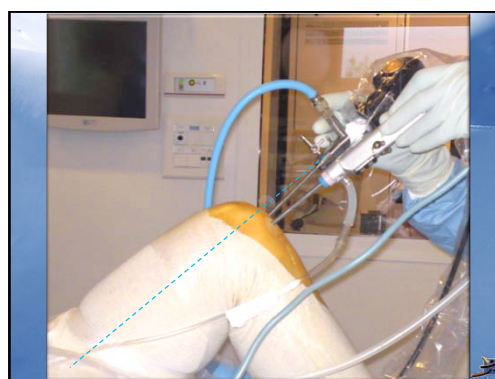
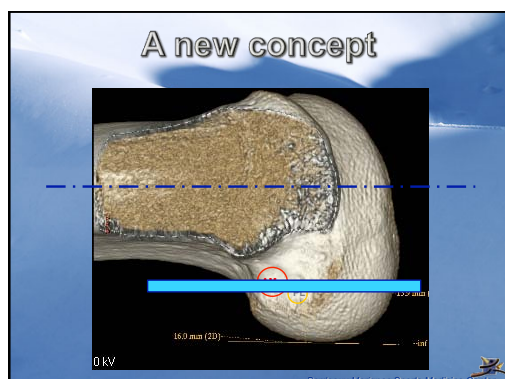
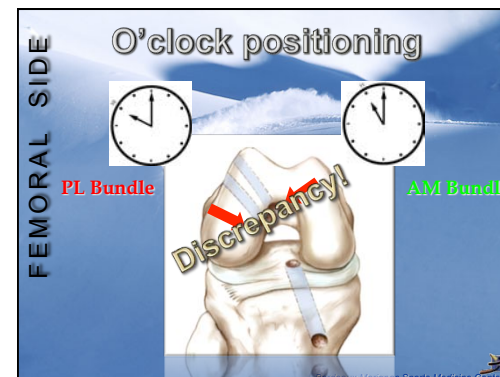
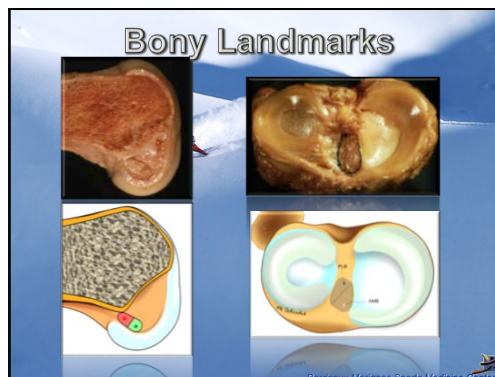
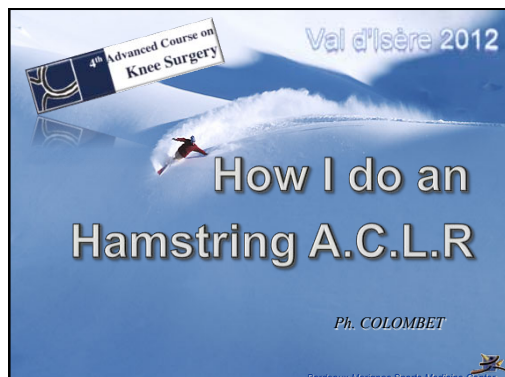
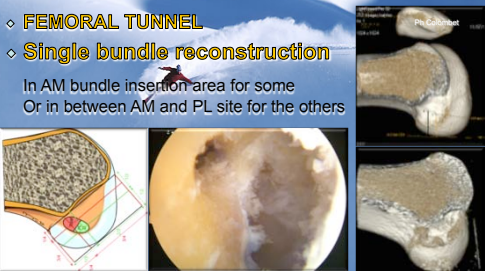




Anatomic Implantation

- **FEMORAL TUNNEL**
- **Single bundle reconstruction**

In AM bundle insertion area for some
Or in between AM and PL site for the others

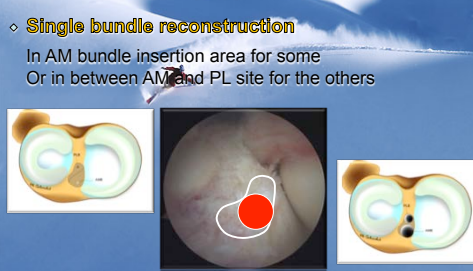


Colombet, P., & al Morphology of anterior Cruciate Ligament
Arthroscopy-2006
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HAMSTRING TENDONS

Gracilis & Semi tendinosus



Beware of the expansions

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Strippers



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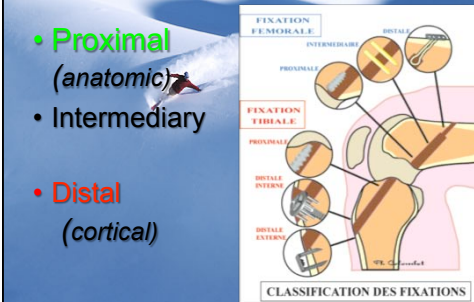
Hamstring Fixation



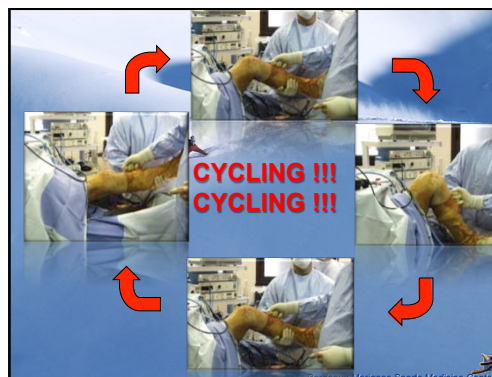
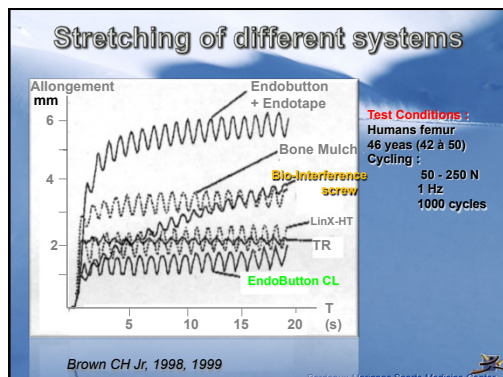
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Classification

- **Proximal (anatomic)**
- **Intermediary**
- **Distal (cortical)**



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H-S Fixation Conclusions (1)

- Isolated Staple, washer and suture on screw has got poor mechanical properties (Resistance & stiffness)
- The direct fixations (anatomic, proximal) are adapted for daily life (~150 N) constraints **but not** enough for aggressive rehabilitation (~500 N), especially for the graft slippage
- On femoral side **suspensory** fixations are perfect, but increase graft elongation
- Cycling is mandatory **Gold Standard**

H-S Fixation Conclusions (2)

- HS tibial fixation **remains an issue** because the bone density and alignment between graft and constraints
- Direct fixation (anatomic, proximal) increase the stiffness and reduce bungee effect
- Remember, "the weakest link provide the global performance of the reconstruction"



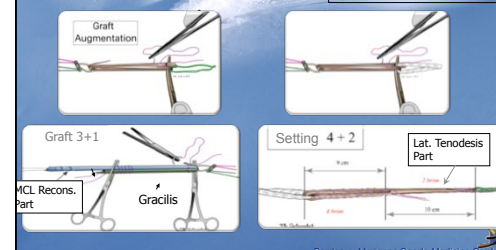
H-S Fixation Conclusions (3)

- All findings indicate that:
we have to manage carefully the rehab protocol
- And we need to develop
a new tibial fixation more effective and reliable

H. Tendons: a Modular Graft!

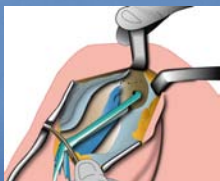
- Hamstring Tendons allow to set different patterns of Graft

Semi T and Gracilis
 Or
ONLY the Semi T



ACL + MCL Reconstruction

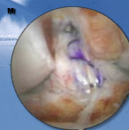
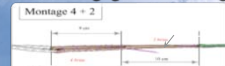
- Graft Setting "3+1" or 4+1"



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ACL + Lat. Tenodesis

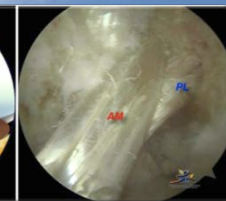
Hamstring graft Setting "4 + 2"



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Double Bundle Reconstruction

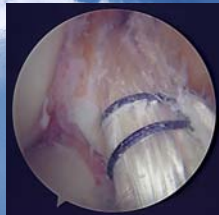
- AM bundle = Semi Tendinosus
- PL bundle = Gracilis



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Additional Reconstruction

- Reconstruction of the missing bundle



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Meniscal status

- Repair!... Repair!... Think about suture



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Indication

Different MENUS should be proposed



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“menu Plat du jour I”

- **Standard Procedure**

(HS Single Bd. 4 or 6 strands)

- Diameter adaptation of the graft to patient morphotype
- Instability during sport or daily life
- Index Nav. Rotation/Translation > 0.5

- **Option « fromage plateau»**

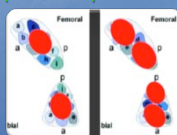
- Lateral tenodesis
 - Open surgery with ilio-tibial band
 - Or percutaneous with the same graft
 - Old lesions, hyper-lax, pivot contact high energy

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“menu Connoisseur II”

- **Double Bundle**

- **High rotational laxity**, explosive Pivot Shift
- Index Nav. Rotation/Translation < 0.5
- Pivot contact high energy sport, hyper lax patients
- **Feel up the foot print insertion**



R. Siebold. 2008 Arthroscopy

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“menu Gastronomique III”

Treat the laxities, all the laxities

- **ACL + MCL (MCL Lesion grade III)**

- Medio Lateral laxity > 10°
- Optimization of the Implantation with Navigation

- **ACL + Postero lateral corner (5 à 7% of cases)**

- Complexes lesions
- Additional postero/postero-lat. Reconstruction

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“menu Light IV”

- **ACL augmentation (Partial Ruptures)**

- Translation @ 20° < 3mm, negative Pivot shift
- Documented Lesions, pivot contact high energy
- Missing bundle reconstruction

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CONCLUSION

Hamstring tendons are now a reference graft

- Adapt your technique to the patient
 - Graft choice
 - Adapted setting
- Select the indications
- Respect the anatomy
- Save the meniscus

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Val d'Isère 2012



Thanks for your attention!

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