

## ACL Tibial Bony Avulsion Fixation Method

Dr. Raghav K. Barve MS DNB Ortho.

Bone and Joint Clinic

6 Pancharatna, Karve Rd, Pune 4, Tel. 020-25448566 Cell 9822008287

Arthroscopy has come a long way for knee and shoulder. Knee arthroscopy is in practice since last so many years for meniscectomy, removal of loose body, synovectomy, ACL and PCL reconstruction, patellar maltracking correction, OCD management and meniscal repair.

Arthroscopic tibial spine avulsion fracture fixation for ACL using 24 SS wire is an useful method. The results of 18 cases done over last 3 yrs are presented.

### Materials and Methods

Age group : 8 yrs to 55 yrs.

Number of cases : 18

Follow up : 3 yrs

Implant used : 24 no SS wire

Instruments : Arthroscope and ACL zig.

Day of fixation : 2<sup>nd</sup> day till 14<sup>th</sup> day of trauma.

Implant removed : 20% of the cases.

Associated bony injuries - 3 cases of split type condylar fracture.

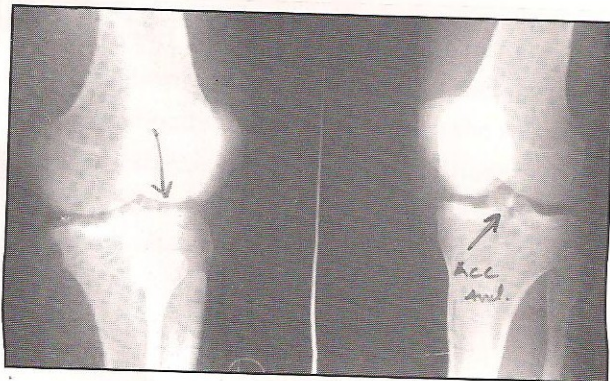


Fig. 1 : Pre op

**Associated soft tissue injuries :** Antero-medial and anterolateral instability in 50% cases.

- 1 case of old MCL repair

- 4 cases of superficial abrasion

Pre operative AP, LAT and Oblique X-ray of injured knee.

MRI in 50% of the cases, to know associated injuries.

### Method

- Arthroscopy with 2 standard portals.
- Wash with 1 lit of NS
- Scope in lateral portal and ACL zig through medial portal
- 2 holes on either side of avulsed fragment with 2mm guide wire
- Outside incision 1 cm long, just medial to tibial tuberosity
- Size 24 SS wire passed in one hole from outside in, just lateral to avulsed fragment. Same end of a wire is brought, inside out through medial hole of a crater.
- Scope in lateral portal, Hook or trocar in medial portal guiding a wire inside on a fragment, while it is tightened out side by gradual twisting.
- Knee is moved in full range to check impingement, drawer test to conform stability.
- Wash after release of a tourniquet and 3 stitches for 3 portals.

### Post op Plan

- Well-padded dressing and crepe-bandage. Full-length knee brace for 3 to 4 weeks.

- X-ray to confirm position of wire and the fragment.
- Mobilization next day with crutches.
- Knee bending after 3 to 4 weeks.
- Weight bearing depending upon associated injuries.

**Fig. 2 : Post op**

Post-op X-ray in 50% cases showed good position of wire and fragment but remaining 50% cases showed prominent anterior part of avulsed fragment on lateral X-ray. This happens because of loop wire is tightened at the base of ACL substance and not on anterior part of bony fragment. This wire and fragment position does not have any adverse effect on knee stability and knee range.

**Results**

80% of patients have got near full range at the end of 3 months. In remaining 20%, 5% did not get extension & in 15% did not get terminal 20 degree flexion. AP stability was excellent in 90% cases & in remaining 10% it was gr 1 laxity which is not clinically significant.

**Discussion**

ACL avulsion fixation with arthrotomy & wire loop, cancellous screw fixation, K wire fixation are few other methods of tackling this problem. But the morbidity with open method is very high as compared to arthroscopic fixation.

Thicker wire than 24SS is difficult to maneuver inside the joint and thicker & stronger implant will cause more damage to ACL substance.

**References :**

1. The role of Arthroscopic surgery in treatment of intercondylar eminence of tibia. JBJS, 64B; 477, 1982.
2. Arthroscopic treatment of fracture of tibial spine Arthroscopy10; 292, 1994.
3. Fracture of intercondylar eminence of tibia JBJS 63B;89,1981.
4. Fractures of tibial spine in children. Evaluation knee stability. JBJS 70B;228-30,1988
5. Avulsion fracture of tibial eminence; treatment by open reduction and pinning JBJS Am1977DEC; 59(8).

C C C