Author's response to reviews

Title: Anterior cruciate ligament (ACL) reconstruction with quadriceps tendon autograft and press-fit fixation using an anteromedial portal technique

Authors:

Ralph Akoto (rakoto@me.com)
Juergen Hoeher (jhoeher@t-online.de)

Version: 3 Date: 5 May 2012

Author's response to reviews: see over
Dear Dr. Longo, dear Ms Quinquini,
we have revised our manuscript according to the comments and suggestions of the two reviewers. Attached please find our point-to-point reply to the reviewers’ specific comments and the file with the revised manuscript. As suggested by the second reviewer we have added numbers to each line of the manuscript.

We look forward to hearing from you. In case of questions do not hesitate to contact us.
Sincerely
Ralph Akoto, Jürgen Höher
Reply to the Reviewer

Dear Dr. Tohyama,

Thank you for your thorough review of our manuscript. We have revised our manuscript according to your comments and suggestions. We have answered your comments in a point by point manner.

Sincerely
Ralph Akoto, Jürgen Höher

Reviewer's report
Title: Anterior cruciate ligament (ACL) reconstruction with quadriceps tendon autograft and press-fit fixation using an anteromedial portal technique

Version: 2 Date: 4 March 2012

Reviewer: Harukazu Tohyama

Reviewer's report:
Background
Page 3: “More recently, several authors have favored press-fit fixation of the graft with a more biological approach avoiding screw fixation and the use of implants. To date all press fit techniques for ACL reconstruction using a quadriceps tendon graft have used a transtibial single incision technique.” The authors should refer the studies about clinical experience of press-fit fixation of a quadriceps tendon graft, e.g., Paessler HH, Mastrokalos DS., Orthop Clin North Am. 2003 Jan;34(1):49-64.

Reply: Indeed, we have cited all authors who have published ACL reconstruction techniques using press fit fixation later in the discussion and also in Table one. We have now revised our manuscript and added these references to the background section.

Page 7: “All patients followed a standardized rehabilitation protocol with partial weight bearing for three weeks.” The description of the authors’ rehabilitation protocol was not sufficient. The authors should detail their protocol, e.g. application of braces, ROM exercise, the periods when they allow the patients to run and participate to sports activities.

Reply to the reviewer: We have added our rehabilitation protocol including application of braces, ROM exercise and the time periods when the patients were allowed to run or participate in Sports activities to our methods section and added this information in Table 1.

Results
Page 8: The authors’ evaluation of their technique is not enough for publication. The authors should report their preliminary outcomes of their technique, even if their primary aim is to introduce their technique. They should report the operation time, results on Lachman test, pivot-shift test, side-to-side difference of KT value, ROM,
and PF-related symptoms (kneeling pain, crepitation of the patella...) at their one-year follow-up.

Reply to the reviewer: We agree to this comment and have added the follow up data of our patients at one year including Lachman test, pivot shift, instrumented laxity measurement, ROM, and PF related symptoms to the results section and added this information in Table 2.

Discussion

Page 9: “Press-fit fixation of a bone block on the femoral side provides sufficient strength and assures a perfect tendon to bone junction, thus helping graft incorporation and early graft function [8].” The authors should discuss more details about biomechanical strength. How much is the strength of femur graft complex with press-fit fixation? Is the strength of femur graft complex with press-fit fixation stronger than those with other techniques?

Reply to the author: Thank you for the comment. We have added one paragraph to the discussion including data from the literature on pull out strength of the press-fit fixation.

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Reply to the Reviewer

Dear Dr. Logerstedt,

Thank you for your thorough review of our manuscript. We have revised our manuscript according to your comments and suggestions. We have answered your comments in a point by point manner.

Sincerely
Ralph Akoto, Jürgen Höher

Reviewer's report Title: Anterior cruciate ligament (ACL) reconstruction with quadriceps tendon autograft and press-fit fixation using an anteromedial portal technique

Version: 2 Date: 2 April 2012
Reviewer: David Logerstedt

Reviewer's report:

Major Compulsory Revisions
1. The results section provides very little data to accurately determine the success or failure of this technique. The only data presented is IKDC scores (not able to interpret the meaning). Did all subjects regain full ROM, normal strength, normal functional performance, normal patient-reported outcomes? Were there any complications (i.e. persistent effusion)? Did any subjects return to their previous level of activity? Were there any graft failures?

Reply to the reviewer: Thank you for your comment. Until yet, we have thirty patients for one year follow up. We have now revised our manuscript and added these data to the results section and added this information in table 2.

2. The authors stated this was a prospective study with pre-operative, 6 weeks, 6 and 12 months follow-up. Why is this data not presented?

Reply to the reviewer: Thank you for the comment. We agree that outcome data for the new surgical technique are important to the reader. In fact we have assessed all patients 6 weeks, 6 months and 12 months after surgery. At 6 weeks only early postoperative complications and early range of motion data were obtained. The 6 months and 12 months data including all IKDC criteria did not differ widely therefore only the 12 months result were included in the manuscript.

3. Page 7, line 15: Research is clear that quadriceps function is more affected after ACL reconstruction than hamstring function, even if a hamstring graft is used (deJong 2007, Keays 2001). Secondly, quadriceps function is related to overall knee function, whereas only a low relationship between hamstrings function and overall knee function has been established. (Eitzen 2010, Lewek 2002, Ardern 2010, Risberg 2009) The use of a quadriceps tendon graft can have an effect on the extensor mechanism and impact overall quadriceps function. So why is the main goal is to preserve hamstring function?
Reply to the reviewer: Thank you for the comment. We agree that quadriceps function is largely affected after ACL reconstruction no matter which graft is used for a long time after surgery. In our patients a quadriceps graft was selected because the patients either had a remaining MCL laxity after MCL rupture or the patients were involved in a martial arts sports in which the dynamic stabilization of the medial side of the knee by the hamstrings is considered to be important for sports performance. (Barrett et al., Anterior Cruciate Ligament Graft Failure A Comparison of Graft Type Based on Age and Tegner Activity Level Am J Sports Med 2011, 39(10):2194-2198.). The quadriceps graft choice was meant to preserve dynamic medial stabilization of the knee delivered by the semitendinosus tendon.

4. Page 8, line 7-8: What do the IKDC grading mean? Six times A and one time B. Does this mean there are only objective scores on 7 patients?

Reply to the reviewer: Thank you for your comment. We revised the results chapter. We now report the one year follow-up data of thirty patients. We present the objective IKDC results. Grading of the IKDC (International knee documentation committee) is performed as follows: A normal, B nearly normal, C abnormal, D severely abnormal.

5. The authors provide a rationale that the press-fit technique using a anteromedial approach can be performed. However, they provide no data that this technique is superior or even equal to other press-fit techniques. Please provide data on ROM, thigh strength, and passive joint laxity with arthrometry, if available.

Reply to the reviewer: Using a press fit technique with a bone block that is wedged into the femoral tunnel has been performed previously by other authors using a transtibial approach. In terms of fixation experimental data reveal a pullout strength of this fixation of about 400N. For us using the anteromedial portal approach a new challenge appears with graft passage, as the femoral tunnel is no more in line with the tibial bone tunnel. Therefore the bone block has to be angulated within the joint in order to be passed into the femoral canal. In our series we have demonstrated that with a bone block of 20mm length we have not had any problems with our graft passage. We have added outcome data of our patients at one year postoperatively in Table 2.

6. They state one of the major goals was to preserve hamstrings function but provide no data on any muscle function. Please provide data if available.

Reply to the reviewer: Yet we have only 5 patients with isokinetic testing after one year showing a deficit in extension ranging from 10-30%. This means that muscle strengths is an important issue in these patients. We will perform a routine isokinetic testing for all patients at the 2year follow-up.

7. Additionally, the authors only used one outcome measure to determine success however do not discuss their results to other published results on press-fit techniques. Please provide additional outcome measures if available.

Reply to the reviewer: The complete outcome data according to IKDC
Guidelines are now shown in the results chapter and in table 2.

Minor Essential Revisions
1. Page 3, line 8: Provided a statement that press-fit quadriceps grafts were inserted using a transtibial approach, but no clear rational why anteromedial approach may be better.

Reply to the reviewer: Recent data have shown that with a transtibial approach the bone tunnel cannot be placed in the correct anatomic position in all cases. Therefore, it is recommended by many expert groups that it drilling the tunnel through a anteromedial portal is adventurous over transtibial approach (Bird JH, et al.: Validation of a new technique to determine midbundle femoral tunnel position in anterior cruciate ligament reconstruction using 3-dimensional computed tomography analysis. Arthroscopy 2011, 27(9):1259-1267).

2. Page 3, line 10: Goal or purpose of this study is different from the goal stated on page 7, line 15.

Reply to the reviewer: Thank you for the comment. We have clarified this in the manuscript that the purpose of our study was to develop a surgical technique for ACL reconstruction in which the advantages of using a quadriceps graft and the advantage of using a press fit technique for fixation were achieved when the femoral tunnel was drilled through an anteromedial portal.

3. Past tense should be used throughout the methods and results.

Reply to the reviewer: We have changed the manuscript accordingly.

4. Page 4, line 14: # should be in words as it starts the sentence.

Reply to the reviewer: We have changed the manuscript accordingly.

5. Page 7, line 7: What is considered a standardized rehab protocol? Were there any ROM limitations? Were there any other limitations placed on patients to prevent graft pull-out?

Reply to the reviewer: We have added this information into the manuscript in Table 1.

6. Page 7, line 7: Why was partial weight-bearing used? How much partial weight-bearing (% of weight-bearing)? Others have used early full weight-bearing without graft pull-out. How earlier were guidelines from return to activity?

Reply to the reviewer: We have added the information on the rehabilitation protocol into the manuscript in Table 1.

7. Page 7, line 11: remove “sporty”

Reply to the reviewer: We have changed the manuscript accordingly.
8. Page 7, line 20: Define reconstructive cartilage repair. Were restorative (microfracture, OATS) included and reparative (ACI) excluded? Not sure which as on page 3, line 16, “cartilage surgery may have been performed”.

Reply to the reviewer: in our series only smoothening of the cartilage for grade II/III lesions and microfracture was used for grade IV lesions was used. We have added this information to the manuscript.

9. Page 8, line 7: What does “stable knee” mean? There is no clinical or arthrometry measurements to suggest that passive knee stability was present. Additionally, there were no data presenting giving way episodes.

Reply to the reviewer: We have changed the manuscript accordingly.

Discretionary Revisions
1. Please have the authors number the lines.
2. Page 3, line 16: What type of meniscus or cartilage surgery was performed? Performing an additional concomitant repairs could affect the overall results of the study.
3. Page 7, line 7: How earlier were guidelines from return to activity?
4. Page 7, line 22: Which IKDC form was used? Based on their results, it would be the IKDC objective (four grades) scores.
5. It is not clear if this was the one-year follow-up. I assume it was as 13 patients were not evaluated at this time point.

Reply to the reviewer: We have made all changes as suggested. Thank you.

Level of interest: An article whose findings are important to those with closely related research interests

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