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Case Report

Anterior cruciate ligament reconstruction in patient with lateral femoral condyle bone loss: Case report

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ABSTRACT

ACL Injury is a common case among knee injuries which relatively common in athletes and productive ages. Reconstruction of ACL recommended based on indication and its successful dependent on the pre operative until post operative management. A case of an open fracture of right tibial plateau and open fracture of right lateral femoral condyle with significant bone loss of lateral femoral condyle of a 21 years old female and get an ACL rupture and allograft inflammation after 2 years of operation. She had undergo an ACL reconstruction using hamstring autograft with transtibial technique because standard transportal technique could not be done due to position of the allograft and the implant. Post operatively, followed until 2 years and the result seem to be satisfactory. In this case we choose not to drill the femoral tunnel to the lateral condyle since we worried about the strength of endobutton fixation in allograft tissue. The tunnel created vertically through transtibial tunnel so that the button have a good purchase and strong fixation in the healthy bone of femoral wall. Post operatively the patient underwent physiotherapy and eventually had normal activity. The surgical technique had achieved a good result but long term evaluation will be needed to know the outcome of the allograft and the fixation in longer period of time.

1. Introduction

There are approximately 200.000 anterior cruciate ligament (ACL) injuries per year in the United States and more than half will undergo ACL reconstruction [1]. Successful ACL reconstruction returns most patients back to pre-injury activity however outcome is dependent on appropriate preoperative evaluation, surgical timing, surgical technique and effective post operative physical therapy program [6]. Associated injuries may also affect the prognosis, type of rehabilitation and make the procedure become more challenging [8]. We will report here a case of an ACL deficient knee with previous history of lateral femoral condyle bone loss treated with lateral femoral condyle allograft and internal fixation. Preexisting implant and allograft posed the surgeon difficulty in creating accurate femoral tunnel position with standard transportal technique. Arthroscopic ACL reconstruction was performed using transtibial technique to avoid the implant and to have a good purchase of femoral wall on the normal bone. Post operatively the patient had stable knee, full range of motion and decrease pain in wall king. We follow the patient 2 years post operatively and the result is quite satisfactory.

2. Case report

A 21 years old female was admitted with open fracture of right tibial plateau and open fracture of right lateral femoral condyle with significant bone loss of lateral femoral condyle. The open wound was debrided, the tibial plateau fracture was fixed with internal fixation and the fractured lateral condyle was fixed with screws in lateral condyle despite there were significant degree of bone loss. Three months later, the screw was removed and being replaced with allograft from tissue bank (Dr. Soetomo Hospital, Surabaya) and fixed it with internal fixation. The patient was then started mobilization with crutches. She still had some degree of pain but she could perform normal activity quite well. 2 years after operation the patient came again with knee pain and complaining of giving way when she walked. Physical examination revealed anterior deficient knee, MRI could not be performed since there is implant in the affected knee. Arthroscopic evaluation of the knee

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showed ACL rupture and significant inflammation around the allograft. We did arthroscopic debridement of the inflammed tissue and also ACL reconstruction using hamstring autograft with transtibial technique. Standard transportal technique could not be done due to position of the allograft and the implant. Figs. 1–6.

3. Result

Post operatively the patient's knee was stable, the pain decreased significantly and she gradually could resume the normal activity. We follow the patient until 2 years post operatively and the result seems to be satisfactory.

4. Discussion

Primary ACL reconstruction in patient with lateral femoral condyle bone loss is very rare case. The opposite condition of our case about femoral condyle fracture is a complication of ACL reconstruction surgery but extremely rare [5]. Previous reports have presented femoral fractures occurring after ACL reconstruction and none have been during the revision procedure [7]. Decreased bone mineral density up to 20% has been observed following knee ligament injury that might additionally contribute to the fracture of femoral condyle during or after ACL reconstruction because of decreased bending stress on the distal femur [4].

In this case, we could not be perform the standard transportal technique since the position of the allograft and the implant from previous operation. So we performed arthroscopic debridement of the inflammed tissue and also ACL reconstruction using hamstring autograft with transtibial technique. Until 2 years post operatively, the result seem to be satisfactory. Even the result is as good as the standart transportal technique.

Local biologic reaction caused by allograft tissue and the presence of implant make the operation especially femoral tunnel placement become more challenging [2,3]. In this case we choose not to drill the femoral tunnel to the lateral condyle since we worried about the strenght of endobutton fixation in allograft tissue. So we create the tunnel vertically through transtibial tunnel so that the button have a good purchase and strong fixation in the healthy bone of femoral wall. Post operatively the patient underwent physiotherapy and eventually she could resume normal activity.

Fig. 2. The tibial plateau fracture was fixed with internal fixation and the fracture lateral condyle was fixed with screws despite there were significant degree of bone loss.

Fig. 1. X Ray before surgery.

Fig. 3. Remove the screw in lateral condyle, replaced the condyle with lateral femoral condyle allograft and fixed it with internal fixation.

Fig. 4. ACL Reconstruction using hamstring autograft with transtibial technique.

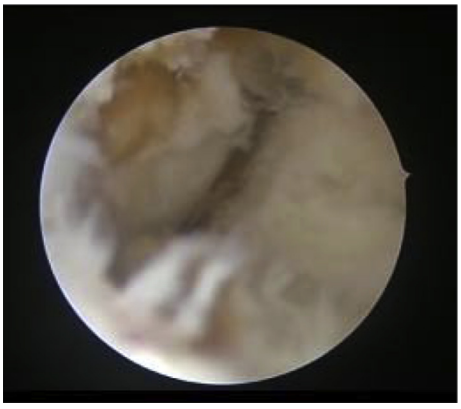

Fig. 5. Inflammed yellowish tissue around allograft.

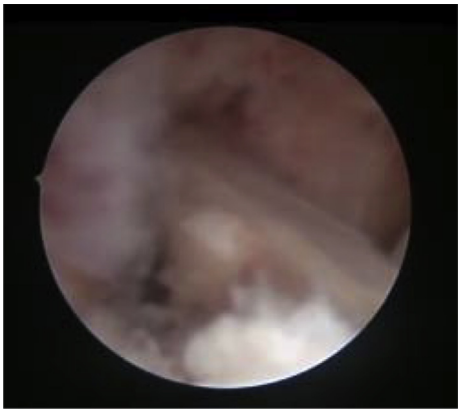

Fig. 6. Hamstring graft on tunnel.

5. Conclusion

We have reported a case of patient with ACL deficient knee after lateral femoral condyle fracture and bone loss that had been treated with condyle replacement with allograft and then followed with ACL reconstruction. This special circumstances required modification of surgical technique to achieve a good result.2 years follow up of this case showed a satisfactory result, but long term evaluation will be needed to know the outcome of the allograft and the fixation in longer period of time.

Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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Author contribution

Edi Mustamsir, Rusendi Hidayat wrote this paper; Edi Mustamsir and Rusendi Hidayat performed the surgery; Edi Mustamsir decided for study design and data analysis. All authors read this paper.

Conflicts of interest statement

The authors declare that there is no conflict of interest regarding the publication of this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijso.2018.11.002.

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