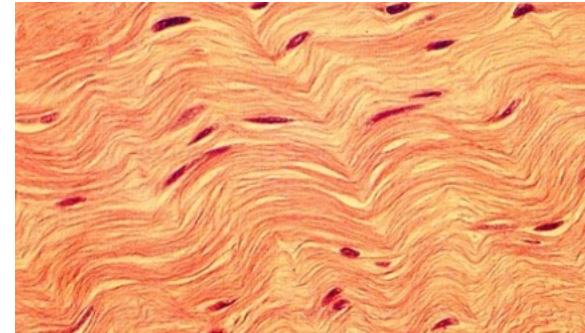
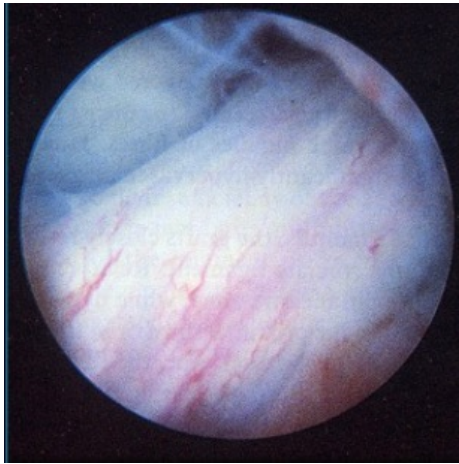


# Allograft and ACL

F-X GUNEPIN, H COMMON, H ROBERT

# History

- Used for ACL since 1981 by Konsei Shino



Biopsy Results at 2 Years

shino , JBJS, 70-B, 1988K

In France, allografts in primary or revision ACL reconstructions account for less than 3%

# ALLOGRAFT + AND -

- **Advantages:**

An interesting alternative to autografts

Avoids donor site harvesting, reducing morbidity

Decreases surgery time

Allows for standardized preparation

- **Disadvantages:**

Requires a tissue bank

Limited availability, longer acquisition times, and higher cost

Poor ligamentization?

Higher rates of iterative ruptures and secondary laxity?



Konkuk University  
Medical Center - 2018



# WHAT ABOUT MECHANICAL PROPERTIES

---

ACL  
Versus  
Double tibialis tendon  
(Allograft)

	LCA	Tibialis x 2
Rupture (N)	2100	1853
Raideur (N/mm)	242	236
Elongation (mm)	4	8
Surface (mm <sup>2</sup> )	48	37

# MECHANICAL PROPERTIES DEPEND PREPARATION METHODS

- **Fresh:**

Graft immersed in an antibiotic solution

Living cells present

➔ Not beneficial for ligament surgery (cartilage defect)

- **Sterilized:**

Reduced risk of infection

Mechanical fragility

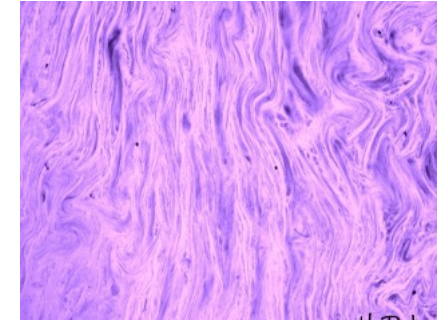
- **Frozen**



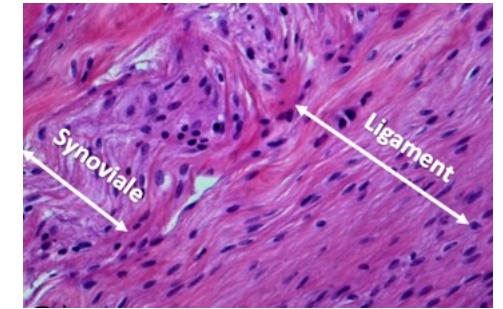
# FROZEN

= no biomechanical degradation ++

- Fresh frozen (-80°C) ++
- Lyophilized
- Cryopreserved (liquid nitrogen at -196°C)



Tibialis ant



2 years later

the allograft behaves like a matrix which will be recolonized.

> Clin Sports Med. 2009 Apr;28(2):203-14, vii. doi: 10.1016/j.csm.2008.10.009.

## Biology of allograft incorporation

Michael J Eagan<sup>1</sup>, David R McAllister

Favorable histology:  
Cellular colonization  
Good orientation of collagen fibers

Courtesy H Robert

# FROZEN AND INFECTION?

➔ no difference overall between autografts and allografts.

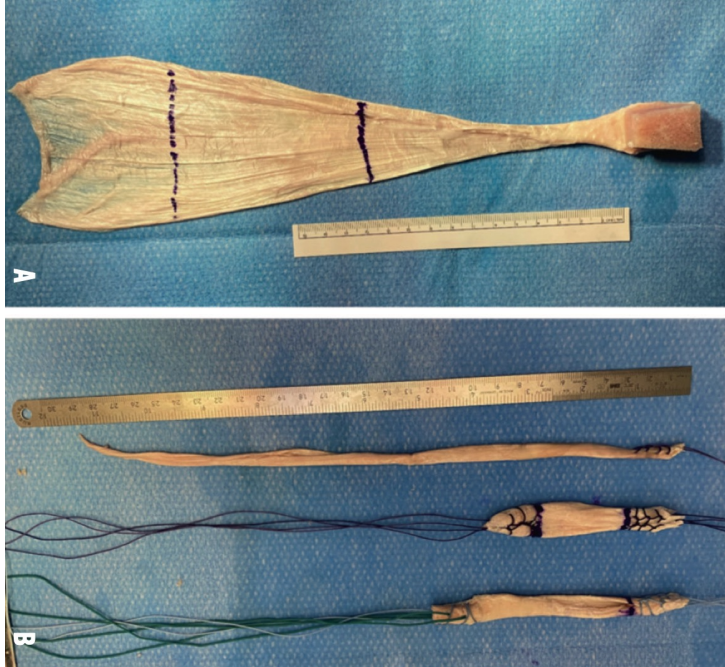
Wei J, Yang HB, Qin JB, Yang TB. A meta-analysis of anterior cruciate ligament reconstruction with autograft compared with nonirradiated allograft. *Knee* 2015;22:372-9

> *Orthop J Sports Med.* 2022 Feb 7;10(2):23259671211073928. doi: 10.1177/23259671211073928.  
eCollection 2022 Feb.

## **Presoaking ACL Grafts in Vancomycin Decreases the Frequency of Postoperative Septic Arthritis: A Cohort Study of 29,659 Patients, Systematic Review, and Meta-analysis From the SANTI Study Group**

Alessandro Carrozzo <sup>1</sup>, Adnan Saithna <sup>2</sup>, Alexandre Ferreira <sup>1</sup>, Sylvain Guy <sup>1</sup>, Lamine Chadli <sup>1</sup>,  
Edoardo Monaco <sup>3</sup>, Daniel Pérez-Prieto <sup>4 5</sup>, Yoann Bohu <sup>6 7</sup>, Thais Dutra Vieira <sup>1</sup>,  
Bertrand Sonnerly-Cottet <sup>1</sup>

# MANY ALLOGRAFTS AVAILABLE



With or without bone block

Calcaneal tendon

Quadriceps tendon

Anterior and posterior tibial

Hamstring

Ilio-tibial band

Fibular tendon

...



Always a allograft compatible with your technique

Dr PHILIPPE M. TSCHOLL <sup>a,b,c</sup>, Pr JACQUES MENETREY <sup>a,d</sup> et Dr MORGAN GAUTHIER <sup>a,b</sup>

*Rev Med Suisse 2021; 17: 1310-3*

No harvesting problem

No more infection

Same biomechanical properties

Same functional score

Same revision rate (not for young patients)

➔ The Brest Graft ?

[Int Orthop](#). 2013 Feb; 37(2): 311–320.

PMCID: PMC3560895

Published online 2012 Dec 4. doi: [10.1007/s00264-012-1720-5](https://doi.org/10.1007/s00264-012-1720-5)

PMID: [23207581](https://pubmed.ncbi.nlm.nih.gov/23207581/)

Allograft versus autograft for anterior cruciate ligament reconstruction: an up-to-date meta-analysis of prospective studies

[Jianzhong Hu](#), [Jin Qu](#), [Daqi Xu](#), [Jingyong Zhou](#), and [Hongbin Lu](#)✉

# NOT FOR ALL

- In Europe, allografts were used in only a few patients (0.3 to 6.3%) whereas they were
- Used in 40% in the US centers (Kaiser Permanente – KP)

6<sup>th</sup> June 2019

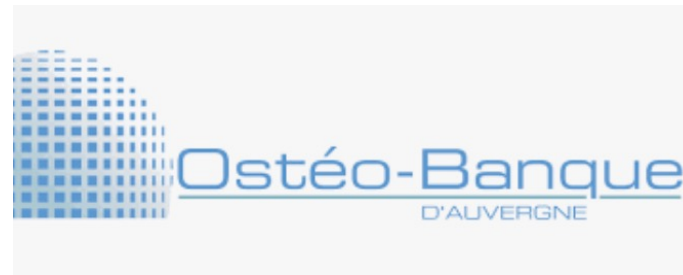
**Warwick**  
Medical School

*Effective  
Evidence*

**The use of allografts in knee reconstructions: systematic review and cost-effectiveness analysis**

A report for the European Society of Sport Traumatology, Knee Surgery and Arthroscopy (ESSKA).

# IN FRANCE



PANORAMAS  
DE LA DREES  
**SANTÉ**

## Les dépenses de santé en 2023

Résultats des comptes  
de la santé

ÉDITION 2024

- Cost

➔ health expenditure 9% of gross domestic product  
constant increase

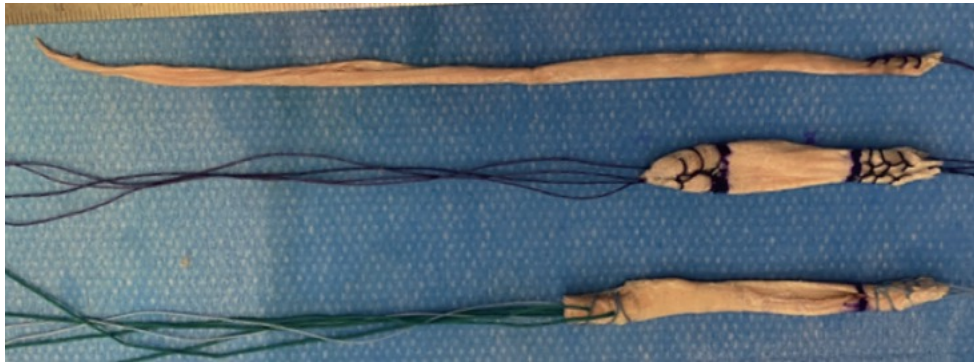
- Availability

➔ no culture of body donation



# REVISION ALONE OR WITH AUTOGRAFT

save autografts

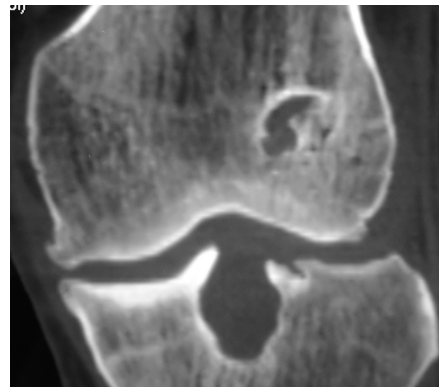
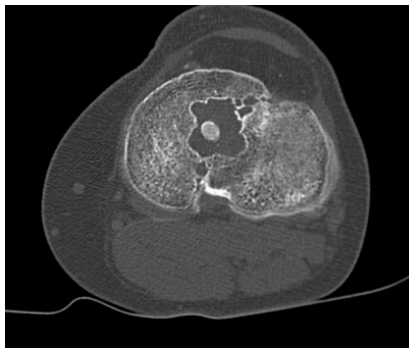


Alternatives: Increase graft diameter using an allograft

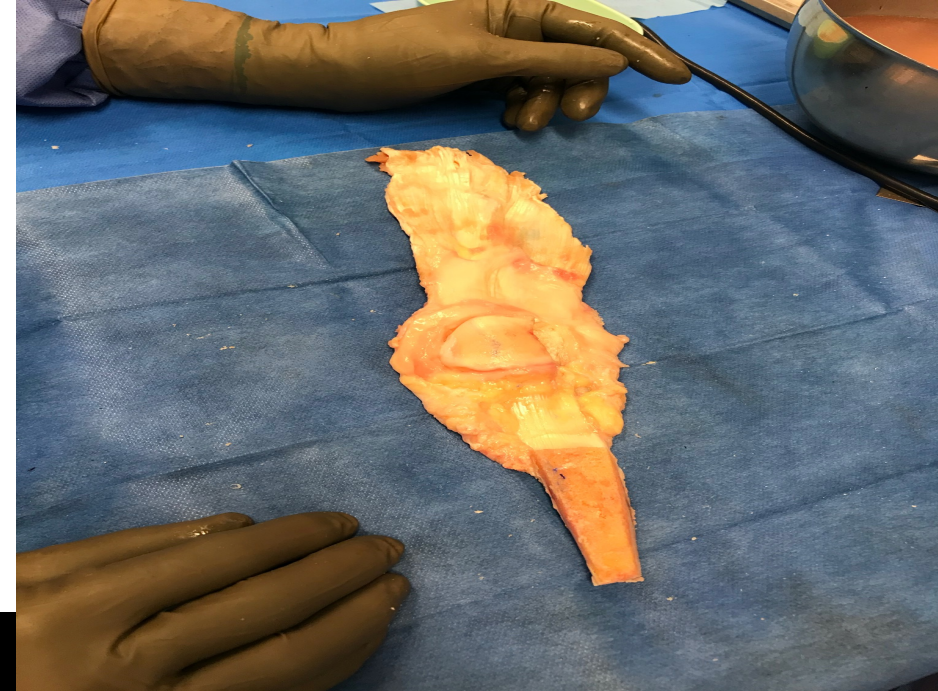
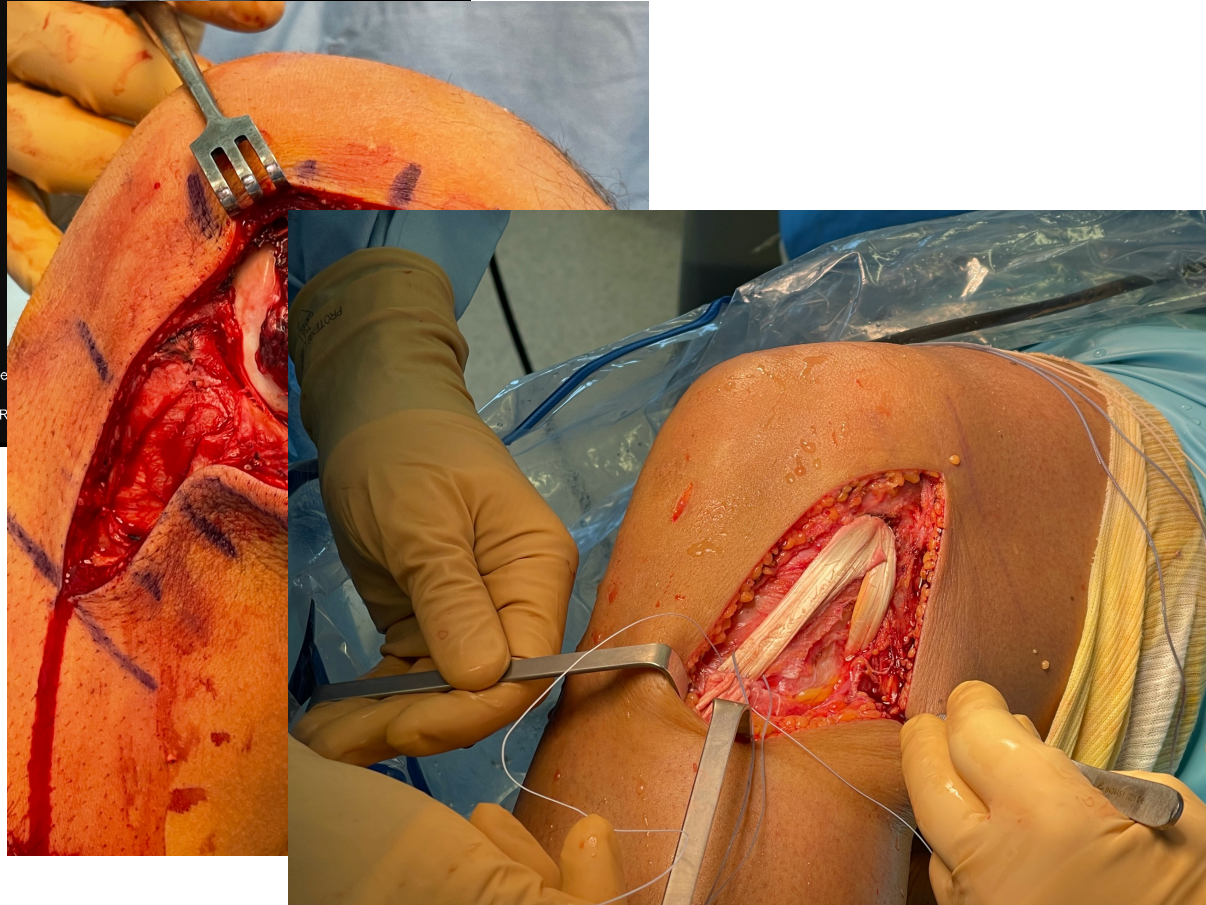
# REVISION

## MANAGEMENT OF BONE DEFECT

- Defects induce by:  
Removal of osteosynthesis material  
Ballooning  
Artificial ligaments
- Options:  
Allograft with bone block



# MULTILIGAMENT INJURY



Quadriceps tendon with patella and tibial tuberosity

# CONCLUSION

**Fresh frozen preparations provide allografts that are mechanically reliable and as safe as autografts.**

**For young athletes under 25 years old, autografts remain the first choice**

**The high costs and relatively limited availability of allografts make them reserved for ACL revisions and multiligament knee injuries.**

# THANK YOU TO THE DREAM TEAM



And my Coco

