

harvesting ICBG caused significantly increased expression of sclerostin, with a >6-fold increase in the Outer and Inner Zones at 1-week ($P < .05$). The surrounding muscle had a >13-fold increase in sclerostin expression at 3-weeks ($P < .05$). Sclerostin was also significantly expressed in the TPs at 6-weeks (~5-fold increase, $P < .05$), which could be a signal to stop forming bone once the fusion is complete. Wnt3a was the most dynamically expressed Wnt factor, with an almost 20,000-fold increase in the muscle at 1 week and a 500-fold increase in expression in the TPs at 6-weeks ($P < .05$). **Conclusion:** This is the first description of how sclerostin levels, and levels of various canonical Wnt signaling factors, are both spatially and temporally dynamically controlled during the maturation of a posterolateral spine fusion mass. This fills an important knowledge gap in our understanding of the basic biology of spinal fusion and provides insight into an understudied regulator of osteogenesis in this setting. Sclerostin and canonical Wnt factors seem to play a role in osteogenesis after spinal arthrodesis and their dynamic expression is regulated differently within specific regions of the maturing fusion mass. Understanding these signaling patterns will be critical in aiding in the design of novel local delivery strategies of biologics that modulate canonical Wnt signaling for the purpose of preventing pseudarthrosis (i.e., determining the specific region of the fusion to be targeted with biologics or determining the optimal timing needed for drug release from its carrier).

580

A211: Bilateral Erector Spinae Plane Block-A Promising Protocol For Post-Operative Pain Relief

Sathish Muthu^{1, 2} and Kartik Kumar Natarajan^{1, 3}

¹Orthopaedic Research Group, Coimbatore, India, ²Government Hospital, Velayuthampalayam, Karur, India, ³Lok Manyu Tilak Municipal General Hospital, Mumbai, India

Introduction: Although opioids remain the mainstay of perioperative pain management in spine surgery, inclusion of methods to utilize the non-opioid medications into the multimodal pain control regimens helps to avoid opioid-related side-effects. Dorsal rami innervate all the pain generators following lumbar spine surgery. Hence regional anesthetic techniques like Thoraco Lumbar Interfascial Plane (TLIP) Block, Erector Spinae Plane Block (ESPB) have been developed to address them locally and thereby enhancing postop recovery. There was increasing evidence to support their usage for postoperative pain management but no meta-analyses exist so far to give conclusive evidence for their utilization in spine surgery. Hence, we performed this meta-analysis to analyze the efficacy of bilateral ESPB for postoperative analgesia in lumbar spine surgery from the available evidence in literature so far. **Materials and Methods:** We conducted independent and duplicate electronic database searches including PubMed,

Embase and Cochrane Library till February 2020 for comparative studies analyzing the efficacy of bilateral ESPB for postoperative pain relief in lumbar spine surgeries. Post-operative pain scores, total analgesic consumption, number of patients requiring rescue analgesics, first analgesic requirement time and complications were the outcomes analyzed. Analysis was performed in R platform using OpenMeta (Analyst) software. **Results:** Four studies including 170 patients (ESPB/Control = 80/90) were included in the analysis. There was a significant pain relief in ESPB group compared to placebo across all timelines such as during immediate post-operative period ($P < .001$), 4 hours ($P = .041$), 8 hours ($P = .001$), 12 hours ($P = .038$) and 24 hours post-surgery ($P = .002$). ESPB group showed a significant reduction in number of patients requiring rescue analgesic ($P < .001$) and total analgesic consumption ($P < .001$) and post-operative nausea and vomiting ($P = .012$) compared to controls. ESPB group also had significant prolongation of time for rescue analgesic if needed ($P < .001$). **Conclusion:** Bilateral ESPB offers prolonged post-operative pain relief compared to controls, thereby reducing the need for opioid consumption and its related complications. Although our meta-analysis establishes the efficacy of ESPB for postoperative pain relief in spine surgeries, future studies investigating the type of local anesthetic with its volume and concentration need to be done to develop a standard protocol for its routine use in multimodal analgesia employed in spine surgeries.

1417

A212: Anti-Inflammatory Effect of BSP-Resveratrol Membrane for the Prevention of Epidural Fibrosis After Laminectomy

Hsuan-Yu Chen¹, Tsung-Han Yang², Chih-Wei Chen³, Tze Hong Wong², Po-Quang Chen³, Ming-Hsiao Hu³, Shu-Hua Yang³, and Feng Huei Lin¹

¹Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

²National Taiwan University Hospital, Hsin-Chu Branch, Hsin-Chu City, Taiwan

³National Taiwan University Hospital, Taipei, Taiwan

Introduction: Laminectomy is a surgical procedure required for the treatment of spinal disorders such as lumbar disk herniation, spinal stenosis, or tumor excision. Although the treatment is effective and relieves neural compression, 8-40% patients suffer from failed back surgery syndrome (FBSS) post laminectomy and 4-9% patients received revision surgery. **Material and Methods:** An CMC-BSP-Resveratrol membrane would be the material of choice for this purpose, since it could fill an irregular surgical defect and be delivered in a minimally-invasive manner. The objective of this study was to evaluate, *in vitro* and *in vivo*, the cytocompatibility and anti-adhesive effect of CMC-BSP-Resveratrol membrane.