



ISAKOS
CONGRESS
2025



MUNICH
GERMANY
June 8-11

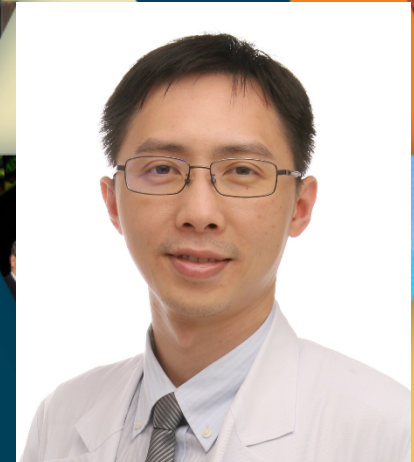


臺北榮民總醫院
Taipei Veterans General Hospital

All-Inside Wrapping Repair of Lateral Meniscus Bucket-Handle Tears: Clinical and Imaging Outcomes

Kun-Hui Chen, MD

Taipei Veterans General Hospital
Taiwan



Faculty Disclosure Information

Nothing to disclosure



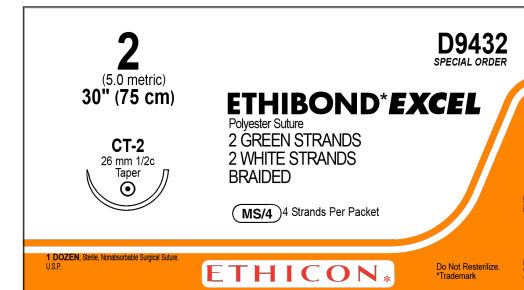
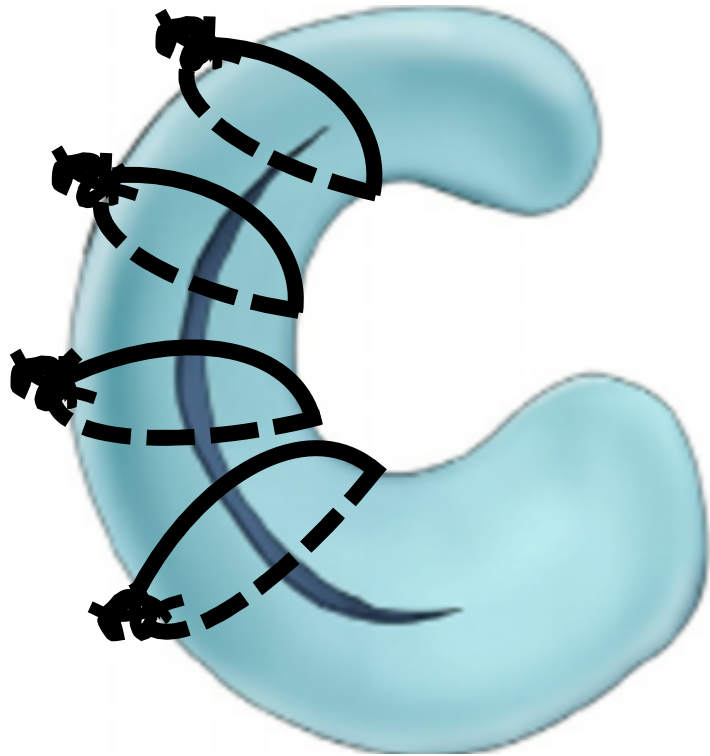
ISAKOS
CONGRESS
2025



MUNICH
GERMANY
June 8-11

All-inside Wrapping repair

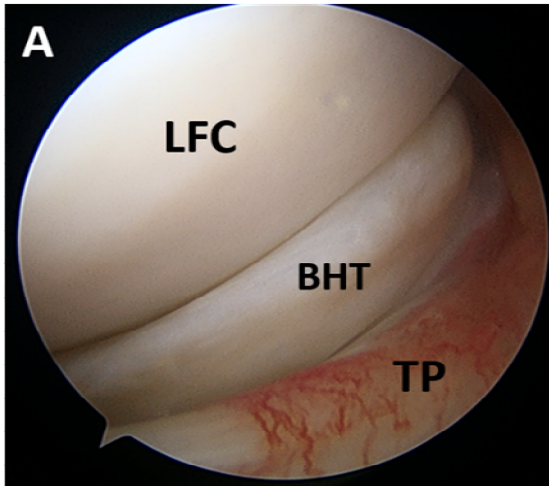
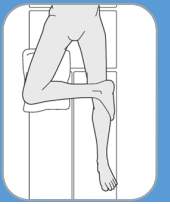
An alternative option for bucket-handle tear



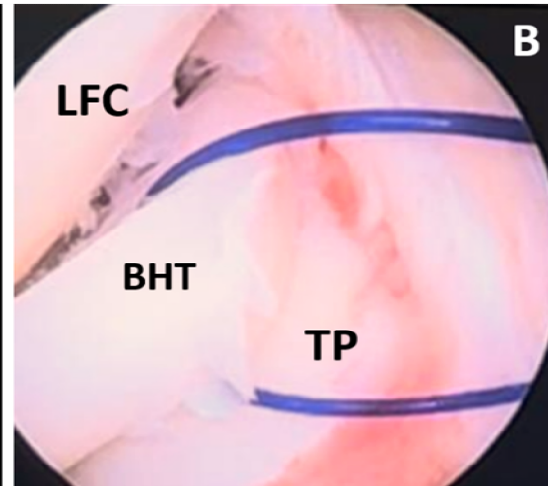
no. 2 Ethibond suture

Surgical technique, steps

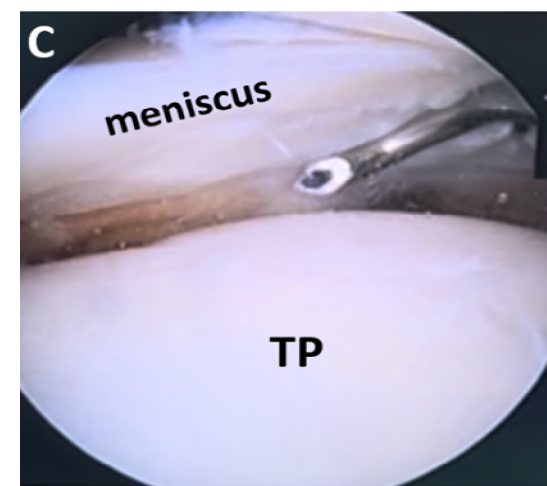
Supine position
Figure-of-four



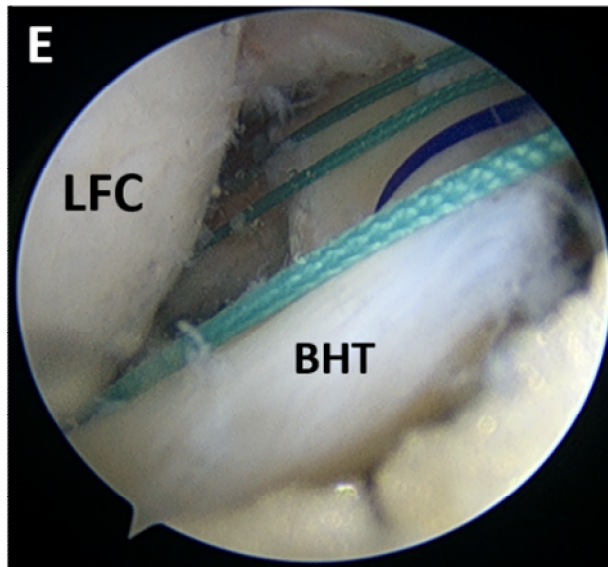
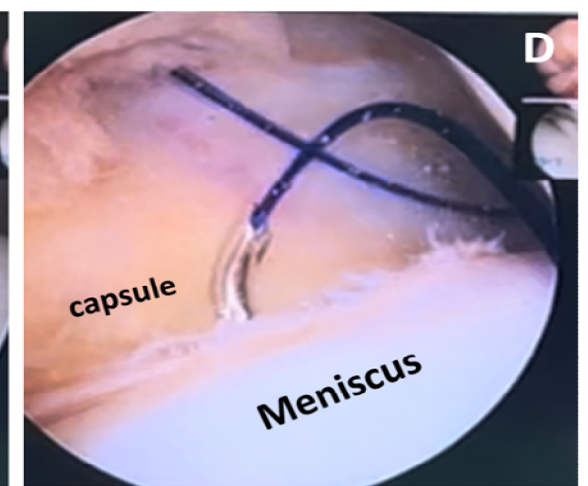
BHT



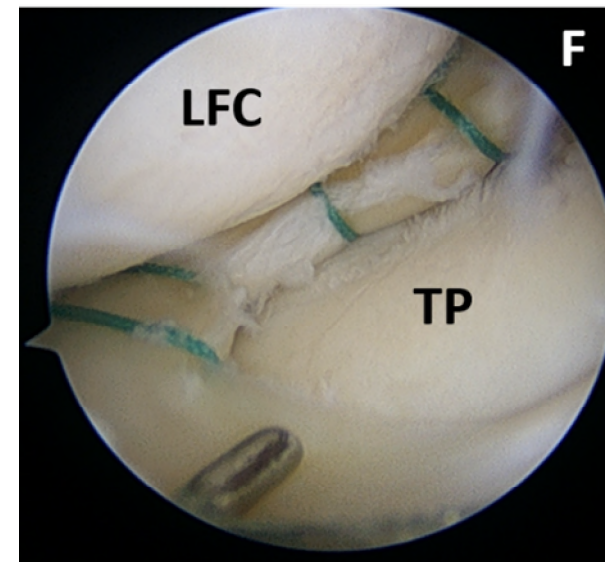
Traction suture (blue)



Suture hook passing the capsule



Wrapping Loops with
Ethibond (green)
traction suture (blue)



Wrapping suture
repair (Done !)

Retrospective Study

Research Subjects	LM BHT (2012-2021)
Treatment (surgical technique)	@ all-inside wrapping repair technique
Result	Clinical and Radiographic healing outcomes

Clinical follow-up

- At least 2 years after surgery
- Post-operative IKDC score
- Clinical failure: Reoperation due to meniscus problem

Radiographic follow-up

- Henning's criteria

Profile of the patients

Patient data	LM BHT + ACL	Isolated LM BHT	Total
Patients	22	12	34
Mean age, years (range)	31.1 (19–44)	26.3 (16–43)	29.5 (16–44)
Sex (M:F)	15:8	8:3	23:11
Side (R:L)	9:14	6:5	15:19

Clinical result (mean 4.2 yrs f/u)

- Clinical healing rate of **94.1%**
 - **2** patients (5.9%) required subsequent partial meniscectomy
 - Males, 1 isolated BHT, 1 concomitant ACL tear
 - Persistent pain, locking sensation, MRI (failure to heal)
- IKDC score: **83.7**
- No infection or neurovascular complications

MRI Result

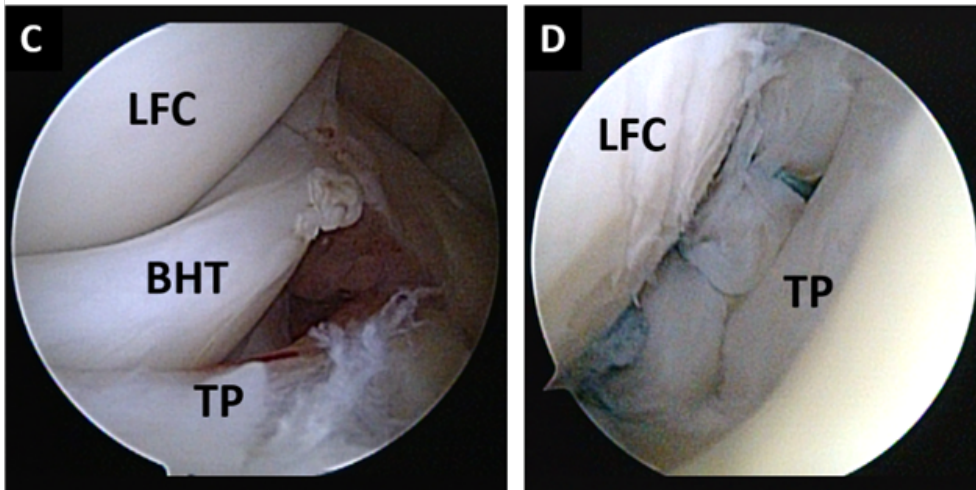
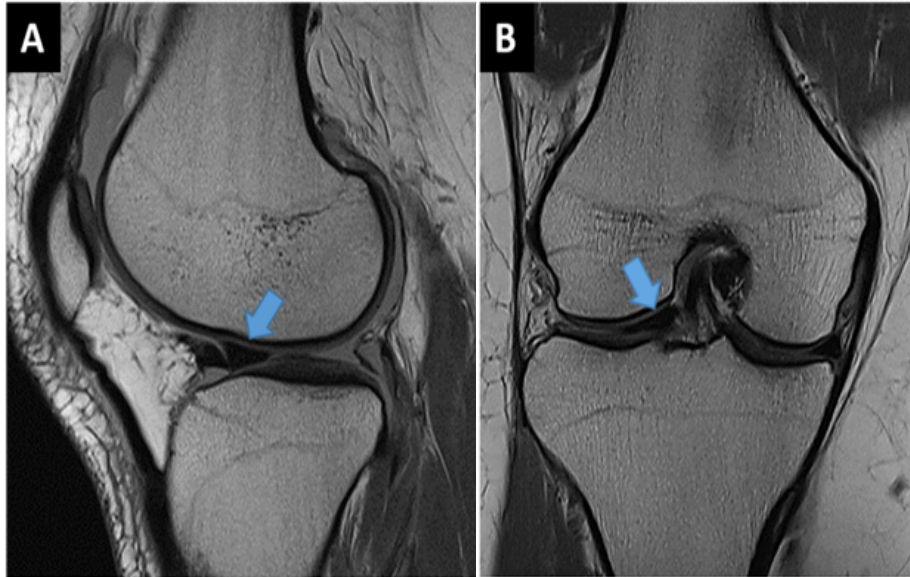
	BHT + ACLR	Isolated	Total (Persantge)
Complete healing	16	6	22 (66.6%)
Partial Healing (>50 %)	4	4	8 (24.2%)
Failure to heal (<50 %)	2	2	4 (12.5%)

Clinical & Radiological healing results after repair

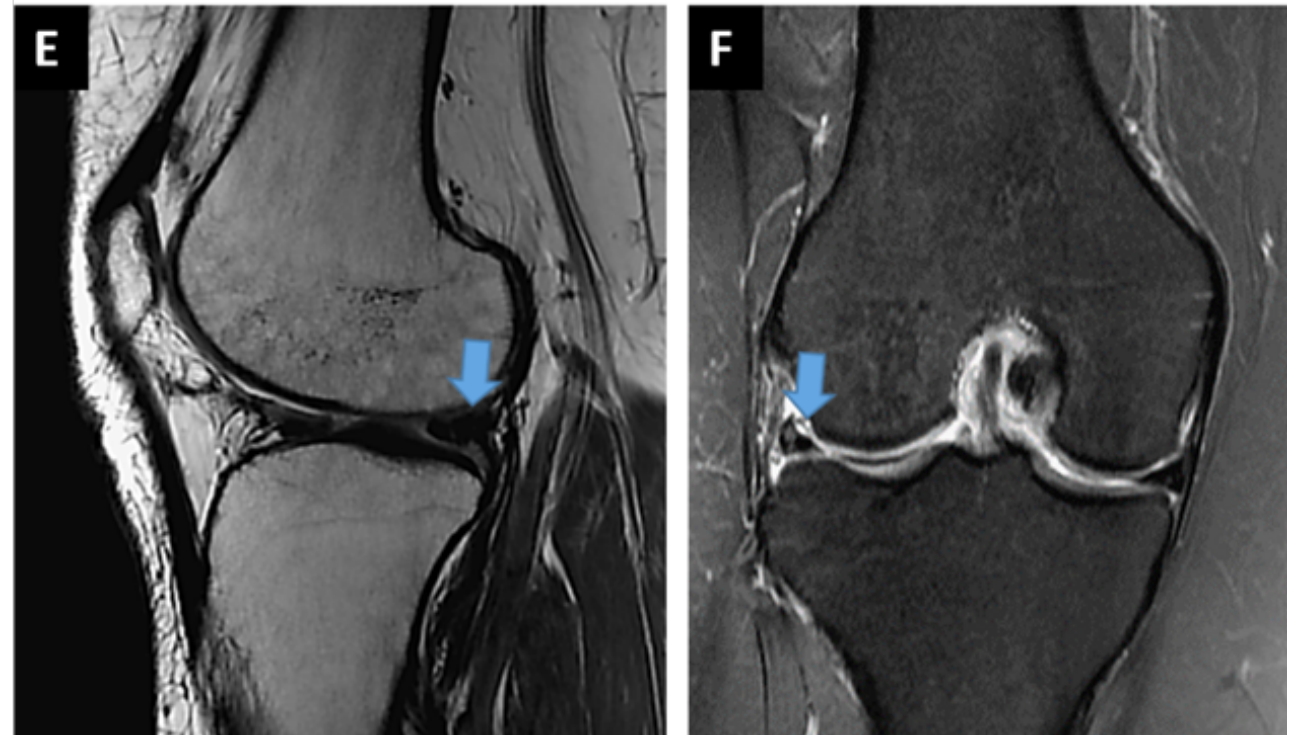
MRI	Clinical	
	Healing	Failure
Complete healing (22)	22 (64.7%)	0 (0%)
Partial healing/failure to heal (12)	10 (29.41%)	2 (5.88%)

Complete healing of a LM BHT

25 year old female

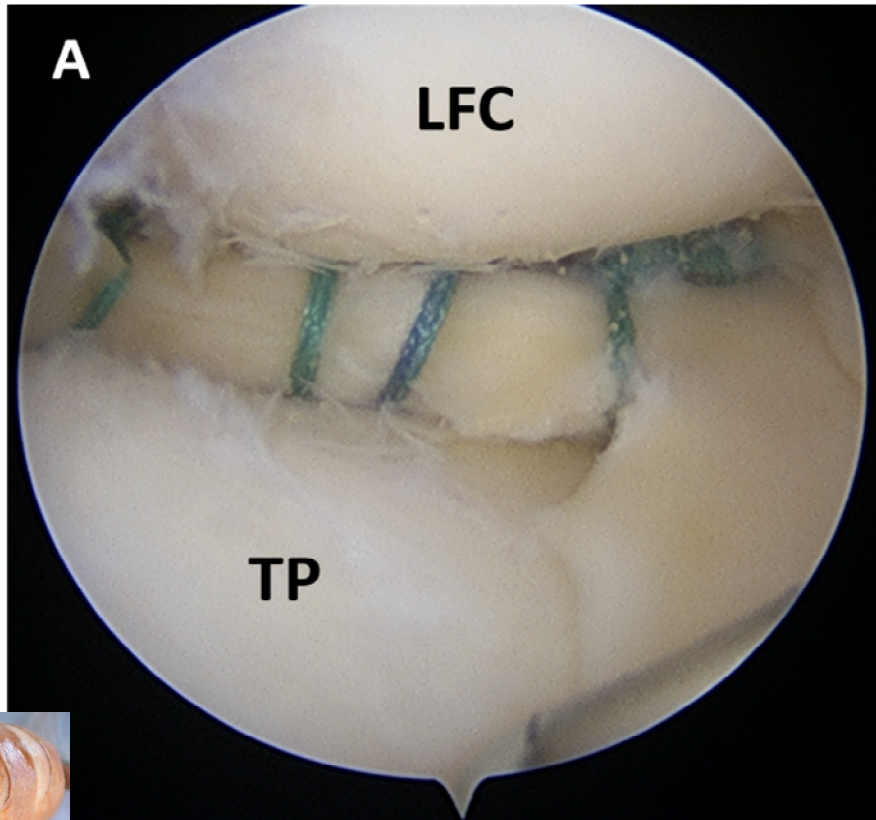


6 months after surgery

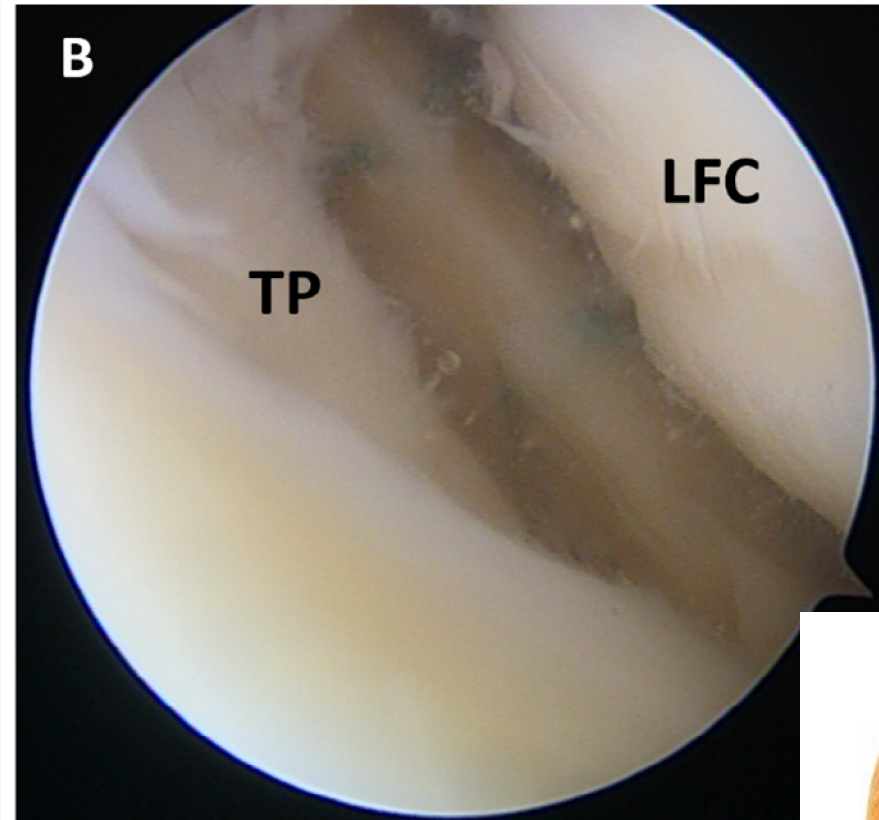


1. Healing
2. Remodeling

Meniscus remodeling (2nd look, 2 yrs, ACL retar)



Circular shape



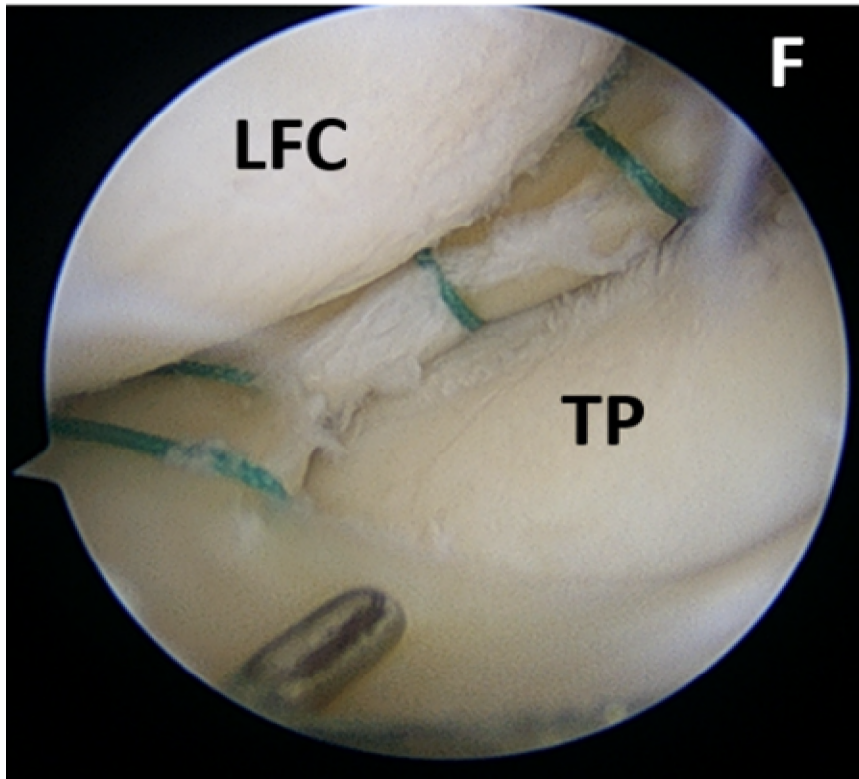
Triangular shape

Integration of the sutures



Conclusion

All-inside wrapping repair technique



- Clinical healing rate: 94.1%
- Radiological healing: 66.6%
- F/U IKDC score: 83.7
- No N/V complication
- Less Cost

Could be an option for LMBHT

References

1. Seedhom, B.B., D. Dowson, and V. Wright, Proceedings: Functions of the menisci. A preliminary study. *Ann Rheum Dis*, 1974. 33(1): p. 111.
2. Voloshin, A.S. and J. Wosk, Shock absorption of meniscectomized and painful knees: a comparative in vivo study. *J Biomed Eng*, 1983. 5(2): p. 157-61.
3. Markolf, K.L., J.S. Mensch, and H.C. Amstutz, Stiffness and laxity of the knee--the contributions of the supporting structures. A quantitative in vitro study. *J Bone Joint Surg Am*, 1976. 58(5): p. 583-94.
4. Allen, C.R., et al., Importance of the medial meniscus in the anterior cruciate ligament-deficient knee. *J Orthop Res*, 2000. 18(1): p. 109-15.
5. Zimny, M.L., D.J. Albright, and E. Dabiez, Mechanoreceptors in the human medial meniscus. *Acta Anat (Basel)*, 1988. 133(1): p. 35-40.
6. Abrams, G.D., et al., Trends in meniscus repair and meniscectomy in the United States, 2005-2011. *Am J Sports Med*, 2013. 41(10): p. 2333-9.
7. Krause, W.R., et al., Mechanical changes in the knee after meniscectomy. *J Bone Joint Surg Am*, 1976. 58(5): p. 599-604.
8. Lau, B.C., et al., Biomechanical Consequences of Meniscal Tear, Partial Meniscectomy, and Meniscal Repair in the Knee. *JBJS Rev*, 2018. 6(4): p. e3.
9. Fairbank, T.J., Knee joint changes after meniscectomy. *J Bone Joint Surg Br*, 1948. 30B(4): p. 664-70.
10. Metcalf, M.H. and G.R. Barrett, Prospective evaluation of 1485 meniscal tear patterns in patients with stable knees. *Am J Sports Med*, 2004. 32(3): p. 675-80.
11. Chen, K.H., et al., Correlation of Meniscal Tear with Timing of Anterior Cruciate Ligament Reconstruction in Patients without Initially Concurrent Meniscal Tear. *J Knee Surg*, 2019. 32(11): p. 1128-1132.
12. Camacho, M.A., The double posterior cruciate ligament sign. *Radiology*, 2004. 233(2): p. 503-4.
13. Magee, T.H. and G.W. Hinson, MRI of meniscal bucket-handle tears. *Skeletal Radiol*, 1998. 27(9): p. 495-9.
14. Paxton, E.S., M.V. Stock, and R.H. Brophy, Meniscal repair versus partial meniscectomy: a systematic review comparing reoperation rates and clinical outcomes. *Arthroscopy*, 2011. 27(9): p. 1275-88.
15. Kalifis, G., et al., Long-term follow-up of bucket-handle meniscal repairs: chondroprotective effect outweighs high failure risk. *Knee Surg Sports Traumatol Arthrosc*, 2022. 30(7): p. 2209-2214.
16. Goodwillie, A.D., K. Myers, and N.A. Sgaglione, Current strategies and approaches to meniscal repair. *J Knee Surg*, 2014. 27(6): p. 423-34.
17. Grant, J.A., et al., Comparison of inside-out and all-inside techniques for the repair of isolated meniscal tears: a systematic review. *Am J Sports Med*, 2012. 40(2): p. 459-68.
18. Fillingham, Y.A., et al., Inside-Out Versus All-Inside Repair of Isolated Meniscal Tears: An Updated Systematic Review. *Am J Sports Med*, 2017. 45(1): p. 234-242.
19. Vint, H., M. Quartley, and J.R. Robinson, All-inside versus inside-out meniscal repair: A systematic review and meta-analysis. *Knee*, 2021. 28: p. 326-337.
20. Kotsovolos, E.S., et al., Results of all-inside meniscal repair with the Fast-Fix meniscal repair system. *Arthroscopy*, 2006. 22(1): p. 3-9.
21. Marchetti, D.C., et al., A Contact Pressure Analysis Comparing an All-Inside and Inside-Out Surgical Repair Technique for Bucket-Handle Medial Meniscus Tears. *Arthroscopy*, 2017. 33(10): p. 1840-1848.
22. Ardizzone, C.A., et al., All-Inside Repair of Bucket-Handle Meniscal Tears: Clinical Outcomes and Prognostic Factors. *Am J Sports Med*, 2020. 48(13): p. 3386-3393.
23. Laible, C., D.A. Stein, and D.N. Kiridly, Meniscal repair. *J Am Acad Orthop Surg*, 2013. 21(4): p. 204-13.
24. Muench, L.N., et al., Clinical outcome and healing rate after meniscal bucket handle tear repair. *BMC Musculoskelet Disord*, 2022. 23(1): p. 1063.
25. Scott, G.A., B.L. Jolly, and C.E. Henning, Combined posterior incision and arthroscopic intra-articular repair of the meniscus. An examination of factors affecting healing. *J Bone Joint Surg Am*, 1986. 68(6): p. 847-61.
26. Ahn, J.H. and I. Oh, Arthroscopic all-inside lateral meniscus suture using posterolateral portal. *Arthroscopy*, 2006. 22(5): p. 572 e1-4.
27. Fiorentino, G., et al., Easy and Safe All-Inside Suture Technique for Posterior Horn Tears of Lateral Meniscus Using Standard Anteromedial and Anterolateral Portals. *Arthrosc Tech*, 2013. 2(4): p. e355-9.
28. Nobile, F., et al., All-inside repair of meniscal bucket handle tears: a retrospective study at mean 4-years follow-up evaluation. *J Biol Regul Homeost Agents*, 2020. 34(4 Suppl. 3): p. 183-190 Congress of the Italian Orthopaedic Research Society.
29. Chuaychoosakoon, C., et al., The Danger Zone for Iatrogenic Neurovascular Injury in All-Inside Lateral Meniscal Repair in Relation to the Popliteal Tendon: An MRI Study. *Orthop J Sports Med*, 2021. 9(10): p. 23259671211038397.
30. Cannon, W.D., Jr. and J.M. Vittori, The incidence of healing in arthroscopic meniscal repairs in anterior cruciate ligament-reconstructed knees versus stable knees. *Am J Sports Med*, 1992. 20(2): p. 176-81.
31. Nepple, J.J., W.R. Dunn, and R.W. Wright, Meniscal repair outcomes at greater than five years: a systematic literature review and meta-analysis. *J Bone Joint Surg Am*, 2012. 94(24): p. 2222-7.
32. Pujol, N., et al., Long-term outcomes of all-inside meniscal repair. *Knee Surg Sports Traumatol Arthrosc*, 2015. 23(1): p. 219-24.
33. Westermann, R.W., et al., All-Inside Versus Inside-Out Meniscal Repair With Concurrent Anterior Cruciate Ligament Reconstruction: A Meta-regression Analysis. *Am J Sports Med*, 2017. 45(3): p. 719-724.

