



Contents lists available at ScienceDirect

North American Spine Society Journal (NASSJ)

journal homepage: www.elsevier.com/locate/xnsj

Commentary

Commentary on “Basivertebral nerve ablation for the treatment of chronic low back pain with modic changes in a community practice setting: 6 months follow-up”



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The discussed study by Schnapp et al. is entitled Basivertebral nerve ablation for the treatment of chronic low back pain with modic changes in a community practice setting: 6 months follow-up [1].

The author performed 16 consecutive basivertebral nerve ablations (BVNA) using the INTRACEPT device (Relieva Medsystems, Inc.) and technique. Chronic low back pain (CLBP) in these patients was assessed by evaluations performed at baseline, 1 month, 3 months, and 6 months and data recorded using the Oswestry Disability Index (ODI), visual analog scale, and SF-36 scores. During the study, no patients were lost to follow-up.

The etiology of pain in axial CLBP is multifactorial, as we know. Different structures are responsible for the sources of low back pain that present clinically under three types according to the structures involved—axial, radicular or as a neurological claudication—although, very often patients present a combination of patterns. As we grow older, at the level of the intervertebral (IV) disc, the degenerative cascade described by Kirkaldy–Willis is an on-going process where the degenerative spine undergoes three stages in sequence: dysfunction, relative instability, and restabilization as osteophytes form at the margins of the disc and the changes in the IV disc become fixed.

Degenerative disc disease primarily concerns the IV disc and subsequently impacts on other areas of the spine, but the two findings most correlated with a painful IV disc are cartilaginous endplate erosion and disc space collapse. Older adults over 60 years are less likely to have pain from degenerative discs than adults between 30 and 50 years of age. Pain from other degenerative conditions in the spine, such as degenerative osteoarthritis or spinal stenosis, exacerbated by sarcopenia as we age, is far more likely in elderly adults than pain from degenerative disc disease.

Over the last decades, when conservative management failed, the gold standard treatment of chronic low back pain was based on blocking movement at the most degenerative spinal segments, and removing the torn degenerative disc(s) invaded from the disc periphery by newly formed sensitive nervous terminal branches. The aim of our manage-

ment was focus on the painful IV disc as the most relevant source of pain in CLBP.

More recently, advancing science surrounding physiologic and immunohistochemical changes from vertebral endplate at a degenerative IV disc has gained relevance as a vertebrogenic pain model, a clinically distinct subgroup of CLBP. Vertebral endplates are innervated by the basivertebral nerve (BVN), a branch of the sinuvertebral nerve, entering the bone marrow through the posterior basivertebral foramen (BVF) [2] although its clear location if between 30% and 50% or 40% to 60% from the posterior vertebral cortex is still not clear.

Since 2018, two randomized controlled trials (RCTs) have evaluated the BVN ablation in treating this subgroup of vertebrogenic CLBP patients and demonstrated a significant difference between arms for reduction in mean Oswestry Disability Index (ODI) and clinically relevant improvements in visual analog pain scores and function were sustained through 2 and 5 years [3,4].

The authors of this current study present a single physician series of 16 patients at a community setting practice, who underwent BVNA to treat a disabling condition of CLBP. However, it is a rather heterogeneous group of patients, older than the previous reported series with the same technic [5,6]. Approximately 50% of these patients underwent previous procedures for treating leg pain with TFESI and another 50% underwent unilateral RFA (Table 2). The radiograph shown from one of the recruited patients demonstrates a very collapsed L4–L5 intervertebral disc in what was described as a restabilization stage of disc degeneration (Fig. 1) and a collapsed adjacent disc below. Having had unsuccessful procedures as described in Table 2 prior to BVNA, we assume it did narrow the sources of pain to the end plate in this selected group of patients. However, it is difficult to quantify how much comes from one IV disc or from the level below and what is the rational to choose which disc to treat in these degenerative spines with several pathologies and comorbidities.

In this series, 25% of patients that fail to improve ODI score due to the fact that ODI baseline was much lower than the other 75%, and these

FDA device/drug status: Not applicable.

Author disclosures: **JM**: Nothing to disclose.

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<https://doi.org/10.1016/j.xnsj.2023.100211>

Received 6 March 2023; Accepted 6 March 2023

Available online 21 March 2023

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patients would not have been recruited for the other previous studies. If we take into account this comment it makes you wonder if the inclusion / exclusion criteria should be revised in order to exclude patients that have a “low” (28%) moderate disability?

The authors believe that the success observed in the current study is a direct result of careful patient selection based on clinical and radiographic criteria but how accurately can we diagnose vertebro- genic type of CLBP is still unclear, in particularly in this elderly population.

If we look back into the past, to the other subgroup of CLBP patients, the ones with discogenic low back pain (LBP), it remind us of an article published by Saal and Saal [7] on this very “seductive” technic IDET, for treating discogenic LBP very successfully, with a follow-up of 24 months. Despite these encouraging results, it did not take long for the literature to show that there was only little or no real effect on the treatment outcome of CLBP with this technic [8,9] and most of the early results published were industry driven.

As far as the FU is concern in this study, it is surprising to present a short FU of 6 months for such a chronic disabling condition like CLBP and it is somehow intriguing to recruit a group of patients with a mean age of 73y to test this procedure. Most of the studies published, 2 RCT and 4 single-group cohort studies outcomes reported FU up to one, two or five years and with younger adult patients between 40 and 60 years of age [10].

However, some caution should be taken in directly comparing the results of the current study with 16 patients and no control group with that of the previous sham controlled RCT of BVN ablation, since different study designs and different control groups were used.

The introduction of new techniques and a larger number of independent studies are warranted in order to gain confidence in the outcomes

reported with this treatment modality for CLBP hoping to ultimately benefit patients, clinicians, and society in general.

Declarations of competing interest

None.

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