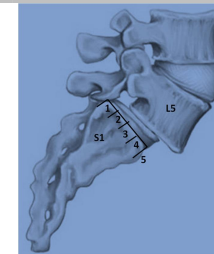


Clinical and Radiographic Outcomes Following Reduction and Instrumented Fusion for High-Grade Spondylolisthesis - A Multicenter Experience

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Introduction

Management of high-grade spondylolisthesis(HGS)remains challenging and is associated with significant controversies.The best surgical procedure still remains debatable,considering the absence of high-quality studies in the literature demonstrating superiority of one approach over another.This retrospective multicenter study was conducted to assess the safety of reduction and circumferential instrumented fusion for HGS along with evaluation of clinical and radiographic outcome.

Methods

Adult patients with HGS(Meyerding grade 3-4)who underwent open decompression,reduction and circumferential instrumented fusion were reviewed.Pre and post-operative Meyerding grade, slip angle and sacral inclination were analyzed to quantify the spinal deformity correction.Surgical details and medical records were reviewed for intraoperative techniques,and intra and post operative complications. Clinical outcome was assessed using Prolo and Oswestry Disability Index(ODI) scores at last follow up.

Results

A total of 25 cases of HGS were identified.Mean age of patients was 41 years(range,19-72 years)with follow up(FU)ranging from 2 to 33 months(mean,21 months).(Table 1) Surgical details are depicted in Tab 2. At the most recent follow up, there was significant improvement in mean Meyerding grade(3.4 versus 1.5,p< 0.01) and slip angle(17.3 versus minus 5.1,p< 0.01). (Table 3) Mean ODI and Prolo scores were 20%(minimum disability) and 8.2(grade 1)respectively with improvement of mean VAS score for back pain from 7.7 to 2.4(p<0.01). Intervertebral fusion was performed in 17 patients(15 TLIF , 1 PLIF and 1 ALIF) while 5 patients underwent sacral dome osteotomies.New neurological deficit after surgery occurred in 1(4%)patient with 1 (4%) construct related complication.Fusion occurred in all 16 patients who had at least 12 months FU following surgery. Representative Pre and post operative rays of a patient with HGS is shown. (Figure)

Conclusions

Open decompression, reduction and instrumented fusion with correction of slip angle for HGS is safe and can result in excellent clinical and radiographic outcome with minimal morbidity.

Table 1

Total patients	25
Male	8 (32%)
Female	17 (68%)
Mean Age (years)	41
Presenting Symptoms	
Back pain	25 (100%)
Lumbosacral radiculopathy	21 (84%)
Motor weakness	6 (24%)
Sensory symptoms	8 (32%)
Bladder involvement	1 (4%)
Pathology	
Isthmic/Dysplastic/Iatrogenic/Post Traumatic	21 (84%) / 2 (8%) / 1 (4%) / 1 (4%)
Prior Surgery	
n = 7	
Non Instrumented Fusion	2
L5 S1 instrumented Fusion	2
L5 S1 anterior instrumented Fusion	1
Laminectomies	1
L2 S1 fusion with instrumentation failure	1
Levels of Listhesis	
L5 S1	22 (88%)
L4 L5	3 (12%)

Demographics

Table 2

Levels treated	Number of patients
L1 to S1	1
L3 to L5	1
L4 to L5	1
L4 to S1	10
L4 to Ilium	2
L5 to S1	9
L5 to Ilium	1
Anterior/Posterior	
TLIF	15
ALIF	1
PLIF	1
Sacral osteotomy	5
Mean EBL (ml)	922
Mean LOS (days)	6

Surgical Details

Table 3

	Meyerding grade	Slip Angle (Degree)	Sacral Inclination (Degree)
Pre-operative	3.4 (3-5)	18.1 (0-62)	41.6 (0-76)
Post-operative	1.6 (0-5) p<0.05	-5 (-25 to 59) p<0.05	42.2 (22-72)

Radiographic Measurements

Learning Objectives

- By conclusion of this session , participants should be able to :
- 1) Diagnose and evaluate HGS
 - 2) Understand the overall deformity in this subgroup of spondylolisthesis
 - 3) Understand the benefit and overall outcome following open decompression, reduction and instrumented fusion with correction of slip angle for HGS



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