

Fixation of Displaced Tibial Spine Avulsion Fracture by Suture Pullout Fixation - Functional outcome

Author:

Dr. Prasad Soraganvi

MS,DNB,MRCS,SICOT-dip

Fellowship in joint replacement surgery (Australia-IMRI, Germany-SMS)

Fellowship in arthroscopy and sports medicine (Italy-SMS, UK-IOSUK)

Professor and HOD

St. Peters medical college, Hosur, TN , India

faculty disclosure

Dr. Prasad Soraganvi

Professor and HOD •

Institution :

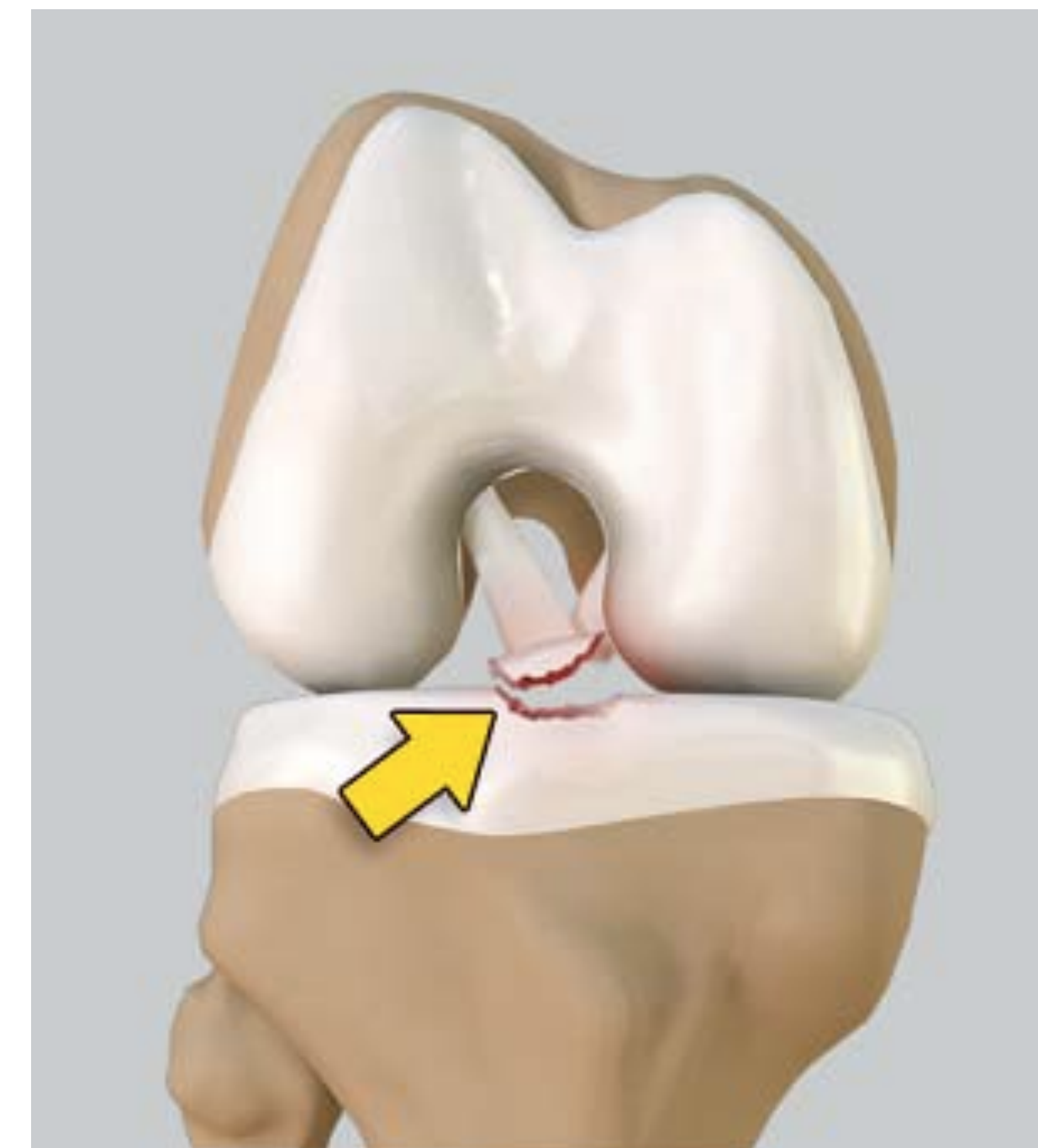
**• St. Peters Medical collCollege Hospital, SPMCHRI, Hosur,
TN,India**

• Conflict of interest: none

- Also called tibial eminence fracture or acl avulsion fractures

- Poncet : first person to document (1895)

- Meyers and Mc keever : described surgical management.



Type I



Type II



Type IIIA



Type IIIB



Type IV



AIM-

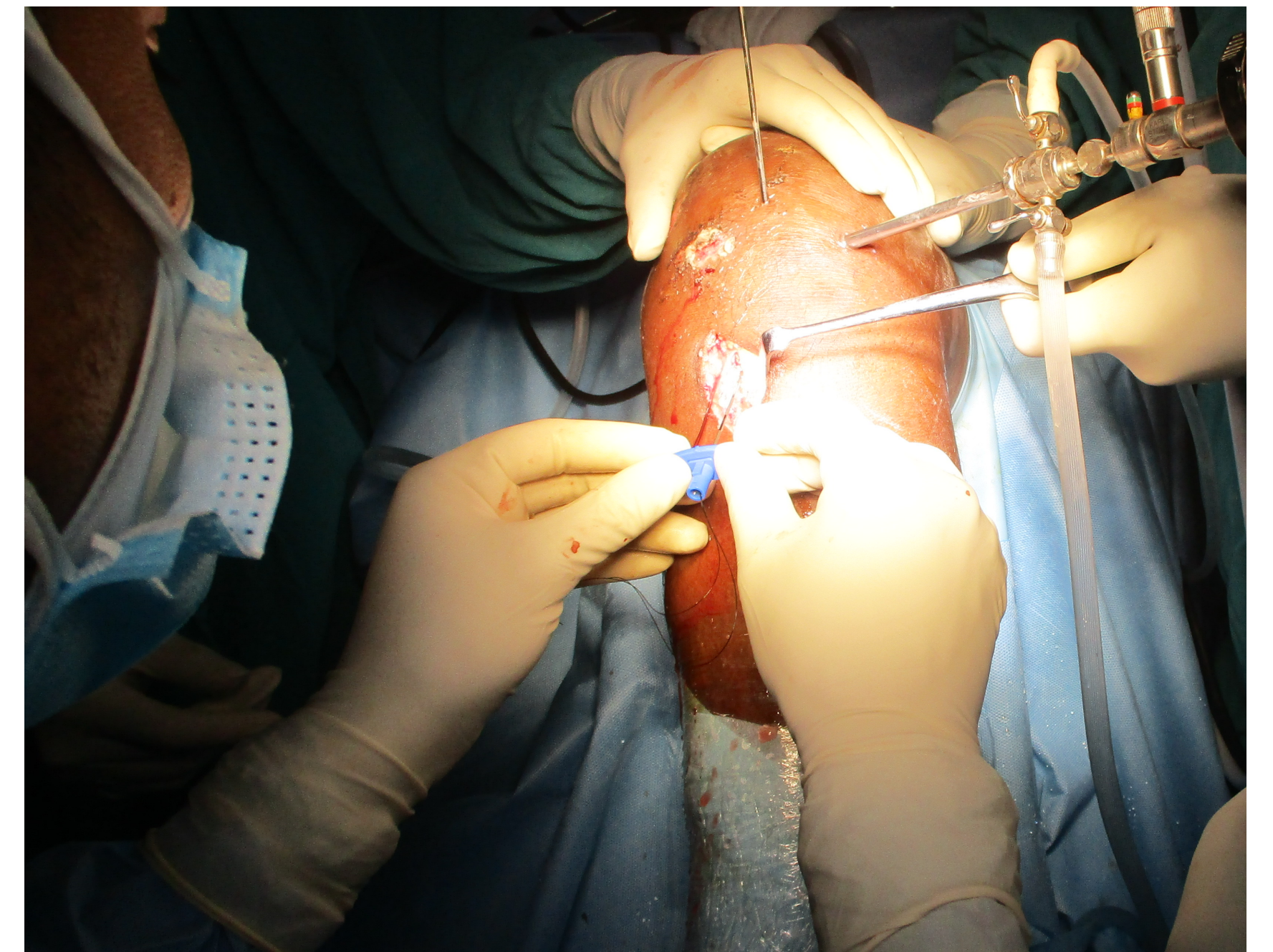
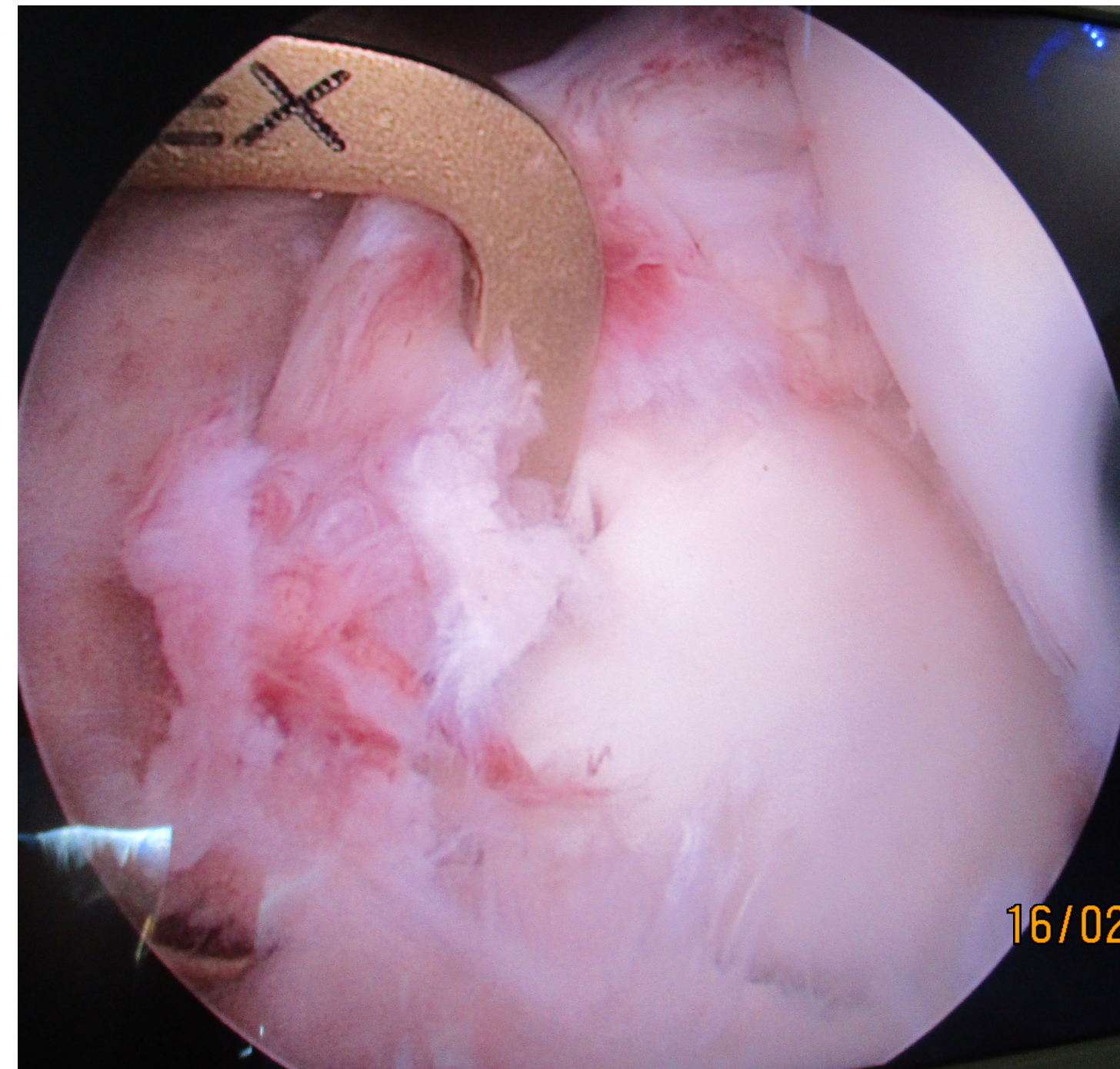
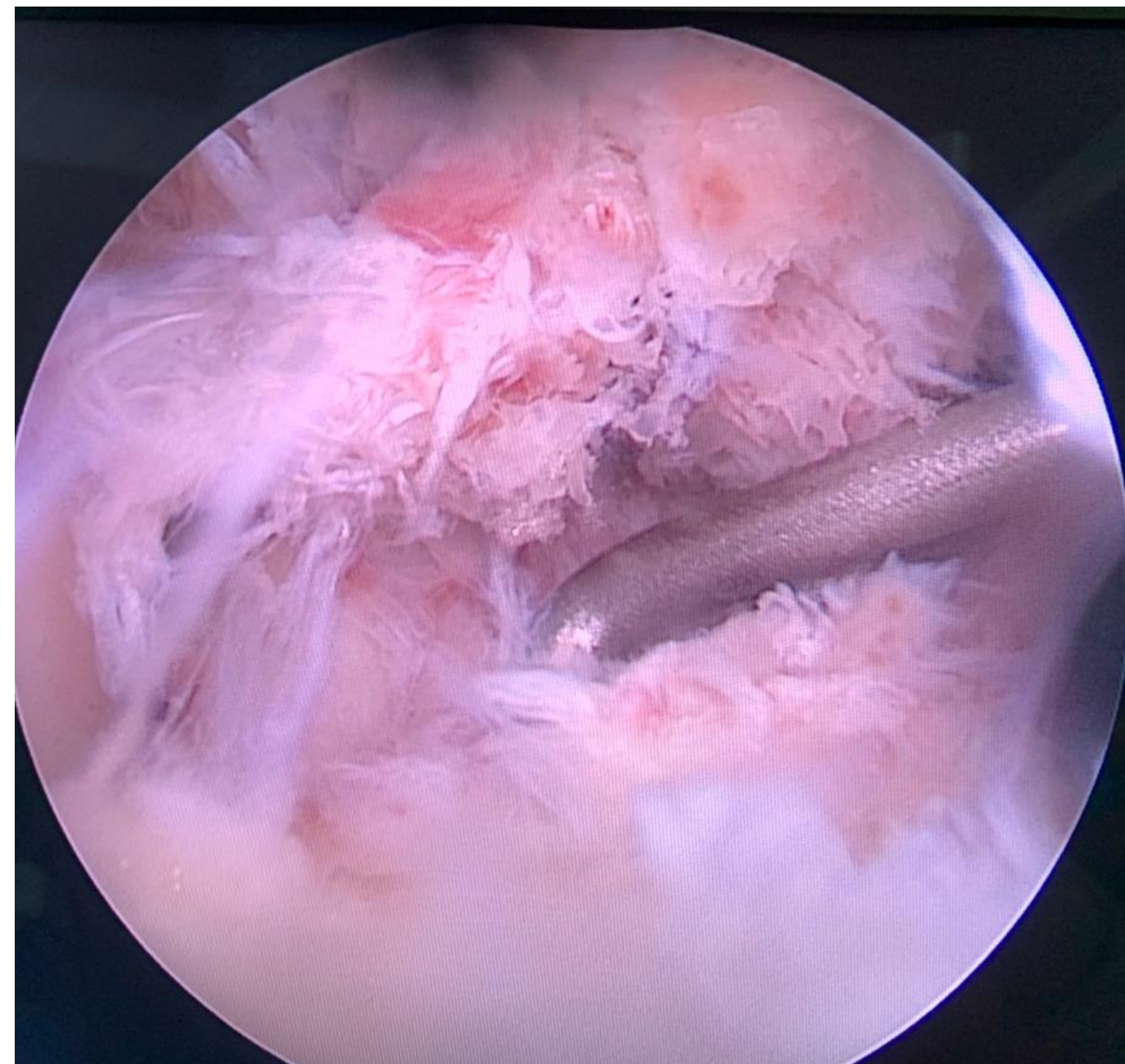
We have evaluated the functional outcome of fixation of ACL avulsion fracture fixation by pullout sutures.

METHODS

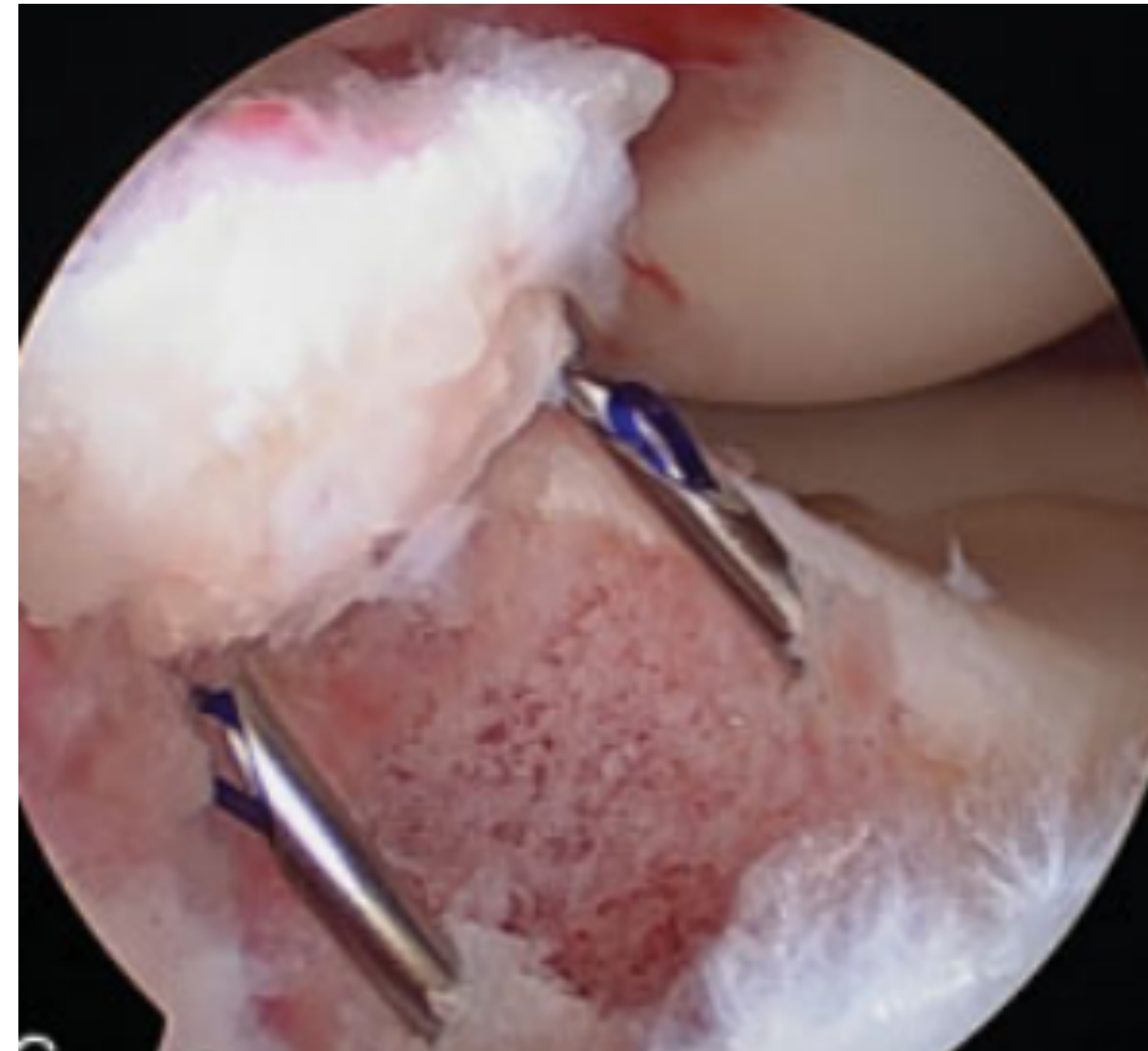
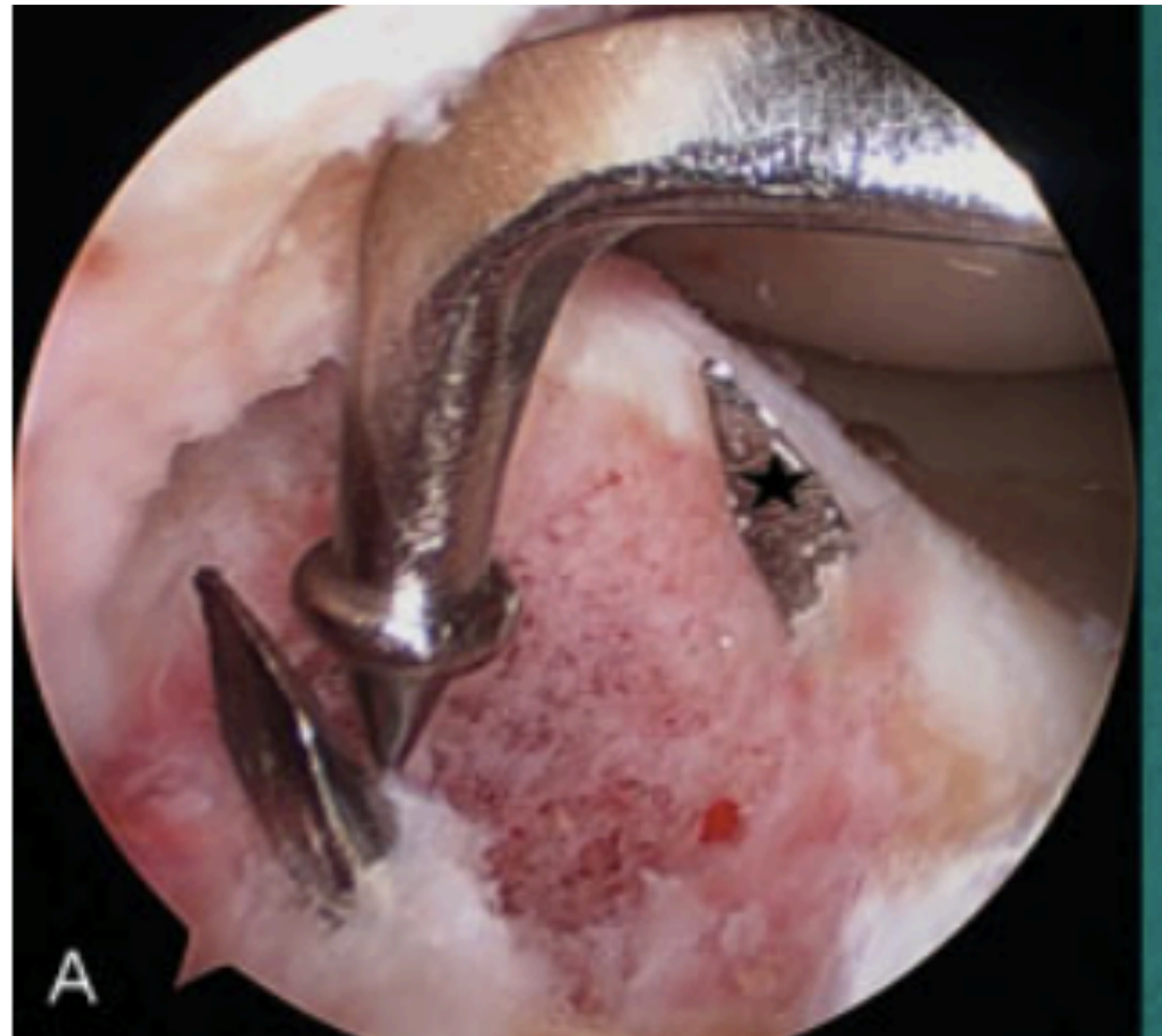
- **18 patients included in study**
- **Inclusion criteria : patients operated with arthroscopic pullout sutures.**
- **Exclusion criteria : other associated knee injuries, arthritic knee, cartilage damage.**
- **Evaluation : clinical tests, radiological evaluation, and Lysholm score.**

Surgical Technique

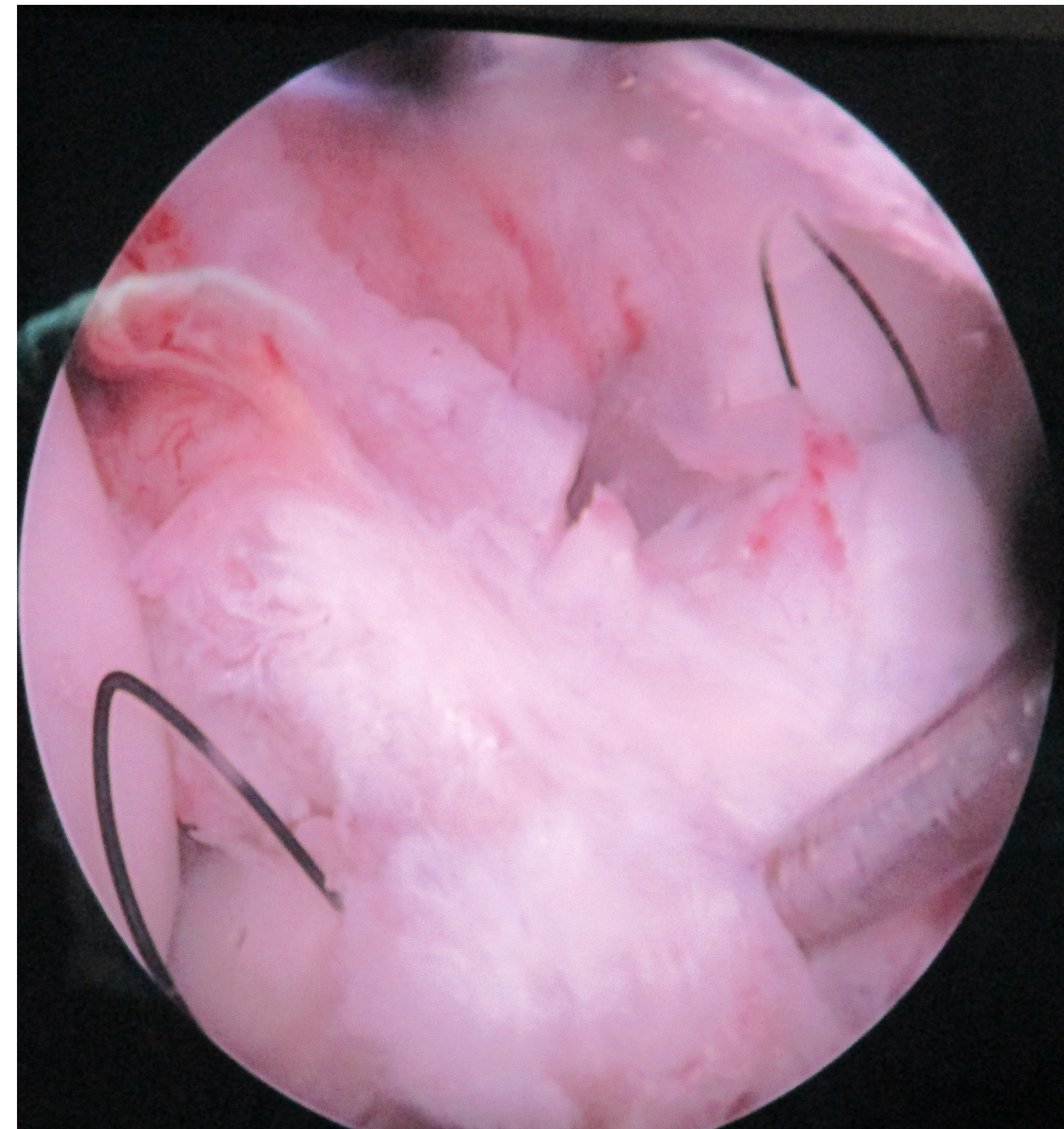
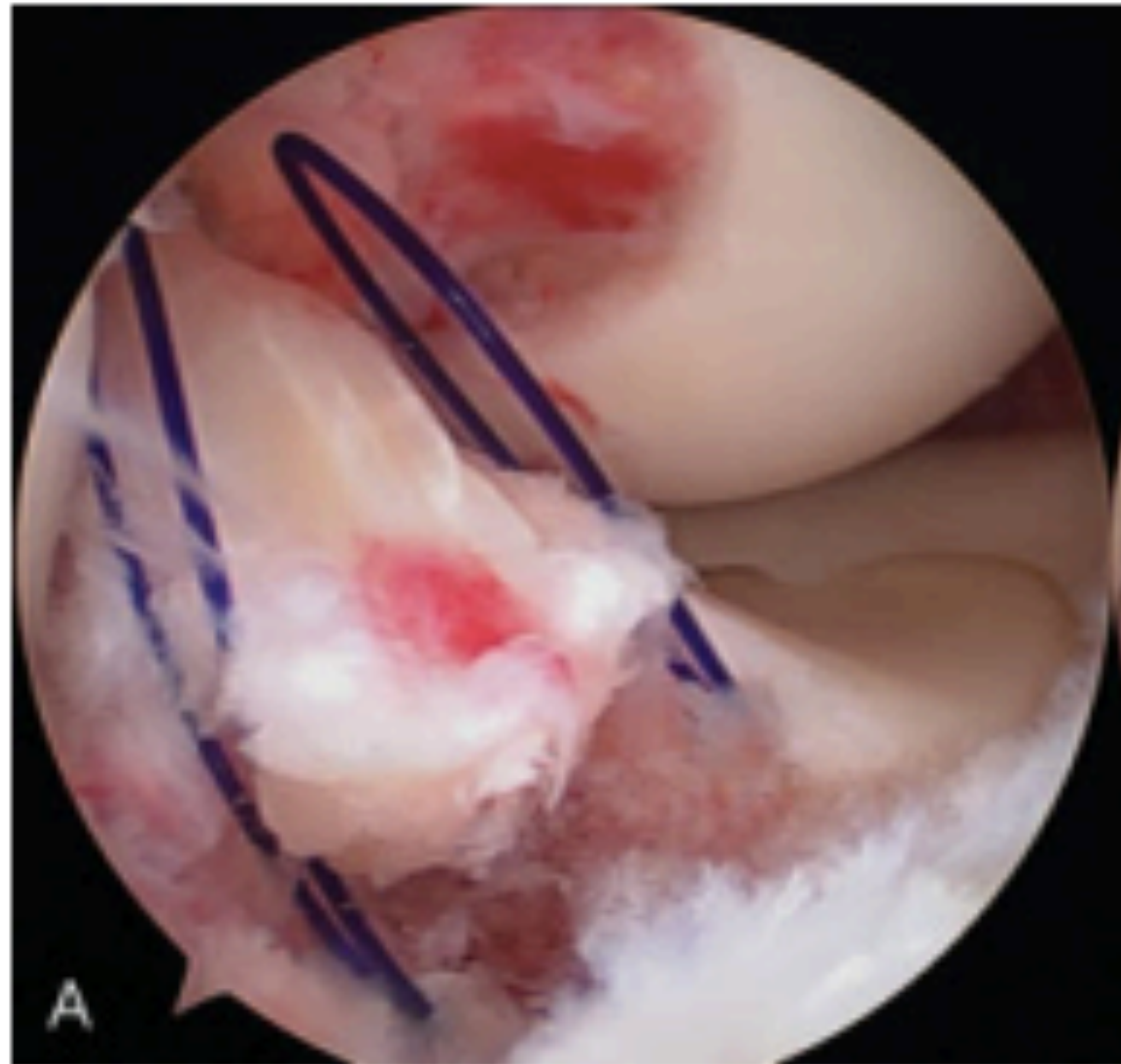
The tibial spine avulsion was identified and type of fracture confirmed. Entrapment of transverse inter-menisal ligament is cleared by retraction 1 inch incision was made parallel and medial to tibial tuberosity



**ACL guide is used to drill two k-wires (1.8 mm) at medial and lateral edge of crater near equator.
Min 1 cm bone bridge left intact between two k-wires over tibia.**
K-wires are pulled out and replaced with 14 or 18 G IV canula or epidural needle loaded with looped ethylon (2-0)



Ethylon loop pushed upwards which open up as loop in joint.
Fracture reduced using ACL guide/probe and fixed with 1.8 mm k-wire



IV canula 18G loaded with ethylon 2-0 passed from medial side entering joint above meniscus, passing through both ethylon loop and piercing in to the ACL at junction of avulsed bone and ACL a bit posteriorly. Same step repeated piercing anterior third of ACL.

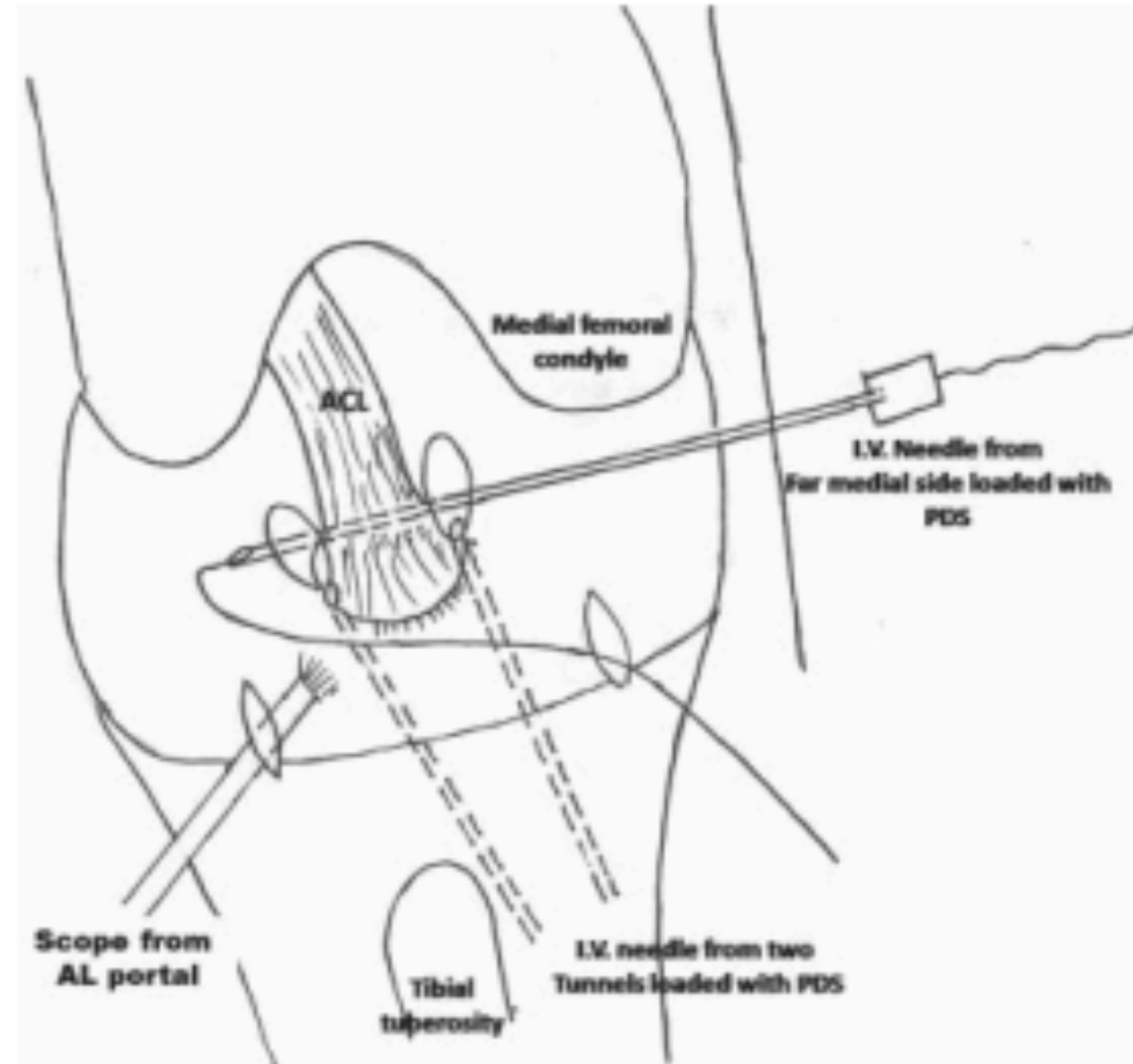
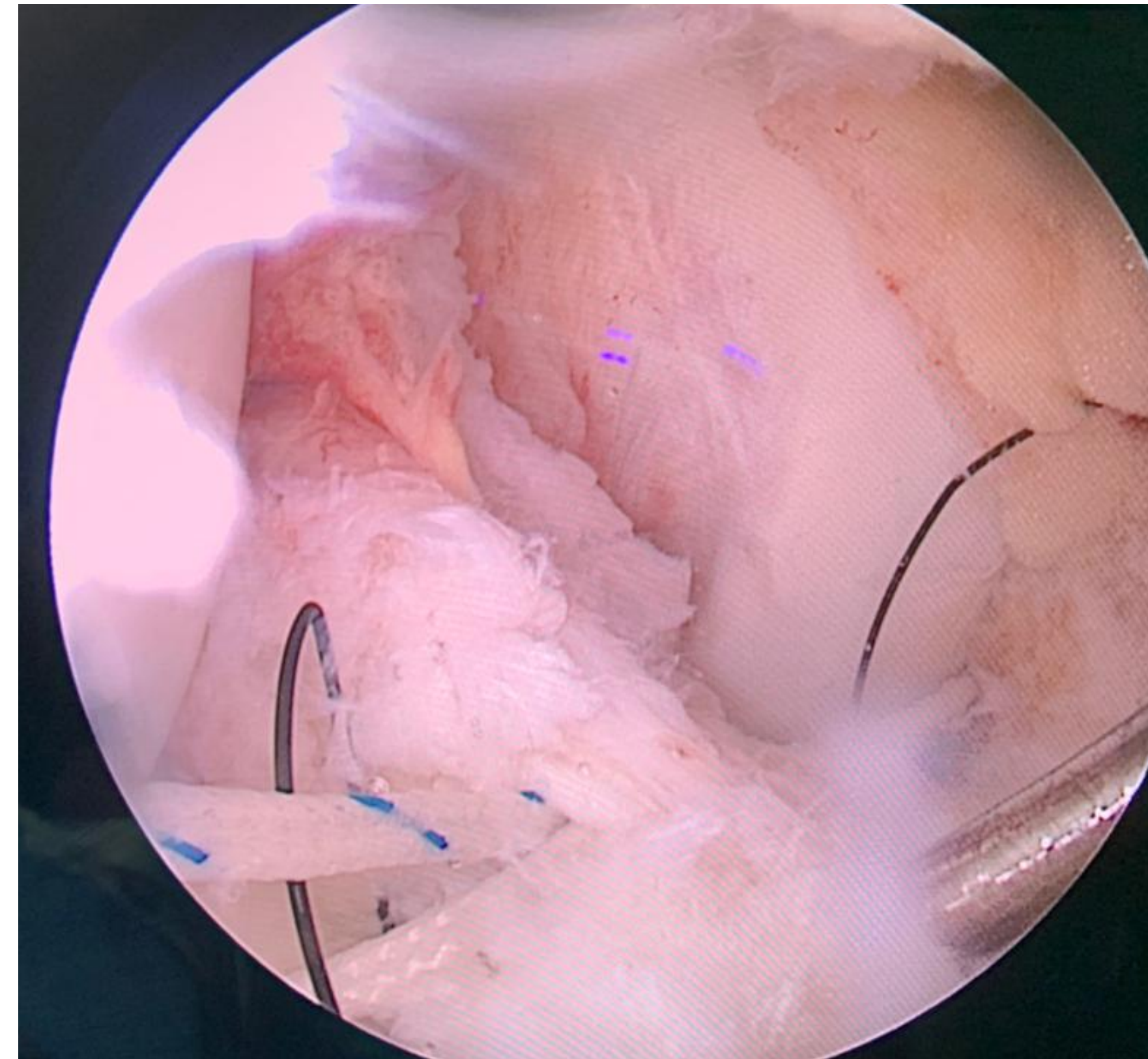
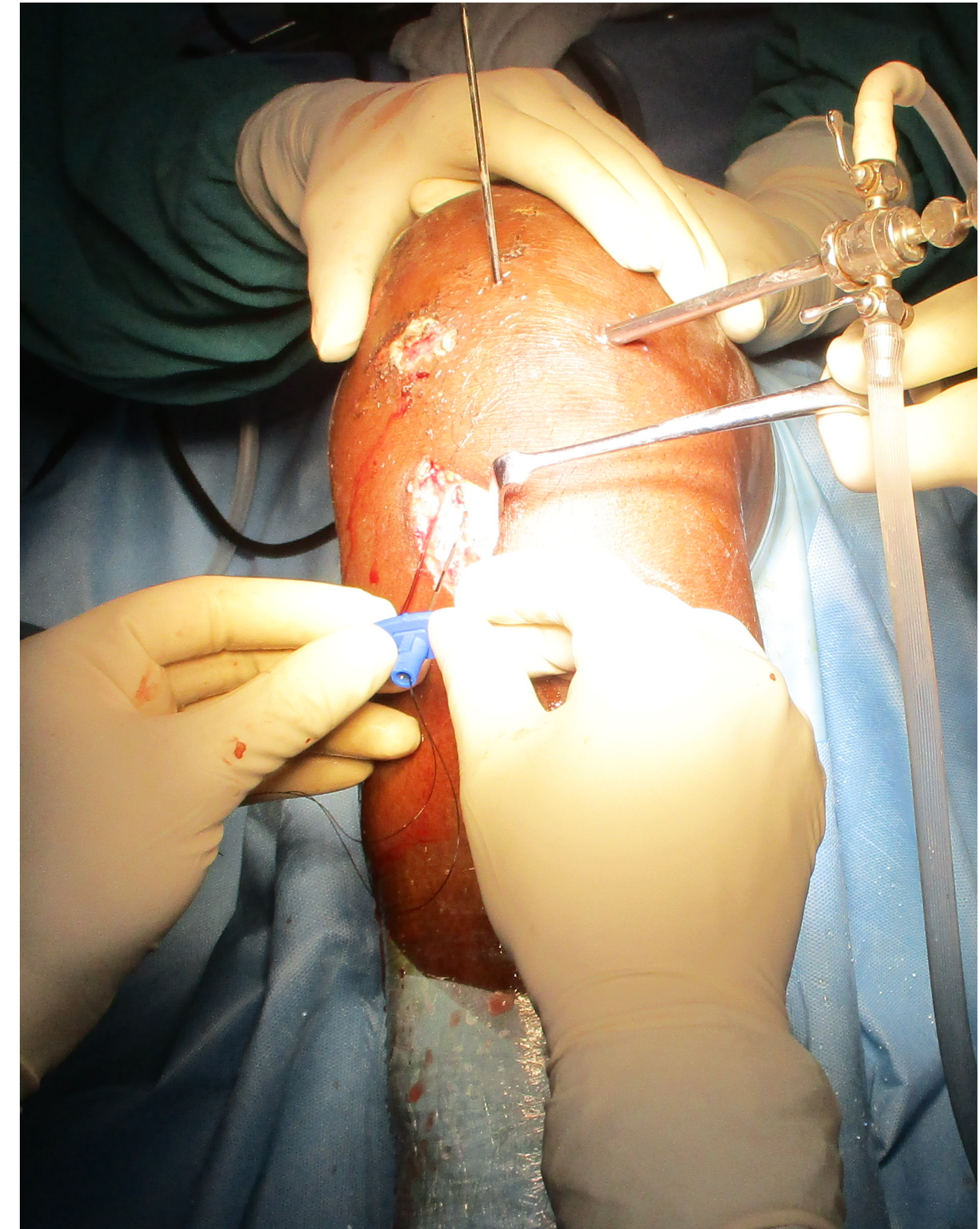
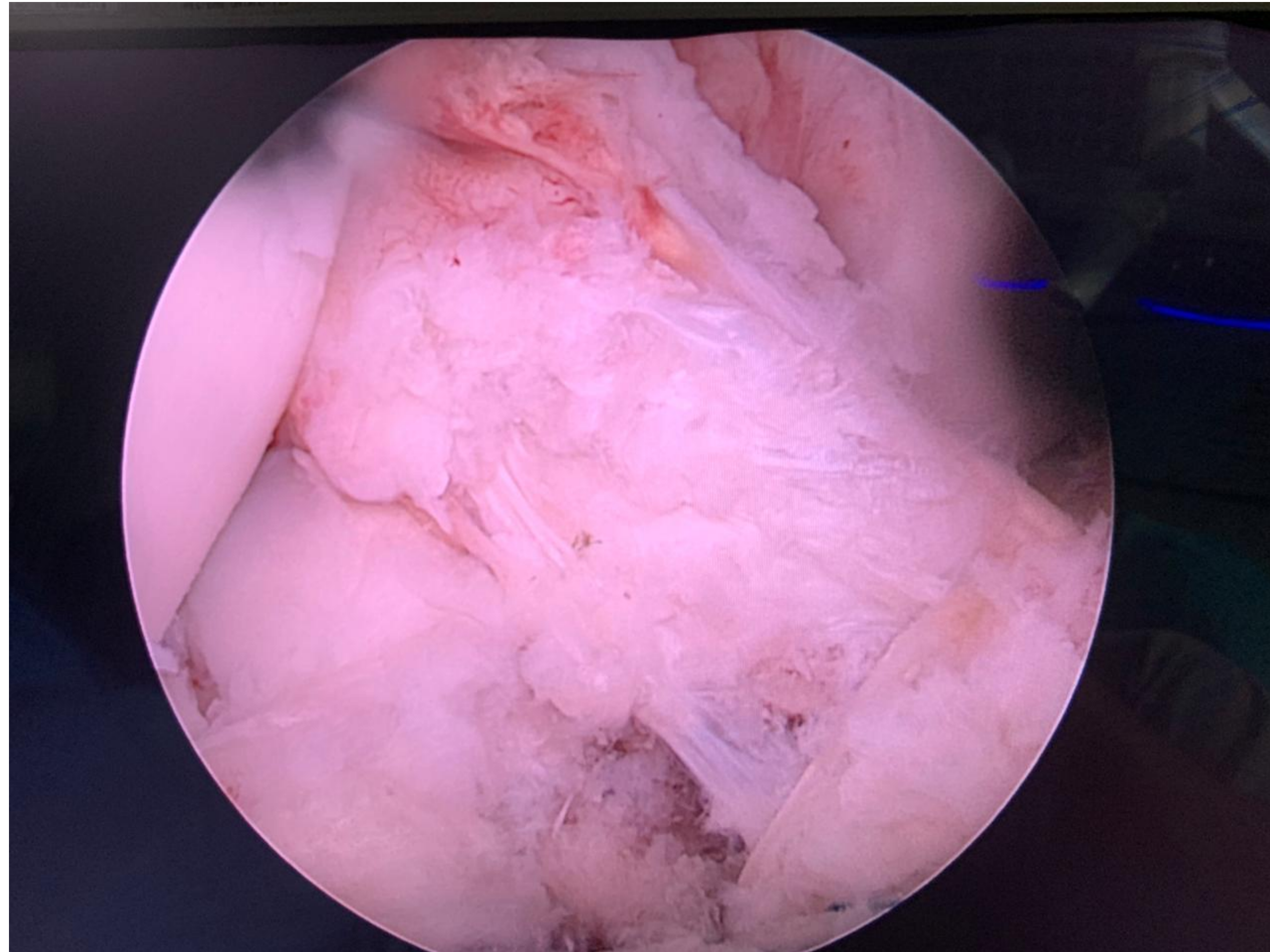


Fig. 3 Illustrated diagram of the technique



The loops of ethylon were pulled out through tibial tunnel which pulls fiberwire out of tibial tunnel. The sutures were tied one by one over bony bridge.



Results

- **Radiographs showed that all fractures healed anatomically**
- **all patients reported no symptoms of instability - such as giving-way episodes, clinical signs of anterior cruciate ligament deficiency were negative.**
- **The functional outcome was assessed with help of Lysholm score on each follow-up (4 weeks, 8 weeks, 12 weeks , 1 year and end of follow-up)**
- **the mean lysom score was 95 at end of followup.**
- **two patient had a restricted range of motion in the post-op period.**

Conclusion

Arthroscopic fixation of tibial spine avulsion fractures using high strength nonabsorbable sutures reliable technique, which gives excellent functional outcomes

References

Huang TW, Hsu KY, Cheng CY, et al. Arthroscopic suture fixation of tibial eminence avulsion fractures. Arthroscopy 2008;24(11):1232–1238 16

Hunter RE, Willis JA. Arthroscopic fixation of avulsion fractures of the tibial eminence: technique and outcome. Arthroscopy 2004; 20(2):113–121 17

May JH, Levy BA, Guse D, Shah J, Stuart MJ, Dahm DL. ACL tibial spine avulsion: mid-term outcomes and rehabilitation. Orthopedics 2011;34(2):89 18

Tudisco C, Giovarruscio R, Febo A, Savarese E, Bisicchia S. Intercondylar eminence avulsion fracture in children: long-term follow-up of 14 cases at the end of skeletal growth. J Pediatr Orthop B 2010;19(5):403–408 19

Wagih AM. Arthroscopic treatment of avulsed tibial spine fractures using a transosseous sutures technique. Acta Orthop Belg 2015;81(1):141–146