Peer Review File
Article information: https://dx.doi.org/10.21037/jtd-22-1829

Reviewer A

This is a single-center retrospective study on internal fixation versus conservative management of simple rib fractures in patients older than 60 years of age.

Comment 1:
Introduction:
Line 79 to 80. Need to cite source.
Reply 1: Thank you for your comments. According to the comments, we have added references (see Page 6, line 80-81).
Changes in the text:
Early studies have shown that the mortality rate of patients with flail chest and visceral injuries is more than 20%. (+1) There are also recent studies that report lower mortality. (+2)
+1 Borman JB, Aharonson-Daniel L, Savitsky B, Peleg K; Israeli Trauma Group. Unilateral flail chest is seldom a lethal injury. Emerg Med J. 2006 Dec;23(12):903-5.
+2 Benjamin, E., Recinos, G., Aiolfi, A. et al. Flail Chest: Less Deadly than Originally Thought. World J Surg 2018;42:3927–3931.

Comment 2: Line 101 to 102. I do not think the statement of almost no separate study on patients with simple rib fractures. There is also a randomized controlled trial by the Denver group on non-flail rib fractures. https://pubmed.ncbi.nlm.nih.gov/31804414/ Although the number of fractures is 3 or more severely displaced ribs fracture.
Reply 2: Thank you for your comments. According to the comments, we adjusted the expression (see Page 7, line 103-104).
Changes in the text:
At present, most studies include patients with and without flail chest, and there are few studies of patients with simple rib fractures, let alone this particular group of elderly patients.

Comment 3:
Methods:
Need to define simple multiple rib fractures does this include displaced? How many displaced?
Reply 3: Thank you for your comments. According to the comments, we have added the relevant content (see Page 9, line 133-135).
Changes in the text:
Simple multiple rib fracture: fracture of multiple ribs (≥2), but without the formation of a flail chest (3 in a row, with two or more fractures in each).
At the beginning of the study, we considered including fracture displacement metrics. However, the subjective determination of displacement degree by visual observation is

high, so this study was not included in the study. At present, we are using a computer software system to conduct a quantitative analysis of rib fracture displacement in patients, aiming to evaluate fracture displacement more objectively and to subgroup patients. The results of subsequent studies will be updated.

Comment 4: Why choose 60 years of age as elderly? As life expectancy increases and quality of life improves, the standard of geriatric age has been increasing.
Reply 4: Thank you for your comments. According to the latest regulations of the World Health Organization (WHO), the Law on the Protection of the Rights and Interests of the Elderly in China also clearly stipulates that people over the age of 60 are defined as the elderly. We conducted a single-center study of Chinese hospitals, and we selected this age based on the Chinese definition of the elderly population.

Comment 5: Lines 170 to 173: Enrolled through further screening? I think the wording is confusing here. The numbers also do not add up. 123 + 290 is not 423. 10 missing patients?
Reply 5: Thank you for your comments. According to the comments, we've made changes to our statistical methods, added propensity scores, and are more granular in the new statistics. Please refer to the instructions in front of the review comments for details.

Comment 6: Lines 192 to 200: is it standard of care for patients to get CT scans every 4-6 weeks for rib fractures? Even for asymptomatic simple rib fractures? What is compliance rate with this type of follow up?
Reply 6: Thank you for your comments. Patients admitted to hospital always have good compliance, and the Department of Thoracic Surgery at our hospital recommends follow-up CT for all rib patients. In our study, the loss to follow-up rate calculated because patients did not have postoperative CT data was 133/880.

Comment 7:
Results:
212 to 219
The numbers do not add up. Please review the numbers here.132 + 310 is not 413.
Reply 7: Thank you for your comments. According to the comments, we've made changes to our statistical methods, added propensity score matches, and are more granular in the new statistics. Please refer to the instructions in front of the review comments for details.

Comment 8: Table 2. It is surprising that ISS were not different between operative and non-operative groups in total and chest ISS. Suspect that there are two groups of patients. Early acute rib fractures that are fixed early and those who are fixed later due to inability to wean vent.
Reply 8: Thank you for your comments. Since the subjects of our study were simple rib fractures, excluding severe chest injuries such as flail chest, there was no significant

difference in ISS scores between the surgical group and the conservative group. In this study, there was no statistics on how long after injury the operation was carried out, which gave us a hint and may be a good direction for research. Thank you for your comments, this will be a direction in our subsequent research.

Comment 9: Table 4. Your findings are consistent with current available evidence that operative patients are usually sicker from respiratory standpoint. In the operative cohort, did the patient develop these complications before or after rib fixation. How many are fixed early? (<72 hours) whic you have mentioned in your discussion.
Reply 9: Thank you for your comments.
According to the comments, we've made changes to our statistical methods, added propensity scores, and are more granular in the new statistics. We adjusted the description of complications into 'fracture comorbidities on admission (lung infections, pleural effusion, pulmonary atelectasis, pneumothorax, lung contusion),' and added statistics on visiting time (see Page 11, line 189-191).
81 patients in the operation group (71.7%) presented within 72 hours. In the nonoperation group, 75 patients (66.4%) presented within 72 hours. There was no significant difference(p=0.388) (see Page 15, line 262-263).

Comment 10: Table 5. How many patients were intubated? Prolonged intubation? Tracheostomy rate? Early or late intubation? Pain score on follow up? What type of painkillers (NSAID, muscle relaxant, opioids?)
Reply 10: Thank you for your comments. The ratio of mechanical ventilation in the surgical group was 13/113 and the ratio of mechanical ventilation in the non-surgical group was 5/113. We only counted the number of mechanically ventilated patients and did not further count Prolonged intubation, Tracheostomy rate and Early or late intubation, which was our negligence. The collection of these data needs to be more detailed and the groups more refined, which will be carried out in our follow-up study. The pain rating was done according to a uniform pain rating scale. In our manuscript, we use VAS score as pain index (score /10). All patients (surgical and conservative) received NSAID for pain relief.

Comment 11: Discussion:
Line 265-271. It is difficult to appreciate how clinically significant all these differences are. Pain score of 3.5+/-1.2 vs 4.8+/-0.9 even though p value is less than 0.9. Also we do not know what type of pain medicine was used in each patient. I think it is better to define what "painkillers" are. Is it opioid use? Clinically in our experience, it is rare that patients use opioids for > 3months after simple rib fracture.
Reply 11: Thank you for your comments. All patients (surgical and conservative) received NSAID for pain relief. Imrecoxib is a class of NSAID drugs. Some patients suffered for a long time and took oral imrecoxib for more than 3 months after discharge. In this study, none of the patients used opioids for pain relief.
1. All patients were given external fixation with rib belt and chest guard plate, and the patients' pain was significantly improved;

2. The study is mainly pure fractured ribs, the damage is less severe than the flail chest, so overall lighter pain degree;
3. All the treatment of patients with oral non-steroidal painkillers, intolerance or relevant basic disease patients with drug taboos have weed out into groups, by multidisciplinary consultation individualized pain treatment.

Comment 12:
4.2
Line 276-285 The strength of any single center study compared to a database study is the ability to find granular detailed data such as timing of surgery, relative timing of complications and use of pain medications which is not seen in this manuscript which the authors state that it is due to technical difficulty.
Reply 12: Thank you for your comments. In response to questions such as timing of surgery, relative timing of complications and use of pain medications, we added relevant information in the new manuscript. However, due to the particularity of injuries caused by trauma, uncertainty, unevenness and suddenness of injuries, it is difficult to determine the choice of timing of surgery. In addition, the elderly is often combined with underlying diseases, and the occurrence of its complications is difficult to define whether it is caused by rib fracture or surgery, so we can only make statistics about the complications of rib fracture in patients before surgery. In addition, the use of painkillers was excluded from all patients except NSAID, in order to evaluate the difference between the operative and conservative groups and reduce the bias due to the difference in medication.

Comment 13:
4.3
Line 286-290 Please spell check author name. Also in that paper, there were significant differences between the operative group and nonoperative group. The mortality benefit is seen in flail chest patients and more likely in nonflail patients with increased ISS. Early fixation has also shown decreased mortality.
Reply 13: Thank you for your comments. According to the comments, we've corrected the author's name as ‘Chen Zhu’ and made changes to our statistical methods, added propensity score matches, and are more granular in the new statistics.

Comment 14:
Line 291-295 not sure how this is related to this paper
Reply 14: Thank you for your comments. According to the comments, We have removed the relevant part.

Comment 15: Line 296-298 Chen Zhu et all shows increased LOS in rib fixation group even after propensity score matching which may be due to confounding factors.
Reply 15: Thank you for your comments. According to the comments, we've made changes to our statistical methods, added propensity score matches, and are more granular in the new statistics. Please refer to the instructions in front of the review

comments for details, aiming to reduce confounding factors and the conclusion obtained is more grounded. Chen Zhu et exactly showed decreased LOS in rib fixation group. But for comparison with our data, we only cite the original authors' conclusions on mortality.

Comment 16: Line 306-312. Pain killer is a broad category which needs to better defined.
Reply 16: Thank you for your comments. In this manuscript, we only used NSAID as painkillers.

Comment 17: Line 314-321. While these statements may be true, were these reasons for non-operating documented in your patient encounter or are these hypotheses?
Reply 17: Thank you for your comments. According to the comments, our original statement has some inaccuracies, we have removed the relevant part.

Comment 18: Line 322-327. Again these may be true but your data does not show the temporal relationship among mechanical ventilation, pulmonary complications, and operative intervention.
Reply 18: Thank you for your comments. According to the comments, Our original statement has some inaccuracies, we have removed the relevant part.

Comment 19: Line 370. Why choose ≥ 2 rib fractures.
Reply 19: At present, there is still no diagnosis and treatment guide for elderly patients with simple rib fracture. According to the research of our center at this stage, we believe that the incidence of complications after elderly patients with simple rib fracture is indeed significantly higher than that of young people. Due to the rich clinical and surgical experience of our center, early operation is still preferred for elderly patients with simple rib fracture. Therefore, the indications for simple rib fracture surgery in young people are ≥ 3 (Chinese expert consensus on surgical treatment of traumatic rib fracture), and the indications for rib fracture surgery in elderly people designated in our initial stage are ≥ 2.

Comment 20: Line 376. Consider using the word “contraindications” instead of “taboos”.
Reply 20: Thank you for your comments. According to the comments, we adjusted the expression.

Comment 21: Line 381 to 384. Mortality rate is not a good primary outcome measure for nondisplaced non flail rib fractures. Primary outcome should be time back to baseline activity, opioid use, and pain score over time. Some even suggest using PFTs and incentive spirometers to objectively measure pulmonary function after rib fracture.
Reply 21: Thank you for your comments. Time back to baseline activity may be a better outcome. However, we are a retrospective study, and we cannot find conclusive evidence in the medical records whether patients are able to return to baseline activity.

In our hospital's medical procedures, PFTs and incentive spirometers are also not routinely used for rib fracture re-examination. In the later study, we will improve our content and relevant indicators, and strive to conduct prospective randomized controlled studies.

Comment 22:
Overall
Recommend having a native English-speaker to review this paper.
No statistical method is used to control for confounding factors between the two groups despite claimed large sample size.
Need granular details as mentioned to make this study more impactful to the current literature on non flail rib fixation.
Reply 22: Thank you for your comments. AJE (American Journal Experts) polished the article and gave it an editing certificate. According to the comments, we've made changes to our statistical methods, added propensity score matches, and are more granular in the new statistics. Please refer to the instructions in front of the review comments for details.

Reviewer B

General Comment: The abstract does not clearly articulate the background behind the study, nor demonstrate the key results to substantiate the conclusions (in fact the p-value listed does not match that presented in the Table 2).
Reply: Thank you for your comments. According to the comments, we adjusted the expression (see Page 3, line 28-53).
Changes in the text:
Objectives: To find out whether elderly individuals with simple multiple rib fractures can benefit from surgical treatment.
Methods: A single-centre, retrospective study was conducted. All 880 registry-identified patients aged ≥60 years who were admitted with blunt rib fractures were included between 2013 to 2020. They were divided into two group according to whether internal fixation was performed. After screening of inclusion and exclusion criteria and propensity score matching, the chosen 226 patients were 113 in an operation group and 113 in a nonoperation group. The demographic characteristics, underlying diseases, number of rib fractures, hospital stay, ICU hospital stay, mechanical ventilation duration, fracture comorbidities on admission, pain index and fracture healing condition were calculated. The chi-square test and independent sample t-test were performed.
Results: The pain score and fracture healing time were significantly improved in the operation group ($p<0.05$). The length of stay in hospital was significantly longer in operation group($P=0.000$). Besides, there was no significant difference in mortality, the incidence of bone non-union, length of stay in the ICU, duration of mechanical ventilation between the two groups.

Conclusions: For patients in the clinical study, internal fixation surgery can reduce fracture healing time, alleviate the use of painkillers. At the same time, surgical treatment is safe because it will not increase the mortality of elderly patients. For older patients with simple rib fractures who have no contraindications to surgery, internal fixation surgery was recommend.

The methodology as a retrospective study needs a little clarification regarding patient selection, inclusion criteria and exclusion reasons. However, the objectives are clear and the listed outcomes should be sufficient to meet them if presented appropriately.

The tables are generally well laid out and easy to interpret, but there needs greater synthesis of the important outcomes in the discussion.

The academic writing and structure of the manuscript will need significant improvements prior to consideration for publication. The writing is often repetitive, with unclear syntax and does not conform to academic writing practices (e.g. introducing new information into discussion paragraphs).

I have endeavored to give specific and constructive feedback to the authors as detailed below. Please do not hesitate to contact me with any questions.

Comments to the authors:

Thank you for the opportunity to review this manuscript.
This is an interesting topic, with global interest regarding the best approach to geriatric rib fracture management.

I have the following queries, which I would appreciate your responses to:

Comment 1:
Abstract:
I did not have a clear idea of the main results to substantiate your conclusions after reading the abstract.
Reply 1: Thank you for your comments. According to the comments, we've made changes to our statistical methods, and adjusted the expression (see Page 3, line 28-53).

Comment 2: The key findings box needs to clearly list the main outcome of the study (I read it as decreased duration anlgesia and faster time to union)
Reply 2: Thank you for your comments. According to the comments, we adjusted the expression (see Page 5, line 55-57).
Changes in the text:
Internal fixation surgery on the elderly individuals with simple multiple rib fractures without contraindication was found to be able to reduce analgesia duration and shorten time to union.

Comment 3:
Background:
Lines 79-80 need a reference.
Reply 3: Thank you for your comments. According to the comments, we have added references (see Page 6, line 79-81).
Changes in the text:
Early studies have shown that the mortality rate of patients with flail chest and visceral injuries is more than 20%. (+1) There are also recent studies that report lower mortality.(+2)
+1 Borman JB, Aharonson-Daniel L, Savitsky B, Peleg K; Israeli Trauma Group. Unilateral flail chest is seldom a lethal injury. Emerg Med J. 2006;23(12):903-5.
+2 Benjamin, E., Recinos, G., Aiolfi, A. et al. Flail Chest: Less Deadly than Originally Thought. World J Surg 2018;42:3927–3931.

Comment 4: The reference for line 81 should be at the end of the sentence.
Reply 4: Thank you for your comments. According to the comments, we adjusted the expression (see Page 6, line 81-83).
Changes in the text:
According to the literature, for elderly patients with rib fractures older than 60 years, the mortality rate increases by 5% for every 1-year increase in age(5).

Comment 5: The fact that this topic is controversial is repeatedly mentioned without adding any further information to the argument: lines 90, 99-100, 103-104 etc
Reply 5: Thank you for your comments. According to the comments, we have added references (see Page 7, line 99-103).
Changes in the text:
Due to the lack of high-level evidence, the effect of surgical stabilization on multiple simple rib fractures remains controversial. A study showed that internal fixation operation in non-flail chest fractures is associated with higher rates of complications and mortality. (+4). However, there are also some studies suggested that operations could improve the outcome of multiple rib fractures patients without flail chest(+3,+5).
+3 Azim, Asad MD; Khan, Muhammad N. MD; Jehan, Faisal S. MD; Con, Jorge MD, FACS. In-Hospital Outcomes after Operative Fixation of Multiple Rib Fractures with Non-Flail Chest: A Propensity Matched Analysis. Journal of the American College of Surgeons 2019;229(4):232,
+4 Haddadin, Zaid MD; Hanna, Kamil MD; Castanon, Lourdes MD; Zeeshan, Muhammad MD; Ditillo, Michael DO, FACS; Tang, Andrew MD, FACS; Gries, Lynn M. MD, FACS; Hamidi, Mohammad K. MD; Kulvatunyou, Narong MD, FACS; Joseph, Bellal MD, FACS. Rib Plating the Non-Flail Chest May Not Be as Good as You Think. Journal of the American College of Surgeons 2019;229(4):241-242,
+5 Pieracci FM, Leasia K, Bauman Z, Eriksson EA, Lottenberg L, Majercik S, Powell L, Sarani B, Semon G, Thomas B, Zhao F, Dyke C, Doben AR. A multicenter, prospective, controlled clinical trial of surgical stabilization of rib fractures in patients with severe, nonflail fracture patterns (Chest Wall Injury Society NONFLAIL). J

Trauma Acute Care Surg. 2020;88(2):249-257.

Comment 6: All information regarding background/rationale for performing the trial should be in the background. New background information is presented in the discussion e.g. osteoporosis, PRP, elderly physiology (lines 334 to 344) and the discussion regarding rib fracture operation in the general population (lines 345 to 352). Unless this is presented in the context of explaining your results, it should be moved to the background.
Reply 6: Thank you for your comments. According to the comments, Our original statement has some inaccuracies, we have removed the relevant part.

Comment 7:
Methodology:
How were patients identified?
Reply 7: Thank you for your comments. After a detailed history inquiry and imaging examination, patients consistent with simple multiple rib fractures were included in the study and numbered.

Comment 8: The setting paragraph can be simplified – only need to know it's a trauma referral centre and volume of practice.
Reply 8: Thank you for your comments. According to the comments, we adjusted the expression (see Page 8, line 125-129).
Changes in the text:
Beijing Jishuitan Hospital is the trauma and burn rescue center of Beijing, with an annual outpatient volume of more than 10000 and an annual emergency volume of more than 1500. The hospital has rich experience in the treatment of multiple trauma patients combined with thoracic trauma.

Comment 9: When were rib ORIFs first performed at your centre?
Reply 9: Thank you for your comments. The thoracic surgery department of our hospital has carried out rib ORIFs since 2012. In 2012, the Department of Thoracic Surgery was established in our hospital, and internal fixation operation for rib fractures began.

Comment 10: Need to define "simple" rib fracture in inclusion criteria
Reply 10: Thank you for your comments. According to the comments, we adjusted the expression (see Page 9, line 133-135).
Changes in the text:
Elderly patients (≥60 years old) with simple multiple rib fractures. Simple multiple rib fracture: fracture of multiple ribs (≥2), but without the formation of a flail chest (3 in a row, with two or more fractures in each).

Comment 11: You mention blunt trauma as mechanism in your results but it is not in your inclusion criteria.

Reply 11: Thank you for your comments. According to the comments, we adjusted the expression (see Page 9, line 133-137).
Changes in the text:
Inclusion criteria
1. Elderly patients (≥60 years old) with simple multiple rib fractures. Simple multiple rib fracture: fracture of multiple ribs (≥2), but without the formation of a flail chest (3 in a row, with two or more fractures in each).
2. Patients with blunt trauma.
3. Clear imaging evidence to prove the rib fracture, with ≥2 ribs affected.

Comment 12: What imaging used to identify rib fractures? The ≥2 is ambiguous – does it mean ≥2 ribs affected? Or ribs affected in ≥2 places?
Reply 12: Thank you for your comments. According to the comments, we adjusted the expression. In our manuscript, CT scan was used to identify rib fractures. The ≥2 is ambiguous means ≥2 ribs affected (see Page 9, line 137).
Changes in the text:
3. Clear imaging evidence to prove the rib fracture, with ≥2 ribs affected.

Comment 13: Why did you choose to exclude those with follow up data? This could lead to significant bias if the patients that got better quickly chose not to re-present for follow up. It would at least be interesting to know how many lost to follow up in each group.
Reply 13: Thank you for your comments. In our manuscript, patients without CT results could not compare outcomes, so we excluded this subset of patients. Because this is a retrospective study, we cannot know why patients did not have a repeat CT that year. Because our hospital has admitted patients from all over the country, we can infer that some patients choose to return to the lower level hospital for follow-up after surgery.

Comment 14: What follow up data was this (Line 137)?
Reply 14: Thank you for your comments. According to the comments, we adjusted the expression. In our manuscript, CT scan was used to identify the union of rib fractures (see Page 9, line 141).
Changes in the text:
3. Without follow-up CT image data.

Comment 15: It's not clear from your retrospective design if all your rib ORIFs receive a post op CT or if this was study specific. If it's study-specific, it's not wholly a retrospective study and this needs to be articulated in your methodology.
Reply 15: Thank you for your comments. Patients admitted to hospital always have good compliance, and the Department of Thoracic Surgery of our hospital recommends that follow up CT of 4-6 weeks for all patients with rib fractures. The CT scan was not a specific. So, in our view, this is still a retrospective study.

Comment 16: The patient recruitment and exclusion would significantly be aided by a

STROBE diagram.
Reply 16: Thank you for your comments. According to the comments, we've made adjustments (see Page 33, line 492).

Comment 17: Lines 141-143 could be summarized as “after initial resuscitation” and are largely unnecessary
Reply 17: Thank you for your comments. According to the comments, we have adjusted the expression (see Page 9, line 147-148).
Changes in the text:
After initial resuscitation, all 113 patients in the operation group were performed with open operations under general anesthesia, and the patients were in supine or lateral position.

Comment 18: Did all the elderly patients receive the same oral analgesia regime? What about ones with renal failure or ischaemic cardiac disease where an NSAID is contra-indicated?
Reply 18: Thank you for your comments. All patients (surgical and conservative) received NSAID for pain relief. Imrecoxib is a class of NSAID drugs. Some patients suffered for a long time and took oral imrecoxib for more than 3 months after discharge. In addition, the use of painkillers was excluded from all patients except NSAID, in order to evaluate the difference between the operative and conservative groups and reduce the bias due to the difference in medication.
1. All patients were given external fixation with rib belt and chest guard plate, and the patients' pain was significantly improved;
2. The study is mainly pure fractured ribs, the damage is less severe than the flail chest, so overall lighter pain degree;
3. All the treatment of patients with oral non-steroidal painkillers, intolerance or relevant basic disease patients with drug taboos have weed out into groups, by multidisciplinary consultation individualized pain treatment.

Comment 19: Did your centre use any adjuncts such as regional nerve blocks or patient-controlled analgesia?
Reply 19: Thank you for your comments. Our center uses some adjuncts such as regional nerve blocks and patient-controlled analgesia. However, none of the patients in this study were used.

Comment 20: What do you mean by “homemade questionnaire” (Line 177)?
Reply 20: Thank you for your comments. “homemade questionnaire” was a form collect information of the patients

Comment 21: What are the “indicators in the guidelines” referred to regarding ARDS and death complications?
Reply 21: Thank you for your comments. We have removed ARDS from the new statistics. For the criteria for determining death, we use the Chinese guidelines for

determining death based on ECG.

Comment 22: Is the pain score /10?
Reply 22: Thank you for your comments. In our manuscript, we use VAS score as pain index (score /10).

Comment 23: Again, is the use of painkillers after discharge collected retrospectively or prospectively?
The p value at Line 207 should be ≤ not >
Reply 23: Thank you for your comments. Our research on analgesics is retrospective. We have corrected the mistake according to the comments (see Page 13, line 214).
Changes in the text:
$P < 0.05$ was considered to be statistically significant.

Comment 24: Results/discussion:
The start of your results section is repeating your patient inclusion paragraph
Reply 24: Thank you for your comments. According to the comments, we adjusted the expression (see Page 13, line 218-229).

Comment 25: What is a conjoined thorax?
Reply 25: Thank you for your comments. According to the comments, we have adjusted the expression (see Page 13, line 224). 'Conjoined thorax' was a mistake of 'flail chest'.
Changes in the text:
133 patients with combined flail chest.

Comment 26: Table 1 does not add to the information provided in Table 3, unless there is a particular trend chronologically that should be pointed out in the discussion.
Reply 26: Thank you for your comments. According to the comments, we've made changes to our statistical methods, added propensity score matches, and are more granular in the new statistics. Please refer to the instructions in front of the review comments for details.

Comment 27: All information in the results (written and tabulated) should compliment each other rather than repeat it. If information is contained within a table, it does not need to be spelled out in words – I'd rather hear more of your other results or subgroup results etc. However, you should be drawing conclusions and synthesising it in the discussion. Most of lines 234-253 is able to be interpreted form the tables.
Reply 27: Thank you for your comments. According to the comments, we have adjusted the relevant expressions (see Page 14, line 238-247).
Changes in the text:
3. Outcome data
Then, we performed statistics on the demographic characteristics of the operation group and the nonoperation group, including sex, age, basic pulmonary diseases (chronic obstructive pulmonary disease, COPD and asthma), smoking history, diabetes history,

basic pulmonary cardiovascular diseases, the number of rib fractures, visit time, fracture comorbidities on admission (lung infections, pleural effusion, pulmonary atelectasis, pneumothorax, lung contusion). There were significant differences in sex between the two groups. The results were shown in Table 2. Then we conducted the 1:1 propensity score match on the two groups of data. After matching, there was no significant difference between two groups. The result was shown in Table 3.

Comment 28: Unless it is a journal-requested formatting, the subheadings in the results hinder the reader.
Reply 28: Thank you for your comments. This is the fixed format required by the magazine.

Comment 29: Lines 263 to 271 are repeating sections of background and results. The discussion needs to synthesise the results by offering hypotheses as to why they occurred, how they answer your primary and secondary objectives and comparing them concurrently to other literature (rather than in a separate section afterwards). This discussion is extremely superficial and does not add to my understanding of your results.
Reply 29: Thank you for your comments. According to the comments, we adjusted the expression (see Page 15-16, line 270-277).
Changes in the text:
1. Key Findings
After propensity score match, the two group of data are comparable. The operation group was found to achieve less pain than the nonoperation group. Surgery significantly reduced the time of fracture healing and the use of painkillers, which is encouraging. At the same time, the infixation surgery considered to be safe because there was no significant difference in the mortality. However, there was no significant difference in the proportion of bone non-union between the operation group and the nonoperation group; thus, surgery cannot reduce the risk of bone non-union.

Comment 30: Did you delineate if respiratory failure occurred pre, or post operatively? Considering respiratory failure is often an indication for rib ORIF, it is an important distinction.
Reply 30: Thank you for your comments. Due to the particularity of injuries caused by trauma, uncertainty, unevenness and suddenness of injuries, it is difficult to determine when respiratory failure occurs. In addition, the elderly is often combined with underlying diseases, and the occurrence of its complications is difficult to define whether it is caused by rib fracture or surgery, so we can only make statistics about the complications of rib fracture in patients before surgery. The data we use now are the complications of patients at admission.

Comment 31: Increased LOS could lead to other complications not collected in your study e.g. pressure sores, delirium, VTE and this should be acknowledged as a limitation.
Reply 31: Thank you for your comments. The situation you mentioned may exist, but

all the elderly people in our center are accompanied by a family member to ensure better management of the patients' life and emotions. The long-term bedridden inpatients will be regularly reviewed and treated with D-dimer and lower limb venous ultrasound. However, some patients will also be bedridden for a long time after discharge without effective detection and prevention measures. There was a large gap between baseline levels, so VTE was not included in this study. In addition, NSAID drugs also have anti-platelet effects and should not be used together with anticoagulant drugs, which may aggravate the risk of bleeding. Therefore, patients using anticoagulants were not included in this study.

Comment 32: The discussion introduces completely irrelevant topics (PRP line 293) no new content should be placed here (pain denial line 312)
Reply 32: Thank you for your comments. We have removed the relevant section.

Comment 33: Did you collect data on the rate of osteoporosis? If not, you can't say the rate of "fracture of internal fixation is higher" – or you need a reference.
Reply 33: Thank you for your comments. We have removed the relevant section.

Comment 34: The net effect of operation per your results is decreased analgesia use (by 0.5months), fracture healing time (by 0.4months), and decreased discharge pain score (by 1.3). The weighing up of this against the longer LOS 2.5 days and if it's clinically significant should be commented on.
Reply 34: Thank you for your comments. According to the comments, we have adjusted the expression (see Page 18, line 322-325).
Changes in the text:
The average hospital stay of patients in the operation group was 2.4 days longer than that in the non-operation group, and the use of NSAIDs decreased by 0.4 months on average, and the fracture healing time decreased by 0.3 months.
With the development of surgical techniques and the improvement of quality of life, age is no longer an absolute contraindication for surgical treatment. We hope that surgical treatment can provide better options for elderly patients and improve patients' quality of life. Of course, surgery itself is traumatic, especially for the elderly, so the length of hospital stay after surgery will be prolonged, but the mortality rate of patients does not increase, and the long-term recovery of patients also shows a better effect, we hope that through our efforts can provide more excellent treatment methods for the treatment of patients with rib fracture.

Comment 35: Regarding your comments, "we found that the use of anticoagulants before injury affected doctors' choices of whether to operate…" (lines 315-317), did you collect data on surgeon's attitudes as this statement implies?
Reply 35: Thank you for your comments. We have removed the relevant section.

Comment 36: Similarly, " did you collect data on osteoporosis or run a regression on if the number of female surgeries performed correlated to osteoporosis rate? If not, you

cannot say “as a result”.
Lines 324-325 and 331 need a reference
Reply 36: Thank you for your comments. We have removed the relevant section.

Comment 37: Figures and Tables:
Figures: the captions are long winded and lose the reader’s interest. You can remove all reference to non-rib injuries i.e. sternum and scaphoid.
Reply 37: Thank you for your comments. We have removed the relevant section.

Comment 38: The tables are generally clear and easy to interpret. Care with formatting consistency in Table 5.
The table rows that include a p-value spanning 3 categories (e.g. ISS, # fractures) – which of the categorical variables is it comparing? Overall op vs non-op?
Reply 38: Thank you for your comments. We use the chi-square test for a 2*3 contingency table. We compared data from operation and nonoperation groups (see Page 30, Table 4).

Comment 39: Table 3 p-values?
Reply 39: Thank you for your comments. We have removed the relevant section. As a result of the change in statistical methods, the tables have been condensed and consolidated, so that they can be easier to understand.

Comment 40: General writing:
The use of the phrase “basic diseases” throughout the paper would be best changed to “comorbidities” or simply omitting “basic” (e.g. basic respiratory diseases)
The syntax is often convoluted and inefficient e.g. lines 82-83, “most of the complications are caused by chest wall pain and limited inspiration (insufficient inspiration caused by pain)”
The overall of the balance of the article structure is off. There is far more words dedicated to the set up rather than investing in your results and discussing these. I would suggest a greater proportion of words should go towards the results you’ve worked hard to obtain.
I would recommend discussion with a professional manuscript writer for proofreading as there are many grammatical oddities that I have not commented on individually.
Reply 40: Thank you for your comments. According to the comments, we have adjusted the relevant expressions. We accept the Article Processing Charge (APC) with extensive language editing.