Dear Editors and Reviewers：

We thank you very much for giving us an opportunity to revise our manuscript. We have resolved all issues in the manuscript based on the peer review report and make a point-by-point response to each of the issues raised in the peer review report, and highlighted the revised/added contents with yellow color in the revised manuscript. All issues in the peer-review report(s) are listed below :

Reviewer #1:

Scientific Quality: Grade B (Very good)

Language Quality: Grade A (Priority publishing)

Conclusion: Minor revision

Specific Comments to Authors: Distal clavicle fractures treated by anteroinferior plating with a single screw: A report of two cases A positive postoperative outcome is essential for a full functional recovery in cases of fractures. Lack of complications after surgery may be one of the most important aspects in choosing a surgical intervention method. Given the high incidence of clavicle fractures and the risk for negative outcome when applying conservative treatment, the search for an optimal surgery technique is of paramount importance, both for the quality of life of the patient, as they can make a major functional improvement without great setbacks, but also regarding the medical cost. Therefore, these findings are important both in a clinical setting, presenting a high practical value for surgeons, but also as a steppingstone for further studies and analysis of the effectiveness of this technique. The manuscript is well organized, has a logical structure, and a high level of written clarity, it is concise and coherent, with an adequate scientific basis. The manuscript has been thoroughly referenced, while the addition of radiological and clinical images further improves the quality of the report by enhancing the level of information provided. The degree of comprehensibility may be further improved by considering some elements. • In the Core tip section, please change “surgical treatment are recommended” to “surgical treatment is recommended”. • In the Introduction section, in the phrase “none of the treatment methods mentioned above has been proven to be the best” to please consider changing the verb to “have been proven”. • Regarding the Discussion section, please consider, when mentioning research or implemented surgical methods by medical doctors, citing the article

mentioning said findings by including the first author's first name, followed by et al (Kaipe et al, Yoo et al). • Concerning the Figure legend, please provide the annotation in the same order: "Figure 1. Radiographic findings. (A) preoperative. (B) 1 week postoperative. (C) 1 year postoperative" After analyzing the manuscript, it can be considered for publication after making these small changes.

Comment1: In the Core tip section, please change "surgical treatment are recommended" to "surgical treatment is recommended".

Response: In the Core tip section, we have changed "surgical treatment are recommended" to "surgical treatment is recommended"and highlighted the revised contents with yellow color in the revised manuscript.

Comment2: In the Introduction section, in the phrase "none of the treatment methods mentioned above has been proven to be the best" to please consider changing the verb to "have been proven".

Response: In the Introduction section, we have changed "none of the treatment methods mentioned above has been proven to be the best" to "none of the treatment methods mentioned above have been proven to be the best"and highlighted the revised contents with yellow color in the revised manuscript.

Comment3: Regarding the Discussion section, please consider, when mentioning research or implemented surgical methods by medical doctors, citing the article mentioning said findings by including the first author's first name, followed by et al (Kaipe et al, Yoo et al)

Response: Regarding the Discussion section, we have changed that when citing the article mentioning said findings by including the first author's first name, followed by et al (Kaipe et al, Yoo et al) and highlighted the revised contents with yellow color in the revised manuscript.

Comment4: Concerning the Figure legend, please provide the annotation in the same order: "Figure 1. Radiographic findings. (A) preoperative. (B) 1 week postoperative. (C) 1 year postoperative" .

Response： We have provided the annotation in the same order for figures according to the reviewer's comment and highlighted the revised contents with yellow color in the revised manuscript.

Thank you very much again ！

Name of Journal: World Journal of Clinical Cases

Manuscript NO: 88264

Manuscript Type: CASE REPORT

Distal clavicle fractures treated by anteroinferior plating with a single screw :A report of two cases

Zhao *et al*.Clavicle fractures treated by a screw

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Author contributions: Zhao XL and Zhang YJ contributed to manuscript writing and editing, and data collection; Zhang YJ was responsible for the

case report's overall organization; Liu YQ、 Wang JG and Liu YC were involved in helping to critically revise the manuscript for important intellectual content and have given final approval of the version to be published; Zhou JX and Wang BY procured the radiograph images, and labeled them;all authors have read and approved the final manuscript.

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Abstract

BACKGROUND :For the treatment of distal clavicle fractures, each treatment method has its own advantages and disadvantages, and there is no optimal surgical solution.

CASE SUMMARY:Based on this, we report 2 cases of distal clavicle fractures treated utilizing an anterior inferior plate with a single screw placed in the distal, in anticipation of providing a better surgical approach to distal clavicle fracture treatment.Two patients were admitted to the hospital after trauma with a diagnosis of distal clavicle fracture, and were admitted to the hospital for internal fixation of clavicle fracture by incision and reduction, with good postoperative functional recovery.

CONCLUSION: With solid postoperative fixation and satisfactory prognostic functional recovery, this technique has been shown to be simple, easy to perform, and effective.

Key words: Distal clavicle fractures; Anteroinferior; Plating; Single screw;Case report

Core tip

Distal clavicle fractures account for about 12-21% of all clavicular fractures and about 25% of distal clavicle fractures are unstable[1]. For conservative treatment of distal clavicle fractures, complications including high incidence of nonunion, abnormal appearance and dysfunction are likely to ensue.Thus, surgical treatment is recommended by scholars. So far, none of the treatment methods has been proven to be the best. Here, we report 2 cases of distal clavicular fractures successfully treated by anteroinferior plating with a single screw placed at the distal fragment. This technique has been shown to be simple,easy to operate and effective,which has not been reported previously as far as we are aware.

Introduction

Distal clavicle fractures account for about 12-21% of all clavicular fractures and about 25% of distal clavicle fractures are unstable[1]. For conservative treatment of distal clavicle fractures, complications including high incidence of nonunion, abnormal appearance and dysfunction are likely to ensue.Thus, surgical treatment is recommended by scholars[2][3][4]. The surgical treatment methods include hook plating, coracoclavicular(CC) stabilization, locking plating, multiple transacromial pins, and etc. Each method has its own advantages and disadvantages. The hook plating method is associated with multiple complications such as subacromial irritation, plate migration, osteolysis and other problems[5][6]. CC stabilization has been recommended with satisfactory clinical outcome[7][8]. It can also be performed with minimal invasion under arthroscopic assistance ,yet this technique is associated with risks of manipulation on coracoid . The locking plating method is to a large degree limited by the bone mass at the distal fragment of the fracture. The fixation effect cannot be guaranteed since it's likely that insufficient screws are placed given the limited bone mass. Indeed, there were reports of cases with fixation failure after locking plate treatment and the implants had to be removed from some patients eventually[9]. Some scholars advocate plating combined with coracoclavicular fixation[10][11]. This will obviously increases total operation in addition to boosting medical cost, which has to be taken into consideration. Problems upon treatment with multiple pins method include acromioclavicular joint interference, pin migration, irritation, as well as forced removal of the implant[12]. So far, none of the treatment methods mentioned above have been proven to be the best. Here, we report 2 cases of distal clavicular fractures successfully treated by anteroinferior plating with a single screw placed at the distal fragment. This technique has been shown to be simple,easy to operate and effective,which has not been reported previously as far as we are aware.These two patients consented to publication of this report.

Case presentation、Final diagnosis 、TreatmentandOutcome and follow-up

Case 1

A 38-year-old man fell while riding his bicycle. He hit his right shoulder on the hard ground and suffered pain and swelling in the distal part of the right clavicle after the injury.The radiograph(Fig.1) showed a fracture of the distal right clavicle. The patient was engaged in moderate physical labor before injury, which demands high shoulder function. Therefore, surgical treatment was recommended. The operation was performed 2 days after injury. The patient was placed in the beach-chair position,subjected to brachial plexus block anesthesia. A parallel incision was made along the lateral lower edge of the clavicle. After the fracture was exposed, a molded anterior-inferior reconstruction plate(Baide Medical,Jiangsu,China)was placed while the reduction was maintained by an assistant pressing the proximal end of clavicle fracture. The distal hole of the plate was placed in a proper position so that a screw could be accurately placed at the distal fragment. Under fluoroscopy, a single screw with length of 3.5cm and diameter of 3.5mm was inserted to form a double cortical fixation at the distal fragment of the fracture. Firm control force was felt while the screw was tightened. 3 screws were inserted at the proximal end of the fracture subsequently. The right clavicle exhibited no displacement within itself while moving right shoulder fully, which indicated firm and reliable fixation effect had been achieved. The wound was irrigated and sutured while the ligaments were not treated during the operation. The patient was encouraged to start shoulder movement after the pain subsided.he was not allowed to load the operated shoulder for 6 weeks.At follow-up examination after 1 year post operation, X-ray (Fig.1)showed that fracture reduction was not lost and union was achieved. At six months post operation, the patient was already pain free and back to his previous work with his right shoulder moving fully free. He felt comfortable after operation and was very satisfied with the local appearance and function in the right shoulder (Fig.2). He has no demand to remove the implant.

Case 2

A 57-year-old man fell to the ground and hit his left shoulder. He suffered pain and swelling in the distal part of the left clavicle after the injury. The radiograph(Fig.3)showed a fracture of the distal left clavicle. The patient was engaged in light physical labor before injury and he demanded high shoulder function. Therefore, we recommended surgical treatment. The operation was performed 8 hours after injury with the same operation procedure as that in case 1. At follow-up examination after 6 months post operation, X-ray (Fig.3) showed that the reduction at the fracture site remained in good condition and the left clavicle was well healed. He was satisfied with both the local appearance and function in the left shoulder (Fig.4). He resumed most of his activities before the injury at 6 months after the operation.

None

Discussion

Surgical treatment of unstable distal clavicle fractures can greatly promote fracture healing and reduce related complications. Because the distal fragment of the fracture is small and flat, it is difficult to fix the fracture directly. When the plate is positioned on the superior surface of the clavicle, the screws tend to be quite short. If the number of screws at the distal fragment of the fracture is small, the fixing effect might be disturbing. Different approaches have been invented so as to strengthen the fixation effect of superior plating. For example, Kaipe *et al*[13]placed a second plate on the anterior surface of the clavicle while Yoo *et al*[14] added several cerclage wires. We made full use of the anatomical advantage of the greater anterior-posterior diameter of the distal clavicle and placed the plate on the anteroinferior surface of the clavicle, where the length of the screw at the distal fragment could be significantly much longer. With just one single screw placed at the distal fragment, the grip force increases significantly, achieving satisfactory fixing effect while there is no need to repair the ligaments. It is also possible to fix smaller fracture fragment with our method. Anteroinferior plating does not need to interfere with acromioclavicular joint and postoperative patients feel more comfortable. The upwarping of the proximal end of the distal clavicle fracture is the main harmful stress potentially causing fixation failure.Our method of anteroinferior plating may prevent screw evulsion since the single anterior-posterior screw is perpendicular to the unfavorable upwarping stress. Furthermore, the screw drilling direction is upward and backward, which can potentially reduce the damage to subclavian nerves and vessels. The anteroinferior plate is relatively well concealed and covered by soft tissues, which maximally reduces plate protrusion as well as patient's discomfort leading to less demand for plate removal. The site of surgical incision could move relatively more downward, which is also advantageous in cosmetic sense. Some of these advantages have been noticed by scholars in the treatment of midshaft clavicular fractures using anteroinferior plating method[15][16].

Conclusion

Based on our experience, it is feasible to treat unstable distal clavicle fractures by anteroinferior plating with a single screw placed at the distal fragment,which is simple and reliable. A long anterior-posterior screw alone could effectively control the smaller distal fragment,which, in our view, is the first. Due to the small number of cases, the effectiveness of this method awaits more observation and verification.

Acknowledgements

We thank the patients and their families.

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Informed consent
Informed written consent was obtained from the patient for publication of this report and any accompanying images.

Conflict-of-interest statement
The authors declare that there are no competing interests in this study.

CARE Checklist (2016) statement
The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Figure Legends

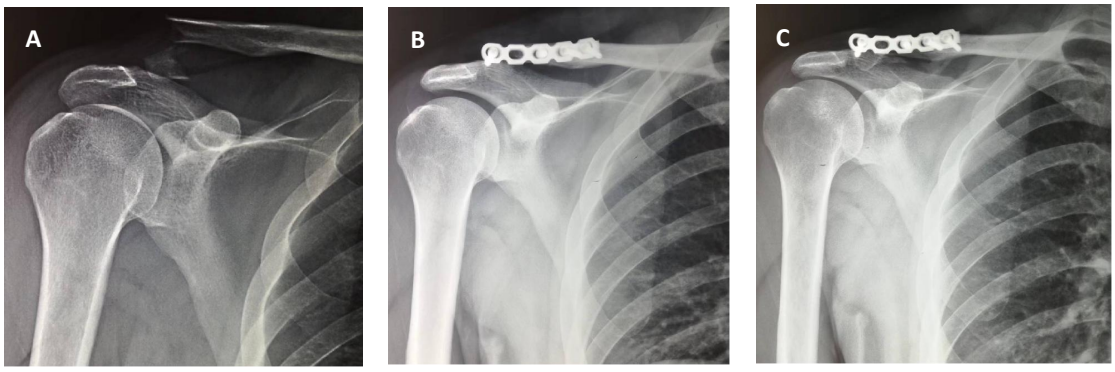

Figure 1. Radiographic findings (A) preoperative. (B) 1 week postoperative. (C) 1 year postoperative.

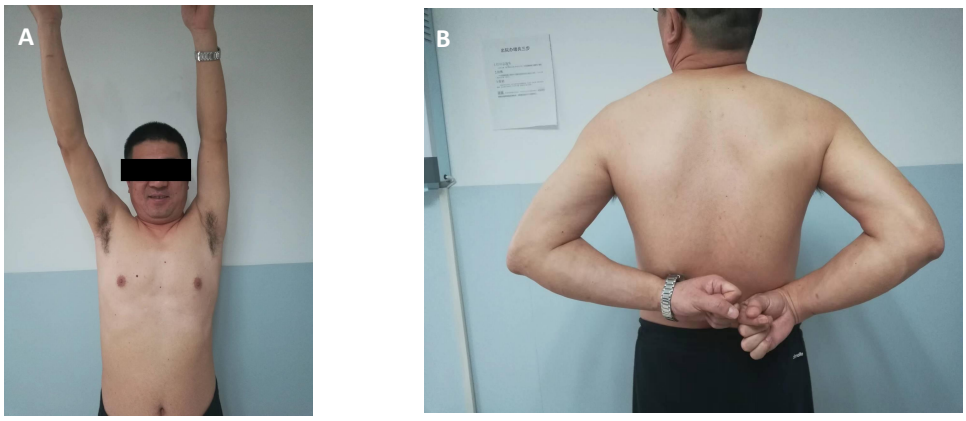

Figure 2. A year postoperative,patient had satisfactory functional outcome. (A) antexion raise. (B)internal rotation.

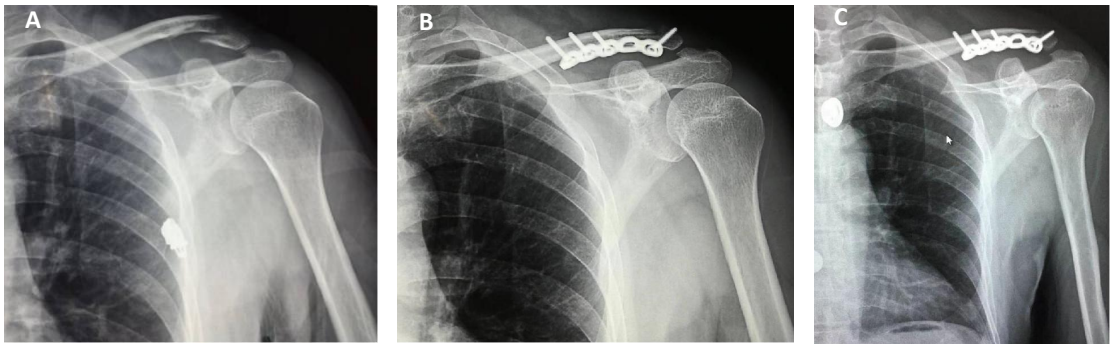

Figure 3. Radiographic findings (A) preoperative. (B) 1 week postoperative. (C) half a year postoperative.

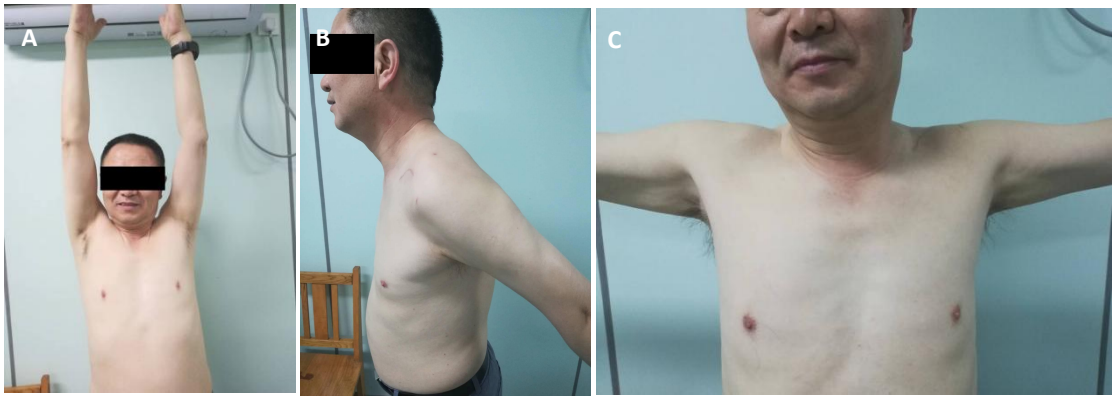

Figure 4. Half a year postoperative, patient had satisfactory functional outcome.(A)antexion raise. (B)rear protraction. (C)abduction.