

Experts opinion_AOSPine Sacral Classification

Invitation

Dear AOSPine and AOTrauma surgeons,

Welcome to the survey about the **AOSPine Sacral Classification**.

The AOSPine Sacral Classification has been developed and designed by leading surgeons from the **AOSPine Knowledge Forums** Spinal Cord Injury and Trauma, as well as members of AOTrauma. Prior to finalizing the classification, we would like to offer the members of AO community an opportunity to comment on the classification system and contribute to the final version of the AOSPine Sacral Classification.

Please take a moment to complete the survey that will take about **5 minutes**.

Follow the link to review the new classification, and after you have reviewed the classification, please answer a few brief questions.

Thank you very much for giving us your expert opinion.

With kindest regards,

Alex Vaccaro, on behalf of the AOSPine Knowledge Forum Trauma

Experts opinion_AOSpine Sacral Classification

Professional background

*** 1. Professional background**

- Orthopaedic Trauma surgeon
- Orthopaedic Spine surgeon
- Neurosurgeon
- Other (please specify)

*** 2. Years of clinical practice:**

- 0-10 years
- 11-20 years
- > 20 years

*** 3. In which region of the world do you currently practice?**

- North America
- Latin and South America
- Europe
- Africa
- Middle East
- Asia Pacific

*** 4. Do you treat sacral fractures (either traumatic or insufficiency):**

*** 5. How many traumatic sacral fractures did you treat last year?**

0-5

6-10

11-20

> 20

AOSpine Sacral Classification Overview

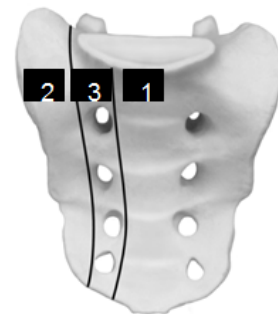
- Hierarchical system progressing from least to most unstable
- **Type A – Lower Sacro-coccygeal Injuries**
 - **NO IMPACT ON POSTERIOR PELVIC OR SPINO-PELVIC INSTABILITY**
 - Eg. Compression/avulsion fractures/injuries below sacroiliac joints
 - *Higher grade subtypes may be associated with neuro injury
- **Type B – Posterior Pelvic Injuries**
 - Unilateral longitudinal (vertical) sacral fractures
 - **PRIMARY IMPACT IS ON POSTERIOR PELVIC STABILITY**
 - No impact on spino-pelvic stability
 - Framework is a variation of Denis Zones I through III injuries
- **Type C – Spino-Pelvic Injuries**
 - **SPINO-PELVIC INSTABILITY**
 - +/- posterior pelvic instability
 - L5-S1 facet involvement, Sacral U variants, bilat longitudinal injuries
 - Subtype severity based on instability & likelihood of neuro injury

Type A – Sacroccygeal Fractures

- Definition:
 - Injuries below the S-I joint (usually S2)
 - No impact on posterior pelvic stability
 - No impact on spino-pelvic stability
 - *May* have impact on neurology
- Type A1
 - Coccygeal or sacral compression vs ligamentous avulsion fractures
- Type A2
 - Nondisplaced transverse injuries below S-I joint
 - Usually neuro intact
- Type A3
 - Displaced transverse injuries below S-I joint
 - Often have cauda equina injuries

Type B – Posterior Pelvic Injuries

- Definition:
 - Unilateral longitudinal sacral fractures
 - Primary impact is on posterior pelvic stability
 - Miminal to no impact on spino-pelvic stability
 - Framework is variation of Denis Zones I through III injuries
 - Usually treated with sacroiliac screw fixation
- Type B1
 - Central Fracture that involves spinal canal, but with primarily longitudinal fracture pattern
 - Longitudinal injuries only – rare type of Denis Zone III injuries (1.4% of all sacral fxs)
 - Does not have the same impact on spino-pelvic stability nor same propensity for cauda equina injury as transverse fxs involving canal
 - Very low likelihood of neurological injury
- Type B2
 - Transalar fracture: Does not involve foramina or spinal canal
 - Denis Zone I injury
 - Approx 5% chance of neuro injury (Denis)
- Type B3
 - Transforaminal Fracture: Involves foramina but not spinal canal
 - Denis Zone II injury
 - Approx 25% chance of neuro injury (Denis)



Type C – Spino-Pelvic Injuries

- Definition:
 - Injuries resulting in spino-pelvic instability
- Type C0
 - Nondisplaced sacral U-type fracture
 - Commonly seen as low-energy insufficiency fracture
- Type C1
 - Any unilateral B-subtype where ipsilateral superior S1 facet is discontinuous with medial part of sacrum
 - MAY IMPACT SPINO-PELVIC STABILITY (Isler), thus potentially most unstable of B-subtypes
- Type C2
 - Bilateral complete Type B injuries without transverse fx
 - More unstable and higher likelihood of neuro injury than C1, but lower neuro risk than C3
- Type C3
 - Displaced sacral U-type fracture
 - Worst combination of instability and likelihood of neuro injury
 - Displaced transverse sacral fx = canal compromise

* 6. Currently, the Denis classification breaks fractures into three types based on the likelihood of a neurologic injury. The new classification follows this model for B type fractures. However, since type B injuries refer only to vertical fracture patterns in these three regions and therefore exclude the more complex Denis Zone III injuries that have a higher likelihood of neurological injuries, using the existing literature and a consensus of expert opinions, we feel that the severity order should actually be 1 = medial to the foramen; 2 = lateral to the foramen; 3 = through the foramen. Does this re-ordering make sense to you?

* 7. Do you think the hierarchical nature of the sacral classification is appropriate with: A = transverse; B = Unilateral vertical fracture; C = Any fracture that leads to spinopelvic instability

*** 8. The treatment of sacral fractures can vary significantly if there is a fracture of the L5/S1 facet, as this injury can lead to spinopelvic dissociation. This was addressed in the classification by making any unilateral B-subtype where ipsilateral superior S1 facet is discontinuous with medial part of sacrum of C1 fracture. Do you think it is adequately considered in this classification system?**

*** 9. Do you think C0 is a clinically relevant entity that deserves its own spot in the classification? This injury was felt to be a distinct entity, because these initially undisplaced and benign appearing fractures, can be potentially very disabling and difficult to treat if they displace. Furthermore they are being seen with increasing frequency particularly in older osteoporotic patients.**