

# Modified all inside ACL reconstruction

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# Disclosure

- No blinding done among surgeons, radiologists, healthcare related products & services
- No conflict of interest



# Introduction

- All-Inside ACLR technique is gaining popularity at present
- This technique involves using a quadrupled semitendinosus graft and suspensory fixation at both tibial end & femoral end
- The proposed advantages in conventional All-inside ACLR include:
  - Preserving gracilis
  - Reduced bone removal
  - Less postoperative pain
- Pitfalls:
  - Requires special instrumentation
  - Tunnel graft length mismatch



# Our novel modification

- To overcome this pitfall we have incorporated our minor modification into conventional all-inside technique which mandatorily requires flip cutters for retrograde drilling of tunnels
- Our technique involves use of a conventional tibial tunnel reaming with a suspensory fixation, which can be achieved with the easily available instruments





# Aim

This study intends to analyze clinical & functional outcomes of conventional ACLR vs Modified All inside ACLR



# Methodology

Prospective case control study

26 patients who underwent modified all inside ACL reconstruction & 40 patients who underwent conventional ACL reconstruction were included in the study

## Inclusion criteria-

- 18 to 50 years of age
- Isolated primary ACL injuries without other ligament injuries

## Exclusion criteria-

- ACL graft retears
- Meniscal injuries
- Associated collateral ligament injuries
- Concomitant Bony injuries

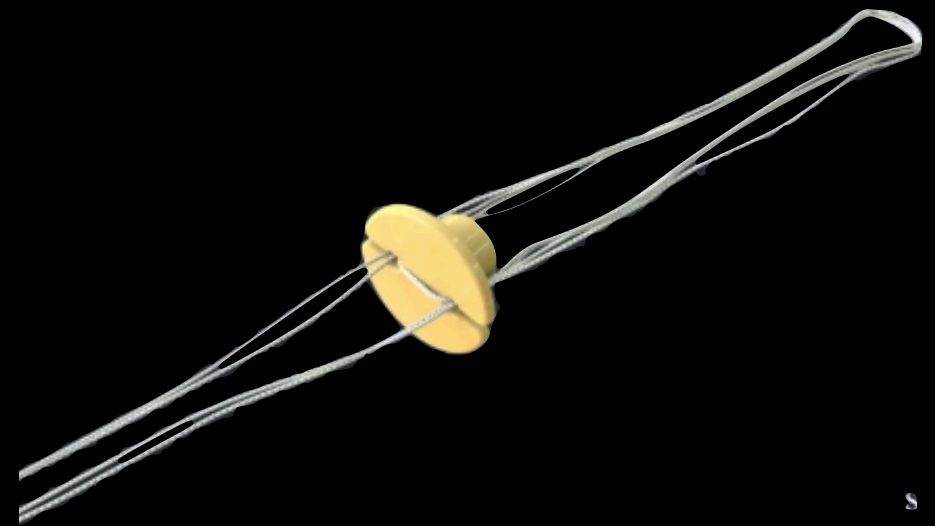


# Intra op graft size & length measurements

Average graft length ST: Minimum 260 mm

**Average required thickness:  
Minimum 8 mm**

Average length achieved for all cases: Minimum 65mm



# Results

	Modified all inside ACLR	Conventional ACLR	P value
VAS score			
1 month	3.2 +/- 1.3	3.5 +/- 1.2	N.S
6 months	0.9 +/- 1.1	1.1 +/- 1.5	N.S
Lysholm score			
1 month	68.5 +/- 7.2	64.4 +/- 8.4	0.04
6 months	89.4 +/- 9.6	86.0 +/- 10.3	N.S

- Functional scores were better with modified all inside ACLR at 1 month following surgery but were comparable at end of 6 months
- No incidence of graft failure in either of the groups



# Discussion

- Our technique retains the primary advantage of all inside ACL technique which is sparing of gracilis during graft harvest, thereby reducing graft site morbidity
- Studies have shown that retaining the gracilis during graft harvest could potentially be beneficial in high demanding sporting individuals.
- Our technique does vary from conventional all inside technique with regard to amount of bone block resected at the tibial end
- However studies have shown that there is no difference in the functional scores when a full tibial tunnel is reamed.

Comparative Study > [Knee Surg Sports Traumatol Arthrosc.](#) 2011 Aug;19(8):1287-92.

doi: 10.1007/s00167-011-1412-5. Epub 2011 Feb 5.

## Effects of additional gracilis tendon harvest on muscle torque, motor coordination, and knee laxity in ACL reconstruction

Hayri Baran Yosmaoglu <sup>1</sup>, Gul Baltaci, Hamza Ozer, Ahmet Atay

**Conclusion:** The outcomes of this study suggested that additional harvest of gracilis did not influence lower extremity motor control, quadriceps muscle torque, and anterior tibial translation; however, it affected knee flexion isokinetic torque negatively at low angular velocity. This finding could be important for functional activity or sports with high demands on hamstring muscle strength. It is recommended that gracilis muscle should be preserved as possible during ACL reconstruction.

Randomized Controlled Trial > [Arthroscopy.](#) 2013 Jul;29(7):1195-200.

doi: 10.1016/j.arthro.2013.04.009.

## Randomized controlled trial comparing all-inside anterior cruciate ligament reconstruction technique with anterior cruciate ligament reconstruction with a full tibial tunnel

James H Lubowitz <sup>1</sup>, Randy Schwartzberg, Patrick Smith

**Conclusions:** The null hypothesis (no difference between all-inside ACL reconstruction and ACL reconstruction with a full tibial tunnel) is supported for IKDC scores, KSS score, SF-12 score, narcotic consumption, and tibial and femoral widening, whereas all-inside ACL reconstruction results in a lower VAS pain score compared with baseline.



# Discussion

- This technique does not require additional instrumentation like flip cutters.
- Hence, this technique incorporates the advantages of an all inside ACLR while using the instruments in conventional ACLR, which makes the technique easily reproducible in all centres.
- The technique is also a handy salvage option if the gracilis tendon is too thin or too small
- Additionally, in the conventional all inside ACLR, graft length and tibial tunnel measurement is of paramount importance.
- However with this technique, the graft length on the tibial side can be variable, thus making the procedure less technically demanding. It can therefore be easily recreated by surgeons in the early stages of their learning curves.



# Conclusion

This technique obviates the need for specialised tibial reamers & graft length measurement on the tibial side making this a time efficient and less demanding procedure.

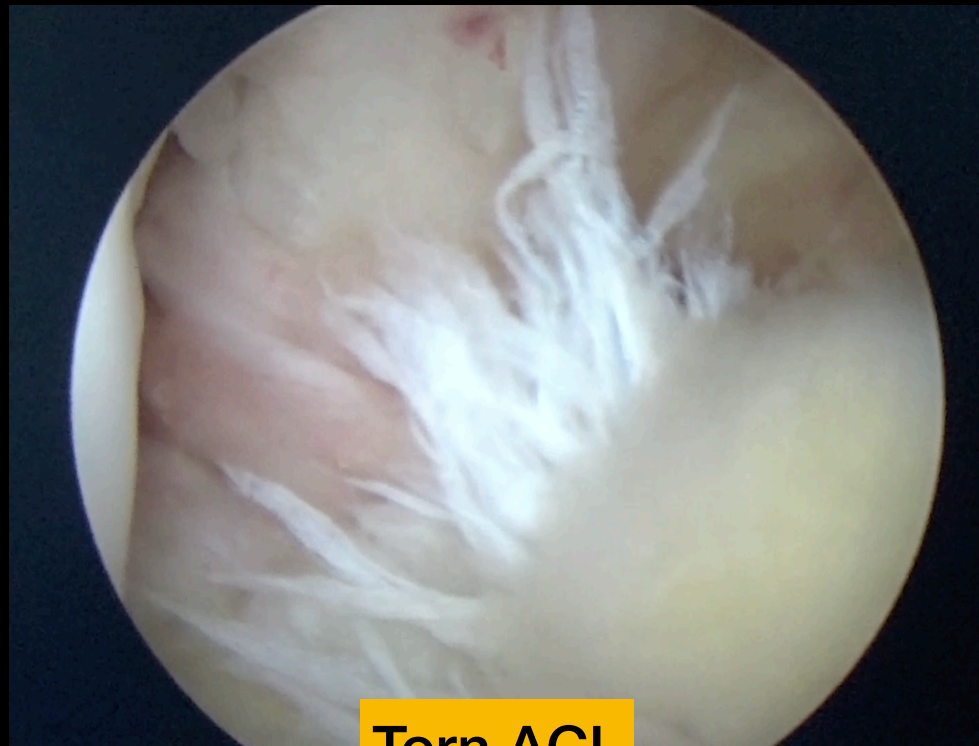
# Limitation

- Randomisation was not done
- Long term results awaited
- Isokinetic testing not done

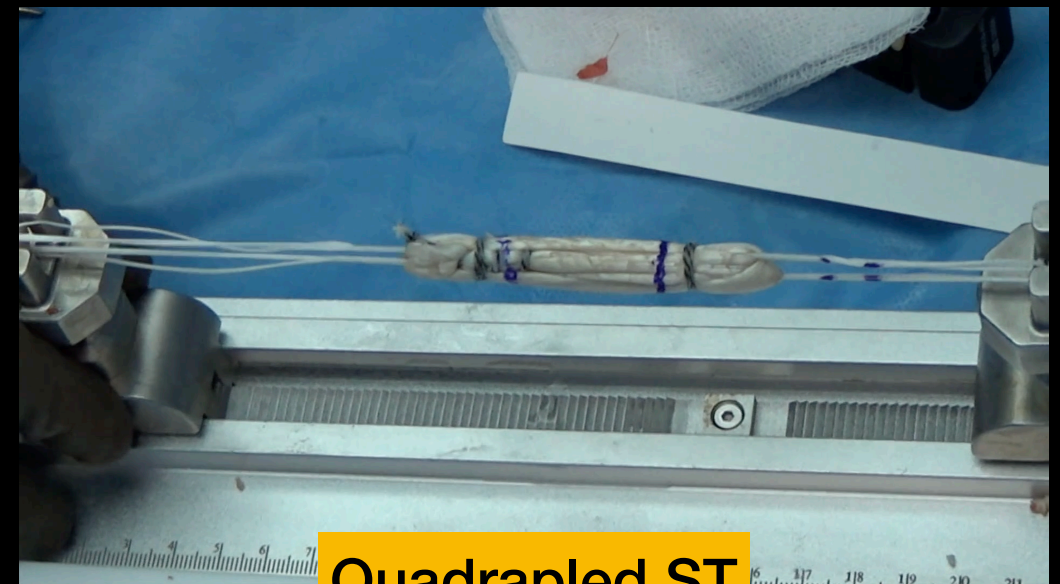




# Case



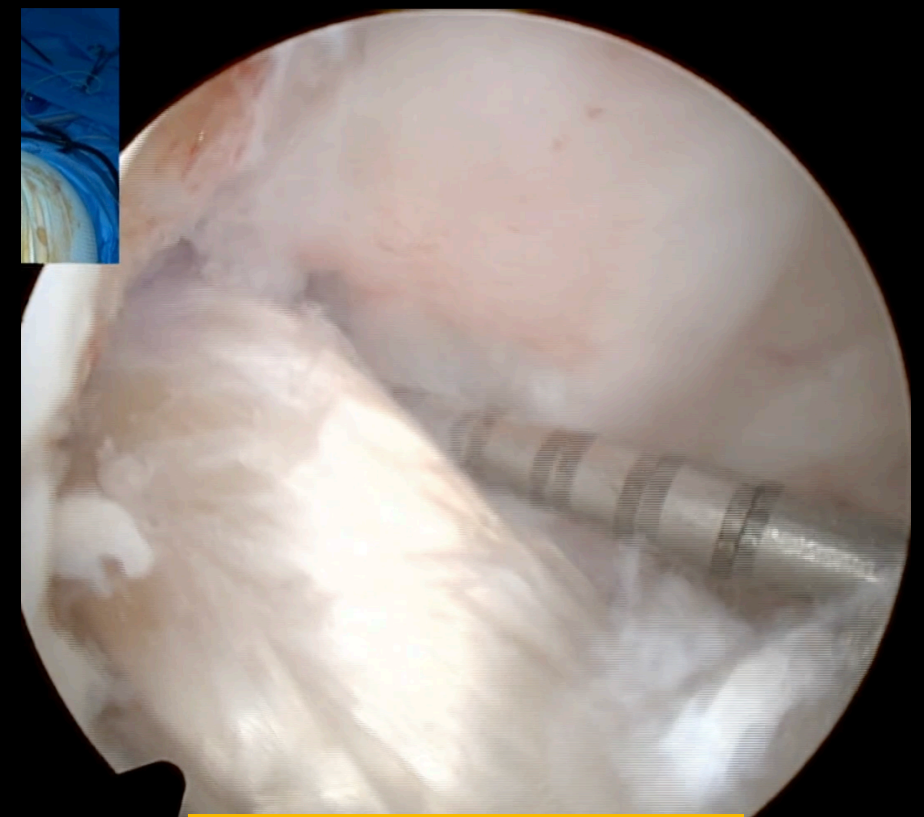
Torn ACL



Quadrupled ST



Tibial suspensory fixation with button



Reconstructed ACL





# References

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- Blackman AJ, Stuart MJ. All-inside anterior cruciate ligament reconstruction. *J Knee Surg*. 2014 Oct;27(5):347-52. doi: 10.1055/s-0034-1381960. Epub 2014 Jun 21. PMID: 24951949.

