Role of Radiofrequency in the Management of Chronic Low Back Pain

Thesis

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Mohamed Hamdy El Boghdady

Dedication

To:

My parents

for their endless love, support,

and continuous care

My Wife

&

My Family

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LIST OF ABBREVIATIONS

Abb.	Full term
ALL	*Anterior Longitudinal Ligament*
BMI	*Body Mass Index*
CLBP	*Chronic Low Back Pain*
CSF	*Cerebrospinal Fluid*
CT	*Computed Tomography*
DD	*Disc Degeneration*
DRG	*Dorsal Root Ganglion*
FBSS	*Failed Back Surgery Syndrome*
FSU	*Functional Spinal Unit*
IPM	*Interventional Pain Management*
IQR	*Interquartile Range*
IV	*Intervertebral*
IVD	*Intervertebral Disc Degeneration*
LBP	*Low Back Pain*
LF	*Ligamentum Flavum*
LSS	*Lumber Spinal Stenosis*
mHz	*millihertz*
MRI	*Magnetic Resonance Imaging*
NSAID	*Non-Steroidal Anti Inflammatory Drugs*
PLL	*Posterior Longitudinal Ligament*
RF	*Radiofrequency*
SD	*Standard Deviation*
SIJ	*Sacroiliac Joint*
SLRT	*Straight Leg Raising Test*
TN	*Trigeminal Neuralgia*
TPF	*Trans Pedicular Fixation*

Abstract

Background: low back pain (LBP) is related to disability and work absence and accounts for high economical costs. The management of LBP comprises a range of different intervention strategies including surgery, drug therapy, and non-medical interventions. Failed back surgery syndrome is a common problem with enormous costs to patients, insurers, and society, defined as persistent back and/ or leg pain after spine surgery. The etiology of failed back surgery can be poor patient selection, incorrect diagnosis, suboptimal selection of surgery, poor technique, failure to achieve surgical goals, and/or recurrent pathology.

Aim of the Work: to evaluate the efficacy, safety and outcome of radiofrequency as a method for management of patients with chronic low back pain.

Subjects and Methods: this prospective study was conducted at El Galaa Military Hospital starting from January 2017. Twenty five patients with chronic low back pain with mal-response to medical treatment justified for receiving interventional pain management as a conservative method of treatment of low back pain. They were subjected to radiofrequency neurotomy as a method for managing low back pain.

Results: there was highly statistically significant decrease in pain score immediately, 1 week, 1 month and 3 months than pain score before RF with p-value < 0.01and there was highly statistically significant difference between daily living activities before RF and daily living activities at different times of measurement with p-value < 0.01.

Conclusion: low back pain is a medical, social and economical problem. Radiofrequency neurotomy had advantage regarding the long term follow up but the costs and equipment-wised problem still make it less prevailed. **Recommendations:** longer follow up and randomized study if could be conducted the results may indicate much clues.

Key words: radiofrequency, management low back pain

AIM OF THE STUDY

The aim of this prospective study is to evaluate the efficacy, safety and outcome of radiofrequency neurotomy as a method for management of patients with chronic low back pain.

Chapter I

OVERVIEW OF THE SPINAL ANATOMY

The vertebral column normally consists of 24 separate bony vertebrae, together with 5 fused vertebrae that form the sacrum, and usually 4 fused vertebrae that form the coccyx.[1] It is not unusual for variations to occur, particularly at the lumbosacral junction where the first sacral segment may exist as a separate vertebra, lumbarization of the first sacral vertebra, sacralization of the fifth lumbar vertebra is another variant, in which there is complete or incomplete incorporation of the fifth lumbar vertebra into the sacrum.

The vertebral column is composed of alternating vertebrae and intervertebral (IV) discs supported by spinal ligaments and muscles. All of these elements, bony, cartilaginous, ligamentous, and muscular, are essential to the structural integrity of the spine.[2]

The spine serves three vital functions:

a) Protecting the spinal cord and spinal nerves, b) Transmitting the weight of the body, and c) Providing a flexible axis for movements of the head and the torso.[2]

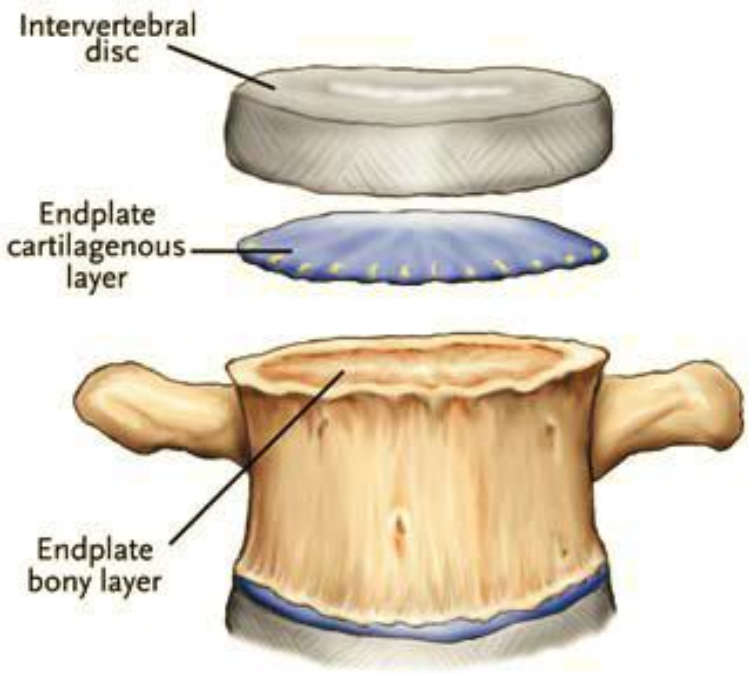

Figure (1): Basic structure of the vertebral column.[2]

The vertebral column is capable of extension, flexion, lateral flexion (side to side), and rotation. However, the degree to which the spine is capable of these movements varies by region.[2]

When viewed from the side, the vertebral column displays five curves in the upright posture cervical, thoracic, lumbar, sacral and coccygeal. The primary spinal curves (thoracic and sacrococcygeal curvatures) are established in fetal development, while the secondary spinal curves (cervical and lumbar curvatures) develop during infancy. The lumbar curve is convex forwards and extends from T12 to the lumbosacral junction. The sacral curve extends from the lumbosacral junction to the coccyx. Its anterior concavity faces downwards