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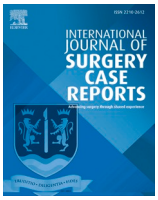

Case report

A simple way to deal with an inadvertently cut suture while inserting the screw in the tibial tunnel during ACL reconstruction

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ABSTRACT

Introduction: There are many complications that can occur during or after ACL reconstruction, including a suture inadvertently cut by the screw threads while inserting the interference screw in the tibial tunnel. No fixes for this small but annoying problem have been proposed to date in the literature, and herein we propose a simple way to deal with this situation by bringing the tibial side of the ACL graft through the anterolateral portal and re-suturing with a stronger suture material.

Case presentation: A 48-year-old Thai female was undergoing an ACL reconstruction with a hamstring graft following a standard technique when the holding suture and distal part of the ACL graft were accidentally cut by the screw. Rather than redoing the graft from the beginning, we did a workaround by bringing the tibial end of the graft through the AL portal and re-suturing.

Discussion: In ACL graft fixation, when inserting the interference screw into the tibial tunnel there is a risk of cutting the holding suture with the screw. When this happened in our situation, we decided to attempt to redo the suture by first taking the graft out through the AL portal and then re-suturing with a stronger suture material.

Conclusion: If inadvertently cutting the holding suture while inserting the screw in the tibial tunnel during ACL reconstruction occurs, the surgeon can use the simple solution we applied in this case to solve this problem or to avoid having to redo the entire procedure.

1. Introduction

Anterior cruciate ligament (ACL) reconstruction is one of the most common procedures in arthroscopic surgery. There are some complications that can occur during or after the surgery such as missed concomitant intraarticular injuries, femoral and/or tibial tunnel malposition, patellar fracture when using a bone-patellar-tendon-bone graft [1–3], knee stiffness or infection [4,5]. Aside from these surgical complications, an inadvertently cut suture while inserting the screw in the tibial tunnel during ACL reconstruction can cause problems during an operation. There are no reported solutions to deal quickly and easily with an inadvertently cut suture during insertion of the interference screw in the tibial tunnel. In this short note we explain the simple and quick way which we dealt with this problem and continued the surgery without needing to remove the reconstruction ACL graft from the knee joint or creating an additional surgical wound. This report was prepared following the Surgical Case Report (SCARE) guidelines [6].

2. Case presentation

A 48-year-old Thai female presented with a knee injury following left knee collapse when running. The diagnosis was an ACL tear and she was scheduled for ACL reconstruction with a hamstring graft which was done following a standard technique. She had no abnormal drug history, family history, genetic information, or psychosocial history. The fixation method in this case was suspensory fixation on the femoral side and interference screw fixation on the tibial side. However, a problem occurred during the interference screw fixation at the tibial side, when the holding suture and distal part of the ACL graft were accidentally cut by the screw (Fig. 1). The surgeon (C.C.) introduced the interference screw into the tibial tunnel without the holding suture, but this resulted in decreased tension of the graft (Fig. 2), and when the fixation was completed, the stability of the knee was tested and found to be unacceptable. The surgeon decided to remove the screw, and a free suture of a double length of Ethibond No.5 was used to loop the ACL graft from

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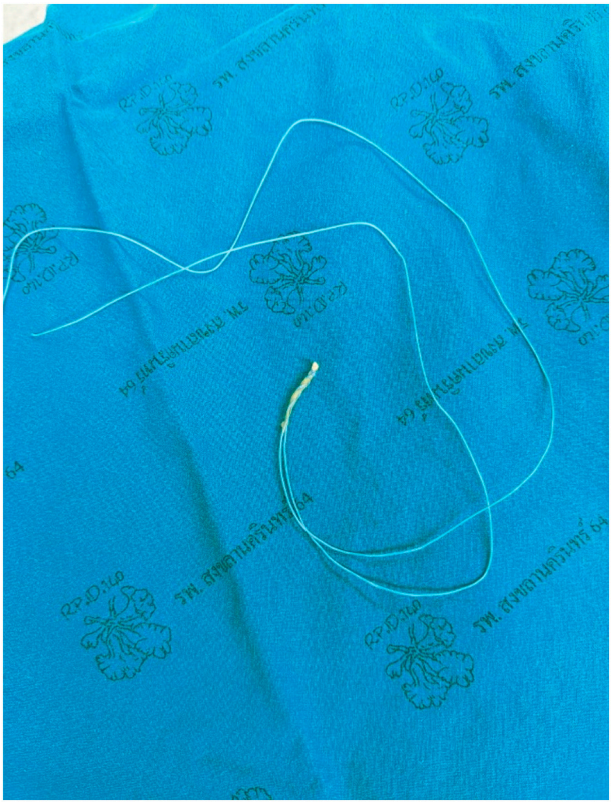

Fig. 1. The holding suture was accidentally cut by the screw.

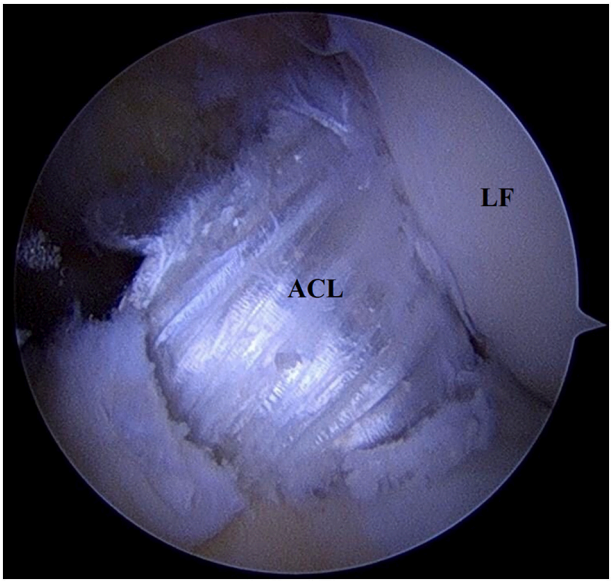

Fig. 2. Loosening tension of the ACL graft after introducing the interference screw into the tibial tunnel without holding sutures. (LF: lateral femoral condyle and ACL: anterior cruciate ligament.)

the medial side to the lateral side. The anterolateral portal incision was extended, and the two tails of the Ethibond No.5 were retrieved through the AL portal to bring the tibial end of the ACL graft through the AL portal (Fig. 3). The tibial end of the ACL graft was secured with an Ethibond No.5 using a whipstitch technique with a speed tap to secure the ACL graft (Fig. 4). The Ethibond No.5 was inserted through the tibial tunnel into the knee joint and retrieved through the AL portal, and the ACL graft was shuttled through the tibial tunnel and fixed with a screw

Fig. 3. The tibial end of the ACL graft was retrieved through the AL portal.

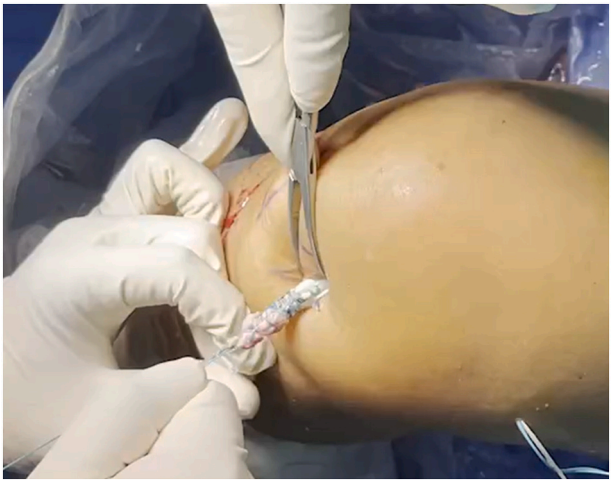

Fig. 4. The tibial end of the ACL graft was secured with an Ethibond No.5 using a whipstitch technique with a speed tap to secure the ACL graft.

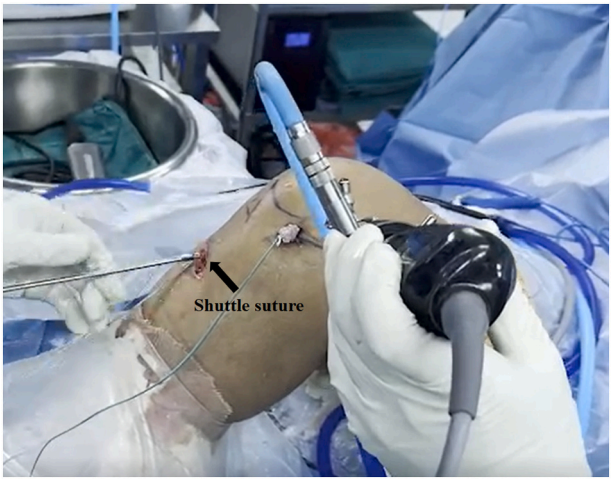

Fig. 5. The Ethibond No.5 was inserted through the tibial tunnel into the knee joint.

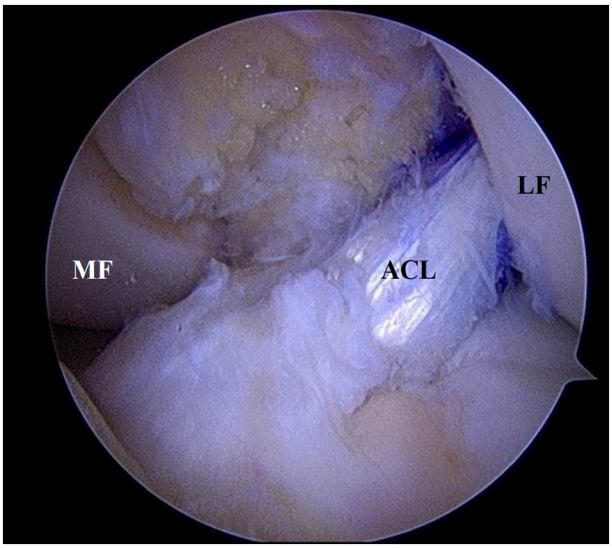

Fig. 6. An arthroscopic image showing the ACL graft after fixation. (MF: medial femoral condyle, LF: lateral femoral condyle, ACL: anterior cruciate ligament.)

(Fig. 5). Fig. 6 shows an arthroscopic view of the ACL graft following the fixation (Fig. 6). The stability of the knee was tested after the fixation and found to be acceptable. At 3-month follow-up, the patient had achieved full range of motion and the knee had good stability.

3. Discussion

In ACL graft fixation, when inserting the interference screw into the tibial tunnel there is a risk of cutting the holding suture with the screw. When this happened in our situation, we decided to attempt to redo the suture by first taking the graft out through the AL portal and then re-suturing with a stronger suture material.

Although inserting the interference screw can lead to various problems, there has been only one study on dealing with any of these problems, a case related to a bone-patellar-tendon bone graft [7]. In this case there was inadvertent graft advancement, with screw damage to the holding suture and tendon lacerations from the screw threads. The authors of this report recommended preventing this complication by passing another suture through the tendon at the base of the bone plug, but there were no recommendations about how to proceed after the complication occurred, especially in case of using a hamstring graft. Our case was different from this study because we were using a different graft type and the problem had already occurred. In our case, the holding suture was accidentally cut while we were inserting the interference screw into the tibial tunnel. As described above, we used an Ethibond No.5, a stronger suture material, to suture the ACL graft with a whipstitch technique, but the interference screw still inadvertently cut the sutures. If this problem occurs, the operating team can try the workaround described in this note, which worked well for us.

4. Conclusions

If inadvertently cutting the holding suture while inserting the screw in the tibial tunnel during the ACL reconstruction, the surgeon can use the simple solution we applied in this case to solve this problem.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Consent

Written informed consent was obtained from the patient for publication.

Ethical approval

The present study was approved by the Prince of Songkla University Institutional Review Board, Faculty of Medicine, Songklanagarind Hospital, Prince of Songkla University (IRB number REC 65-264-11-1).

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Guarantor

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Research registration number

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CRediT authorship contribution statement

Chaiwat Chuaychoosakoon—Preparation of case report, Literature review, Writing the paper.
Korakot Maliwankul—Preparation of case report. Writing the paper.
Wachiraphan Parinyakhup—Preparation of case report. Writing the paper.
Tanarat Boonriong—Preparation of case report. Writing the paper.

Declaration of competing interest

No conflicts of interest.

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