ORIGINAL ARTICLE

Is antero-lateral complex of knee joint of critical importance in restoring rotational instability in patients with anterior cruciate ligament tear?

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Abstract. Antero-lateral ligament complex (ALC) is a vital structure for maintaining rotational stability of the knee. Evaluation of ALC radiologically (MRI) is still unpopular in setting of anterior cruciate ligament injury. A dire necessity exists for the orthopedic surgeons in outdoor patient department settings to rule out involvement of ALC. So, that it can be addressed during operating for Anterior Cruciate Ligament injury. The authors have formulated an algorithm on a personal level and have implemented this screening program and initiated screening of young to middle aged patients reporting with rotational knee instability for ALC involvement before recommending final operative plan. This screening program which uses specifically devised physical tests have significantly reduced the number of underdiagnosed Antero Lateral Ligament tear.

Introduction

Antero-lateral ligament complex (ALC) is a novel area of focus in patients having ACL tear with anterior and rotational knee instability since it is essential for maintaining rotational knee stability (1-4). Anterolateral augmentation (ALA) may be advantageous for patients who are undergone anterior cruciate ligament (ACL) reconstruction (ACLR), but this is still debatable (5).

Materials and methods

Scenario in developing countries. Evaluation of Antero-lateral ligament complex (ALC) radiologically (MRI) is still unpopular in setting of anterior cruciate ligament injury. Orthopedic surgeons are left with no choice but assessing the ALC intraoperatively and fix the excessive antero-lateral laxity by conducting additional procedures like lateral extraarticular tenodesis (LET) or antero-lateral reconstruction.

Anatomy of Antero-lateral ligament complex. Below the ilio-tibial band, the antero-lateral ligament is a triangular structure (6). The iliotibial band and its superficial, deep, and capsulo-osseous layers, as well as the Antero-lateral ligament, constitute the Antero-lateral ligament complex (7). Please refer to Fig. 1 for anatomy of Antero-lateral ligament complex.

Screening program. The authors wish to propose a program in which patients of young to middle age presenting with anterior and rotational instability of knee joint will be screened using physical tests to detect or suspect involvement/injury to antero-lateral complex (ALC) of knee joint. This screening targets early evaluation of integrity of ALC, before finalizing management plan of Anterior Cruciate ligament (ACL), Tibial collateral ligament (Medial Collateral Ligament), Fibular collateral ligament (Lateral Collateral Ligament), Posterior cruciate ligament (PCL) in patients presenting with instability of knee joint. The objective behind this screening of ALC is a consideration that approximately 20 percent of ACL injury invariably involves ALC. A detailed algorithm of this screening process is mentioned in Fig. 2.

Radiological evaluation of Antero-lateral ligament. Ultrasound may increase the likelihood of ALL-reconstruction indications because it has a higher spatial resolution and can detect Segond fractures that radiography and MRI cannot (8). Since ultrasonography is a low-cost, real-time imaging modality with excellent spatial resolution, when identifying the Antero-lateral ligament, ultrasound is more sensitive and specific than MRI (9).

Conclusions

Integrity of Antero-lateral complex is of vital importance in maintaining the rotational instability of knee joint and should be always evaluated first before intervening for ACL

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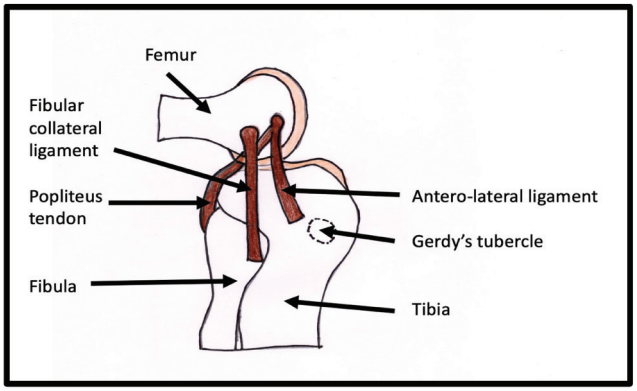

Figure 1. Anatomy of Antero-lateral ligament complex.

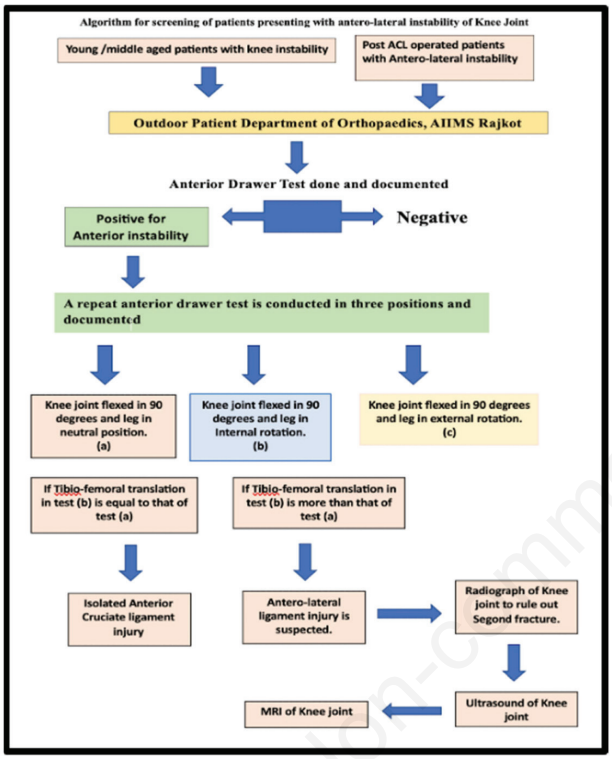

Figure 2. Algorithm for screening of patients presenting with antero-lateral instability of Knee joint.

tear. Ultrasound is a better diagnostic modality than MRI for identifying the ALL injuries.

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Availability of data and material

Data and materials are made available by the authors in the manuscript itself. There is no separate data that shall be shared or released at a later date.

Contributions

AKM, SC, conceptualization, AKM, SC, design; AKM, data collection; SC, drafting the manuscript; VC, SM, VM, interpretation of radiological aspects. All the authors approved the final version to be published.

Ethical approval and consent to participate

This manuscript does not include data related to any patient, staff, student, or faculty of All India Institute of Medical Sciences, (AIIMS) Rajkot, or any other institute within India or outside India. Hence there is no requirement for any ethical committee approval. However, the Research Review board has been intimated of this publication.

Informed consent

The manuscript does not contain any individual person's data in any form, so no need for any informed consent.

Conflict of interest

The authors declare no potential conflict of interest.

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