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Short and proximalized interference screw fixation leads to tibial tunnel bone re-growth and better hamstring graft integration in ACL reconstruction.

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Faculty Disclosure Information

- Nothing to disclosure.

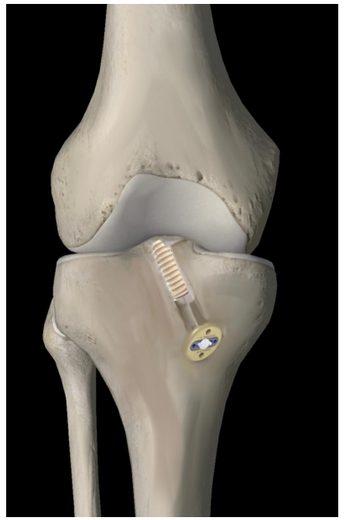
HYPOTHESIS

When a double tibial fixation was used in ACLR with a short graft of autologous hamstrings, tibial tunnel bone re-growth and better graft integration would be observed at short-term follow-up.

METHODS

- 112 PATIENTS -> ACL RECONSTRUCTION WITH HAMSTRINGS

- GROUP I
- 35 PATIENTS
- INTERFERENCE SCREW +
- CORTICAL BUTTON.

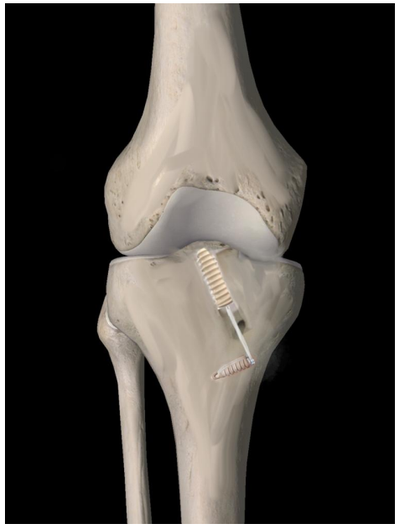


GROUP II

37 PATIENTS

INTERFERENCE SCREW+

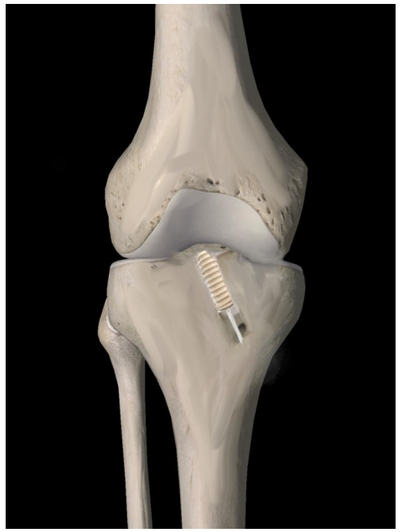
ANCHOR.



GROUP III

40 PATIENTS

INTERFERENCE SCREW.

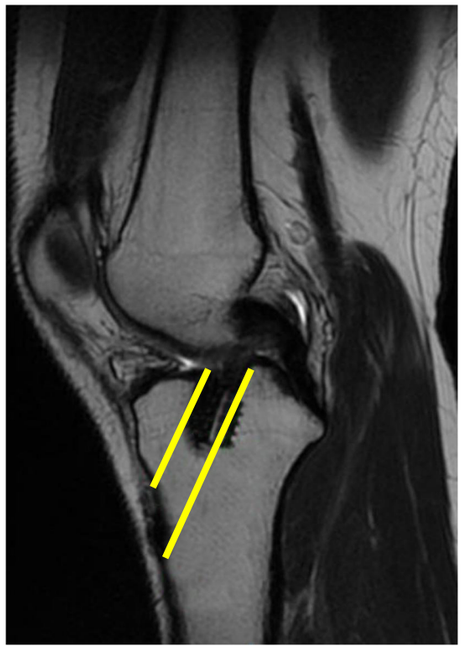


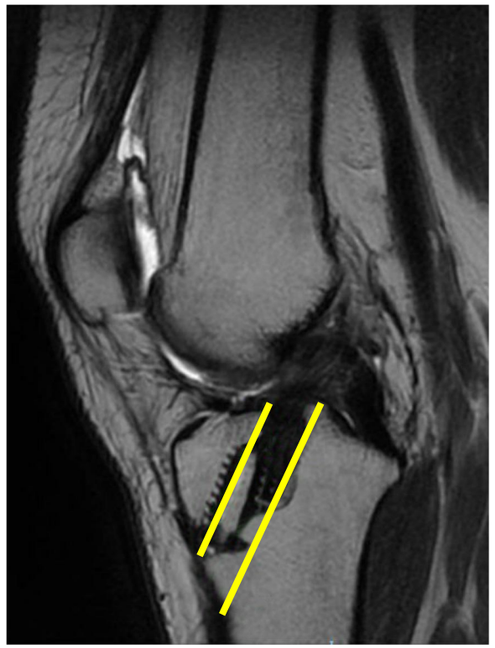
METHODS

- GROUP I

GROUP II

GROUP III





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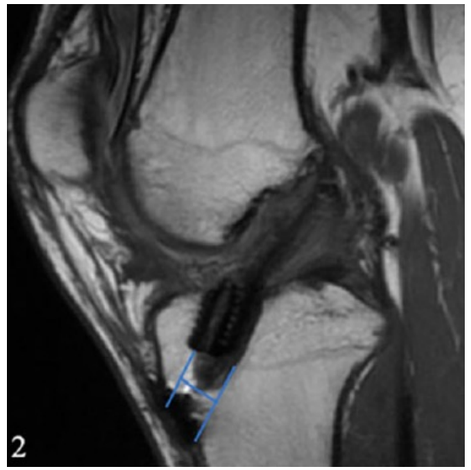
Yellow lines. Tibial tunnel : MRI sagital view. 6 months POP

ASSESSMENT OF BONE RE-GROWTH IN THE TIBIAL TUNNEL.

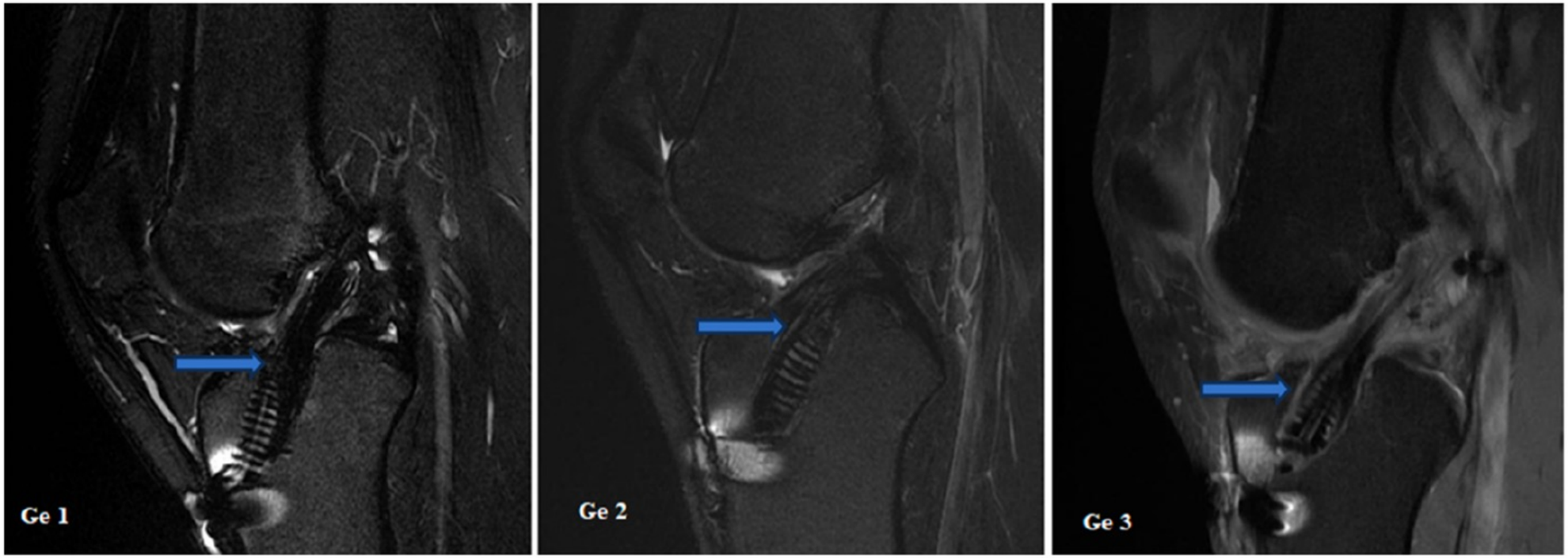
•**Measurement**: Distance between the distal part of the interference screw and anterior tibial cortex.

•**Criteria**:

- **≤ 2 mm**: Insufficient to evaluate bone re-growth.
- **> 2 mm**: Tunnel divided into two segments for assessment.
  - **No Re-growth**: Both segments empty. (1)
  - **Partial Re-growth**: One segment filled with bone. (2)
  - **Complete Re-growth**: Both segments filled with bone. (3)



MEASUREMENT GRAFT HEALING IN THE TUNNEL (GE CLASSIFICATION).



Ge1. Low intensity, no fibrosis at the bone-graft interface, full attachment. **Ge2**. High intensity over a portion of the interface. **Ge3**. High intensity over the entire bone-graft interface, poor attachment.

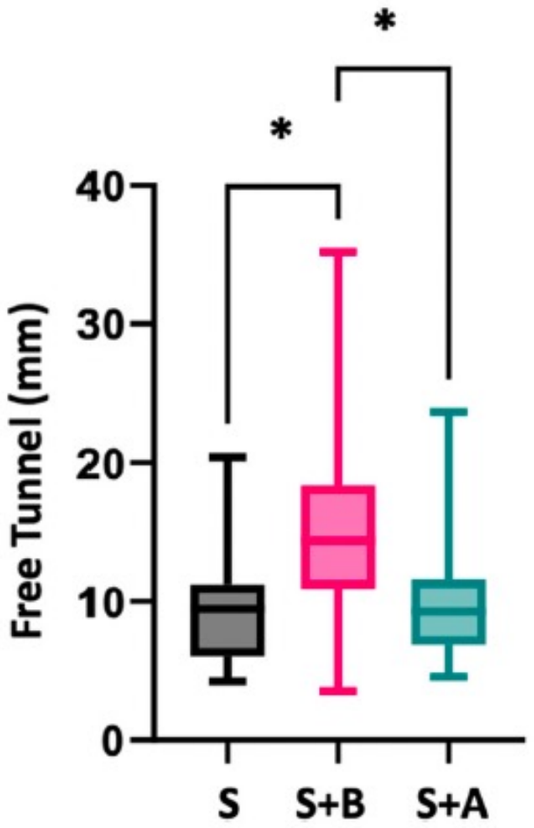
RESULTS:

Tibial Tunnel Free Space Length Comparison (Kruskall–Wallis Test)

- **Group S (Screw only)**: 9.29 ± 3.85 mm
- **Group S + A (Screw + Anchor)**: 10.09 ± 4.53 mm
- **Group S + B (Screw + Button)**: **15.1 ± 5.88 mm**

  Significantly longer screw-free tunnel ($p < 0.001$)

👉 **Group S + B showed the highest free tunnel space.**



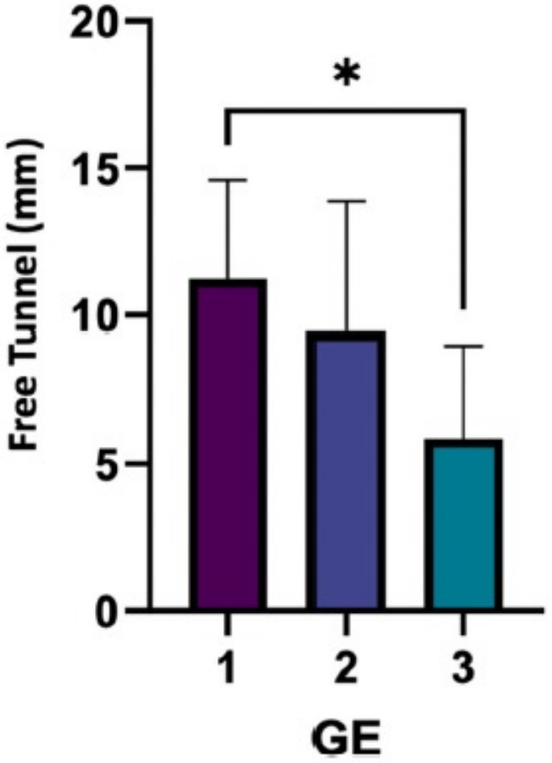
RESULTS:

Free Tibial Tunnel Space & Graft Integration (Ge Classification)

•**Significant difference** in free tunnel space between:

- **Ge1**: Highest graft integration
- **Ge3**: Lowest graft integration

👉 **Larger free tunnel space = better graft integration (Ge1)**



CONCLUSION:

Bone re-growth & **graft-tunnel integration** are significantly linked to:

➤ **Free space** between anterior tibial cortex and the most distal portion of the interference screw.

Hence the use of a short and proximalized interference screw is suggested to restore bone stock after hamstring ACLR.

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