SUMMARY

Severe neuromuscular (NM) deformity has traditionally been treated with circumferential release and fusion. Posterior-only fusion offers lower morbidity, but whether results are comparable is unclear. We compared 36 non-spastic NM patients with severe curves treated via A/PSF vs. 25 matched patients treated with posterior-only surgery. The posterior-only group had significantly lower blood loss and operative times and trended towards lower revision and complication rates. Cobb angles, correction, sitting balance, and pelvic tilt were similar between the two groups at 2 years.

INTRODUCTION

While posterior-only fusion (PSF) could potentially result in less morbidity, no studies to date have demonstrated that it has efficacy comparable to circumferential release and fusion (A/PSF) in the non-spastic NM population with significant deformity. We examined the 2-year outcomes of patients that had received a PSF and compared them with a similar population that underwent A/PSF to determine if PSF could replace A/PSF as the procedure of choice.

METHODS

61 non-spastic NM patients with severe scoliosis (101.9º±15.0) or kyphosis (108.0º±16.6) underwent either a primary A/PSF (n=36) or PSF alone (n=25). Patients in both groups were followed for a minimum of 2 years. Diagnoses include myelomeningocele (n=30), SMA (n=8), Duchenne's (n=5), and other myopathies (n=18). There were no significant differences in age at surgery, preoperative coronal and sagittal plane Cobb angles, sitting coronal balance, and pelvic tilt between the two groups.

RESULTS

Blood loss was 1251±779 cc for A/PSF and 620±285 cc for PSF ($p<0.0001$). The mean

operative time for A/PSF was 703±260 min vs. 382±103 min for PSF ($p<0.0001$). 9/36 (25.0%) A/PSF required revision within 2 years vs. 2/25 (8.0%) PSF patients ($p=0.106$). 12/36 (33.3%) had significant complications in the A/PSF group vs. 3/25 (12.0%) in the PSF group ($p=0.166$). There were no differences in terms of % correction of deformity, coronal and sagittal plane Cobb angles, sitting coronal balance, and pelvic tilt between the two groups at 2-year follow-up.

CONCLUSION

Posterior-only spinal fusion demonstrates equivalent radiographic outcomes to combined anterior/posterior release and fusion in non-spastic neuromuscular patients with significant sagittal and coronal plane deformities. The PSF only group also had significantly lower EBL and operative times as well as an obvious trend towards lower complications and revision rates. This study supports the use of PSF in lieu of A/PSF for deformity correction in non-spastic NM patients.