

Minimally Invasive Pain Procedures

Mohieddin Fasihi Harandi^{1,*}

¹Anesthesia and Pain Department, Milad Hospital, Tehran, IR Iran

*Corresponding author: Mohieddin Fasihi Harandi, Anesthesia and Pain Department, Milad Hospital, Tehran, IR Iran. E-mail: dr.fasihi@gmail.com

Received 2016 May 11; Accepted 2016 May 14.

Keywords: Minimally Invasive Pain Procedures, Surgery, Endoscopic Discectomy

Preserving normal tissue during surgery has become increasingly important for better outcome after operation. Because of this, minimally invasive procedures have been developed. There are many pain procedures with minimally invasive method to aid fluoroscopy.

The percutaneous vertebroplasty or kyphoplasty instead of screw fixation for many kinds of compressed fractures with 90% success rate is a good example (1). The percutaneous radiofrequency ablation of medial branch of dorsal ramus for facet mediated vertebral pains is another example with good results (2).

The percutaneous trigeminal ganglion radiofrequency ablation instead of microvascular decompression in elderly people has success rate of 80% - 90% (3). Spinal column stimulator and intrathecal pump implantation are expensive and useful methods of treating persistent pains such as failed back surgery syndrome and CRPS (4).

Recently, the percutaneous transformational decompression of disc with ozone or laser or coblation in bulging or moderate protrusion of lumbar or cervical discs or in disco genic pain instead of discectomy or screw fixations, have become popular. In 1973, Kambin (originally Iranian orthopedic surgeon) started percutaneous decompression of disc by nucleotomy in USA (5). Later, he reported 72 percent success rate with modified Hijikata approach (6). In 1985, Onik et al. introduced nucleotomy with motorized shaver (7). Ascher performed the first laser discectomy in mid-1980s. He used Nd: YAG laser and the good to fair range response to that method was 78% (8).

Minimally invasive percutaneous transforaminal endoscopic discectomy was initiated by Kambin in 1988. Kambin described The triangular safe zone in transforaminal approach in 1990 (4). Tsou and Yeung, in 2002, reported the same efficacy for endoscopic discectomy and conventional open surgery (9). They reported 91% success rate for this approach (10). Nevertheless, there are some failed cases such as migrated fragments or high canal compromised herniation (11).

With recent advances, endoscopic discectomy will gradually replace open discectomy in near future.

References

- Garfin S, Lin G, Lieberman I. Retrospective analysis of the outcomes of balloon kyphoplasty to treat vertebral body compression fracture (VCF) refractory to medical management. *Eur Spine J*. 2001;**10**(Suppl 1):S7.
- Dreyfuss P, Halbrook B, Pauza K, Joshi A, McLarty J, Bogduk N. Efficacy and validity of radiofrequency neurotomy for chronic lumbar zygapophysial joint pain. *Spine (Phila Pa 1976)*. 2000;**25**(10):1270-7. [PubMed: 10806505].
- Taha JM, Tew JM, Buncher CR. A prospective 15-year follow up of 154 consecutive patients with trigeminal neuralgia treated by percutaneous stereotactic radiofrequency thermal rhizotomy. *J Neurosurg*. 1995;**83**(6):989-3. doi: 10.3171/jns.1995.83.6.0989. [PubMed: 7490643].
- Raj PP, Lou L, Erdine S, Staats PS, Steven D. W., Racz G, et al. *Interventional Pain Management: Image-guided Procedures*. US: Saunders; 2008.
- Kambin P. *Arthroscopic microdiscectomy: Minimal intervention in spinal surgery*. Baltimore: Urban and Schwarzenberg; 1991.
- Kambin P, Gellman H. Percutaneous Lateral Discectomy of the Lumbar Spine A Preliminary Report. *Clin Orthop Relat Res*. 1983;**174**:127-32.
- Onik G, Mooney V, Maroon JC, Wiltse L, Helms C, Schweigel J, et al. Automated percutaneous discectomy: a prospective multi-institutional study. *Neurosurgery*. 1990;**26**(2):228-33.
- Ascher PW. Status quo and new horizons of laser therapy in neurosurgery. *Lasers Surg Med*. 1985;**5**(5):499-506. [PubMed: 4068883].
- Yeung AT, Tsou PM. Posterolateral endoscopic excision for lumbar disc herniation: Surgical technique, outcome, and complications in 307 consecutive cases. *Spine (Phila Pa 1976)*. 2002;**27**(7):722-31. [PubMed: 11923665].
- Tsou PM, Yeung AT. Transforaminal endoscopic decompression for radiculopathy secondary to intracanal noncontained lumbar disc herniations: outcome and technique. *Spine J*. 2002;**2**(1):41-8. [PubMed: 14588287].
- Lee SH, Kang BU, Ahn Y, Choi G, Choi YG, Ahn KU, et al. Operative failure of percutaneous endoscopic lumbar discectomy: a radiologic analysis of 55 cases. *Spine (Phila Pa 1976)*. 2006;**31**(10):E285-90. doi: 10.1097/01. [PubMed: 16648734].