

## Transforaminal Endoscopy for Disc Herniations

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**Keywords:** Axilla, Exiting nerve, Lateral stenosis, Local anesthesia.

### GENERAL ASPECTS

In 1986 Kambin published initial work about transforaminal endoscopy [1]. The understanding and philosophy has changed with respect to indirect decompression, ablation, irrigation, desensitization, decompression and mobilization of nerves with emphasis on removing the source of the inflammatory response, which forms the basis of pain [2, 3].

In basic endoscopy, central debulking of disc was done, after confirming safe entry through the annulus. Around 1995, a conceptual change was to study of foraminal anatomy get a more clear understanding of the pain generator and produce instruments needed to decompress, ablate, and irrigate the source of pain. Study by Mirkowitz, performed by his resident David Swartz, highlighted maximum size of cannula, which we can safely put in the foramen for safe endoscopic surgery [4]. Now the endoscopic surgery has advanced, with cannula designs that can protect and retract nerves in the foramen while visualizing the disc from the foramen and intradiscally, looking for the source of the patho-anatomy; and way beyond, in an awake and aware patient. We can now treat moderate and large extruded or migrated herniations by accessing the fragment with the “inside-out” philosophy. This is because the source of the patho-anatomy namely annular tear usually originates intradiscally. It is now possible to visualize

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## Minimally Invasive Endoscopic Decompression of Foraminal Stenosis under Local Anesthesia

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**Keywords:** Axilla, Exiting nerve, Local anesthesia, Percutaneous interbody fusion.

### GENERAL ASPECTS

Our understanding of spinal stenosis has vastly improved over the past 150 years, when spinal stenosis resulting from disc degeneration in stenosis was described by Harris and Macnab [1]. The area underlying superior articular process was highlighted by Macnab [2]. Spinal canal stenosis symptomatology as neurogenic claudication was described by Verbiest.[3]. Lumbar spinal is narrowing of the central spinal canal stenosis, lateral recess or the neural foramen. The term indicates a pathological condition causing compression of neural and vascular structures [4].

The lumbar spinal canal shape varies, it is generally round, ovoid, triangular or trefoil. The thecal sac containing the cauda equina occupies this conduct. Central stenosis commonly develops with aging, narrowed by dorsal canal structures as the spine ages and facet and ligamentum flavum hypertrophies. It however, takes significant compression and narrowing for intermittent claudication, a classic symptom, to become debilitating. Most patients with spinal stenosis also have associated lateral stenosis, with or without a trefoil canal configuration. “The

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## Foraminal and Dorsal Endoscopic Rhizotomy

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**Keywords:** Axilla, Exiting nerve, Lateral stenosis, Local anesthesia.

### GENERAL ASPECTS

Mooney and Robertson described facet syndrome in 1976. They used steroids or local anesthetic injected under fluoroscopy for diagnosis and therapy. The facet joint was found to cause persistent low back pain [1].

In 1981, Bogduk published a study of anatomy of an osseous fibrous tunnel that sometimes shielded the medial branch of the dorsal ramus that he named the lumbar mamillo-accessory ligament (MAL). The medial branch enervated the facet at and below the disc level. This keeps the medial branch in a relatively constant relationship to bone, so interventions and needle techniques to stimulate, anesthetize or ablate the medial branch becomes possible. It is ossified in over 10% that may interfere with some percutaneous denervation techniques [2] (Fig. 1). Relative position of Kambin's triangle. [Blue triangle] (Fig. 2).

Target for medial branch ablation is the blue circle (1) on the process and (2) over the roof of foramen. The medial branch, however, can also be ablated in the foramen as it traverses along the foraminal ligament to innervate the facet below at the cephalad aspect of the superior articular process leading to the axilla of the spinal segment. The nerve can be visualized and transected, providing relief of back pain when operating by foraminal decompression for stenosis. These nerves

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