Management of neglected ACL avulsion fractures: a case series and systematic review

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• I am Dr. Devendra K Chouhan affiliate with PGIMER, Chandigarh, India. It a government institute I have no financial conflict to disclose.
Introduction

• ACL avulsion is an uncommon injury seen in 3/100000.

• Commonly seen in the adolescent age.

• Early intervention resulted in satisfactory outcome.

• Chronic ACL avulsion injury is even more rare to see.

• Being a developing country we do encounter these cases
Introduction

• The predominant problem with the chronic ACL avulsion are because of the Impingement from united fragment leading to
  • Pain
  • Reduce range of movement
  • Flexion deformity

• Management at this is limited because of scares research work in the field
Objective

• We wish to propose strategy from our experience in a series of 12 cases of chronic/neglected ACL avulsion fractures which were treated by a specific protocol.

• We did the systematically review the literature to evaluate the published management options for this uncommon scenario.
Material and Methods

• After appropriate approval from ethics committee

• All patients retrospectively were included for the study who underwent open reduction and internal fixation of ACL avulsion non-unions/neglected fractures (Meyers and McKeever’s types II, III, and IV fractures) between July 2011 and December 2016.

• Literature search was done on PubMed and embase
Surgical algorithm

- Under regional anaesthesia in supine position
- Arthroscopy under tourniquet from anterolateral and anteromedial portal
- Meniscal intervention SOS
- Converted to mini-open
- Adequate crater recreation
- Resizing and shaping of fragment after confirming correct orientation and tension in ACL
Outcome analysis

• Presentation – History and examination under anaesthesia
• Intraoperative finding - Meniscus or chondral injury
• Functional outcome – Lysholm score and IKDC
Results

• At total of 15 cases, 12 patients were eligible for the study
• Mean period of chronicity 45.9 months (3-312 months)
• Clinical presentation
  • 8 patients presented because of flexion deformity subsequent to nonoperative treatment
  • 4 patient had old injury and second injury and locked knee
  • 2 patients were unstable on clinical examination under anaesthesia
• Arthroscopy finding
  • 5 patient had medial meniscus tear
Functional Outcome

• Mean follow-up 29.9 months (12-48 months)

• None of the case had symptoms of instability or required ACL reconstruction

• One patient had objective laxity.

• The mean Lysholm score
  • Pre-operative - 55.67 (range 27–79)
  • Post-operatively - 94 (range 88–100).

• The IKDC scoring,
  • Preoperative - severely abnormal or abnormal
  • Postoperative - Normal or nearly normal (10 normal and 2 nearly normal).
Discussion

• The reduction of the ACL avulsion was not limited by shortening in neglected scenario

• Subjected adequate resizing of fragment and crater

• The displacement of the fragment multidirectional because of pull caused by ACL and anterior horn of Lateral meniscus

• Reduction manoeuvre should counter all
Literature review

• 11 studies were related to the topic and most are case report or small case series

• 5 study did arthroscopic assisted intervention
  • 2 internal fixation
  • Other 3 just did to correct impingement

• Author prefer ORIF with PTCS to accomplish the goal supported by 6 previous research work for satisfactory outcome


