

Anterior cruciate ligament repair using dynamic intraligamentary stabilization provides a similarly successful outcome as all-inside anterior cruciate ligament reconstruction with a faster psychological recovery in moderately active patients

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The authors have nothing to disclose

Objectives:

To comparatively evaluate early to mid-term clinical results of case-matched patient groups of primary repairs with dynamic intraligamentary stabilization (DIS) or all-inside anterior cruciate ligament (ACL) reconstruction (ACLR) by an independent group

**Primary repair
with dynamic
intraligamentary
stabilization (DIS)**



**All-inside anterior
cruciate ligament
(ACL)
reconstruction**



Hypothesis:

- 1. The DIS technique would have a comparable success rate as the all-inside ACLR.**
- 2. The repair group was expected to demonstrate a greater psychological readiness as measured by the ACL-Return to Sports Index (ACLRSI) score than the ACLR group**

Patients and methods:

Single-center, retrospective cohort study

16 DIS vs 32 All-inside ACL-R patients

The ACLR patients were selected from a patient group with an injury-to operation time interval of fewer than three months.

PROMs:

IKDC subjective score,

Tegner,

Lysholm,

ACL Return to Sport after Injury (ACL-RSI) scale score

Complications

Lachmann and Pivot-Shift tests

Patients and methods:

ACL-R: All-inside reconstructions were done using a previously described GraftLink® technique in all cases. Femoral and tibial sockets were created using a retrograde drilling device (FlipCutter, Arthrex, Naples, FL, USA).

DIS: The DIS device was implanted as instructed by the developers. The Ligamys® Monoblock device was placed within the tibial socket

Results:

In the repair group, one repair failed (7%), whereas the ACLR group had one graft fail (3%).

Three (21%) of the repair group underwent re-arthroscopy at least one year postoperatively to remove the tibial device at the patient's request, one of whom also had a cyclops lesion.

Results:

| Baseline demographics of the study population | | | | | | | | | |
|---|-------------------------|-----------|--------|---------|---------------------|-----------|--------|---------|----------|
| | All-inside group (n=30) | | | | Repair group (n=15) | | | | <i>p</i> |
| | % | Mean±SD | Median | Min-Max | % | Mean±SD | Median | Min-Max | |
| Age (year) | | 27.4±10.2 | | | | 27.8±9.5 | | | NS |
| Sex | | | | | | | | | |
| Male | 80 | | | | 80 | | | | NS |
| Mean body mass index (kg/m ²) | | 23.2±3.2 | | | | 23.6±2.5 | | | NS |
| Time to surgery (weeks) | | 7.1±2.8 | | | | 2.2±2.0 | | | <0.001 |
| Side of injury (right) | 63 | | | | 67 | | | | NS |
| Concomitant injuries | | | | | | | | | |
| Meniscal injuries | 20 | | | | 13 | | | | NS |
| Chondral injuries (Grade 1-2) | 7 | | | | 13 | | | | NS |
| Collateral ligament sprain | - | | | | 7 | | | | NS |
| Follow-up time (months) | | 48.2±11.4 | | | | 50.8±13.5 | | | NS |
| Pre-injury Tegner score | | | 4.5 | 3-7 | | | 5 | 3-9 | |

SD: Standard deviation; NS: Non-significant.

Results:

| Comparing the preoperative and postoperative Lachman's test | | | | | |
|---|------------|----|------------------|----|----------|
| Lachman's test | ACL repair | | All-inside ACL-R | | <i>p</i> |
| | n | % | n | % | |
| Preoperative | | | | | |
| Grade 2 (5-10 mm) | 7 | 47 | 16 | 53 | NS |
| Grade 3 (>10 mm) | 8 | 53 | 14 | 47 | NS |
| Postoperative | | | | | |
| Grade 0 | 9 | 60 | 29 | 97 | |
| Grade 1 (<5 mm) | 4 | 26 | - | - | NS |
| Grade 2 (5-10 mm) | 1 | 7 | - | - | |
| Grade 3 (>10 mm)* | 1 | 7 | 1 | 3 | |

ACL-R: Anterior cruciate ligament reconstruction; * Ruptured cases; NS: Non-significant.

Results:

Preoperative and postoperative patient-reported outcomes of the patients

| Timepoint | Pre-injury or preoperative* | | | At 6 th months | | | At 12 th months | | | At last follow-up | | |
|----------------------|-----------------------------|----------|----------|---------------------------|----------|----------|----------------------------|----------|----------|-------------------|----------|----------|
| | ACLR | DIS | <i>p</i> | ACLR | DIS | <i>p</i> | ACLR | DIS | <i>p</i> | ACLR | DIS | <i>p</i> |
| Tegner | 4.5 (3-7) | 5 (3-9) | NS | 3 (2-6) | 4 (2-5) | NS | 4 (2-6) | 4 (3-7) | NS | 4.5 (3-7) | 5 (3-7) | NS |
| Lysholm preoperative | 66.8±8.5 | 67.3±7.5 | NS | 78.1±9.6 | 87.1±6.2 | NS | 91.5±5.1 | 93.4±4 | NS | 95.1±3 | 96.3±2.6 | NS |
| IKDC subjective | 99.1±1.3 | 99.3±1.4 | NS | 71.9±6.6 | 82±6 | NS | 86.1±7.6 | 88.8±4.2 | NS | 94.6±3.7 | 95.4±2.8 | NS |
| ACL-RSI | - | - | - | 50.3±7.2 | 57.6±6.3 | <0.001 | 70.7±6.9 | 74.8±5.2 | 0.01 | 84.3±4.7 | 86±5 | NS |

* Preoperative for Lysholm and preinjury for Tegner and IKDC scores; ACL-R: Anterior cruciate ligament reconstruction; DIS: Dynamic intraligamentary stabilization; IKDC: International Knee Documentation Committee; ACL-RSI: ACL-Return to Sports Index; NS: Non-significant.

Conclusion:

- 1. Primary ACL repair using the DIS technique yields comparable results in terms of patient-reported outcomes and clinical results as by an all-inside ACLR technique in moderately active patients.**
- 2. The DIS technique is reliable and reproducible and associated with an early and speedier psychological recovery in a carefully selected, moderately active patient group.**

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