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PERCUTANEOUS RELEASE OF THE MEDIAL COLLATERAL LIGAMENT DURING ARTHROSCOPY IMPROVES ACCESS TO THE MEDIAL COMPARTMENT WITHOUT AFFECTING THE COURSE OF KNEE RESTORATION

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- No financial support, grants, or compensation were received that could influence the objectivity of the research.
- There are no conflicts of interest related to the topic of this research.
- The research was conducted in compliance with ethical standards, including obtaining informed consent from participants (if applicable).
- The information presented in this report is not intended for commercial promotion or advertising.

The Challenge of Limited Access

The Problem

Achieving complete visualization of the internal joint space is essential for successful knee arthroscopy. However, accessing certain areas, particularly the medial compartment, can be challenging due to anatomical constraints. This can lead to complications, such as cartilage damage, during surgery.

The Solution

A novel approach involves percutaneous release of the medial collateral ligament (MCL). This technique widens the medial compartment, providing surgeons with improved access and visualization, leading to more precise and effective procedures.

Study Design and Methods

1

Study Design

A prospective study was conducted with two groups: a study group (n=32) and a control group (n=36). The study group underwent partial meniscectomy with percutaneous MCL release, while the control group underwent only partial meniscectomy.

2

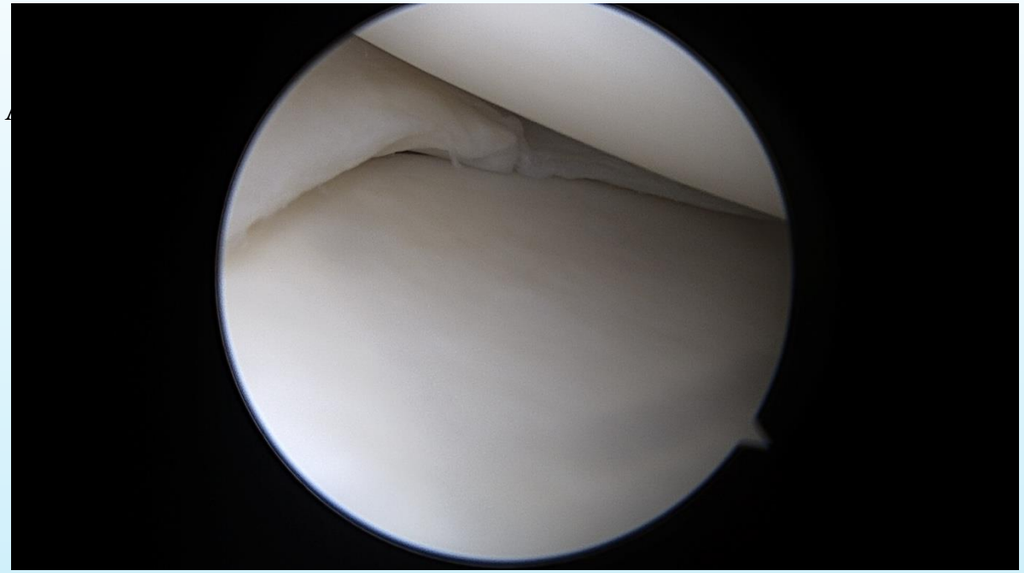
Assessment Criteria

The study analyzed pain levels using VAS scores, functional recovery using the Tegner Lysholm scale, and the occurrence of medial instability. These assessments were performed at various time points during the postoperative period.

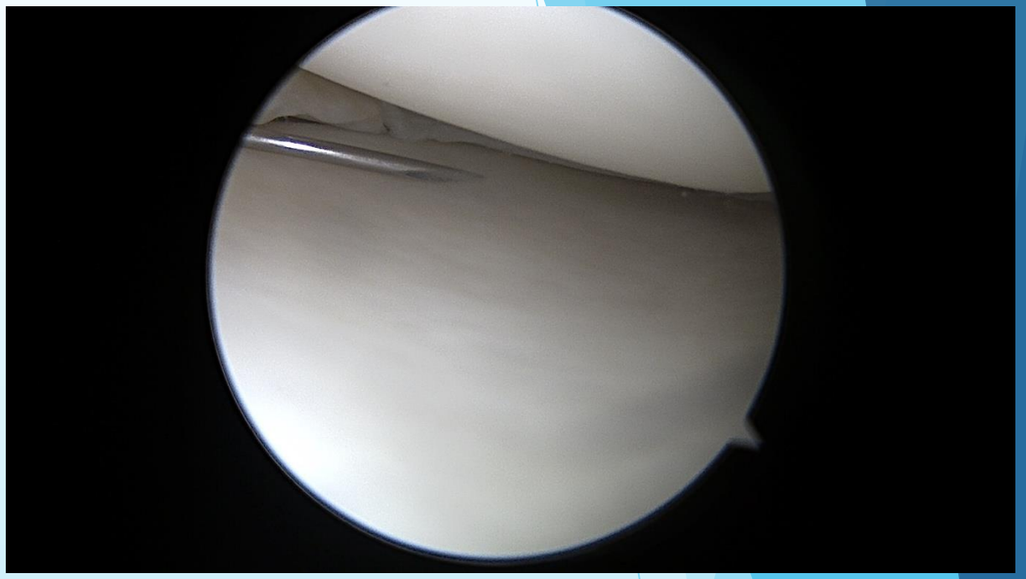
3

Ethical Considerations

The study was approved by the Bioethics Commission and conducted according to international ethical guidelines, including the ICH-GCP and the Declaration of Human Rights.



A



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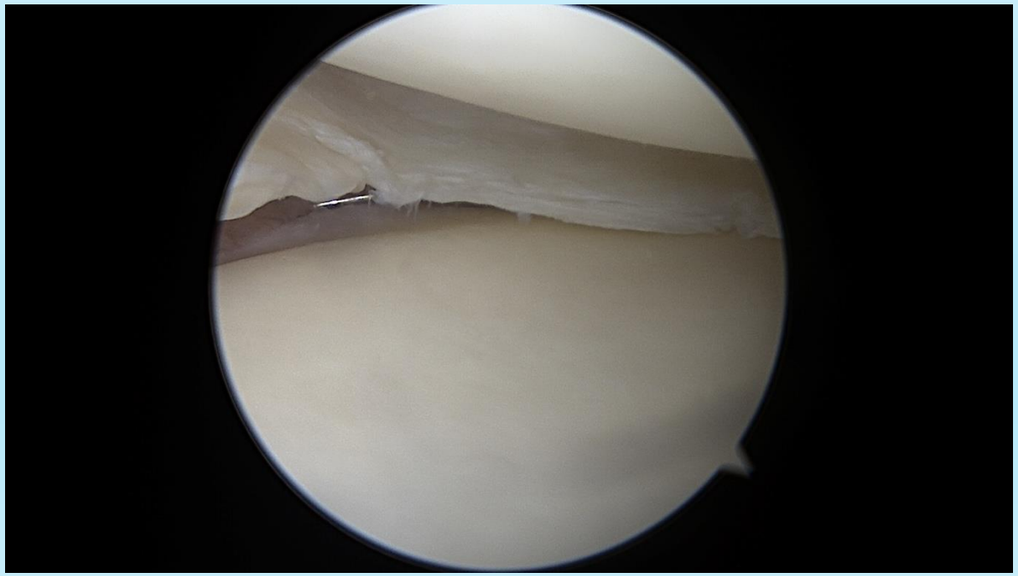

C

Images obtained during arthroscopy of the knee joint:

A – condition of the medial part of the knee joint opening before procedure;

B – partial dissection of the distal portion of the medial collateral ligament with a needle;

C - the result of the opening of the medial part of the knee joint.

Pain and Functional Recovery

Pain Reduction

Both groups demonstrated significant pain reduction over time, as measured by VAS scores. However, no significant difference in pain intensity was observed between the groups.

Functional Improvement

Patients in both groups showed statistically significant improvement in functional status 6 months post-surgery compared to their preoperative scores, according to the Tegner Lysholm scale. However, there was no significant difference between the groups on this scale.

Intensity of pain syndrome after surgery according to VAS, Me [Q25; Q75]

Terms of the study	Study group (n=32)	Comparison group (n=36)	p*, value
Before surgery	5.0 [3.0; 6.0]	5.0 [4.0; 6.0]	p=0,797
Day 2	6.0 [4.0; 6.0]	6.0 [3.0; 6.0]	p=0,205
6 weeks	2.0 [1.0; 2.0]	2.0 [0.0; 2.0]	p=0,871

*– Mann-Whitney, p – statistically significant at p<0.05

Functional state of patients according to the Tegner Lysholm scale, Me [Q25; Q75]

Terms of the study	Study group (n=32)	Comparison group (n=36)	p*, value
Before surgery	62.0 [56.0; 70.0]	60.0 [55.0; 67.0]	p=0,596
6 weeks	93.0 [90.0; 95.0]	92.0 [87.0; 94.0]	p=0,771
p*, value	p=0,0034	p=0,0071	

*– Mann-Whitney, p – statistically significant at p<0.05

Medial Instability

Valgus Deviation

The study group showed a slight increase in valgus deviation **(no more than 5º)** of the tibia in 14 patients (43.75%) during the valgus stress test performed in the early postoperative period.

No Subjective Instability

However, after 6 weeks, none of the patients in the study group reported subjective instability or weakness in the knee joint, indicating that the percutaneous MCL release did not compromise the knee joint stability.

Key Findings

No Impact on Postoperative Course

The percutaneous MCL release did not adversely affect the postoperative recovery or functional outcomes of patients undergoing partial meniscectomy.

Improved Access

The technique provides surgeons with improved access to the medial compartment of the knee, potentially leading to more accurate and efficient procedures.

No Compromise to Stability

Despite the slight increase in valgus deviation in the early postoperative period, the technique did not result in any long-term instability or weakness of the knee joint.

Conclusion

- Percutaneous MCL release appears to be a safe and effective technique for widening the medial compartment during knee arthroscopy. It provides surgeons with improved access and visualization, without compromising joint stability or affecting postoperative recovery. Further research is needed to confirm its long-term efficacy and potential applications in other knee procedures.

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