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Reappraisal of the microsurgical technique in the management of lumbar disc herniation

Thesis

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TO MY PARENTS
MY WIFE
&
MY SON

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INTRODUCTION

Historical Development of Lumbar Disc Surgery

The presence of sciatica was known to the ancient physicians, but its anatomic source was unclear. By 1864, Lasegue [1] described the clinical findings of sciatic pain but attributed it to neuritis. Surgical excision of disc material to relieve sciatic pain and impairment was first reported by Oppenheim in 1909[2], and the extruded fragments were identified as chondromata.

Fifty years ago, an occasional laminectomy was performed for lumbar disc disease. The surgical technique involved extensive bilateral laminectomy, which was followed by dural opening in the mid line, separating the nerve roots to either side, then the anterior dura was opened and the fragment was removed. [3]

The impetus for modern spinal surgery was Mixter and Barr's 1934 description of the concept of ruptured intervertebral disc, its clinical syndrome, and surgical treatment [4]. Surgical refinements followed this where the disc was removed through an extradural approach, followed by the hemilaminectomy approach, which was further refined into the interlaminar approach.

The failed back syndrome remains a common cause of disability, this syndrome may be defined as the inability to

obtain long term relief of symptoms after surgical procedures for lumbosacral diseases, with persistent or recurrent low back pain. [5,6,7] A quote from Dr. Mixter fifty years later, about one of his first patients:

"Newton is of particular historic interest because he represents the first case where lumbar intervertebral disc was recognized as the cause of symptoms.....As such he is the man who started the whole mess"

Clearly, Mixter was expressing his concern about the over utilization and complications of surgical disc excision. [8]

There are two main factors responsible for failed back syndrome, either singly or in combination: poor patient selection, and excessive trauma to the contents of the epidural space and normal spinal anatomy. Thus by defining these weaknesses, one can improve the results by proper selection of cases, smaller incisions, less dissection of the muscles, preservation of the ligamentum flavum, if possible, preservation of the epidural fat, meticulous hemostasis, and of course adequate disc removal. [3]

The refinement which occurred in the diagnostic, and operative equipment lead to the development of the variety of minimally invasive techniques, which are the means by which operative techniques are sequentially refined. Of these minimally invasive techniques are the percutanous approaches and the microsurgical approach, which are going to be discussed in the following section.

ANATOMY

The human spine consists of a complex of osseous and soft tissue elements. The osseous complex is formed of thirty three vertebrae ,with intervening intervertebral cartilage .

General characters of a vertebra:[9] (fig.1,2)

Each vertebra consists of two essential parts, an anterior solid segment or body, and a posterior segment or arch. The arch is formed of two pedicles and two laminae, supporting seven processes (four articular, two transverse, and one spinous).

The bodies of the vertebrae are piled one upon the other, forming a strong pillar for support of the cranium and the trunk; while the arches form a hollow cylinder behind the bodies for the protection of the spinal cord. The different vertebrae are connected together by means of the articular processes and the intervertebral discs; while the transverse and the spinous processes serve as levers for attachment of muscles, which move the different parts of the spine. Lastly, between each pair of vertebrae apertures exist through which the spinal nerves pass from the cord. Each of these constituent parts must now be separately discussed.