Injury, Int. J. Care Injured 50 (2019) 1261–1265

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury

Letter to the Editor

A new technique for medial-end comminuted clavicle fractures

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http://dx.doi.org/10.1016/j.injury.2019.04.012

Recently, we read the article written by Zhenxing Li and his colleagues with great interest (Li Z, Liu H, Chen D, et al. A new technique for medical-end comminuted clavicle fractures. Injury. 2019). They made an effort to show us a new technique for medial-end comminuted clavicle fractures. And we appreciate their work from bottom of our heart. However, we have to point out some defects of the study, mainly in the following three aspects. First of all, the evaluation of postoperative function is not appropriate. The authors used the DASH score [1]. However, this score is mainly used for the functional evaluation of the upper limbs which unable to accurately reflect the impact of the surgery on shoulder joint activity. We think the Constant Murley score may be more appropriate [2]. Secondly, the study lacks the description of the impact on neck activity. The author fixed the plate between the two clavicle ends. This will make the plate ride across the two sternoclavicular joints. There are many ligaments and muscles at the sternoclavicular joint, especially the sternocleidomastoid muscle. When the neck turns to one side, the contralateral sternocleidomastoid muscle will contract and protrude on the skin surface [3]. If the author fixes the plate across the sternoclavicular joint, it will inevitably compress the sternocleidomastoid muscle, causing pain and affecting activity. Thirdly, the inner part of the clavicle and the sternoclavicular joint are located under the skin and can be distinguished by the naked eye. If a steel plate is placed here, it is easy to protrude on the skin surface. At the same time, there are incisions on both sides of the neck, which makes it difficult to cover up with clothes. This has a big impact on the appearance, especially for women. Is there a more minimally invasive method to improve the aesthetics after surgery? This is a question worthy of further discussion by the author.

Conflict of interest

None.

Funding source

None.

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Letter to the Editor

Inter and intraobserver reliability and critical analysis of the FFP classification of osteoporotic pelvic ring injuries: Methodological issue

Dear Editor,

We were interested to read an article that recently published by Krappinger D and colleagues in the Feb 2019 issue of Injury [1]. The purpose of the authors was to investigate inter and intraobserver reliability of the fragility fractures of the pelvis (FFP) classification system and to critically analyze its strengths and weaknesses [1]. The intra and interobserver reliability were assessed with Cohen's k coefficient. One-hundred pelvic CT scans obtained from a consecutive series of patients aged 70 years and older were reviewed and classified each Osteoporotic Pelvic Ring Injuries (OPRI) according to the FFP classification in two different sessions by three orthopaedic traumatologists of varying levels of experience. The authors reported that overall interobserver reliability for all 100 cases was moderate with Kappa values from 0.42 to 0.59, while intraobserver reliability was substantial with Kappa values from 0.68 to 0.72. Subgroup analysis revealed lowest reliability for the classification of Type IIc, IIIc and IVb injuries (32 cases). Within this subgroup of combined anterior and posterior OPRI involving a complete nondisplaced or displaced (uni- or bilateral) sacral fracture, Kappa values for

Table 1
The kappa and weighted kappa values for assessing agreement between 2 observers having more than 2 categories.

		Observer 1			Sum
	grade	1	2	3	
Observer 2	1	60	20	1	81
	2	2	12	4	18
	3	3	11	11	25
Sum		65	43	16	124
Kappa		0.43 (Moderate)			
Weighted kappa		0.63 (Good)			

interobserver reliability ranged from 0.10 to 0.52, while those for intraobserver reliability ranged from 0.29 to 0.66 [1].

We congratulate authors for their valuable work, but we would like to explain some issues about this study. To assess agreement of a qualitative variable, using kappa value is not always an appropriate estimate. First, Kappa is sensitive to marginal distribution and extremely depends on the prevalence. Second, the kappa value is sensitive to the number of categories [2–6]. We should mention that when a variable with more than two categories or an ordinal scale is used (with 3 or more ordered categories), then the weighted kappa would be a good choice to investigate inter and intraobserver reliability [2–6]. Table 1 shows the agreement by applying kappa (0.43 as moderate) and weighted kappa (0.63 as good) which has different values and consequently different interpretations. In this table, the marginal distribution in first category (grade1) is different from the other categories and also, the number of categories is more than two.

Authors concluded that overall interobserver reliability of the FFP classification system was moderate, while intraobserver reliability was substantial. Also, classification of FFP subtypes involving a complete nondisplaced or displaced sacral fracture showed relatively poor reliability. Such conclusion may be a misleading message due to applying an inappropriate estimate to assess reliability.

In this letter, we discussed two important limitations of the kappa value to assess reliability [2–6]. Any conclusion in reliability analyses needs to be supported by the methodological and statistical issues mentioned above.

Source(s) of support

None.

Conflicts of interest

No.

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http://dx.doi.org/10.1016/j.injury.2019.04.011

Response to *A. Kumar, et al.*, Letter to the Editor concerning "Revisiting the Schatzker classification of tibial plateau fractures" by Kfuri M, Schatzker J. Injury. 2018 49 December (12):2252–2263, Injury (2019) https://doi.org/10.1016/j.Injury.2019.01.020

We would like to thank the authors of the letter to the editor for their interesting and challenging remarks. In response to their request, we are highlighting some important aspects of our original manuscript [1]. In our publication, we have emphasized three essential new concepts: the virtual equator, the main fracture plane, and the importance of restoring stability of the joint by restoring the containment of the rim injury. In order to address more expertly some of the specific anatomical questions about the identification of our proposed landmarks for the virtual equator when using computed tomography, we have added a musculoskeletal radiologist as a co-author of our response.

The virtual equator

Our aim in "revisiting the Schatzker classification" was to find a way to localize the lesions responsible for joint instability in three dimensions. In order to do this, we had to establish new anatomical landmarks. The proximal tibial epiphysis has two condyles, each covered by a cartilage surface and a meniscus. Anatomists have accurately described the origin and insertion of the collateral ligaments of the knee; namely, the fibular collateral ligament and the medial collateral ligament [2,3]. The virtual equator uses as landmarks the collateral ligaments of the knee and their specific bony attachments. We agree that high energy tibial plateau fractures are frequently associated with ligament injuries [4]. It is also true that computed tomography does not compare with MRI when it comes to the assessment of soft tissues injuries around the knee. However, the fibular collateral ligament and the medial collateral ligament are easily identifiable in the axial cuts of computed tomography even in cases of comminuted bicondylar tibial plateau fractures. (Fig. 1) The interpretation of the anatomy of the knee when one is using computed tomography may be done on any given computer by scrolling images of each of the three planes. Furthermore, the comparison of the fractured knee with the contralateral side, by superimposition of the images, allows for a double check of the described bony anatomical landmarks, in case any questions arise. Computed tomography makes it possible to track the peripheral knee ligaments. On the medial side, it is possible to track the