anorganic bone mineral (ABM); plus the use of autologous bone marrow aspirate (BMA) that increases the benefits of the bone graft, by the osteogenic, osteo-inductive and osteo-conductive stimuli. Main objective is to standardize lumbar fusion process on any technique to achieve more efficient and predictable fusion, evaluating results with radiological and clinical scales. Other objectives are to find the amount of graft needed to achieve spinal fusion and determine if its necessary in all cases to perform bone marrow aspirate (BMA). **Material and Methods:** Prospective study, data during May 2021 to December 2022. Inclusion Criteria includes every ALIF, TLIF and LLIF procedures with complete follow up at 6 weeks with radiograph and complete follow up and 3, 6 and 12 months with Computed Tomography. Exclusion Criteria are revision procedures, less than 1 year of follow-up and lack of the specified CT imaging. Patients will be divided in Group A - Using I-Factor bone graft and subdivided into three groups: TLIF 2.5 cc in the cage and 2.5 cc in the space, LLIF 5 cc in the cage, ALIF 5 cc in the cage**.** And Group B - Using I-Factor bone graft mixed with bone marrow aspirate concentrate. (1:1) subdivided into three groups: TLIF 2.5 cc in the cage and 2.5 cc in the space, LLIF 5 cc in the cage, ALIF 5 cc in the cage**.** Radiological outcomes includes fusion rates per the Lenke scale, CTUH. Clinical outcomes will be evaluated via the Oswestry Disability Index (ODI), Short Form Performance (SPF-36) and Visual Analog Scale (VAS and VASS) for pain and satisfaction. **Results:** Data analysis by now, with 26 patients completed 6 months follow up. Group A (19 patients), Group B (7 patients), shows no difference at Lenke scale with every patient on LENKE A at 6 months. CTUH measures shows more differences between 3 and 6 months in patients with use of mixed ABM/p-15 + BMA (Group B) than just ABM/P-15 (Group A). No differences in clinical outcomes in both groups. **Conclusion:** No differences between techniques used, therefore the quantities used seem to be sufficient to achieve fusion. Fusion rates seems to be slightly improved at Group B (p15/ABM + BMA) and non dependent on the technique. Long-term follow-up is required, this is 6 months preliminary report.

1329
A047: AOGO guideline: changing the landscape of the osteobiologic use in ACDF

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Introduction: Osteobiologics are widely used in spinal surgery for a variety of indications. However, the clinical use of the several available osteobiologics is not very well defined. Several factors are responsible for the current situation. Firstly, there is a lack of robust clinical evidence for the use of biologics, which provides limited information to foster their knowledge and to guide their use. Secondly, regulations about the use of biologics vary across different countries. In most cases, a specific osteobiologic is chosen based on surgeon's interest and/or because it is available in the hospital catalog. There is a need to develop an international guideline to provide evidence-based guidance to the spinal community on how and when to use osteobiologics in spine surgery. Therefore, the AO Spine Knowledge Forum Degenerative conducted an internationally led initiative to develop a guideline (AOGO) for the use of osteobiologics in Anterior Cervical Spine Fusion (ACDF) procedures. **Material and Methods:** The AO policies and the Guideline International Network (GIN)-McMaster Guideline Development Checklist directed the overall guideline development. The guideline group consisted of 71 participants with expertise in degenerative spine diseases and surgery from 22 countries. Meetings were held to discuss evidence and recommendations and were attended by the guideline panel, a methodologist to facilitate the process, and AO Spine representatives. The guideline panel determined the topics for evidence review and the outcomes to be assessed, including benefits, harms and the effects of comorbidities and costs. Systematic reviews of the evidence were conducted for each topic and are

published separately. The methodologist compiled the evidence from the systematic reviews into GRADE Evidence-to-Decision (EtD) frameworks, using the GRADEpro Guideline Development Tool. Guideline panel members made the final recommendations through consensus. **Results:** The guideline group agreed on five recommendations. A conditional recommendation for the use of allograft, autograft or a cage with an osteobiologic in primary ACDF surgery was made. There was also a conditional recommendation for the use of an osteobiologic in single or multi-level ACDF and in ACDF/cervical total disc replacement (TDR) hybrid construct surgery. However, the guideline group suggested that surgeons use other osteobiologics rather than human bone morphogenetic protein-2 (rhBMP-2) in common clinical situations. A conditional recommendation means that surgeons can choose to use one graft over another or one osteobiologic over another primarily based on the clinical situation, and the costs and availability of the materials. Clinicans will need to be informed of their local situation when making decisions. Due to the lack of data, no recommendation was made for the use of ostebiologics in people with comorbidities or for revision surgery. **Conclusion:** With a rigorous evaluation process and systematic review of the literature utilizing the GRADE approach, the AOGO guideline was developed. Despite, the comprehensive searches for evidence, there were often few studies, primarily non-randomised studies and case series, with small sample sizes and inherent risks of bias. Therefore, the certainty of the evidence for the benefits and harms, and the costs associated with osteobiologics in ACDF, was either low or very low.

1627
A048: Elucidating the potential therapeutic mechanisms underlying distriction spinal cord injury-associated neuroinflamation and apoptosis

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Introduction: The incidence of distraction spinal cord injury (DSCI), which results from spinal cord ischemia due to vascular compromise and spinal cord tract disturbances, remains high. Furthermore, because no animal model that mimics DSCI in clinical settings is available thus far, the cytological and molecular mechanisms underlying DSCI remain unclear. Thus, this study aimed to establish a porcine model of DSCI and investigate the apoptosis and neuroinflammation in these pigs. **Material and Methods:** Before surgery, all pigs were randomly divided into three groups: sham group, osteotomy surgery only (control); the incomplete distraction spinal cord injury (IDSCI) and complete distraction spinal cord injury (CDSCI) groups, osteotomy plus DSCI surgery with a motor-evoked potential (MEP) amplitude decreased by >75% and >100%, respectively. After surgery, modified Tarlov scoring and MRC muscle strength scoring were used to evaluate neurologic function in each group. We observed the distracted spinal cord using magnetic resonance imaging (MRI), and all the pigs were sacrificed. We used immunofluorescence staining to assess the neuroinflammatory responses and neuronal survival in the DSCI lesions. Inflammatory cytokine levels in the spinal cord and cerebrospinal fluid (CSF) were also analyzed. Western blotting and immunohistochemistry were used to determine the expression of apoptosis-related proteins. **Results:** The modified Tarlov scoring and MRC muscle strength decreased significantly in the DSCI groups. T2-MRI showed a relative enhancement at the center of the DSCI lesions. H&E and Lxol fast blue staining revealed that spinal cord distraction destroyed the normal structure of spinal cord tissues and nerve fiber tracts, exacerbating inflammatory cell infiltration, hyperemia, and edema. Immunofluorescence staining indicated impaired neuronal and microglial structure and function and astrocyte hyperplasia after DSCI. The IL-1β, IL-6, and TNF-α levels increased in the spinal cord and CSF of the DSCI groups. Moreover, DSCI promoted the protein expression of p53, Bax, and caspase-3 in the spinal tissues, but reduced the Bcl-2 expression. **Conclusion**: This study successfully established a porcine DSCI model that closely mimics DSCI in clinical settings and clarified the mechanisms underlying DSCI-associated apoptosis and neuroinflammation; thus, our findings highlight potential DSCI-treatment strategies for establishing suitable drug therapies.

1922
A049: The intersection of spinopelvic deformity and spine oncology

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Introduction: Spinopelvic alignment, particularly in the context of sagittal balance, significantly impacts health-related quality of life and postoperative outcomes. Despite the fact