Classification of subcapital hip fractures

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The paper on subcapital hip fracture classification by Beimers and associates[1] again brings into question the clinical usefulness of the Garden classification and puts forward a new classification system based on the presence or absence of bony continuity across the fracture site. They report that this new classification is extremely reliable and warrants further evaluation to assess the relationship between the classification and patient outcome.

Classification systems are commonly used in orthopedics as a tool to enable the surgeon to define the nature of the problem being classified, determine treatment based on the expected outcome and allow uniform reporting among institutions. The ideal classification must be both reliable and valid. Many orthopedic classifications that are commonly used have not been tested for reliability. Reliability refers both to the interobserver reliability (agreement among different observers) and to intraobserver reliability (agreement of one observer's repeated classification). The κ value is commonly used for measuring observer agreement. If a classification has been shown to be reliable, then it should be tested for validity. This assesses the classification's utility with respect to patient outcome.

Beimers and associates should be commended on validating the inter- and intraobserver reliability for their proposed classification. However, a high level of reliability does not necessarily make a classification system useful. For example, if one were to simply classify hips into those with and without a subcapital fracture, one could expect an extremely high level of reliability. However, the usefulness of this classification would be minimal. As well, many commonly used classifications in orthopedics have been shown to be reliable but may not be valid. For example, if 2 surgeons were to categorize a fracture as stable, there would be a high interobserver agreement and a high reliability. However, if the intraoperative finding demonstrated that the fracture was unstable, the classification would be reliable but certainly not valid. Therefore, as Beimers and associates have pointed out, the validity of their classification system needs to be assessed before it is widely implemented.

Also, a reliable classification on its own does not necessarily imply that it is clinically useful. Although Beimers and associates only address the reliability of a new classification for subcapital hip fractures, there are some concerns regarding its potential validity. The authors classified hip fractures based on the presence or absence of bony contact across the fracture site. Therefore, some Garden class III fractures were in the same group as Garden class I fractures. It is unlikely that the prognosis and treatment of these 2 fracture types would be identical in all cases. The authors then suggest that bony continuity, seen in stable fractures, would result in the fracture moving as one unit, and a lack of bony continuity, seen in unstable fractures, would result in independent motion. This may be true but is not always the case. In displaced Garden class III fractures there may be an intact periosteal hinge, which can result in a successful closed reduction. Again, this raises the issue of the potential validity or usefulness of the new classification.

It remains unclear whether this catagorization of subcapital hip fractures represents a new classification system or simply a collapse of the 4-category Garden classification into 2 categories. Beimers and associates suggest that their classification is not a simple collapse of the Garden classification, because the definitions are different and the agreement between the 2 classification systems was not 100%. They note that 5.1% of all ratings categorized as unstable were not Garden class III or IV. This would imply that 5.1% of the unstable group were Garden I or II or that 5.1% of the ratings were incorrect. It is hard to understand how a Garden class I or II fracture could be defined as unstable based on the authors' definition of bony continuity. This suggests that these fractures may have been misclassified.

Before this system is put into common usage, further studies are warranted to assess its validity and to differentiate whether or not it is more than just a collapse of the Garden classification.

Reference

1. Beimers L, Kreder HJ, Berry GK, Stephen DJ, Schemitsch RH, McKee MD. Subcapital hip fractures: the Garden classification should be replaced, not collapsed. *Can J Surg* 2002;45:411-4.

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