Reviewers report

Title: Possible induction of malignant fibrous histiocytoma at the distal femur by arthroscopic anterior cruciate ligament reconstruction: a case report and review of the literature

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MAJOR COMPULSORY REVISIONS:

Malignant fibrous histiocytoma (MFH) is a tumor that like fibrosarcoma tends to occur in previously abnormal bone (from old infarcts or Paget’s disease). Patients are usually middle-aged adults and x-rays may reveal a destructive lesion adjacent to an old area of medullary infarction. The tumor is most often primary, but rare cases of secondary malignant fibrous histiocytoma in burn scars or infected or non-infected surgical scars have been more widely reported in the literature. Secondary malignant fibrous histiocytoma has been described in contact with prostheses, osteosynthesis material, or implanted Dacron grafts.

Although the authors present an interesting case report concerning a young patient, and try to connect the appearance of an osseous MFH with ACL reconstruction, I am not convinced that these two facts were not coincidental. Therefore, I have some very critical objections, which the authors should consider:

The title is very hypothetical and connects directly the arthroscopic ACL reconstruction with the appearance of MFH. This was not proven in this article and the two facts may not be related. Thus, it should be changed into a title more descriptive, like i.e., “Malignant fibrous histiocytoma of the distal femur at the site of an arthroscopic ACL reconstruction”

The authors try to make a connection of the tumor appearance with the fixation materials. However, the Endobutton fixation seems from the X-Ray to be rather far from the lesion. Also the Endobutton is not an invasive material like a screw. They should comment on this, as it does not appear to be connected.

They should present also a figure of the initial pre-operative MRI for comparison with the tumor-one, so that the reader won’t have any suspicion about a pre-operative small lesion existence that the authors didn’t notice.

How did the tumor infiltrate the femoral graft tunnel? As it seems from the X-ray position of the Endobutton (Figure 1), the femoral tunnel is situated at the 11 o’clock position at the lateral femoral condyle (LFC) and from the MRI (Figure 2) the lesion seem to occupy the medial condyle and does not cross the notch. The authors need to present an MRI image demonstrating the tunnel along with the
infiltrating lesion.

Were there any histiocytes and giant cells in the histopathologic evaluation? The authors should clarify the type of cells encountered in the biopsy.

It would be also very interesting to present a photo of the knee joint prosthesis that they finally used.

The sentence in the Discussion about the connection of surgical implants with cancer, as demonstrated in animals “However, animal…cancerogenic effects” should be eliminated, as it is a study from 1964 and concerns the cadmium. There is no study connecting the titanium (used in this study) with cancerogenic effects.

In the other similar case report by Caron et al (leiomyosarcoma at the distal femur after ACL reconstruction, where the sarcoma was located close to the interference screws), the authors considered it to be very unlikely that there is a connection between the malignant degeneration and material fixation, although their anatomic connection. The authors should comment on this.

“It seems theoretically possible…was increased”: the osteonecrosis and consequent malignant degeneration theory is very hypothetical and seems rather unfeasible, due also to location of the lesion at the MFC and not at the LFC. If this was the underlying mechanism, one should expect that the lesion would occupy the lateral femoral condyle and not the medial. The hypothesis that the former trauma situation can trigger the appearance of MFH seems more rational and is also described in the literature.

Figure 4 (the dissected specimen) do not show clearly that the ACL tunnel has been infiltrated from the tumor. The authors should provide a photo that demonstrates this better, macroscopically.

The authors should provide the duration of their patient’s follow-up.

The paper is in general well-written, and has very few grammatical or syntax mistakes. I was not convinced that ACL reconstruction was connected with the appearance of the MFH. I propose that this manuscript should be accepted after taking care of the above suggestions and the authors make it very clear for the reader that there is not evidence-based connection between the surgery and the tumor appearance.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests