شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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A Systematic Review for Partial Fulfilment of Master Degree In Neurosurgery

Posterior Lumbar Fixation Surgeries, Indications and Approaches
(Posterolateral Fixation, PLIF and TLIF)

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قروس قبوتلا قيلآ

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Muhamed Abdelmoez Abdelzaher

Dedication

To

My Father, My Mother

My brothers and my sisters

All My Family

All my Colleagues and

Professors

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List of Abbreviations

Abb.	Full term
ALIF	Anterior lumbar interbody fusion
ALL	Anterior Longitudinal Ligament
AP	Antero-Posterior
CT	Computed tomography
ECM	Extra Cellular Matrix
GAGs	Glycosaminoglycans
IAP	Inferior Anteroposterior
ITL	Inter-Transverse "Ligament"
IVF	Intervertebtal foramen
JOA	Jabanese Orthopedic Analogue
LBOS	Low Back Outcome Scale
LF	Ligamentum Flavum
MRI	Magnetic Resonance imaging
ODI	Oswestry Disability Index
PA	Posterior to Anterior
PcoS	Prospective comparative study
PEEK	Polyetheretherketone
PLC	Posterior Ligamentous Complex
PLIF	Posterior lumbar interbody fusion
PLL	Posterior Longitudinal Ligament
RcoS	retrospective comparative study
RCT	randomized controlled trail
RD	Repeated Discectomy
RhBMP-2	Recombinant human bone morphogenetic protein
RTAs	Road Traffic Accidents
SAP	Superior Anteroposterior Dimension
SCI	Spinal Cord Injury
SF	Segmental Fusion
TFLs	Transforaminal Ligaments
TLIF	Transforaminal Lumbar Interbody Fusion
TLISS	Thoracolumbar Injury Severity Score
VAS	Visual Analogue Scale

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Introduction

The first posterior lumbar fusion was introduced by Cloward in 1953 for degenerative disc disease and spondylolisthesis. Since then, pedicle screw instrumentation has enabled a rigid construct to promote stability and fusion for numerous spinal pathologies including: trauma, tumours, deformity and degenerative diseases. **(Kanter & Mummaneni, 2008)**

Lumbar arthrodesis is a commonly performed surgical procedure for the treatment of spondylosis, trauma, infection, neoplasm, and spinal instability. **(Brantigan et al., 2004)**

A posterolateral fusion with autologous bone graft has traditionally resulted in acceptable clinical results; however, reported fusion rates have been inconsistent. **(Matsumoto et al., 1992)**

With the addition of internal fixation using posterolateral transpedicular screw instrumentation, fusion rates have improved significantly especially in cases of instability. **(Brantigan et al., 2004)**

Performing an interbody arthrodesis may further improve the clinical results by eliminating the disc as a potential pain generator, improving fusion rates, and restoring intervertebral height and lumbar lordosis. **(DiPaola & Molinari, 2008)**

Posterior lumbar interbody fusion (PLIF) and transforaminal lumbar interbody fusion (TLIF) create

intervertebral fusion by means of a posterior approach. Both techniques are useful in managing degenerative disk disease, severe instability, spondylolisthesis, deformity, and pseudarthrosis. **(DiPaola & Molinari, 2008)**

Successful results have been reported with allograft, various cages (for interbody support), autograft, and recombinant human bone morphogenetic protein-2. Interbody fusion techniques may facilitate reduction and enhance fusion. The rationale for PLIF and TLIF is biomechanically sound. However, clinical outcomes of different anterior and posterior spinal fusion techniques tend to be similar. **(DiPaola & Molinari, 2008)**

PLIF has a high complication rate (dural tear. 5.4% to 10%; neurologic injury, 9% to 16%). these findings, coupled with the versatility of TLIF throughout the entire lumbar spine, may make TLIF the ideal choice for all-posterior interbody fusion**. (DiPaola & Molinari, 2008)**