Author's response to reviews

Title: Juvenile Osteochondritis Dissecans in the Lateral Femoral Condyle Requiring Osteochondral Autograft as a Revision Procedure - A case report-

Authors:

Ryo Kanto (ryokanto@hotmail.com)
Hiroshi Nakayama (hiroshi0273@mac.com)
Tomoya Iseki (tomoya.1.19@live.jp)
Shinichi Yoshiya (yoshiya@hyo-med.ac.jp)

Version: 4 Date: 24 November 2015

Author's response to reviews: see over
Responses to the Comments

Dear Doctor,

Please find enclosed our revised paper. We thank you for your constructive comments and have attempted to address the suggestions and comments given.

Specifically, our responses to each of the comments are describes below.

To Reviewer Dr. Yoshinari Tanaka

Comment
Possible risks of OATS for young children like the present case in the “Discussion”.

Our response
Based on your comment, we have added the statements referring to the potential risks of OATS in young children to the context as follows.

Supplemented sentence
Lines 176-181: However, we have to pay attention to potential risk for complications associated with osteochondral autograft procedure such as donor cite pain, patellofemoral problem, and possibility of growth disturbance caused by growth plate injury.

Comment
Preoperative plan in more detail in the “Case Report” or “Discussion” section.
The reviewer believes the surgery performed in this report was difficult because the direction and the length of the osteochondral plug should have been strictly planed and controlled not to hurt the growth plate.

Our response
Thank you for your comment. In order to address your comment, revision and supplementation have been made in the original context to describe the preoperative planning.

Supplemented sentences
Lines 118-124: In the preoperative assessment, length and direction of the graft harvest and transplantation were determined on sagittal plane MRI images. At surgery, 1.5-cm
long osteochondral graft was harvested from the lateral femoral condyle just anterior to the terminal sulcus (contact area at full extension). During the harvest and transplantation procedures, we repeatedly checked the direction and distance from growth plate on intraoperative fluoroscopic images (Fig 3).

To Reviewer Prof. Shuji Horibe

**Comment**

1. Differential diagnosis

Since stage-I OCD could be confused with variants of ossification during normal development of the knee, the differential diagnosis of these two disorders is clinically very important in order to avoid unnecessary treatment of anomalies of ossification. MRI is considered to be an effective non-invasive diagnostic method for these two disorders, and there are many papers (Nawata K et al. Pediatr Radiol (1999), Gebarski K & Hernandez RJ, Pediatr Radiol (2005) Please describe how the authors differentiate the juvenile OCD from the normal variants of ossification.

**Our response**

As commented by the reviewer, differential diagnosis between OCD and normal variant of ossification is an important clinical issue to avoid over-treatment caused by over-diagnosis. The diagnosis we made for this patient was based on the MRI findings demonstrating the low-signal lesion (defect) associated with reactive changes in the surrounding bone marrow as shown in Figures 1 and 2. In addition, the stage of the lesion was defined and classified using the Hefti’s and Bohndorf’s classifications. In order to address your comment, we have added the sentence to the context as follows. Additionally, the literatures you listed have been added to the References.

**Supplemented sentences**

**Lines 81-87:** Subsequent MRI showed subchondral lesions suggestive of OCD in the lateral condyles of the bilateral knees, which demonstrated low signal lesion (defect) with reactive changes in the surrounding bone marrow. These lesions were classified as Stages I and II by Hefti’s classification [2] for the right and left knees respectively (Figures 1A, B, and C), and stage I by Bohndorf’s classification [13].

**Comment**

Surgical indication for arthroscopic drilling for left knee (Case report ln 93-96)
authors decided to do surgical intervention because of no apparent radiological healing after conservative treatment for 6 months. Did they evaluated by reconstructed CT? Healing of the OCD lesions is difficult to detect only by plain radiography. In addition, they did not describe the clinical symptom, such as pain.

**Our response**

The authors appreciate your thoughtful comment. In imaging evaluation for knees with OCD lesion, we perform CT examination only when we experience difficulties in evaluating healing status of the lesion. In the present case, lack of healing response was evident on plain radiograph, and thus CT examination was not performed. The inadequate healing despite of 6-month conservative treatment corresponded to our indication for surgical intervention for OCD lesion of the knee. Since sports activities were prohibited during the course of conservative treatment, this patient was asymptomatic before the surgery.

In order to address your comment, we have added the sentence to the context as follows.

**Supplemented sentence**

Lines 97-98: At that time, he had no symptoms in his left knee due to the strict activity modification.

Lines 179-181: Regarding the image assessment during the follow-up period, CT examination in addition to serial radiographs would have provided more accurate information.

**Comment**

Arthroscopic drilling for OCD located at the posterior area

In this case, the OCD lesion is located at the posterior area. It may be difficult to drill the posterior lesion. Did they confirm that drilling could be achieved accurately by using post-op. MRI?

**Our response**

As you pointed out, intraoperative confirmation for the location of drilling is difficult especially for the early lesion located in the posterior area. At surgery, the operative knee was deeply flexed to access the lesion for drilling, and location of the drilling was monitored on intraoperative lateral fluoroscopic images. Postoperatively, MRI was utilized to confirm whether the drilling procedure accurately performed on the lesion area.

Based on your comment, we have added the sentence to the context as follows.
Supplemented sentences

Lines 100-103: During surgery, the operative knee was deeply flexed to access the lesion located in the posterior area. Location of the drilling was intraoperatively monitored on lateral fluoroscopic images and confirmed by the postoperative MRI.

Comment
Autogenous osteochondral graft transplantation
They described “autogenous cylindrical osteochondral graft transplantation (8 mm in diameter) was performed,” It is too simple. Please describe the surgical procedures in more detail and use a photo if possible.

Our response
Thank you for your comment. In response to your suggestion, the original sentences have been supplemented with detailed description of the procedure performed. Intraoperative photograph is not available for this patient.

Supplemented sentences

Lines 118-124: In the preoperative assessment, length and direction of the graft harvest and transplantation were determined on sagittal plane MRI images. At surgery, a 1.5-cm long osteochondral graft was harvested from the lateral femoral condyle just anterior to the terminal sulcus (contact area at full extension). During the harvest and transplantation procedures, we repeatedly checked the direction and distance from growth plate on intraoperative fluoroscopic images (Fig 3)

Comment
Post-op CT
The authors showed only Rosenberg view at 3 and a half years after second operation (figure 4). In this case, an autogenous osteochondral graft transplantation was performed at younger age. CT images are very helpful for readers to understand what happens to both donor and recipient sites after this procedures.

Our response
We agree with your comment; however, in our practice, CT examination is indicated for the cases posing difficulty in assessing the healing status. In the present case, healing of the lesion at the follow-up evaluation was evident on plain radiographs and thus additional CT examination was not performed. Consequently, CT images at the follow-up are not available for this case. As you commented, CT examination is helpful
in assessing the status of the graft donor and recipient sites. This issue has been additionally described at the end of the Discussion section with supplemental figure preparation showing MRI image at the graft donor site (Fig. 4D).

Supplemented sentence

Lines 179-181: Regarding the image assessment during the follow-up period, CT examination in addition to serial radiographs would have provided more accurate information.

Figure 4D: Graft donor site in the lateral femoral condyle.

We respectfully resubmit this paper for your consideration and look forward to your response.
Thank you in advance for your time and trouble.