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Toward scientifically informed stem cell therapies in spine surgery

Iliac crest bone graft (ICBG) is widely accepted as the gold standard for spinal fusion but is associated with donor site morbidities including hematoma, infection and prolonged chronic pain up to years after graft harvest. Bone graft substitutes and add-on biologics have been developed in an effort to combat these drawbacks of ICBG, but most have not considered the impact of their mechanical, biological and biochemical profiles on the process of osteogenesis. This presentation will highlight the signaling pathways associated with osteogenic differentiation of bone marrow derived mesenchymal stem cells and how those signaling pathways can be encouraged or inhibited by the properties of bone graft materials.

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