Author's response to reviews

Title: Arthroscopic guided biopsy and radiofrequency thermoablation of a benign neoplasm of the tibial spines area: a treatment option

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Author's response to reviews: see over
Dear Editor

I’d like to thank the referees who aid us to increase the quality of our work. I’m sorry if the last time I did not the requested modifications but unfortunately they were not enclosed to my email. I hope to satisfy every request.

Following please find a point by point answer for referee 1; the change required from referee 2 was done and the paper was another time reviewed by a natural English speaker.

Point by Point Answer

1. in the abstract, the authors mention that standard treatment of a lesion in this location could contaminate the neurovascular bundle. This would be extremely unusual and would only occur if the posterior capsule of the knee is violated. I would recommend removing this statement.
   - your observation is generally true, but when the lesion is located just posterior to the cruciate’s insertion the anterior approach is not feasible because the quality of the exposition is not good because of the presence of the cruciate ligaments, so that a posterior approach, with neurovascular bundle exposition, is probably easier. That means possible posterior local relapse.

2. the complication of violation of the joint by the fluid pressure needs to be mentioned in the abstract.  
   - We have added the complication of violation of the joint as suggested.

3. in the case report section, 3rd paragraph, the authors need to discuss why the recommendation was made to this patient to undergo this procedure. They state elsewhere in the article that this procedure has a decreased risk of cartilage damage. why? what is the evidence to support this? 
   - the following sentence has been added to explain the unusual surgical procedure:
     “Considering the position of the disease a curettage by posterior approach was hypothesized but this would have caused a possible contamination of the popliteal neurovascular bundles in case of local relapse, thus...”; moreover the posterior location of the lesion is specified. The procedure should guarantee less risk of damage to the articular tibial surface because RT is done by direct view of the cartilage. However no studies about the changes induced by RT are available in literature. Our group has not had any experience, therefore the sentence was expressed as a conditional.

4. in the case report, paragraph 2, the authors state that the patient is in "good condition". This needs to be expanded; is he having any pain? what is his range of motion? does he have any activity limitations? In this same paragraph, the authors state that the patient is disease-free. However, in reviewing the CT and MRI provided, the area of the lesion looks larger after treatment. This may be an effect of treatment, but this finding, and any potential ramifications of this, needs to be discussed.
- The following sentence has been added to explain the patient’s condition: “the patient is without pain, with a range of motion 0-130°, has no activity limitations...”.
- The following sentence has been added to describe the imaging: “Fortunately this did not influence the results, and after one year of follow-up no sign of any recurrence is present with MRI and CT-scans (Fig.3). It is also possible to note the wide effect of the treatment; RT was not only limited to the lesion area but also took in the surrounding tissue, thus in the postoperative imaging the treated area looks bigger than the original disease area. This explains the possible advantage of a direct view of the cartilage, allowing the procedure to be stopped in case of any visible change in the aspect of the cartilage, and to pull the probe slightly backwards.

5. In technical note, first paragraph: were the portals inferior or superior?
   - The following sentence was modified to specify the portals: “access was provided via the routine parapatellar anterolateral and anteromedial portals”

6. Was a frozen section obtained prior to proceeding with the RF?
   - No, it was not; we considered the imaging and clinical evolution sufficient. The following sentence was added: no frozen section was obtained because the imaging and clinical aspect was considered clear.

7. The authors state that the primary advantage of this procedure is that the joint isn’t opened and thereby contaminated by tumor. However, the complication identified with breach of the articular cartilage does just that. What do the authors think will be the long-term effects of this complication? Is there risk of recurrence due to joint contamination? If this complication occurs again, would that indicate that this procedure is not justified on the grounds of joint contamination?
   - The following sentence was added to explain the concept: This happened because the water pressure was not decreased during and after the procedure and not as a direct consequence of the treatment. The rupture occurred after RT when theoretically the tumoral cells had died, therefore local relapse risk is, definitely, less than that of traditional curettage: the high temperature achieved by RT created a significant necrosis, so the patient remains disease-free at one year of follow-up.

8. What do the authors propose that the surgeon monitor in regard to the articular cartilage surface? What changes would be noted? If changes are noted, how can they be stopped or reversed?
   - The following sentence was added to the discussion section: “. In our case no changes were noted during the procedure, but if any variation in the aspect and color of the cartilage were noted during the procedure, it could be stopped and started another time after pulling the probe backward and positioning it farther from the cartilage or after decreasing the working temperature.”.

9. In the discussion section, paragraph 3: the authors state that the advantage of this procedure is monitoring of the cartilage cartilage; yet, despite that, the cartilage was still
damaged; is this still a valid reason for suggesting this procedure?
- we think so, because the cartilage damage was not a consequence of the treatment but just a mistake due to water pump pressure: it is sufficient to decrease the pressure during and after the procedure to avoid this complication.

10. in the discussion section, paragraph 5: the authors need to mention that this can be performed where RF equipment/instruments, as well as arthroscopic instruments, are available.
- We have complied with the referee’s suggestion

11. in the discussion section, last paragraph: the authors state that this can be performed by surgeons with varying levels of expertise. however, if the primary advantage of this procedure is monitoring the articular cartilage, doesn’t the surgeon need to have enough experience to note if there are changes (again, what changes are to be assessed for?) and what to do about them?
- the paragraph was modified as following to better explain the function of the technique: The main advantage of our technique is to allow the treatment of benign lesions in the tibial spines area and in the posterior part of the tibial articular surface where a posterior approach is needed without opening the joint for curettage. Moreover, it should permit the cartilage to be directly monitored during the procedure, and because of its safety and relative ease, it can be performed by surgeons at varying levels of expertise in arthroscopic procedures. Nevertheless, more studies need to be conducted to describe the possible cartilage damage.

12. is there an initial size of the lesion that the authors would suggest would be the upper limit of what could be treated? would larger lesions be less sensitive or need additional treatments? with the increase in size of the involved area noted on CT and MRI after the invention described in this case, would there be an upper limit that would make the bone at risk of fracture/collapse after the treatment.
- The following sentence was added at the end of the discussion section: “The upper size limit of the lesions potentially treated by RF depends on the opening of the probe tips technically possible till 5 cm; nevertheless this size cannot be obtained within the bone and the radiofrequency application would not be uniform so, in our opinion, lesions bigger than 3 cm in diameter should not be treated.”.