

# **Semitendinosus Graft for Meniscal Autograft Transplant Without Detaching the Tendon from the Tibia – A PROSPECTIVE STUDY**



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# **Mandatory faculty disclosure**

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## OBJECTIVE

To study the effectiveness of an autologous semitendinosus tendon graft as a meniscus substitute.

## METHOD

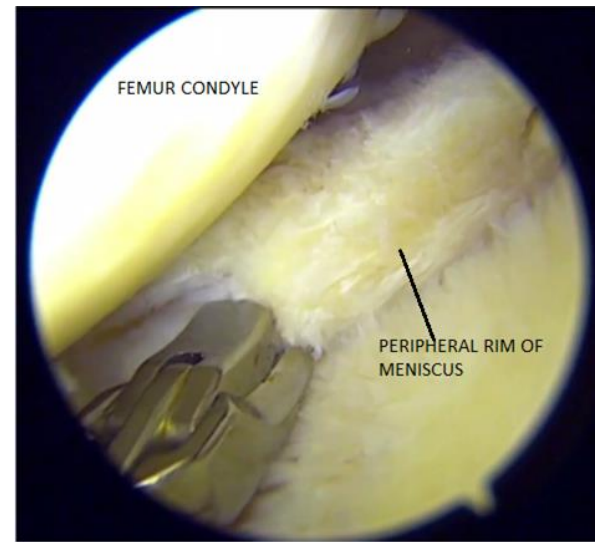
- Prospective study
- Meniscus replacement with autologous Semitendinosus graft
- 3 Female and 6 male
- 4 Lateral and 5 medial meniscus tears
- Mean Age: 61 (Youngest: 54, Oldest: 73)

# INCLUSION CRITERIA and EVALUATION

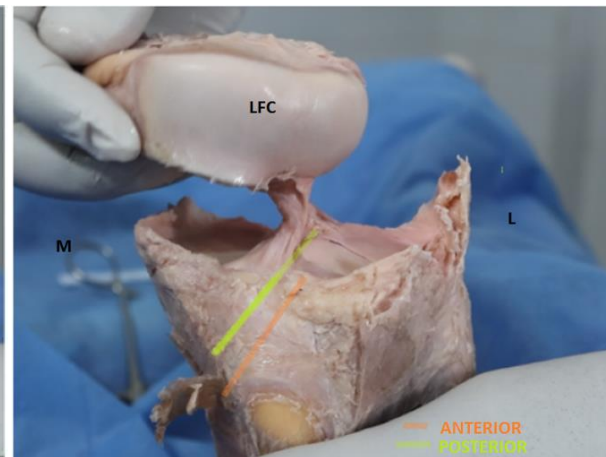
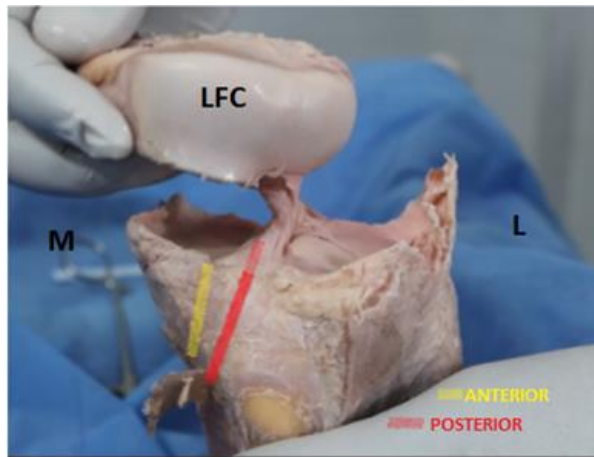
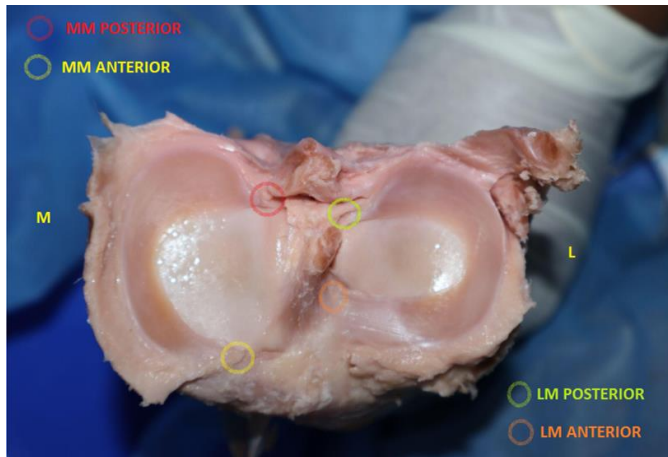
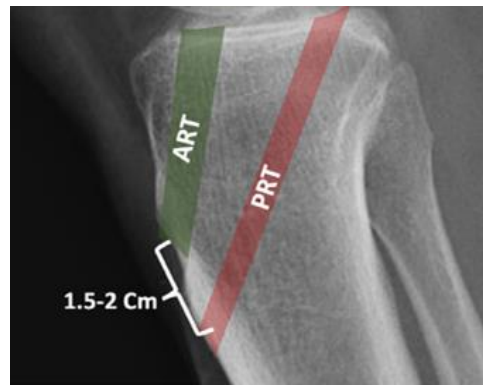
- X-ray: only mild OA
  - Scannogram: Normal alignment
  - MRI : complex tear with extrusion
  - Inflammatory markers: Negative
  - Diagnostic Arthroscopy : Non-salvageable meniscus
- Evaluation : assessed using **KOOS** and **Lysholm score**
  - At Pre-op , 3<sup>rd</sup> , 6<sup>th</sup> month and 1 year
- KOOS : Knee Injury and Osteoarthritis Outcome Score

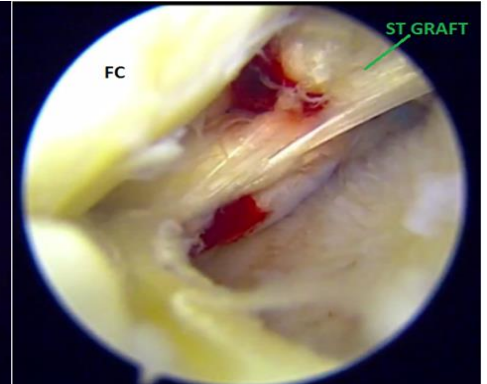
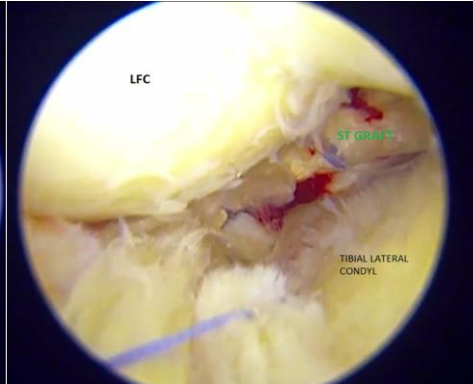
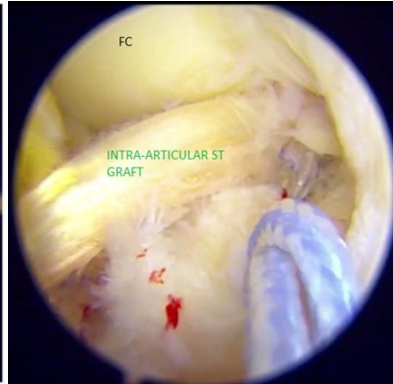
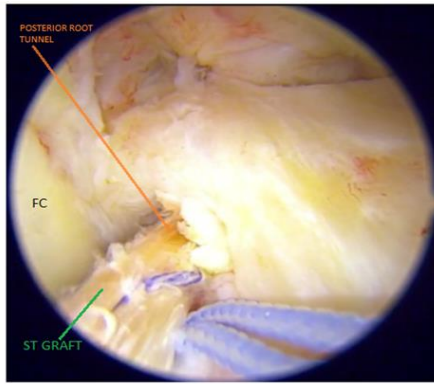
# TECHNIQUE

- Partial meniscectomy, preserve the peripheral rim
- Graft: Semitendinosus graft is doubled ( without detaching insertion)
- Prepare double-running sutures, pull out sutures and measure



- 2 tibial tunnels (4.5-5mm)
- Posterior & anterior root with jig





Graft passed  
through posterior  
tunnel

Brought intra-articularly

Anatomical shape attained by suturing the graft to the meniscal  
remnant using all-inside, inside-out and outside-in techniques.

- Remaining tendon brought out through anterior tunnel
- sutured to Semitendinosus insertion/ Bio screw
- Wound closure, Compression bandage and Knee immobilizer

#### POST OP PROTOCOL

- Non-weight bearing: 3 week & ROM ( 0-30 deg)
- Partial weight bearing: 3 week & ROM (0-90 deg)
- Full weight bearing: 6<sup>th</sup> week & Full ROM
- Squatting: 3<sup>rd</sup> month
- Repeat MRI: 3<sup>rd</sup> month

## RESULT

There is significant improvement in **KOOS**, **IKDC** and **Lysholm score** when compared to pre op.

Patient 1: 56/M- Lateral Meniscus

Patient 6: 63 /M Medial Meniscus

Patient 2: 73/F -Lateral Meniscus

Patient 7: 61/M Medial Meniscus

Patient 3: 71/M- Medial Meniscus

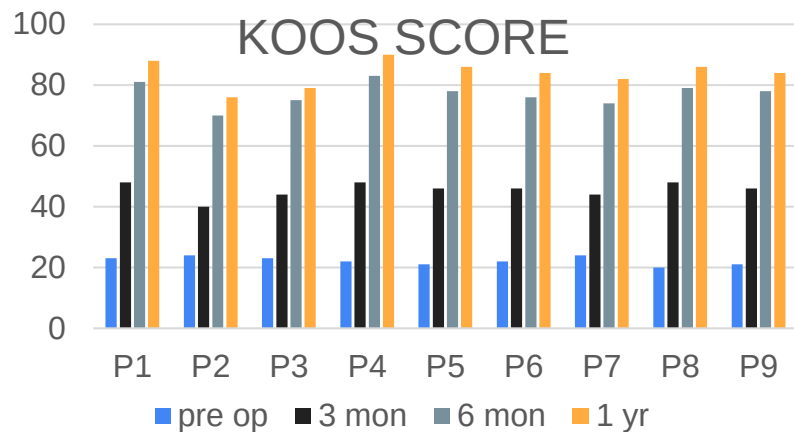
Patient 8 : 58/F Lateral Mensicus

Patient 4:54/F- Medial Meniscus

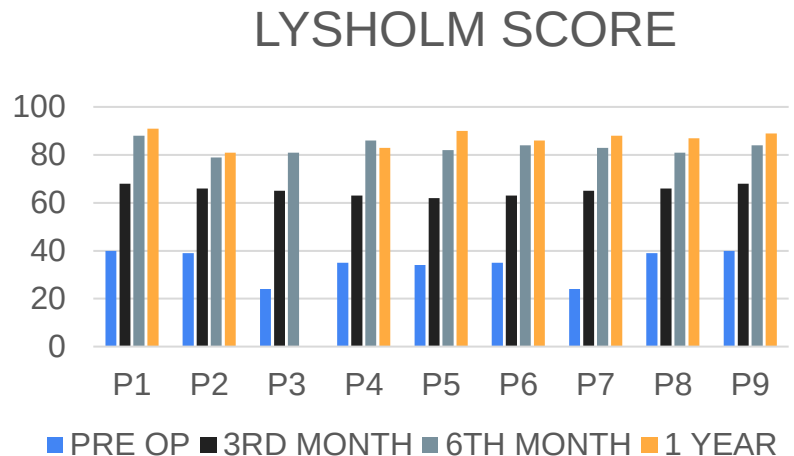
Patient 9: 57/F Medial Meniscus

Patient 5: 60/F- Lateral Meniscus





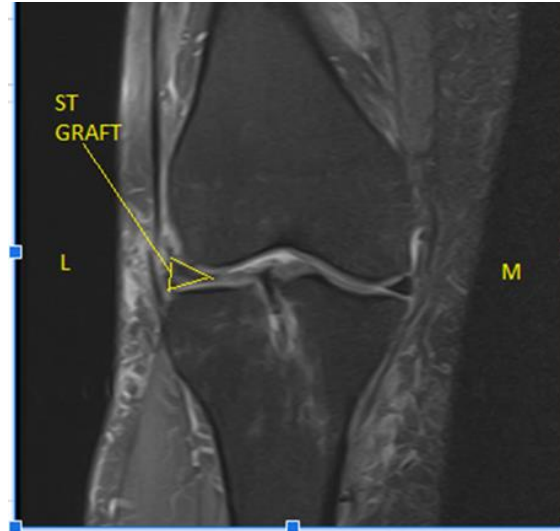
|    | PRE OP | 3 <sup>RD</sup> MONTH | 6 <sup>TH</sup> MONTH | 1 YEAR |
|----|--------|-----------------------|-----------------------|--------|
| P1 | 23     | 48                    | 81                    | 88     |
| P2 | 24     | 40                    | 70                    | 76     |
| P3 | 23     | 44                    | 75                    | 79     |
| P4 | 22     | 48                    | 83                    | 90     |
| P5 | 21     | 46                    | 78                    | 86     |
| P6 | 22     | 46                    | 76                    | 84     |
| P7 | 24     | 44                    | 74                    | 82     |
| P8 | 20     | 48                    | 79                    | 86     |
| P9 | 21     | 46                    | 78                    | 84     |



|    | PRE OP | 3 <sup>RD</sup> MONTH | 6 <sup>TH</sup> MONTH | 1 YEAR |
|----|--------|-----------------------|-----------------------|--------|
| P1 | 40     | 68                    | 88                    | 91     |
| P2 | 39     | 66                    | 79                    | 81     |
| P3 | 24     | 65                    | 81                    | 83     |
| P4 | 35     | 60                    | 86                    | 90     |
| P5 | 34     | 62                    | 82                    | 86     |
| P6 | 35     | 63                    | 84                    | 88     |
| P7 | 24     | 65                    | 83                    | 89     |
| P8 | 39     | 66                    | 81                    | 87     |
| P9 | 40     | 68                    | 84                    | 89     |

## MRI assessment at 3<sup>rd</sup> month

- The root anchoring of the graft was distinctly visible in every case.
- Exhibited a wedge-shaped, meniscus-like appearance



Coronal PD image



Sagittal PD image

| PROS                                                                                               | CONS                                                                             |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Cost-effective                                                                                     | Requires a high degree of surgical skill                                         |
| No immunologic reaction                                                                            | Need all types of meniscal repair skills (all inside, inside out and outside in) |
| No disease transmission                                                                            | The possibility of donor-site morbidity exists                                   |
| Easy graft harvest                                                                                 | Fiber direction differs from that in the natural meniscus                        |
| There is no need to size the meniscus, as excess meniscus can be accommodated in the tunnel or cut |                                                                                  |
| Have more biomechanical evidence of its strength                                                   |                                                                                  |
| Can decide intraoperatively                                                                        |                                                                                  |

## CONCLUSION

- The short-term study demonstrates improvement in weight-bearing, pain and overall quality of life.
- The autologous semitendinosus tendon graft is an effective and viable alternative for meniscus replacement.
- A comprehensive long-term study is necessary to validate this technique among athletes.

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