



Neuromuscular Scoliosis Today's Surgical Care

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Abstract

Neuromuscular scoliosis is a spinal deformity, caused by disorders of the brain, spinal cord, and muscular system. Nerves and muscles are unable to maintain appropriate balance/alignment of the spine and trunk. Conservative and surgical treatment of neuromuscular scoliosis differs from idiopathic scoliosis, being more complex and with a higher complications rate.

Introduction

The type of spinal stabilization depends on the age of the patient, ambulatory status, and underlying condition. Pelvic obliquity is commonly associated with neuromuscular scoliosis [1-6], making sitting difficult: correction needs to be considered during planning. The goal of surgical treatment is: prevent curve progression, improve sitting balance and tolerance (in non-ambulatory), reduce repositioning, reduce pain [7,8], to obtain and maintain a well-balanced spine above a well-positioned pelvis.

Methods

48 patients (25 F, 23 M) Mean age 15.8 years. The average angle value of the main scoliotic curve was 94.05° (34 min - 165 max) Thoracic kyphosis was 42.86 . Lumbar lordosis was 33.57 . The posterior instrumented fusion, using only pedicle screw instrumentation. Fusion up to the lumbar spine was in 25 patients, up to the sacro-ileum with iliac screw in the other 23 patients (Figure 1). The complications that have been noted are minor type and led to a reoperation in 7 cases (14.5%) (Table 1).

Conclusions

The positive results with improvement of quality of life in patients with neuromuscular scoliosis, can be obtained when the decision takes into account for the treatment of multi-disciplinary

OPEN ACCESS

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Received Date: 23 Mar 2018

Accepted Date: 17 Apr 2018

Published Date: 24 Apr 2018

Citation:

Greggì T. Neuromuscular Scoliosis Today's Surgical Care. *Ann Spine Res.* 2018; 1(1): 1003.

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Figure 1a



Figure 1b



Figure 1c

Figure 1: F. 12 Y, SMAII

1a: scoliosis, with a severe pelvic obliquity.

1b: corrected instrumentation with pedicle screws and S2 alar iliac fixation.

1c: clinical pictures pre-op and 1 yrs f-up.

Table 1: The complications that have been noted are minor type.

Fusion up to the lumbar spine 25 cases	Fusion to the sacro-ileum 23 cases
6 complications (24%)	2 complications (8,6%)
3 mobilization of hooks	1 dural lesion
1 breakage of the instrumentation	
1 loss of correction	1 deep infection
2 proximal junctional kyphosis (PJK)	
5 revision surgery	2 revision surgery
2 replacements hooks mobilized	1 repair of the dura
1 replacement of instrumentation and fusion revision	1 debridement and removal of the hardware
2 proximal extension of arthrodesis	

assessments. The surgery should be performed as early as possible, however, the sacrum and pelvis fixation should be avoided in patients with residual walking ability. The decision to proceed with spinal instrumentation may alter functional abilities in weak and marginally ambulatory NMD patients. The instrumented posterior fusion alone proved to be an effective technique in neuromuscular scoliosis, and is seems the treatment of choice for patients with limited lung function.

Acknowledgment

Thank you for your support - Rizzoli Orthopedic Institute.

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