3.9	17.6 ± 4.0 <sup>b</sup>	18.4 ± 2.8	22.8 ± 4.0	23.0 ± 5.0
B	3.4 ± 2.2	4.4 ± 3.2	7.3 ± 4.3	7.9 ± 4.0	14.7 ± 4.1 <sup>c</sup>	14.7 ± 4.7
C	5.1 ± 2.8	4.5 ± 2.7	5.9 ± 4.5	7.3 ± 5.0	14.8 ± 5.0 <sup>d</sup>	14.8 ± 5.7





During arthroscopic PCL reconstruction with transtibial tunnel technique, risk of iatrogenic popliteal vessel injury could be reduced by posterior capsular release.

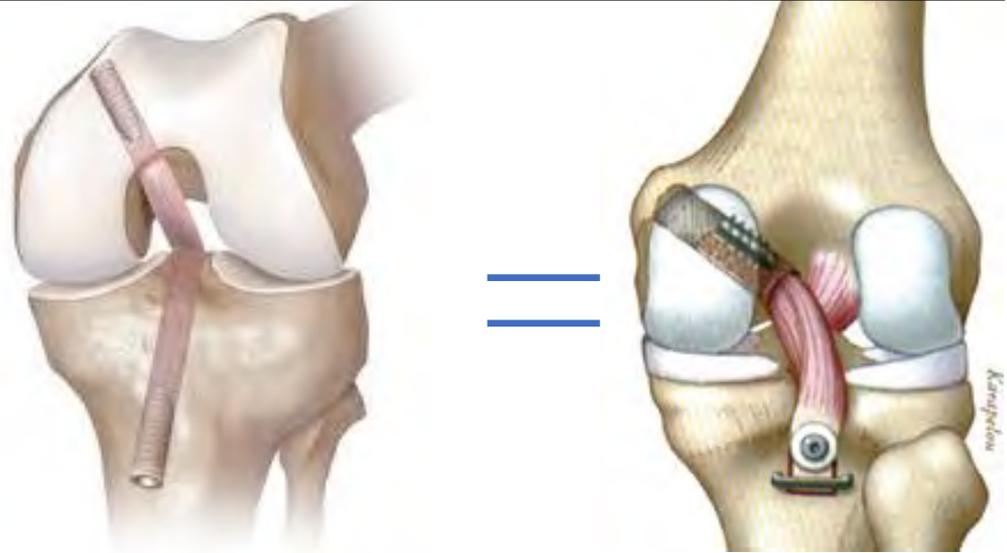
# FIXATION TIBIALE

## Tunnel trans-tibial VS Inlay

- Revue lit
- 7 études
- 149 TT vs 148 inlay
- PROM, laximétrie

**No Clinically Important Difference in Knee Scores or Instability Between Transtibial and Inlay Techniques for PCL Reconstruction: A Systematic Review**

Young-Soo Shin MD, Hyun-Jung Kim MPH, PhD, Dae-Hee Lee MD, PhD



Aucune différence : Laxité postérieure , Lysholm, Tegner

# Reconstruction du LCP

## Autogreffe

IJ	72%
BPTB	16 %
TQ	12%



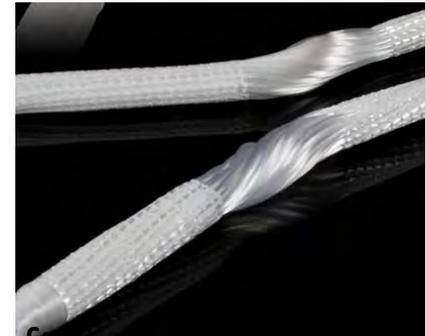
## Allogreffe

Achille  
BPTB, TQ, I...



## Greffe synthétique

LARS



Joshua L. Hudgens et al., « Allograft versus Autograft in Posterior Cruciate Ligament Reconstruction: An Evidence-Based Systematic Review », *The Journal of Knee Surgery* 26,

# Greffe Idéale de LCP ?



Propriétés structurales identiques au LCP

Forme géométrique identique au LCP

Pas de problème sur le site donneur

Insertion facile de la greffe au travers des tunnels osseux

Greffe permettant une fixation sécurisée de manière anatomique

Incorporation et ligamentisation faciles et rapides de la greffe

# Avantages / Inconvénients des greffes

Type de transplant	Avantages	Inconvénients
Rotulien os-tendon-os homolatéral	Pas de rejet Fixation os-os Solidité	Morbidité du site donneur affaiblissement de l'appareil extenseur Problème de démarche (2-3 semaines) Problème de longueur
Rotulien os-tendon-os controlatéral	Idem précédent + moindre morbidité du genou « réparé »	Morbidité du site donneur Problème de démarche (2-3 semaines) Problème de longueur
Tendon quadricipital	Pas de rejet Moindre morbidité du site donneur	Affaiblissement de l'appareil extenseur Problème de longueur Fixation hybride os-os/os-tendon
Ischiojambiers 4 faisceaux	Solide si tendus correctement Faible morbidité Pas de problème de longueur	Faible si tendu séparément Fixation os-tendon
Allogreffe Achille	Pas de morbidité Cheville osseuse ( <i>bulk</i> ) Force Longueur	Réponse immunitaire (> 50 % Harner) Rejet aigu (1 sur 20 ou 30) Transmission de maladie?
Allogreffe de tendon rotulien	Idem précédent Fixation	Réponse immunitaire, rejet, transmission de maladies? Fusion osseuse retardée
Ligaments artificiels	Morbidité = 0 Position isométrique nécessaire 2 faisceaux	Rupture Hydarthrose

# Résultats des plasties de LCP

## Ligament synthétique

- 2019
- rétrospective
- Recul 10 ans
- 33 patients
- LARS 2 Fx



Posterior cruciate ligament reconstruction implemented by the Ligament Advanced Reinforcement System over a minimum follow-up of 10 years

Liang-Yu Chiang<sup>a,b,c</sup>, Cheng-Hung Lee<sup>a,d</sup>, Kwok-Man Tong<sup>e</sup>, Shun-Ping Wang<sup>a</sup>, Kun-Tsan Lee<sup>a</sup>, Wen-Chen Tsai<sup>f</sup>, Chao-Ping Chen<sup>a,f,g,\*</sup>

Tegner 6

Lysholm & IKDC 90

7% arthrose

SSD 4 mm

Résultats comparables aux autres types de greffes

Intérêt dans les reconstructions multi-ligamentaires

# Résultats des plasties de LCP ligament synthétique

- ▶ Revue systématique
- ▶ Arthroscopy 2015
- ▶ Synthétique LCA et LCP
- ▶ 85 articles
- ▶ 120 LARS LCP

## Synthetic Devices for Reconstructive Surgery of the Cruciate Ligaments: A Systematic Review

Lachlan M. Batty, M.B.B.S., Cameron J. Norsworthy, F.R.A.C.S.,  
Nicholas J. Lash, F.R.A.C.S., Jason Wasiak, M.P.H., Anneka K. Richmond, B.Sc., and  
Julian A. Feller, F.R.A.C.S.

**Table 2.** Complications

Device	Ligament	Failure* (n)	Revision* (n)	Noninfective Effusion/Synovitis* (n)
LARS	ACL	2.0% (1 of 49)	2.0% (1 of 49)	0.2% (1 of 49)
	PCL	1% (1 of 99)	0% (0 of 120)	1.2% (1 of 79)
Kennedy LAD	ACL	13.9% (180 of 1,364)	3.5% (13 of 368)	4.7% (38 of 813)
	PCL	NR	NR	NR
Leeds-Keio I	ACL	16.8% (60 of 356)	8.8% (19 of 215)	7.2% (13 of 179)
Leeds-Keio II	ACL	7.7% (1 of 13)	7.7% (1 of 13)	0% (0 of 13)
Dacron	ACL	33.6% (168 of 499)	11.7% (48 of 409)	6.3% (23 of 366)
Gore-Tex	ACL	12.9% (59 of 475)	10.7% (46 of 428)	27.6% (103 of 387)
	PCL	NR	NR	NR
Trevira-Hochfest	ACL	9.8% (26 of 265)	11.8% (25 of 211)	2.3% (5 of 214)
	PCL	16.7% (2 of 12)	0% (0 of 12)	NR

**Pas de comparaison efficacité**  
**AIGUE +++**

**Meilleur résultat avec LARS**  
**Faible taux de complications**

# Résultats des plasties de LCP

## Type autogreffe

- ▶ Symposium SFA 2005
- ▶ Rétrospective multicentrique 105 patients
- ▶ Mesure TELOS
- ▶ 4 ans de recul

[Rev Chir Orthop Reparatrice Appar Mot. 2005 Dec;91\(S8\):43-54.](#)

**["Isolated" injury of the posterior cruciate ligament. Surgical treatment of isolated posterior cruciate ligament tears: a multicentric retrospective study of 103 patients].**

[Article in French]

[Badet R<sup>1</sup>](#), [Chambat P](#), [Boussaton M](#), [Bousquet V](#), [Chassaing V](#), [Cucurulo T](#), [Djian P](#), [Franceschi JP](#), [Potel JF](#), [Siegrist O](#), [Sbihi A](#), [Cerciello S](#); et la Société Française d'Arthroscopie.

Quelque soit le type de greffe

Absence de différence en terme de laxité résiduelle

# Résultats des plasties de LCP :

## Type de greffe

- ▶ Revue de la littérature
- ▶ Incluant 19 études
- ▶ Allo & autogreffes

### Allograft Versus Autograft in Posterior Cruciate Ligament Reconstruction: An Evidence-Based Systematic Review

Joshua L. Hudgens, MD<sup>1</sup> Blake P. Gillette, MD<sup>1</sup> Aaron J. Krych, MD<sup>1</sup> Michael J. Stuart, MD<sup>1</sup>  
Jedediah H. May, MD<sup>1</sup> Bruce A. Levy, MD<sup>1</sup>

**Pas de différence non plus en terme de résultats cliniques et fonctionnels**

# Résultats des plasties de LCP intégration

Am J Sports Med. 2012 Sep;40(9):2052-60. doi: 10.1177/0363546512454532. Epub 2012 Aug 8.

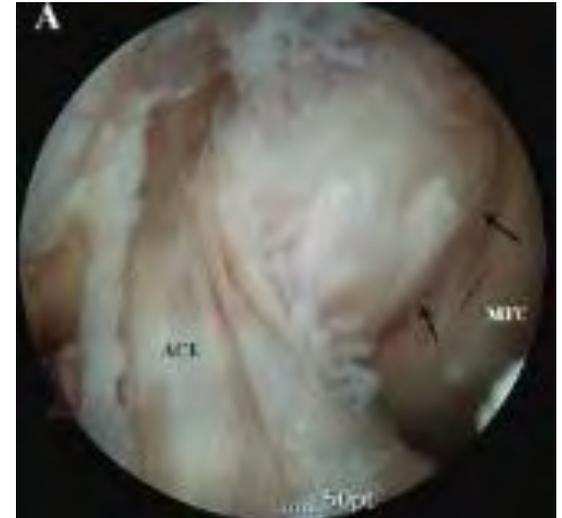
**Second-look arthroscopic assessment of arthroscopic single-bundle posterior cruciate ligament reconstruction: comparison of mixed graft versus achilles tendon allograft.**

Yang JH<sup>1</sup>, Yoon JR, Jeong HI, Hwang DH, Woo SJ, Kwon JH, Nha KW.

- Cohorte prospective
- 60 patients
- Recul de 2 ans
- 2<sup>nd</sup> look arthroscopique

**Défaut intégration des allogreffes**

**Privilégier autogreffe**



# Résultats des plasties de LCP :

## Type de greffe

- ▶ Revue de la littérature
- ▶ Incluant 25 études
- ▶ Comparaison autogreffe
- ▶ Arthroscopy 2018

### Influence of Graft Source on Postoperative Activity and Joint Laxity in Posterior Cruciate Ligament Reconstruction: A Systematic Review

Abdus Samad Ansari, M.B.Ch.B., M.Sc., Brittany B. Dennis, B.A., Ph.D., Nolan S. Horner, M.D., Ming Zhu, M.Sc., Charlotte Brookes, M.Sc., Moin Khan, M.D., M.Sc., F.R.C.S.C., and John A. Grant, M.D., Ph.D., F.R.C.S.C., Dip.Sport.Med.

**Pas de différence en fonction choix autogreffe**  
**Résultat PROM amélioré dans tous les cas**  
**Morbidité propre au choix auto**

# Résultats des plasties de LCP

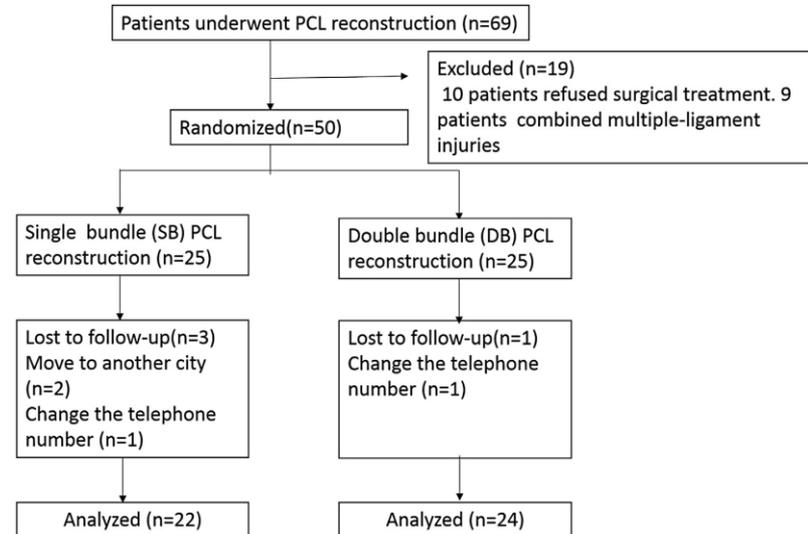
## Plastie 1 VS 2 Fx

*Arthroscopy*. 2014 Jun;30(6):695-700. doi: 10.1016/j.arthro.2014.02.035. Epub 2014 Apr 14.

### Comparison of single-bundle and double-bundle isolated posterior cruciate ligament reconstruction with allograft: a prospective, randomized study.

Li Y<sup>1</sup>, Li J<sup>1</sup>, Wang J<sup>1</sup>, Gao S<sup>1</sup>, Zhang Y<sup>2</sup>.

- ▶ RCT
- ▶ Score **IKDC**, Lysholm, Tegner
- ▶ **Laximétrie**
- ▶ 2 ans de recul



**DB > SB laxité post**

**Allogreffe**

# Résultats des plasties de LCP

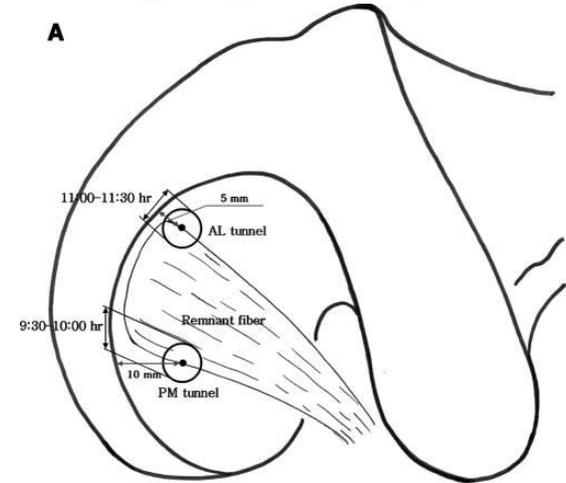
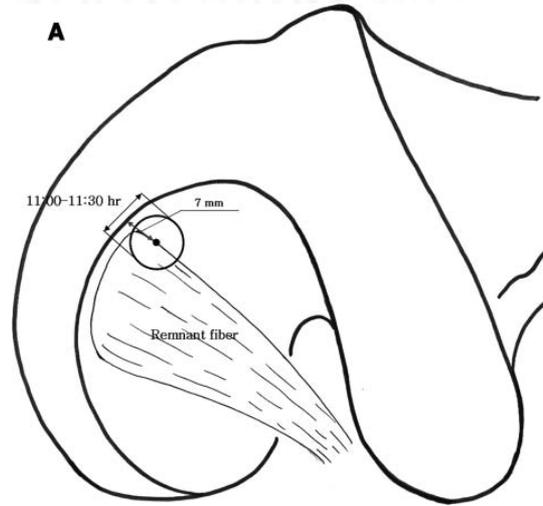
## Plastie 1 VS 2 Fx

*Am J Sports Med.* 2011 Mar;39(3):474-80. doi: 10.1177/0363546510382206. Epub 2010 Nov 23.

**A prospective randomized study comparing arthroscopic single-bundle and double-bundle posterior cruciate ligament reconstructions preserving remnant fibers.**

Yoon KH<sup>1</sup>, Bae DK, Song SJ, Cho HJ, Lee JH.

- ▶ RCT
- ▶ Score **IKDC**, Lysholm, Tegner
- ▶ **Laximétrie**
- ▶ 2 ans de recul



Supériorité relative des plasties à 2 faisceaux

Allogreffe

# Résultats des plasties de LCP

## Plastie 1 VS 2 Fx

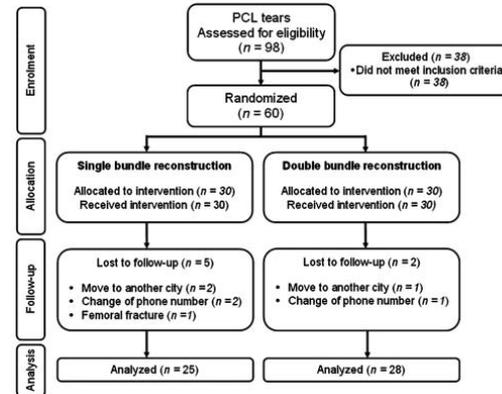
Am J Sports Med. 2011 Mar;39(3):474-80. doi: 10.1177/0363546510382206. Epub 2010 Nov 23.

**A prospective randomized study comparing arthroscopic single-bundle and double-bundle posterior cruciate ligament reconstructions preserving remnant fibers.**

Yoon KH<sup>1</sup>, Bae DK, Song SJ, Cho HJ, Lee JH.

**TABLE 4**  
International Knee Documentation Committee Grade  
at Last Follow-Up: n (%)

Grade	Single-Bundle Group	Double-Bundle Group
A	6 (24)	15 (54)
B	12 (48)	9 (32)
C	6 (24)	4 (14)
D	1 (4)	0 (0)



Supériorité relative des plasties à 2 faisceaux

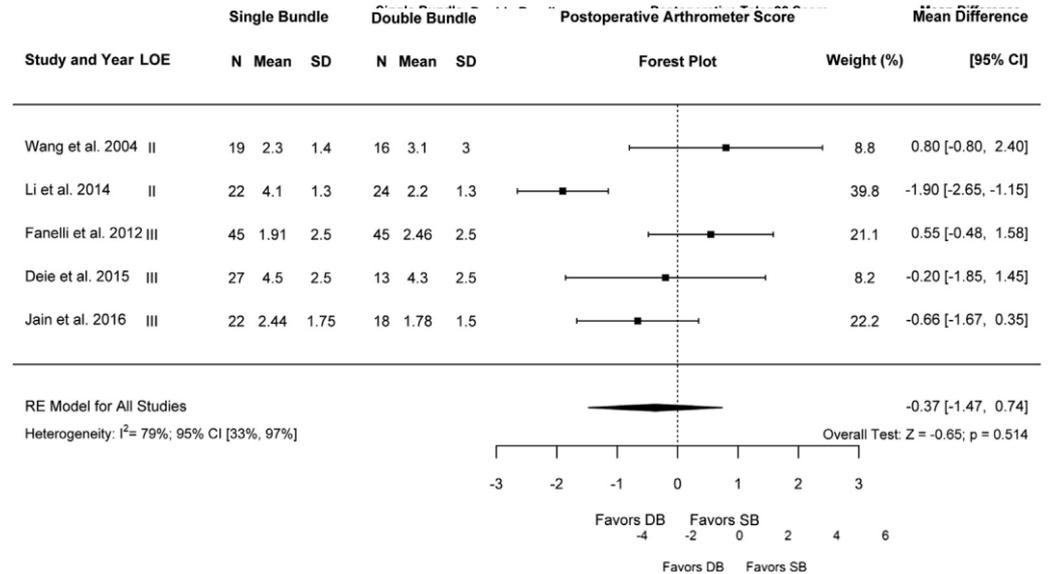
Allogreffe

# Résultats des plasties de LCP : DB / SB

Single-Bundle and Double-Bundle Posterior Cruciate Ligament Reconstructions: A Systematic Review and Meta-analysis of 441 Patients at a Minimum 2 Years' Follow-up

Jorge Chahla, M.D., Ph.D., Gilbert Moatshe, M.D., Mark E. Cinque, B.S., M.S., Grant J. Dorman, M.Sc., Justin J. Mitchell, M.D., Taylor J. Ridley, M.D., and Robert F. LaPrade, M.D., Ph.D.

- ▶ Revue de la littérature / MA
- ▶ Incluant 11 études
- ▶ Arthroscopy 2017
- ▶ 332 SB VS 209 DB
- ▶ 3 RCT



**Pas différence , laxité , PROM pour analyse globale**  
**Différence laxité Post seulement TELOS 90°avec RCT**  
**DB = SB**

# Résultats des plasties de LCP : Préservation du remnant

- ▶ Revue de la littérature
- ▶ Incluant 11 études
- ▶ Pas de déficience claire remnant
- ▶ Arthroscopie 2015
- ▶ 294 avec conservation Vs 63 sans préservation

## Clinical Outcome of Posterior Cruciate Ligament Reconstruction With and Without Remnant Preservation

Jae-Gwang Song, M.D., Hyun-Jung Kim, M.P.H., Jae Hwi Han, M.D., Nikhl N. Bhandare, M.D., Gautam M. Shetty, M.D., Seung-Baik Kang, M.D., Young Woong Song, M.D., and Kyung Wook Nha, M.D.

*KT-1000.* The mean side-to-side differences in posterior translation on KT-1000 (MEDmetric, San Diego, CA) testing were measured in 4 studies on remnant-preserving PCLR and 3 studies on standard PCLR. At final follow up, the ranges of mean postoperative side-to-side differences were 0.7 to 2.8 mm in patients who underwent remnant-preserving PCLR and 1 to 3.5 mm in patients who underwent standard PCLR.

**Laxité légèrement meilleure avec préservation**

**Reste id**

# Protocoles post-opératoires

Enjeux = tiroir postérieur résiduel, déficit en flexion

Attelle de posture ≈ 3S-3M (genou multiligamentaire ++)

## Protocole **5 phases**

- **Pas appui S1, partiel S2, complet S3**
- **Regain des amplitudes S3-S6**
- **S6 début Proprioception**

## Retour au sport à 9 mois



-John Nyland,, « Double-Bundle Posterior Cruciate Ligament Reconstruction with Allograft Tissue: 2-Year Postoperative Outcomes », *Knee Surgery, Sports Traumatology, Arthroscopy*:

Casey M. et al., « Posterior Cruciate Ligament Tears: Functional and Postoperative Rehabilitation », *Knee Surgery, Sports Traumatology, Arthroscopy: Official Journal of the ESSKA* 21,

# Protocoles post-opératoires

## Programme détaillé

++++

Time following injury	Specific protocol
	<p>Continue exercises as weeks 1-4.</p> <p>Gastrocnemius and light hamstring stretching.</p> <p>Leg press limited to 0-70° of knee flexion (Fig. 5).</p> <p>Squat progression (squat → squat with half raise → squat with weight shift).</p> <p>Static lunge (Fig. 3).</p> <p>Hamstring bridges on ball with the knee extended (Fig. 4).</p> <p>Progressive resistance stationary bike.</p> <p>Light kicking in pool.</p> <p>Incline treadmill walking (1-12% incline).</p> <p>Single leg dead lift with the knee extended (Fig. 5).</p> <p>Proprioceptive and balance exercises.</p>
Phase III 15-18 weeks after injury	<p><b>Brace</b></p> <p>Discontinue PCL Jack brace.</p> <p><b>Goals</b></p> <p>Reps and set structure to emphasize muscular strength development.</p> <p>Progress ROM strength to beyond 70° knee flexion.</p> <p><i>Isolated hamstring exercises may begin after week 17.</i></p> <p>Prepare athlete for sport-specific activity.</p> <p><b>Therapeutic exercise</b></p> <p>Double leg press with progression to single leg (Fig. 2).</p> <p>Single leg knee bends.</p> <p>Balance squat (Fig. 6).</p> <p>Single leg dead lift (Fig. 5).</p> <p>Single leg bridges starting thorax week 16 (Fig. 7).</p> <p>Continue bike and treadmill walking.</p> <p><b>Running</b></p> <p>Running is allowed once the patient has demonstrated sufficient strength and stability with functional exercise and quadriceps graft is greater than or equal to 90% compared to the contralateral normal side.</p> <p><b>Outlines:</b></p> <p>Week 1: 4 min walk; 1 min jog for 15-20 min</p> <p>Week 2: 3 min walk; 2 min jog for 20 min</p> <p>Week 3: 2 min walk; 3 min jog for 20 min</p> <p>Week 4: 1 min walk; 4 min jog for 20 min</p> <p>Once running progression is completed, continue single plane agility with progression to multi-planar agility.</p> <p><b>Classical examination under PCL:</b> stress radiographs to objectively verify healing of PCL after week 15.</p> <p>Caution: exercises and protocol from weeks 13-18.</p> <p>Set and rep structure to emphasize muscular power development (3 sets of 4-8 reps).</p> <p><b>Sport-specific agility exercises</b></p> <p>Non-contact return to play following clearance by the operating physician.</p> <p>Full contact return to play when specific return to sports criterion met:</p> <p>Full active ROM</p> <p>Greater than 85-90% normal quadriceps strength</p> <p>No evidence of instability or giving way</p> <p>Greater than 90% function on return to sports conditioning</p> <p>Athlete is mentally ready to return to sport and not timid or fearful of re-injury</p>
Phase IV 19 + weeks after injury	

Knee Surg Sports Traumatol Arthrosc  
DOI 10.1007/s00167-012-1970-1

KNEE

## Posterior cruciate ligament tears: functional and postoperative rehabilitation

Casey M. Pierce · Luke O'Brien · Laurie Wohlt Griffin · Robert F. LaPrade

Table 3 Operative PCL rehabilitation protocol

Time following surgery	Specific protocol
Phase I 0-6 weeks after injury	<p><b>Precautions</b></p> <p>PRICE (Protect, Rest, Ice, Compress, Elevate) protocol</p> <p>Avoid hyperextension (12 weeks)</p> <p>Prevent posterior tibial translation (12 weeks)</p> <p><i>Isolated hamstring exercises should be avoided for 4 months.</i></p> <p>Weight bearing</p> <p>Non-weight bearing with crutches (6 weeks)</p> <p>Range of motion (ROM)</p> <p>Passive positive ROM from 0° to 90° (Fig. 1) (for the first 2 weeks, then progress to full ROM as tolerated)</p> <p><b>Brace</b></p> <p>Immobilizer brace (3 days) in extension until patient can transition into Jack PCL brace</p> <p>PCL Jack brace to be worn at all times, including rehabilitation and sleep (minimum of 24 weeks)</p> <p><b>Goal</b></p> <p>PCL ligament graft protection</p> <p>Outlets reduction to improve positive ROM and quadriceps activation</p> <p>Address gait mechanics</p> <p>Patient education</p> <p><b>Therapeutic exercise</b></p> <p>Patellar mobilization</p> <p>Passive positive ROM (Fig. 1)</p> <p>Quadriceps activation</p> <p>Quadriceps sets</p> <p>Straight leg raises (SLR): once the quadriceps are able to lock joint in increased extension and no leg is present</p> <p>Gastrocnemius stretching</p> <p>Hip abduction/adduction</p> <p>Upper body and core strength as appropriate</p>
Phase II 6-12 weeks after injury	<p><b>Precautions</b></p> <p>Continued avoidance of hyperextension and isolated hamstring activities</p> <p>Prevent posterior tibial translation</p> <p>Weight bearing</p> <p>Progress to weight bearing as tolerated (WBAT)</p> <p>Range of motion</p> <p>Full ROM, active and passive ROM after 6 weeks</p> <p>Caution to not be over-aggressive with flexion (standing upright on the repair)</p> <p><b>Brace</b></p> <p>PCL Jack brace to be worn at all times</p> <p><b>Goal</b></p> <p>PCL ligament protection</p> <p>Continued ROM as tolerated</p> <p>Address gait mechanics during crutch weaning</p> <p>Double leg strength through ROM (not greater than 70° knee flexion) and single leg static strength exercises</p> <p>Reps and set structure to emphasize muscular endurance development (3 sets of 20 reps)</p>
Therapeutic exercise	<p>Continue PRICE protocol</p> <p>Continue stretching in weeks 1-4</p> <p>Gastrocnemius and light hamstring stretching</p> <p>Weight shifts to prepare for crutch weaning</p> <p>Pool walking to assist with crutch weaning</p>

## ARTHROSCOPY TECHNIQUES

Companion to Arthroscopy:  
The Journal of Arthroscopic and Related Surgery

Arthroscopic Posterior Cruciate Ligament  
Reconstruction With Remnant Preservation Using a  
Posterior Trans-septal Portal

Dhong Won Lee, M.D., Hyeuk Woo Choi, M.D., and Jin Goo Kim, M.D., Ph.D.

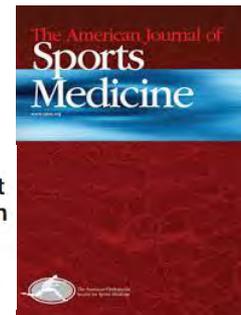
*Arthroscopy Tech., 2017*

- Femoral tunnel: **single** vs double
- Femoral tunnel: **anatomic** vs isometric
- Tibial tunnel: **trans-tibial** vs posterior inlay
- Trans-tibial starting point: **anteromedial** vs anterolateral
- Posterior portals: No vs Posteomedial only  
vs **both posterolateral and posteromedial**
- PCL remaining tissue: **preservation** vs removal
- **Single bundle** vs double bundle reconstruction

Clinical, Functional, and Morphological  
Evaluations of Posterior Cruciate Ligament  
Reconstruction With Remnant Preservation

Minimum 2-Year Follow-up

Dhong Won Lee,\* MD, Hyoung Won Jang,<sup>†</sup> MD, Yong Seuk Lee,<sup>‡</sup> MD, Soo Jin Oh,<sup>§</sup> BS,  
Jae Young Kim,<sup>¶</sup> MD, Han Eun Song,<sup>||</sup> MD, and Jin Goo Kim,<sup>\*\*</sup> MD



*AJSM, 2014*

# Conclusion

Résultats des plasties de LCP globalement bons

Aucune technique n'a prouvé sa supériorité

TTT fonctionnel garde sa place

Choix à la carte en fonction des lésions associées ou non

Faible niveau de preuve des études, résultats hétérogènes & effectifs souvent faibles

# Réfléchir PROM

KNEE



## Determination of normal KOOS and WOMAC values in a healthy population

Vincent Marot<sup>1</sup> · Jérôme Murgier<sup>1</sup> · Alessandro Carrozzo<sup>2</sup> · Nicolas Reina<sup>1</sup> · Edoardo Monaco<sup>2</sup> · Philippe Chiron<sup>1</sup> · Emilie Berard<sup>3</sup> · Etienne Cavaignac<sup>1</sup>