
Spine and Pain Management

EFW Radiology Medical Brief

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Chronic pain can have devastating consequences on the well being of individual patients. Its social and economic impact can be far reaching as life expectancy and average ages trend upwards.³ Diagnosing and treating chronic pain poses a unique, and often difficult, challenge to primary care givers. The source of pain, beyond the patient's general description of an anatomic region, can be very difficult to identify, let alone adequately treat. This medical brief provides an overview of the current medical literature and a guide to assist in a primary care office approach to chronic pain of spinal origin.

It is estimated that 54% to 80% of the population will experience pain attributable to the spine in their lifetime (lifetime prevalence),¹ with chronic neck and low back pain the most common complaints. Chronic low back pain is more common than neck pain – 30% prevalence¹ compared to 7.6%,² and together represents two of the most frequent disorders in the middle aged and elderly patient that correlate with functional limitations, perceived difficulty in performing daily activities and risk factors for future disability.¹

Three decades of magnetic resonance imaging studies of the spine has lead to a greater appreciation of the presence of a spectrum of degenerative changes of the spine in asymptomatic individuals. The presence of these abnormalities in asymptomatic individuals makes the accurate diagnosis of spinal pain difficult. The challenge of knowing how to interpret imaging findings, the purely subjective nature of spinal pain and uncertain pathophysiology of most painful spinal conditions, compounds this conundrum.

While conservative management remains the mainstay of pain management, in the past decade **diagnostic interventional techniques** have evolved to better identify the source of pain prior to embarking on therapeutic pathways. Targeted diagnostic interventional techniques attempt to answer the question, “Is this target structure a source of the patient's pain?”

After thorough clinical evaluation and relevant diagnostic imaging tests, a targeted diagnostic interventional procedure(s) is used to confirm or refute a clinicians “best guess” that a given structure(s) is causing pain. During these procedures, local anesthetic is injected into a targeted structure, or nerve supply to the target structure, thought to be a cause of the pain. Temporary improvement of pain confirms that the injected/blocked structure represents a source of pain for the patient. Conversely, a lack of improvement of pain indicates that the injected/blocked structure does not represent a source of pain for the patient. Either scenario provides diagnostic information to the clinician.

Once the combination of clinical assessment and diagnostic interventional procedure(s) have identified the structure(s) most likely responsible for the pain, **therapeutic interventional techniques** may be utilized to provide patients with longer-term pain relief. During these procedures, preparations of analgesic combined with corticosteroids can be injected into or around targeted structures thought to be contributing to the pains symptoms.

In patients who have failed to respond to conservative back pain management, and have no documented disc protrusion on CT or MRI, studies have stratified the likelihood that a particular structure is the source of the patient's pain. These studies show that the origin of pain is, in order of decreasing likelihood: 40% facet joint, 26% discogenic, 10-26% sacroiliac joint 6 and 13% segmental dural/nerve roots. 4 Patients with chronic neck pain demonstrated that the origin of pain is 55% facet joint, 16% discogenic pain and 9% lateral atlanto-axial joint.⁵

Diagnostic interventional techniques for which evidence is available include intra-articular facet joint blocks, medial branch blocks, sacroiliac joint injections, transforaminal epidurals or selective nerve root blocks and discography. These comprise the majority of the structures known to cause chronic back and neck pain. Therapeutic interventional techniques include not only these procedures performed with an appropriate corticosteroid/anesthetic mixture, but also in patients with pain of facet origin for whom corticosteroids either do not provide long-term relief, or are not a feasible option, thermal radiofrequency neuroablation (RFA) is an option.

The table below summarizes the level of evidence for major diagnostic and therapeutic spinal interventional techniques.

Table 1

EVIDENCE ¹	DIAGNOSIS ACCURACY	THERAPEUTIC	
		< 6 wks	> 6wks
Facet joints			
Intra-articular			
Lumbar	Strong	Moderate	Moderate
Thoracic	Moderate	Limited data	Limited data
Cervical	Strong	Limited data	Limited data
Medial Branch Blocks			
Lumbar	Strong	Moderate	Moderate
Thoracic	Moderate	Moderate	Moderate
Cervical	Strong	Moderate	Moderate
RFA			
Lumbar	NA	Moderate	Moderate
Thoracic	NA	Limited data	Limited data
Cervical	NA	Strong	Strong
SI joints	Moderate	Limited data	Limited data
TF ESI			
Lumbar	Moderate	Strong	Moderate
Thoracic	Moderate	Limited data	Limited data
Cervical	Moderate	Moderate	Moderate
Caudal ESI	NA	Strong	Moderate
Interlaminar ESI	NA	Strong	Limited data

Reference Articles:

1. Interventional techniques: evidence-based practice guidelines in the management of chronic spinal pain. Boswell MV, Trescot AM, Datta S, Schultz DM, Hansen HC, Abdi S, Sehgal N, Shah RV, Singh V, Benyamin RM, Patel VB, Buenaventura RM, Colson JD, Cordner HJ, Epter RS, Jasper JF, Dunbar EE, Atluri SL, Bowman RC, Deer TR, Swicegood JR, Staats PS, Smith HS, Burton AW, Kloth DS, Giordano J, Manchikanti L; American Society of Interventional Pain Physicians. *Pain Physician* 2007 Jan;10(1):7-111.
2. The prevalence of neck pain in the world population: a systematic critical review of the literature. Fejer R, Kyvik KO, Hartvigsen J. *Eur Spine J*. 2006 Jun;15(6):834-48.
3. Surgical versus non-surgical treatment of chronic low back pain: a meta-analysis of randomised trials. Ibrahim T, Tleyjeh IM, Gabbar O. *Int Orthop*. 2008 Feb;32(1):107-13. *Epub* 2006 Nov 21.
4. Evaluation of the relative contributions of various structures in chronic low back pain. Manchikanti L, Singh V, Pampati V, Damron KS, Barnhill RC, Beyer C, Cash KA. *Pain Physician* 2001 Oct;4(4):308-16.
5. The nature of neck pain in a private pain clinic in the United States. Yin W, Bogduk N. *Pain Med*. 2008 Mar;9(2):196-203. doi: 10.1111/j.1526-4637.2007.00369.x.

Guidelines: [CAR Guidelines](#); the American College of Radiology, [ACR Appropriateness Criteria](#)[®].

SPINE AND PAIN MANAGEMENT

EFW Radiology's Advanced Spinal Care Centre, is a sub specialized clinic that provides image guided pain injections. Comprehensive treatment is available for:

- Facet Joint Procedures
- Other Spine Procedures
- Peripheral Procedures
- Musculoskeletal (MSK) Ultrasound

Should you feel your patient would benefit from an appointment at EFW Radiology's Advanced Spinal Care Centre, please fax a **Spine and Pain Management Requisition** to **(403) 210-8382**.