

## AO spine classification system for thoracolumbar fractures

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The classification of a certain pathology—be it located at the spine or at another anatomical region of the human body, and be it traumatic or a disease—is a fundamental medical act in terms of developing a common language for the understanding of this pathology and as an attempt to standardize treatment and to measure outcome. Classifications should be as simple as possible and consistently reproducible and have a rational treatment implication. There may be a basic classification for the daily clinical use and a more detailed sub-classification for more sophisticated scientific evaluations.

This “philosophy” has been tried to be applied in the original AO Spine thoracolumbar fracture classification, and before it has been published [1] many different attempts have been made to develop this common language mentioned above.

After almost 20 years in use without a rigid validation process and, nevertheless, gradually becoming the most applied classification in spinal trauma circles, the authors of the article in this issue [2] felt they had to adapt and to revise this classification.

Classifications are exposed to the dynamics of medical progress and change in the knowledge in terms of diagnostic tools, treatment options, outcome expectation and a certain fashion from which also surgeons and physicians may not be excluded.

The new presented revision follows in principle the known concept of the original classification by recognizing the intact or injured, so-called posterior ligament complex/tension banding system as the key differentiating factor for the severity of injury:

- The A-type injuries with an intact posterior tension banding system on one side, and
- The B- and C-type injuries with a disrupted posterior tension banding system, the latter in addition to the disruption of the anterior elements.

The C-injuries are now characterized by “displacement”, whereas before they were the result of an inability to resist torsional forces. Whether the concept of displacements is a better injury denominator, we will see in the practical application, however, we should be reminded that fractures may have a displacement in the process of injury and may present themselves in a reduced position when prone, although highly unstable.

However, the concept of the C-injuries is not fully applied in the subtype C1 lesions, which do not go together with a displacement. The C1 lesions were originally classified within the B-3 lesions.

The subtypes C2 and C3 are in the a-p view (see Fig. 3 of reference 2) clearly combined with a rotational displacement, a morphological criteria, which led in the original classification to the interpretation of the inability of a spinal segment to withstand torsional forces.

In the A-types we have now four subtypes instead of three as a result of classifying incomplete and complete burst fractures in separate subtypes. This is a breach with the original “three division” concept in analogy to the AO Classification of the long bones.

I recommend to study this revised classification carefully and to try to understand its evolution from the original classification.

We want to leave it to the practical application, whether the revision will bring us a step forward for the treatment of those injuries. This per se is an interesting exercise, which I encourage all those who treat thoracolumbar fractures to

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engage in and bring back a practical feedback to the authors, who should be congratulated for their hard work.

2. Reinhold M, Audigé L, Schnake KJ, Bellabarba C, Dai LY, Oner FC (2013) AO spine injury classification system: a revision proposal for the thoracic and lumbar spine. *Eur Spine J* 22(10). doi:[10.1007/s00586-013-2738-0](https://doi.org/10.1007/s00586-013-2738-0)

## References

1. Magerl F, Aebi M, Gertzbein SD, Harms J, Nazarian S (1994) A comprehensive classification of thoracic and lumbar injuries. *Eur Spine J* 3(4):184–201