

**Manuscript ID:** 65616

**Title:** Influence of volar margin of the lunate fossa fragment fixation on distal radius fracture outcomes: A retrospective series

**Journal:** World Journal of Clinical Cases

## **Response to Reviewer's comments**

Dear Editor-in-Chief,

Thanks for your comprehensive assessment of our manuscript. We appreciate your response and overall positive initial feedback, and made modifications to improve the original manuscript. After carefully reviewing the comments made by the Reviewers, we have further modified the manuscript to improve the presentation of our results and their discussion, therefore providing a more complete context for this research that may be of interest to your readers.

We hope you will find the revised version suitable for publication, and we look forward to contributing to your renowned journal. Please do not hesitate to contact me with other questions or concerns regarding the manuscript.

Best regards,

## Reviewer #1

**General comments:** *This retrospective study compares patient outcomes (wrist stability, balance, function) following two different surgical techniques to treat distal radius fractures: fixation versus no fixation of VMLF fragments. According to these findings, fixation is the superior method. A few aspects of the study need to be clarified, and data presentation should be improved. In general, the paper is well written. There are instances, though, where sentences are incomplete or repetitive.*

**Response:** We thank the Reviewer for taking the time to review our manuscript and for the comments.

### **Specific comments:**

#### **Abstract**

1• *State the aim in a neutral manner (“to demonstrate the impact” sounds like a hypothesis) – e.g., to investigate or to assess the impact.*

**Response:** We agree with the Reviewer. The aim was revised as suggested.

2• *Include the number of wrists in each surgical group.*

**Response:** We thank the Reviewer for the comment. The numbers were added.

3• *Separate reporting of the patient /characteristics and wrist characteristics -- 35 patients (20 females/15 males) with a mean age, and 38 wrists (20 left side and 18 right side).*

**Response:** We thank the Reviewer for the comment. The sentence was rephrased.

#### **Introduction**

4• *Last sentence in 2nd paragraph “...adaptive response...results...”*

**Response:** It was corrected.

5• *The authors use the word “neglect” when they might mean “overlooked” or “missed”, particularly when the fragment is small.*

**Response:** We agree with the Reviewer. The word was changed.

#### **Materials and Methods**

6• *1st paragraph – “All procedures were performed in accordance with the ethical...” Unless the journal requires this wording, I suggest removing “...a study involving human participants...” It sounds too much like a standard declaration.*

**Response:** We thank the Reviewer. The statement was revised.

7• *Please briefly describe the surgeries and postoperative care. It is helpful to establish the differences/similarities – operation time, aftercare, etc.*

**Response:** We thank the Reviewer for the comment. There were no differences between the two groups in the surgical technique. The basic technique is the same in

the two groups, except that the VMLF fragment was fixed in some patients when found preoperatively.

The length of operation was about 1 h for only volar or dorsal fixation. Fixing the VMLF took about 30 min.

For volar fixation, a volar incision of about 6 cm in length was made between the radial artery and the flexor carpi radialis tendon. The pronator muscle was cut to expose the fracture, which was then reduced and fixed with a volar plate. According to the degree of fracture comminution, auxiliary screws or Kirschner wire internal fixation could be used. After reduction and fixation were satisfying, the pronator muscle was repaired, and the incision was sutured. If the fracture was severely comminuted, external fixation with plaster or brace was provided after the operation.

In dorsal fixation surgery, a dorsal incision, about 4 cm in length, was made to enter between the extensor wrist and extensor digitorum muscles, reveal the fracture, reduce it, and fix it with a dorsal plate. After reduction and fixation were confirmed, the incision was sutured.

During postoperative care, the patients were instructed to raise the affected limb for 1 week, start passive functional exercises of the metacarpophalangeal and interphalangeal joints after recovery from anesthesia, and after 2-3 days gradually perform active functional exercises of the metacarpophalangeal and interphalangeal joints. Patients with external fixation were asked to gradually perform active wrist exercises starting 3 days after surgery.

*8• Please provide the number of cases assessed for inclusion that were excluded (and the reasons why).*

**Response:** We thank the Reviewer. From 2013 to 2017, a total of 216 patients with distal radius fractures underwent surgical treatment. Among them, there were 37 patients with VMLF fractures. Two patients were lost to follow-up. Therefore, 35 patients (38 wrists) were included in the study.

*9• No power analysis was done to estimate the sample size. Therefore, this should be stated as a limitation (not just that the sample size was small). Also, please explain if there were clinical reasons for selecting cases only during the years stated. In other words, why this period and this number of patients?*

**Response:** We thank the Reviewer. According to the authors' experience, the difference of Mayo or DASH between two non-paired groups was expected to be 20-25 [1]. Considering an SD of 20 in each group and a power of 0.8, the sample size was calculated to be 11-18/group using the R software (<https://www.R-project.org/>). Since the two groups included 16 and 22 patients, respectively, it can be considered that the power reached 0.8.

Distal radius fracture is a common disease in orthopedics. Open reduction and internal fixation of distal radius fracture is a conventional trauma orthopedic surgery. With the improvement of surgical technology and the development of internal fixation, the short-term effect in patients after operation is good, and patients are encouraged to perform early functional exercises, however, the long term postoperative effect has

not been significantly improved. Some patients' imaging findings during follow-up suggest that there is wrist instability or even subluxation. Therefore, we collected all the cases of the recent 5 years to investigate the impact of VMLF fragment in distal radius fractures on the stability and function of the wrist joint in the retrospective study.

*10• Why didn't the authors conduct tests of normality? This is a relatively small sample size; nonparametric statistics might be a better choice (then there are no assumptions about the underlying distribution of the outcome measures). Please justify the parametric tests or present data as median, interquartile range, range, and Mann-Whitney U to test group differences for continuous variables.*

**Response:** We thank the Reviewer. Continuous data were tested for normal distribution using the Shapiro-Wilk test and for homogeneity of variance using Levene's test. All continuous data were found to be normally distributed and have homogeneous variance.

*11• Please delete the third sentence in the first paragraph, "This is a retrospective study..." since it repeats the same information as the first sentence.*

**Response:** It was corrected.

*12• The last sentence of the first paragraph (regarding informed consent) is incomplete. Please use similar wording to the statement on page 17.*

**Response:** It was corrected.

*13• The full name of DASH should be written in the first paragraph since it is the first time it is mentioned.*

**Response:** We thank the Reviewer. DASH is defined at the first encounter in the Abstract and the main text..

*• Top of page 7 (2nd paragraph of the section): delete the word "were".*

**Response:** It was corrected.

*14• Last paragraph: is it correct that both the chief surgeon and the deputy chief surgeon did all 38 surgeries together? If yes, then please insert the word "both" between the words "have" and "worked" (... , who have both worked for more than 20 years in the hospital.)*

**Response:** We thank the Reviewer. The two surgeons performed a total of 216 operations on distal radius fractures from 2013 to 2017, but among them, only 35 patients had VMLF involvement and met the enrollment criteria. One physician was an attending physician who has worked for 18 years. The other one was a chief physician, who has worked for 30 years.

*15• Page 8 – please delete “ ” around the word poor.*

**Response:** It was corrected.

## **Results**

*16• There is too much overlap when presenting the data – please present the results in text or a table (with some minor exceptions, of course). For example, data in Figure 3 is also presented in Table 2.*

**Response:** We thank the Reviewer. We deleted Figure 3, and we revised the text to minimize the repetitions between the text and tables/figures.

*17• There may not be a statistically significant difference between the groups, but the proportion of women to men is quite different (75% females in fixed group but 40% females in unfixated group).*

**Response:** We thank the Reviewer for the comment. Distal radius fracture is one of the most common osteoporotic fractures [2]. Data from China have shown that among elderly people >60 years, there are far more women with distal radius fractures than men [3]. According to the prospective analysis of more than 4000 cases of distal radius fractures by the Edinburgh Orthopaedic Trauma Unit, the age distribution is bimodal, peaking in young men and middle-aged women, with more than 50% of fractures belonging to type A3 or C2 [4]. The estrogen levels decrease in women after menopause, and the bone loss is faster than in men. The degree of osteoporosis of the distal radius is more serious than in men [5]. The reason for the higher proportion of women in the fixed group might be that the fracture comminuted was more serious at the beginning, and fractures found intraoperatively (including VMLF) were given auxiliary fixation. The non-fixation group included more young and middle-aged male patients, and fewer investigations might have been performed in such patients. Age and gender might be confounding factors for the results, but the numbers of patients were small, and further follow-up studies are needed. It was added as a limitation.

*18• If available, it would help to present more information about patient characteristics, such as osteoporosis, BMI, ASA or comorbidities, injury to the dominant side, low- or high-energy fracture. If not available in medical records, please include this as a limitation (not just that multivariable analysis was not possible).*

**Response:** We thank the Reviewer. Indeed, such data were not available for all patients. It was added as a limitation.

*19• Please explain if there were any complications, reoperations, or loss to follow-up.*

**Response:** We thank the Reviewer. Each patient was followed and given routine instruction after discharge. All patients were followed with X-rays at 1, 3, and 6 months after the operation. Two patients were lost to follow-up but were not included at all in the study, as now stated in the Methods. All included patients showed no complications such as infection, nonunion of fracture, loosening of internal fixation, or rupture. It was added to the Results.

*20• Please include the range for the follow-up in months.*

**Response:** We added the follow-up range.

***Discussion***

21• Page 12 – “*This study’s findings suggest that...*”

22• Page 12 – “*One year after surgery, ...*”

**Response:** These were corrected.

23• *Please include any additional limitations mentioned above. In addition, it should be stated that retrospectively conducted studies have shortcomings.*

**Response:** We thank the Reviewer. We added limitations, as above.

24• *Perhaps the authors could address the downside(s) of fixation. For example, since these cases are relatively rare (or often missed), surgeons are likely less experienced with VMLF fracture fixation. This may extend the surgical time, which would certainly be justified if it is more likely to obtain the desired result and avoid reoperation, a burden on the patients, and unnecessary costs.*

**Response:** The number of cases is small, the follow-up time needs to be further extended, and the methods of SRL repair and VMLF fixation need to be further studied.

***Figures/Tables***

25• *Delete Figure 3 since data are already presented in Table 2.*

**Response:** We thank the Reviewer. Figure 3 was deleted.

## Science editor

*Issues raised: (1) The authors did not provide the approved grant application form(s). Please upload the approved grant application form(s) or funding agency copy of any approval document(s)*

**Response:** We now provide the form.

*(2) The authors did not provide original pictures. Please provide the original figure documents. Please prepare and arrange the figures using PowerPoint to ensure that all graphs or arrows or text portions can be reprocessed by the editor; and*

**Response:** We now provide the original figures.

*(3) The “Article Highlights” section is missing. Please add the “Article Highlights” section at the end of the main text. 6 Recommendation: Conditional acceptance.*

**Response:** We now provide the Highlights.

## Company editor-in-chief

*I have reviewed the Peer-Review Report, the full text of the manuscript, and the relevant ethics documents, all of which have met the basic publishing requirements of the World Journal of Clinical Cases, and the manuscript is conditionally accepted. I have sent the manuscript to the author(s) for its revision according to the Peer-Review Report, Editorial Office's comments and the Criteria for Manuscript Revision by Authors. Before its final acceptance, please upload the primary version (PDF) of the Institutional Review Board's official approval in official language of the authors' country to the system; for example, authors from China should upload the Chinese version of the document, authors from Italy should upload the Italian version of the document, authors from Germany should upload the Deutsch version of the document, and authors from the United States and the United Kingdom should upload the English version of the document, etc.*

**Response:** We thank the Editor-in-Chief. We now provide the approval([65616-grant application form\(s\).jpg](#), [65616-IRB approval letter.pdf](#)).

**(a) Requirements for figures:** *Please provide decomposable Figures (whose parts are all movable and editable), organize them into a single PowerPoint file, and submit as “65616-Figures.ppt” on the system. The figures should be uploaded to the file destination of “Image File”.*

**Response:** The figures are now organized in a ppt file([65616-Figures.pptx](#)).

**(b) Requirements for tables:** *Please provide decomposable Tables (whose parts are all movable and editable), organize them into a single Word file, and submit as “65616-Tables.docx” on the system. The tables should be uploaded to the file destination of “Table File”.*

**Response:** The tables are now provided as a separate file.

## References

1. Egund L, Onnby K, McGuigan F, Akesson K. Disability and Pain are the Best Predictors of Sick Leave After a Distal Radius Fracture in Men. *J Occup Rehabil* 2020; 30: 656-664. doi: 10.1007/s10926-020-09880-4. PMID: 32052265.
2. Cummings SR, Melton LJ. Epidemiology and outcomes of osteoporotic fractures. *Lancet* 2002; 359: 1761-1767. doi: 10.1016/S0140-6736(02)08657-9. PMID: 12049882.
3. Lu H, Tong PJ. [Overview and progress in treatment of fractures the distal radius]. *Zhejiang Linchuang Yixue* 2011; 13: 446-447. doi: PMID:
4. Ng CY, McQueen MM. What are the radiological predictors of functional outcome following fractures of the distal radius? *J Bone Joint Surg Br* 2011; 93: 145-150. doi: 10.1302/0301-620X.93B2.25631. PMID: 21282750.
5. Mackenney PJ, McQueen MM, Elton R. Prediction of instability in distal radial fractures. *J Bone Joint Surg Am* 2006; 88: 1944-1951. doi: 10.2106/JBJS.D.02520. PMID: 16951109.