The Place Of Interlaminar Microdiscectomy In The Surgical Treatment Of Prolapsed Lumbar Disc

Thesis
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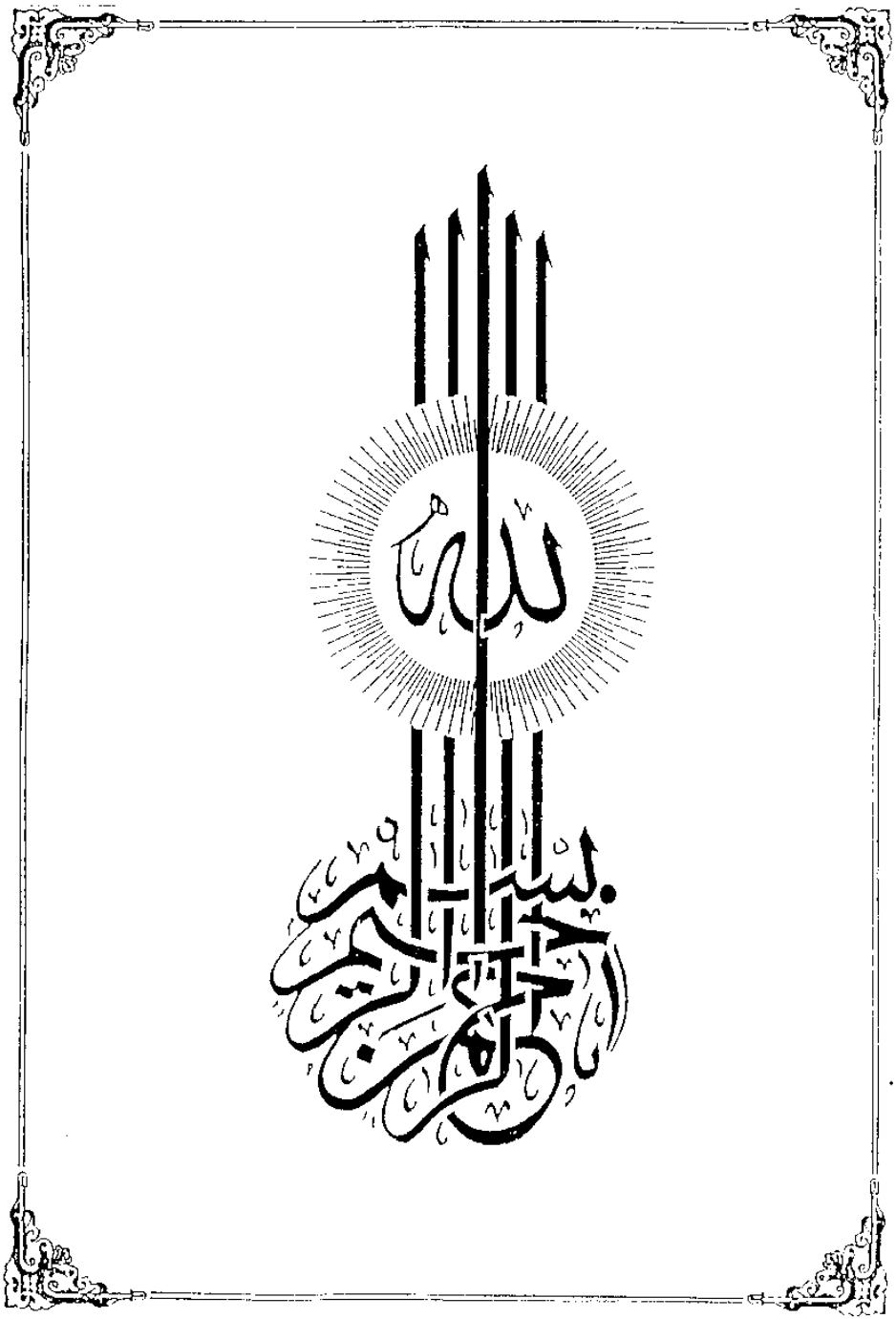
To My God to whom every thing is refered,
To My Professors, H. Al Sharif,
M.M. Salama ,
S. El Molla ,
who taught me and always give me and to whom I'm grateful,

To My Parents and my wife who always encourage and support me.

Dr. Emad Ghanem ...



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Introduction

INTRODUCTION

Recognition of th common clinical syndroms of disc diseases developed slowly in medical history. The first anatomical description of the intervertebral disc was credited to Vesalius in I555. In the mid-ninteenth century, a complete descsiption of discs and their abnormalities were given and posterior protrusion of the intervertebral discs was recognized as a clinical entity. A posterior displacement of the intervertebral disc between the first and the second lumbar vrtebrae was found at post-mortem examination.

Dandy in 1929 operated upon on two patients with cauda equina compression and he stated that the lesion was a completely detached fragment from the intervertebral lumbar disc. Then, the modern era of definition for surgical treatment of the ruptured intervertebral disc came into light and it was concluded that in patints who do not respond to conservative measures, results from surgical treatment were very satisfactory if compression had not been too prolonged.

Since then, an increasing but still incomplete fund of knowledge now is interested in basic aetiology, modes of investigation and treatment of prolapsed lumbar disc.

Aim of the work:

1. Study of 75 cases of prolapsed lumbar disc treated surgically either by microdiscectomy, fenestration and standard laminectomy.

2. Study and evaluation of post-operative course and the results of microdiscectomy, fenestration and laminectomy.

Methodology:

This study will be carried out on 75 patients with prolapsed lumbar disc, the study will includ:

1. Full history and complete neurological examination.

2. Routine laboratory investigations.

3. Plain x-ray of the lumbosaral spine for all cases.

4. C.T. of lumbosacral spine for some cases and lumbosacal myelography for others.

4. Treatment of these cases surgically either by micro discectomy, fenestration or standard laminectomy.

5. Post - operative evaluation and assissment of results of these groups.

Results & Discusion:

Results will be tabulated and the conclusion will be withdrawn.

Embryology

EMBRYOLOGY

In the embryo, the notochord, which is derived from the endoderm, is quickly surrounded by mesenchymal cells, and each provertebra divides horizontally into a caudal half attaching to the cephalad half of the adjacent provertebra to form the rudimentary vertebra with the future intervening disc which becomes the farrthest point from the intersegmental artery (1).

A mucoid matrix intervenes between the notochordal cells to form the nucleus pulposus of the intervertebral disc. This nucleus is surrounded by the intermediate part of each perichordal disc to form anulus fibrosus which differentiated into an external laminated fibrous zone and an internal cuff around the nucleus pulposus (2).

By the tenth embryonic week, the notochord has become extruded into this intervertebral region and is separated from the cartilaginous vertebral bodies by a fibro-cartilaginous envelop derived from the original mesenchymal intervertebral cells (1).

By the Twenty-Fourth week of embryonic development, the two cartilage plates have appeared and there is progressive invasion of the nucleus pulpous by fibroblasts from the outer zone of the anulus fibrosus i.e. the

notochordal cells in the nucleus pulposus commence to degenerate. This degeneration continues until the second decade of life. By that time, all the notochordal cells have disappeared. Thus, in the adult, notochordal vestiges are limited, at the most, to non - cellular matrix (2).

The anulus is strongly attached to the cartilaginous plates and to the margins of the vertebral bodies. The cartilaginous plates in turn are intimately fused to the vertebral bodies by long bony clefts and ridges that have appeared in a radial fashion in the superior and inferior margins of these bodies at the time of birth. They increase in size in the first decade and gradually smooth out over the next 10-15 years (1).

Adjacent to the disc within the epiphyseal rings, the vertebral body is composed of a specialized, dense, smooth bone that is perforated by small holes corresponding to marrow cavities, apparently to permit fluids to pass from the spongy bone into the disc for nourishment (1).

It is thought that these areas and the ossification gaps for the clefts may account for week places in the bony plate that cause later development of Schmorl's nodes (1).

After birth, the intervertebral disc continues to function actively. By the age of 6 months, the anulus

fibrosus is well developed and attached itself to the newly developed anterior and posterior ligamnts, and completely developed by the tenth year.

The nucleus, which started as a rectangular structure, has become oval and the notochordal elements have disappeared with progressive invasion by fibroblasts (1).

The cartilaginous plate continues to be active, but in the second decade; this activity decreasses. Upto the age of 8 years, small blood vessels enter the disc by way of the cartilaginous plate, but these channels are completely obliterated by scarring by the age of 20-30 years (1).

The anulus still progresses, but degeneration becomes evident in the late years of the second decade. The anulus has become broken up and irregular, losing its diffuse character, and a more distinct demarcation has appeared between the anulus and the nucleus. The nucleus continues to take on fluids and is maturing, but the cartilaginous plate shows definite wear and tear with some longitudinal fissures appear that it may be the result of trauma. (1)

It is thought that the maximum point of function is reached by the third decade. By the fourth decade, retrogressive changes in the cartilaginous plate are striking, the nucleus has gradually lost fluids and is being replaced by fibrous tissue, and the anulus shows

aging by pigmentation and vascularization as well as hyaline degeneration. (3)

Older age is accompanied by continued degeneration, ballooning of the dise into the body of the vertebra with actual erosion and protrusion into the body, frequently by posterior breaks in the anulus, calcification of the disc, and replacement of the nucleus by fibrocartilage. (3)

Anatomy

ANATOMY

A typical vertebra consists of anterior ventral part; the body, and posterior dorsal parts; the vertebral arch which extends to enclose the neural canal occupied by the cauda equina.

The opposed surfaces of adjacent vertebral bodies are strongly bound to each other by intervertebral discs.

Between the adjacent vertebrae, there are the intervertebral foraminae which transmit nerve roots and vessels. These foraminae are formed by the concavities above and below the pedicles (vertebral notches) where adjacent notches enclose the intervertebral foraminae . (4)

The vertebral arch has on each side a short, thick and rounded bars projecting backwards at the junction between the lateral and dorsal surfaces, the pedicle.

Behind the pedicle, there are the laminae. There are seven processes; paired transverse processes, superior and inferior articular processes and a single spinous process.

The lumbar vertebrae differ from other vertebrae in their greater size and absence of costal facets. The body