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التوثيق الالكتروني والميكروفيلم

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Faculty of Medicine
Department of orthopaedic surgery

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Title

VALUE OF ENDOSCOPIC SPINAL SURGERY IN MANAGEMENT OF THORACIC AND THORACOLUMBAR KYPHOSIS

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CONTENTS

Introduction

Kyphosis is defined as an angulation of the spine in which, there is an abnormal dorsal curvature in the sagittal plane. [128]

The kyphotic deformities can be broadly classified as two types. The first includes deformities with a uniform posterior curvature over many segments of the spine (round or non-angular kyphosis) as seen in Scheuermann's kyphosis, ankylosing spondylitis, and some types of senile kyphosis. These curvatures may be flexible or rigid. The second type of kyphosis is angular as seen in post-traumatic kyphosis, healed Pott's disease or congenital kyphosis. This type of kyphosis is quite rigid. [128]

The thoracic and thoracolumbar kyphosis may be considered as a postural deformity if the curve can be completely reducible in the hyperextension position comparing the clinical and radiographic measurements of a subject. If the curve is partially reducible, this means that there are structural bony, discal, or ligamentous changes (structural deformity). [25]

The treatment of structural kyphosis is surgical. With the exception of Scheuermann's kyphosis, non-operative methods are ineffective in providing permanent correction. As kyphosis progresses, the weight-bearing axis migrates further anterior increasing the tendency towards progression. A vicious cycle is created unless the normal sagittal balance is restored. [108]

The pathomechanics of the deformity dictate that, in most situations both anterior and posterior surgery should be performed. So the successful surgical treatment of kyphosis frequently depends on the reconstruction of the anterior column. Without support in the anterior column, the posterior instrumentation and fusion remain under tension and will fail. So that, the principle of anterior

column lengthening, restoring an adequate anterior support, and then shortening of the posterior column, must be followed. [128]

Traditionally most of the anterior spinal procedures for the correction of thoracic and thoracolumbar deformity are performed through an open thoracotomy or thoraco-lumbotomy approaches. Now, these procedures can be successfully performed using Video-Assisted Thoracoscopic Surgery (VATS), which is a minimal invasive approach for high-risk patients. Many authors believe that thoracoscopic surgery is associated with reduced morbidity as compared to open thoracotomy used to perform anterior release, discectomy, and fusion in cases of spinal deformities [339].

Most of the reports in the literature using VATS for spinal deformities describe the patient in the lateral position. However, the prone position VATS used in this study offers many advantages such as saving time, avoiding one-lung ventilation, minimizes the risk of vascular injuries, and allows a controllable and titerated antero-posterior correction of kyphosis deformity. So, the prone position thoracoscopic technique is a good alternative to open thoracotomy. It is safe and effective procedure allowing an adequate circumferential release when it is combined with posterior corrective procedures and posterior instrumentation of the spine. Moreover, the thoracoscopic technique preserves structures of utmost importance for spinal stability. [52]

Aim of the work

The aim of the present study is to evaluate the morbidity, clinical results, and radiographic correction following the use of video-assisted thoracoscopic techniques simultaneous with posterior correction and instrumentation for thoracic and thoracolumbar kyphosis. This will elucidate the merits of using the thoracoscopic techniques in correction of kyphotic deformities of different aetiologies.


Review of the literature

Historical review

The ancient Egyptian physician was the first man to speak about the spine, in the ***Edwin Smith*** surgical papyrus which originally written in the Egyptian Old Kingdom when the great pyramids were built (2600-2200 BC). The Egyptians differentiated between the simple injury of the cervical spine and the dislocation. The exact author for the Edwin Smith papyrus is shrouded by mystery, but it is possible that it was penned by ***Imhoteb;*** the great physician-architect at the court of pharaoh Zoser of the third dynasty. [1]

The first account of treatment rendered for spinal deformity is recorded in the ***Srimad Bhagwat Mahapuranam***, an ancient Indian epic written between 3500 and 1800 BC, [2,3,4] which included a passage describes **Lord Krishna** applying axial traction to correct the hunchback in one of his devotees, **Kubja.** "To shower the fruits of his blessings, happy Lord Krishna decided to straighten Kubja, who was deformed in three places. He pressed her feet by his foot, held her chin by two fingers and pulled her up. By the touch and pull of Lord, she became a beautiful straight woman." It is probable that Kubja had kyphoscoliosis. (Fig. 1)

The veracity of the account may be of course, be placed into question. Nevertheless, the fact remains that this passage is the earliest known reference to the concept of correction of deformity by axial traction, predating Hippocrates by over a millennium. [5]

Hippocrates II (460-361 BC) did understand some basic concepts of the vertebral column. He realised that the disc, ligaments, and muscles held the bony column together. In De Articulations of the Corpus Hippocraticum [5], there is a description of normal and abnormal spinal curves. One passage states