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Editorial

It is nearly 3 decades since Mooney proposed the posterior joints of the lumbar spine as a potential cause of low back pain [1]. Yet, only recently has the notion that the lumbar zygoapophoseal joints can serve as a primary source of lower back been widely accepted. Including these structures in the differential diagnosis of lower spine pain is simple. Determining who is actually perceiving the manifestation of a deranged or inflamed joint is another matter. A few investigators have sought to identify the historical and exam characteristics that can reveal who is experiencing the symptom manifestation of zygoapophoseal joint (z-joint) athralgia [2–7]. The culmination of these reports is the unanimous conclusion that there is no single pathognomonic historical or exam feature indicative of z-joint mediated pain. Nevertheless, Revel's follow-up randomized control trial has enabled the spine clinician to rapidly determine who is likely to provide a confirmatory response to a diagnostic injection ostensibly demonstrating the presence of z-joint mediated pain [4]. Two approaches can be used to temporarily denervate the joint for diagnostic purposes: intra-articular injection or medial branch blockade using a local anesthetic agent. In 1997, Dreyfuss et al., using cadaveric dissection followed by local anesthetic injection into the z-joints of volunteers, demonstrated the proper technique for a diagnostic medial branch block [8]. Not all interventional spine physicians, including those at the Penn Spine Center, rely upon anesthetization of the medial branch, although it has been demonstrated to be interchangeable with intra-articular injection [9]. Regardless of the approach used the diagnosis can only be affirmed using, at a minimum, a double block paradigm due to the low positive predictive value of a single diagnostic injection [3]. What remains less clear is how to treat this entity. Some have used intra-articular glucocorticoid instillation, but there has not been a single study to prove its efficacy. A more thorough analysis of the application of radiofrequency energy to denervate the lumbar z-joint has been undertaken by at least 4 investigators [10–13]. Each of these studies had inherent methodological flaws that preclude the categorical statement that radiofrequency denervation is the only proven intervention to treat lumbar z-joint pain. A detailed review of these deficiencies and critical analyses of the relevant peer reviewed publications can be found elsewhere [14,15]. A critical issue that was missed in both reviews was a thorough assessment of the radiofrequency technique employed. This omission is skillfully and cogently exposed and then described in the article by Lau et al. [16], although that was not their concern. Rather, their contention and the question that they proposed to answer was: If one is not keenly aware of the precise anatomic location of the lumbar medial branch, then how can any surgical technique be accurately preformed? Lau et al.'s meticulously constructed article details the critical surgical anatomy and the correct method to perform a reliable and thorough medial branch denervation. Two obvious implications arise from this superb work. New studies need to be conducted to ascertain whether radiofrequency denervation is as efficacious as some, including myself, believe. As well, current practitioners of this treatment should insure they are following the anatomic landmarks and technical parameters set by Lau et al.

In summary, the process of identifying who experiences lumbar z-joint pain, the technique used to make the diagnosis, identifying the precise location of the relevant surgical anatomy, and instituting an effective treatment have been an evolving medical story. Two centers have been instrumental in the development of the facts: Paul Dreyfus and Nic Bogduk and his group. Through their efforts we have witnessed the fascinating metamorphosis of a medical concept that was initially weaved into a mostly fiction exposition that is, now, just a few chapters short of a non-fiction book. Lau et al., have made a substantial contribution with their detailed and meticulous anatomic investigation that delineates a reliable method by which to achieve radiofrequency denervation of painful lumbar zygoapophoseal joints, but it does not bring this story to conclusion. A systematic scientific inquiry of lumbar z-joint radiofrequency denervation that assesses a suffi-

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cient number of patients in the control and treatment arm would be a wonderful ending.

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