posterior vertebral column resection in complex spinal disorders

A Thesis Submitted For Partial Fulfillment of M.D. Degree
Of Orthopaedic Surgery

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✍ *Mohammed Ali Ibrahim Hussein*

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List of Abbreviations

3CO	:	3 Column osteotomy
AIS	:	Adolescent idiopathic scoliosis
AP	:	Antero-Posterior
APVCR	:	Antero-Posterior vertebral column resection
BDBO	:	Bone disc bone osteotomy
C7PL	:	C7 Plumb line
CBVA	:	Chin-brow vertical angle
CK	:	Cervical kyphosis
CORA	:	Center of rotation and angulation
CSF	:	Cerebrospinal fluid
CSL	:	Central sacral line
DVT	:	Deep venous thrombosis
EBL	:	Estimated blood loss
HRQOL	:	Health-related quality-of-life
IAR	:	Instantaneous axis of rotation
LIV	:	Lower instrumented vertebra
LK	:	Lumbar kyphosis
LL	:	Lumbar lordosis
LLK	:	Lower lumbar kyphosis
MMVCR	:	Multilevel modified vertebral column resection
ODI	:	Oswestry Disability index
PCA	:	Patient controlled analgesia
PI	:	Pelvic Incidence
PJK	:	Proximal junctional kyphosis
PK	:	Pelvic kyphosis
PSF	:	Posterior spinal fixation
PSO	:	Pedicle subtraction osteotomy
PSVL	:	Posterior sagittal vertical line
PT	:	Pelvic tilt
PTK	:	Posttraumatic kyphosis
PVCR	:	Posterior vertebral column resection
RA	:	Regional angulation
SPO	:	Smith-Petersen osteotomy
SRS	:	Scoliosis research society

List of Abbreviations

SS	:	Sacral slope
SSEP	:	Somatosensory evoked potential
SSV	:	Sagittal stable vertebra
SVA	:	Sagittal vertebral axis
TK	:	Thoracic kyphosis
TLJK	:	Thoracolumbar junction kyphosis
TP	:	Transverse process
UIV	:	Upper instrumented vertebra
UMNL	:	Upper motor neuron lesion
VAS	:	Visual analogue scale
VCD	:	Vertebral column decancellation
VCR	:	Vertebral column resection

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Introduction

Vertebral column resection (VCR) is defined as a circumferential resection of at least one vertebra with all its anterior and posterior elements along with the adjoining intervertebral discs. It was first described by Bradford as a combined approach requiring posterior stabilization, and anterior vertebrectomy and reconstruction. Combined anterior and posterior resection requires a lengthy operation (1). Suk et al. (2) first promoted a posterior-only VCR. They believed the total operating time and blood loss was reduced through this one-stage posterior-only procedure.

Vertebral column resection has been suggested for tumors (3), and spondyloptosis (4). Also, VCR has been described for severe rigid angular deformities (5).

A deformed section of the spine as seen in cases of congenital kyphoscoliosis or post-infectious kyphosis not only affects the development of the remaining healthy spine, but also that of the chest wall, the extremities and body balance. Decompensation in the sagittal plane of the spine leads to specific complaints such as pain, cardiopulmonary compromise, significant cosmetic problems, limitation of the activities of daily living, psychological implications and neurological impairment (6). Sufficient restoration of alignment may not only result in better fusion, but also in better spinal canal decompression (7,8).

Aim of the Work

This prospective study is conducted to evaluate the results of posterior vertebral column resection (PVCR) in patients needing corrective reconstructive surgery or decompressive surgery of kyphotic or kyphoscoliotic spinal deformity resulting from congenital, developmental, traumatic or infectious conditions.

Introduction

The spine is normally formed of four curves in balance, intrauterine and at birth, only the two primary kyphotic curves are present at the thoracic and sacrococcygeal area. The secondary lordotic curves of the cervical and lumbar areas are considered compensatory and develop when the child holds his head upright and when he begins to stand and walk (Fig. 1) (9,10). These Lordotic curves compensate for kyphotic degrees of the primary curves to balance the spine sagittaly.

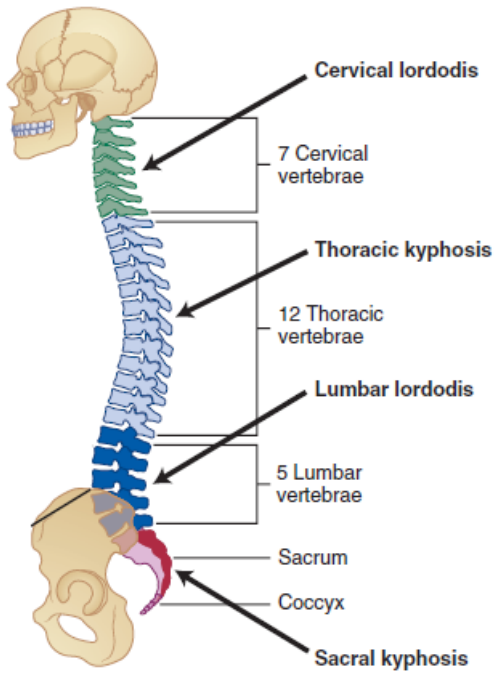

Fig (1): Sagittal spine profile (10).