AO Spine Knowledge Forum Deformity

The **AO Spine Knowledge Forum Deformity** is an international expert working group within AO Spine, focused on the study, standardization, and advancement of care for **spinal deformity**, in both adult and pediatric populations.

Key Features

- **Composition**: Comprised of leading spine surgeons, clinical researchers, biomechanical experts, and epidemiologists from top institutions around the world.
- **Objectives**:
  - Develop **standardized alignment goals** and **surgical outcome criteria** for spinal deformities.
  - Conduct **high-quality multicenter prospective studies** to inform global best practices.
  - Establish **international consensus statements** on:
    - Surgical indications
    - Techniques
    - Patient selection
  - Promote **evidence-based approaches** and reduce regional variability in deformity management.

Role and Impact

The Forum plays a central role in shaping the future of spinal deformity care through:

- Collaborative research
- Rigorous methodology
- Translation of findings into clinical guidelines and surgical education

It serves as a **global reference** for best practices in the treatment of complex spinal deformities.

Narrative Reviews

In a narrative review Pizones et al. from Hospital Universitario La Paz; additional centers in San Antonio, San Diego, Toronto, Barcelona, Charlottesville, New York published in the Global Spine Journal to critically examine evolving strategies in sagittal alignment targets for adult spinal deformity surgery, shifting focus from generic HRQoL goals to preventing mechanical complications Traditional alignment metrics (PI-LL, SVA, TK) are limited for personalized planning; compensatory strategies (pelvic retroversion, knee flexion) are essential; individualized, structure-shape–based alignment (e.g., GAP, Roussouly, T4-L1-Hip-Axis) reduces mechanical failure risk, though reoperation rates remain high [1].

Critical Review

The narrative review offers a comprehensive appraisal of alignment paradigms, yet:

* **Strengths:** Integrates key classification systems; emphasizes pelvic and lower-extremity compensation; aligns recent evidence on shape-based vs. quality-of-life–based targets; timely discussion given recent advances (e.g., T4-L1-Hip-Axis)

* **Weaknesses:** Lacks systematic methodology or quantitative synthesis; conclusions primarily descriptive; limited critical appraisal of conflicting literature; evidence grade unclear

* **Evidence gaps:** No robust meta-analysis to support superiority of new alignment strategies; minimal discussion on age-adjusted goals (e.g., Lafage et al., 2016, 2017) and their clinical endpoints

Verdict

The article is a well-informed narrative but falls short of high-level evidence. It's hypothesis-generating rather than definitive in guiding surgical decision-making.

Rating: 6/10

Takeaway for Practicing Neurosurgeon

Use alignment strategies that respect patient-specific morphology (like GAP and Roussouly Classification) and consider whole-body compensation. However, be cautious—this guidance is based on emerging concepts, not on strong comparative trials or comprehensive outcomes data.

Bottom Line

An informative review on evolving alignment goals—but lacking in solid evidence. A step forward in concept, yet insufficient as a standalone clinical guide until validated by robust comparative studies.

Citation

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[1)]

Pizones J, Hills J, Kelly MP, Alavi F, Nuñez-Pereira S, Smith JS, Sardar ZM, Lenke LG, Lewis SJ, Pellisé F; AO Spine Knowledge Forum Deformity. Alignment Goals in Adult Spinal Deformity Surgery. Global Spine J. 2025 Jul;15(3_suppl):108S-122S. doi: 10.1177/21925682251331048. Epub 2025 Jul 9. PMID: 40632289.