

**ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION
WITH QUADRICEPS TENDON AUTOGRAFT:
EVALUATION WITH MRI**

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The ideal graft

- ✶ Mechanical properties similar to ACL
- ★ Good initial stabilization
- ✶ Small morbidity from graft harvesting
- ★ Incorporation ability
- ✶ Ability for rapid rehabilitation

But



No ACL graft fulfills all criteria



All grafts have advantages and disadvantages



Autografts: compromising function, affecting strength and proprioception

Quadriceps Tendon Graft



- Adequate size and strength
- Little morbidity from harvesting
- Wider and thicker graft (50% greater mass)
- Many fixation options



- One bone block
- Not known harvesting morbidity
- Few clinical trials and experimental studies

Purpose Of the Study

To evaluate the
revascularization and ligamentization
process of the QT tendon graft using MRI

Patients - Methods

- 09/1998 - 03/1999
- 25 patients: with ACL tear
- Male, Age at operation: 18 - 33 years (mean 23.6)
- Isolated tear: Acute 18 Chronic 7
- Mechanism of Injury: MVA/ Sports 17/25
- Meniscal tear: Medial 13 Lateral 14
- Time from injury: 3 wks - 5 years
- Follow -up: 12- 26 months

MRI evaluation

- 15 patients
- 10 – 16 months from reconstruction

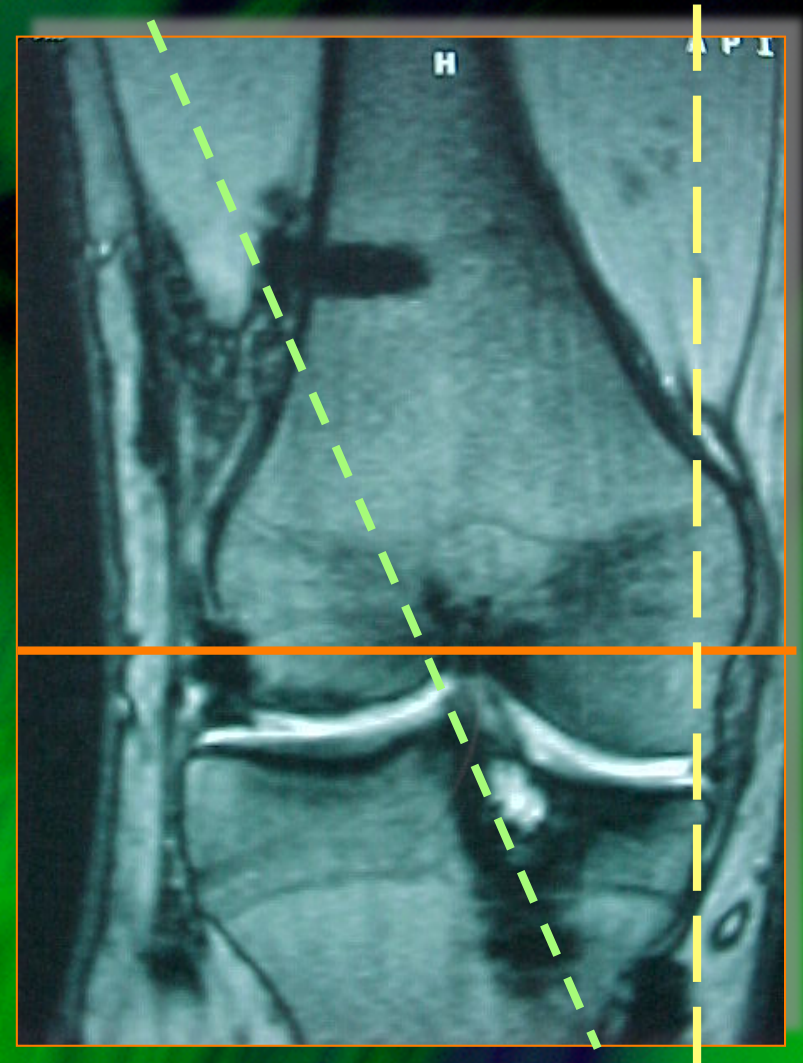


MRI evaluation

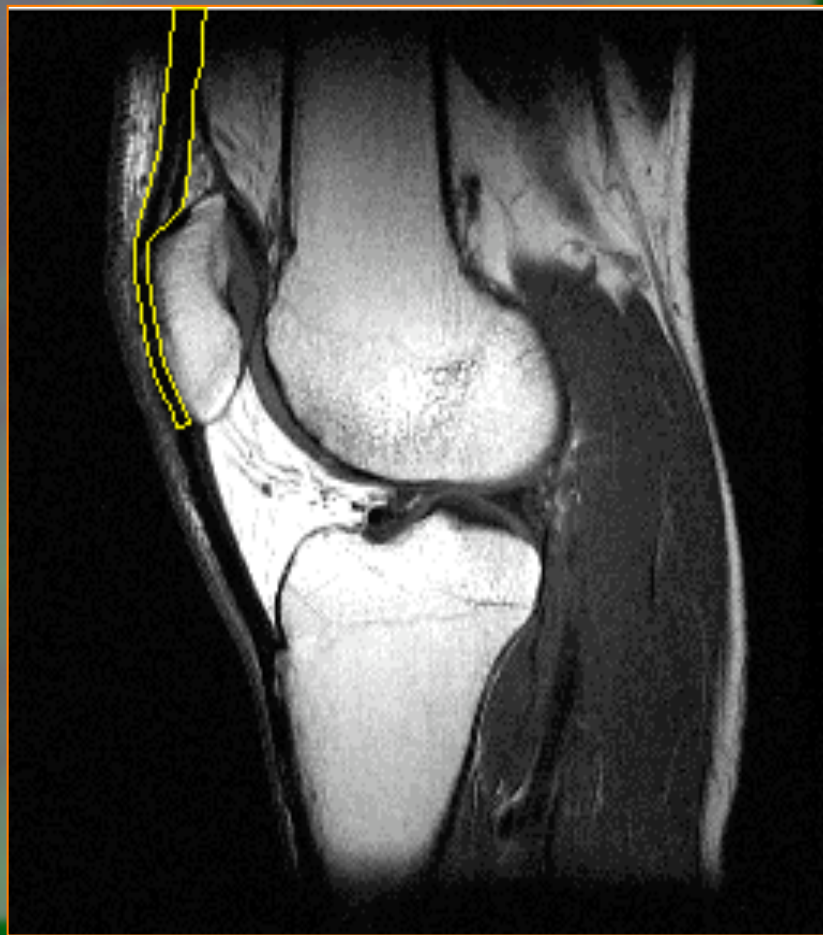
Siemens Magnetom 1.5 T

Sagittal, Transverse and
Oblique Coronal

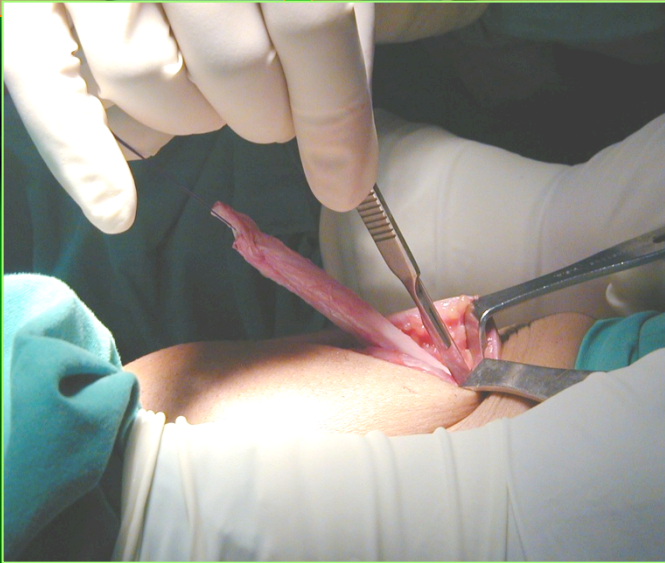
T1 and T2 weighted images



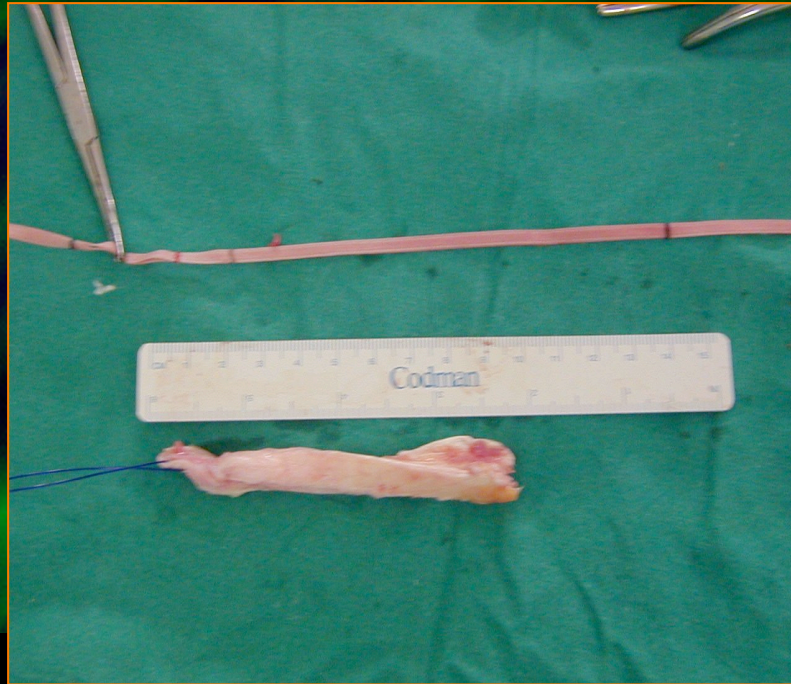
Surgical Anatomy of the Quadriceps Tendon



Graft Harvesting



Graft Dimensions



length

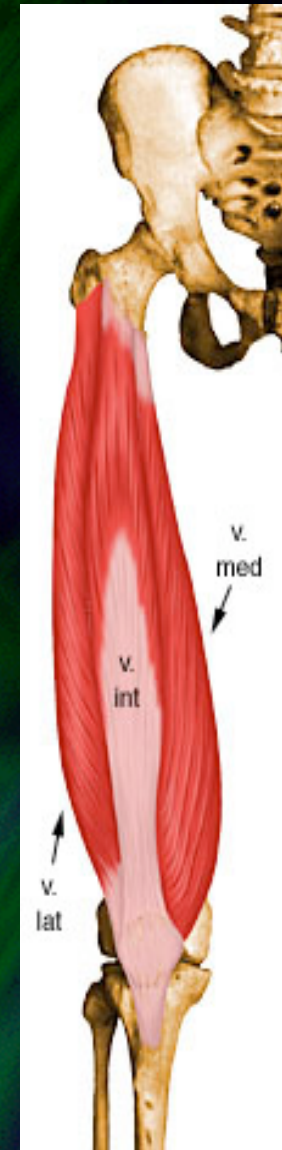
90-100 mm

width

10 mm

thickness

7-8 mm



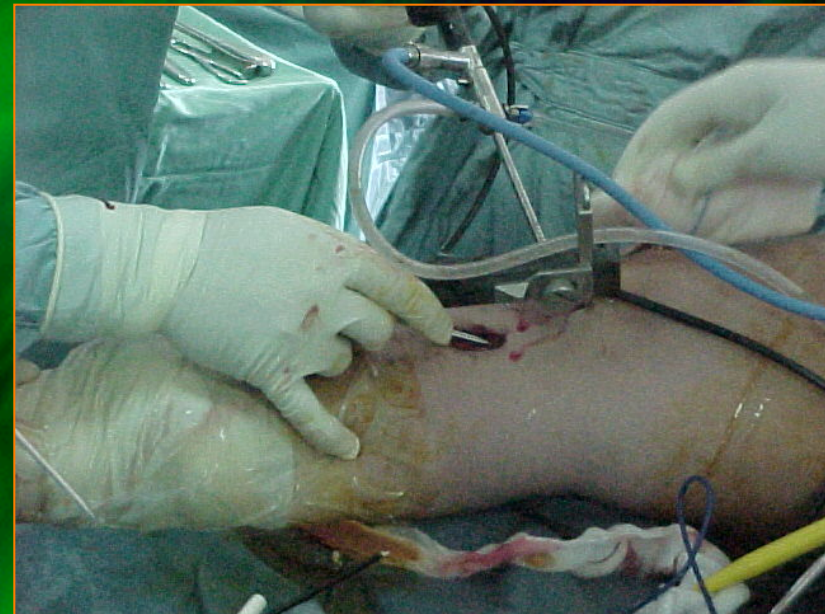
Preparation of the Graft



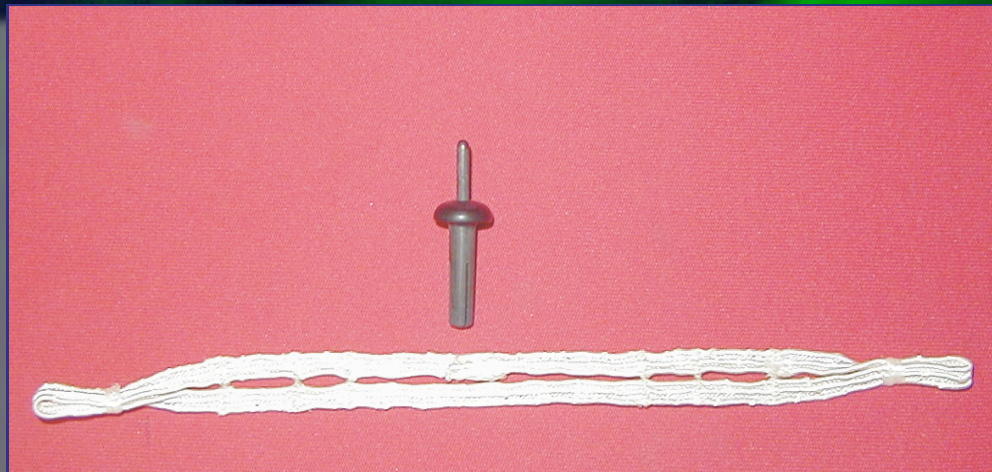
Preparation of the OVER THE TOP position



Opening the tibial tunnel in extension



Surgical Wound

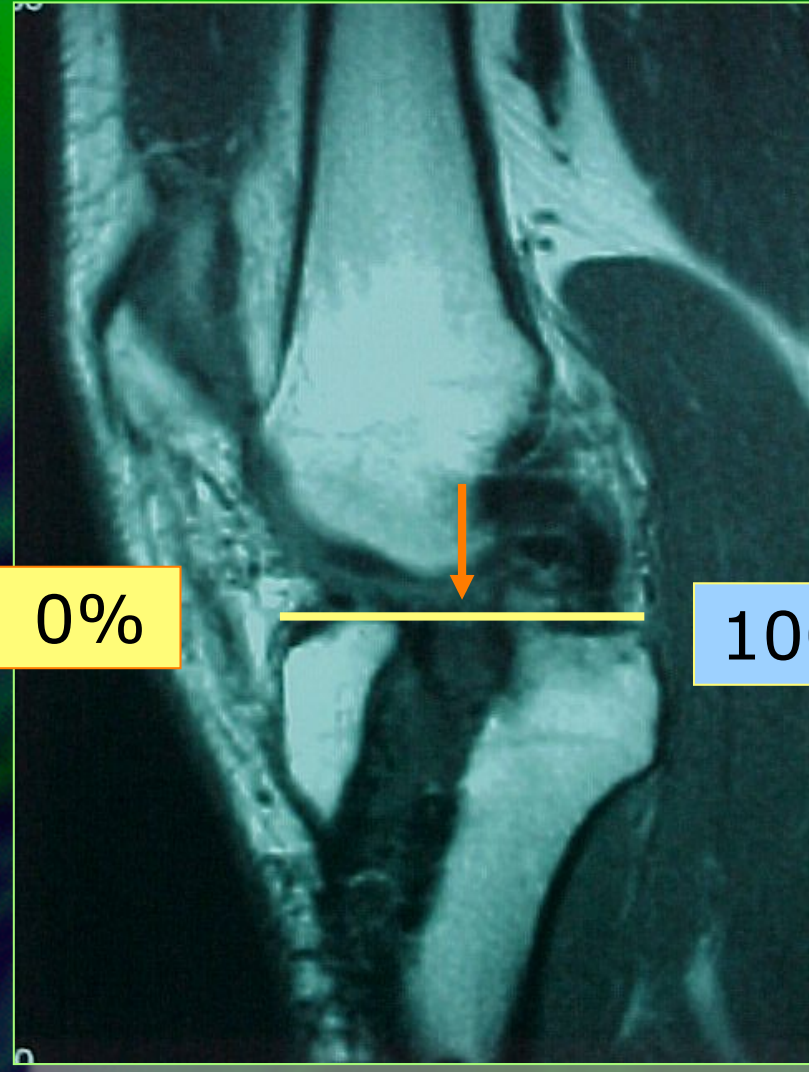


Soffix, Mark II,
Surgicraft

Postoperative X-ray

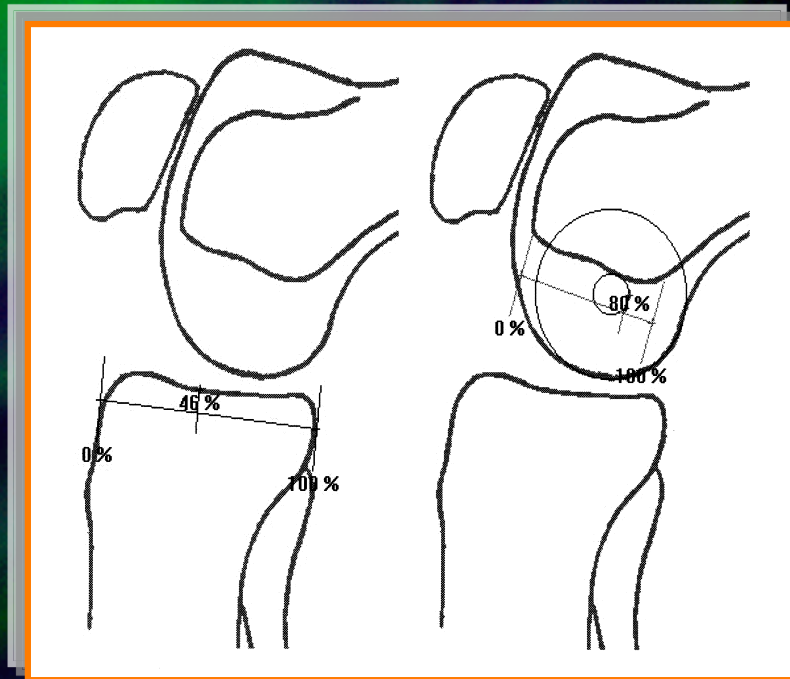


Positioning of the Graft



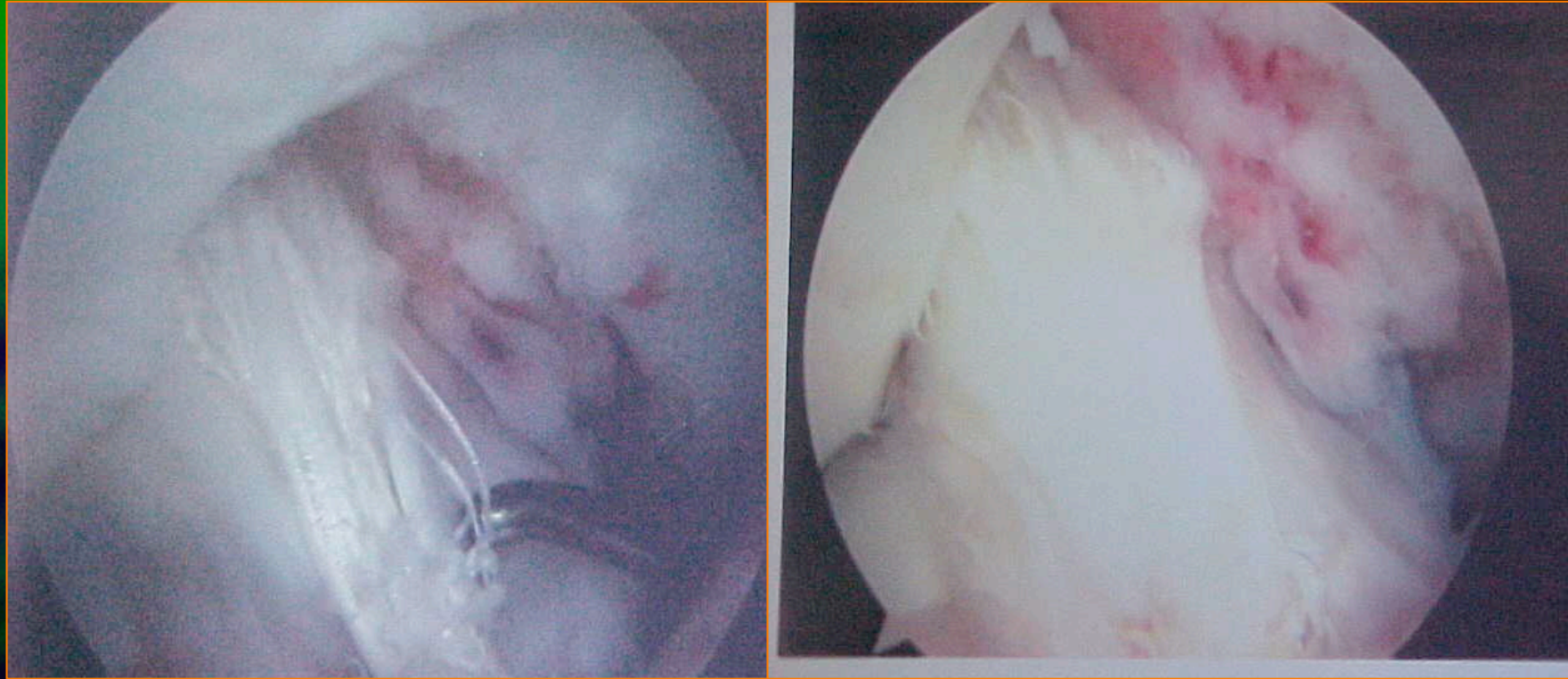
Tibial Tunnel
Harner, 1994

Position of the Graft



Tibial Tunnel
 $48 \pm 3\%$

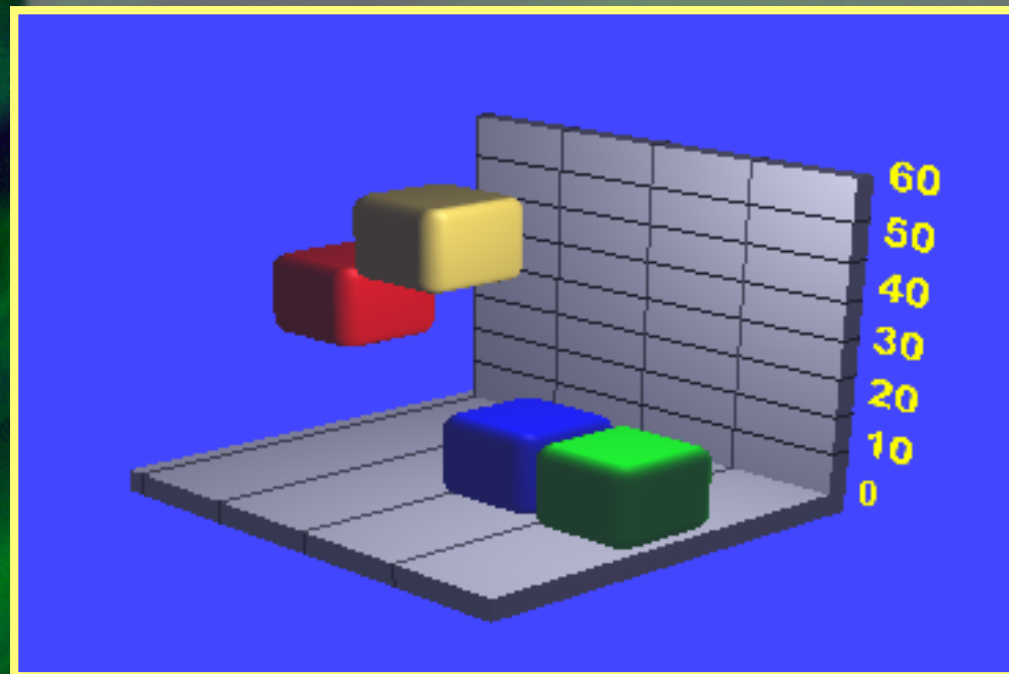
Second Look Arthroscopy



5 patients; revascularization of the graft

IKDC scale

Normal	8(32%)
Almost Normal	13(52%)
Abnormal	4(16%)
Severely Abnormal	-----



MRI appearance

Type 1 :

well defined: smooth continuous band, low signal intensity over entire course.

Type 2:

intermediate type: signal intensity increased, with low signal band only in part of the graft

Type 3:

indiscernible type: graft not identified, due to increased signal intensity

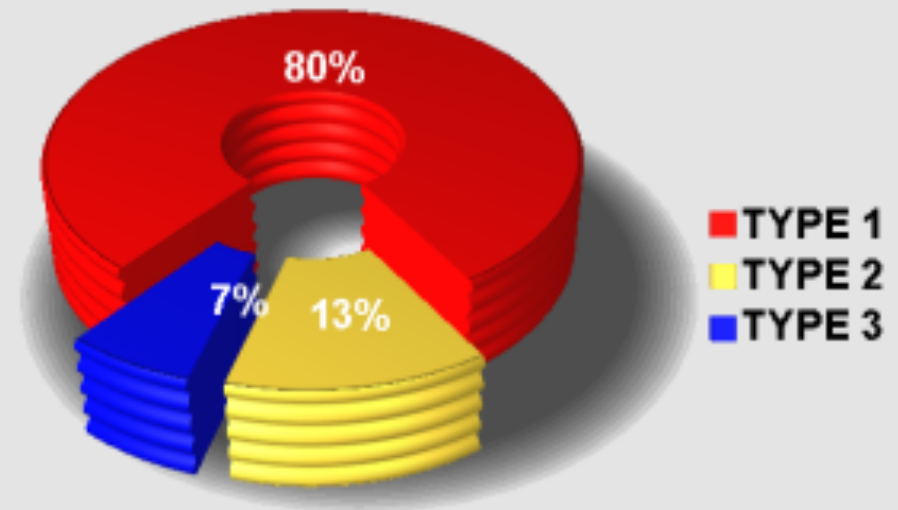
Rak et al. Radiology 1991 ;178(2):553-6

Results

Type 1 : 12(80%)

Type 2 : 2

Type 3 : 1

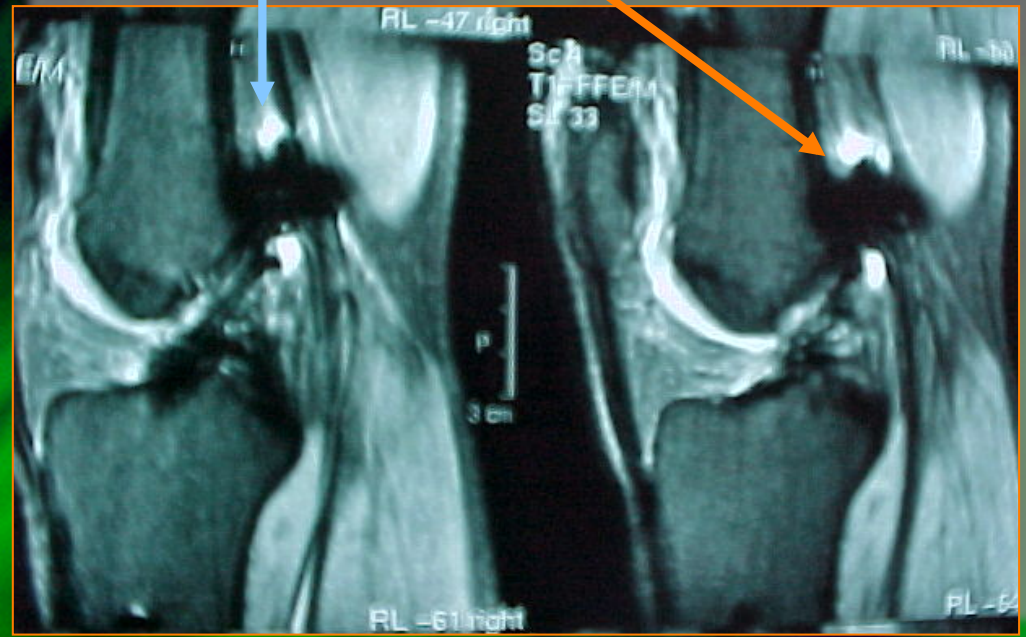




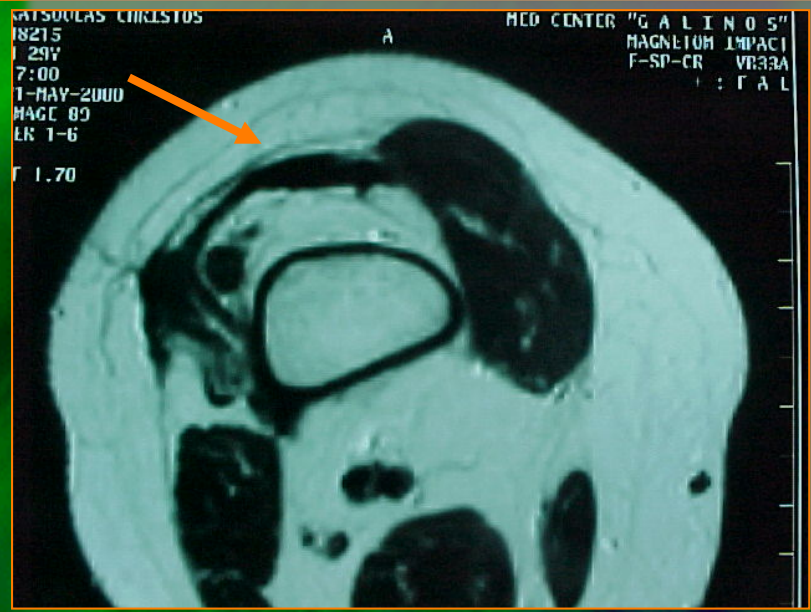
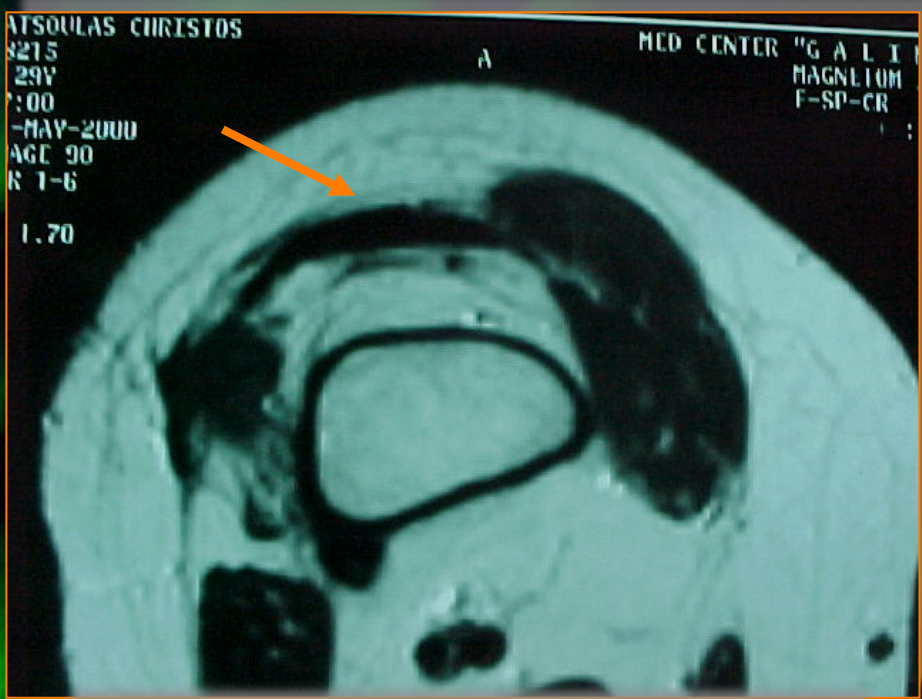
1



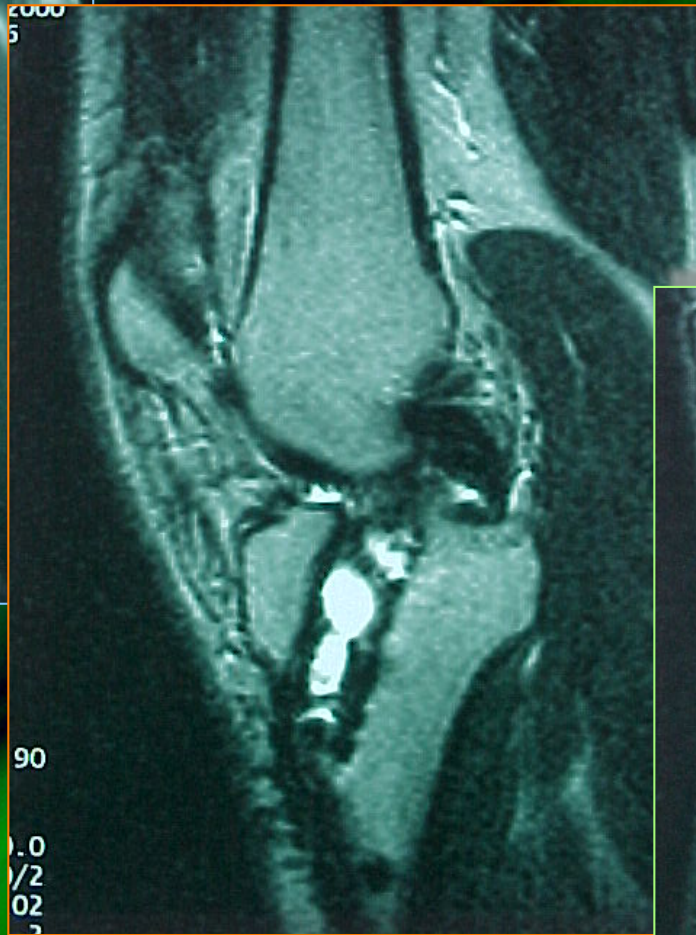
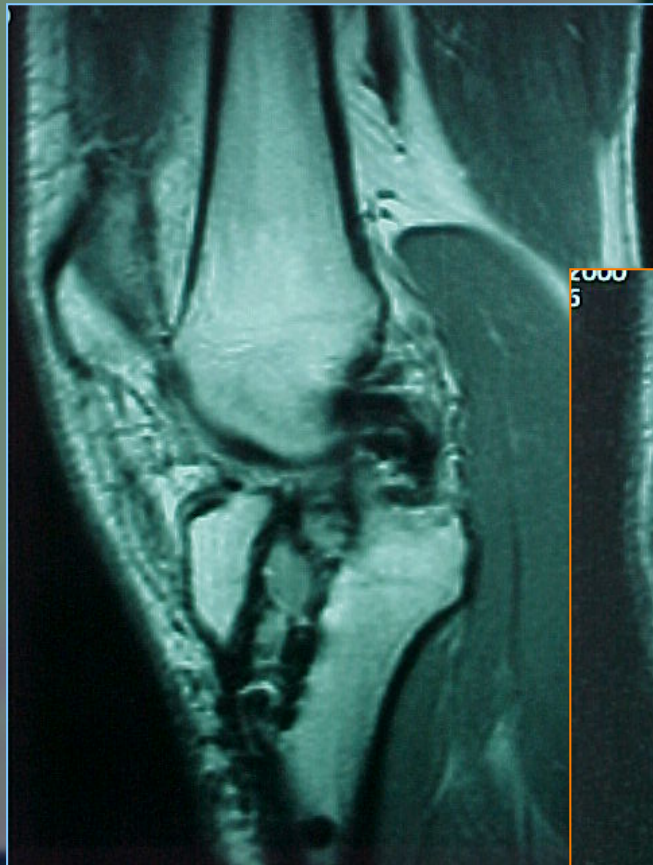
2



3



4



5

Conclusion

- ✓ The synovialisation-revascularization of the QT autograft is completed within the first post-op year
- ✓ MR imaging is an excellent noninvasive imaging modality for evaluating ACL reconstruction, while also providing ancillary information about the postoperative knee.
- ✓ MRI provides informations not obtainable by other imaging methods.

