

Do class III obese patients achieve similar outcomes and satisfaction to nonobese patients following surgery for cervical myelopathy? A QOD study

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OBJECTIVE The aim of this study was to compare the rate of achievement of the minimal clinically important difference (MCID) in patient-reported outcomes (PROs) and satisfaction between cervical spondylotic myelopathy (CSM) patients with and without class III obesity who underwent surgery.

METHODS The authors analyzed patients from the 14 highest-enrolling sites in the prospective Quality Outcomes Database CSM cohort. Patients were dichotomized based on whether or not they were obese (class III, BMI ≥ 35 kg/m²). PROs including visual analog scale (VAS) neck and arm pain, Neck Disability Index (NDI), modified Japanese Orthopaedic Association (mJOA), EQ-5D, and North American Spine Society patient satisfaction scores were collected at baseline and 24 months after cervical spine surgery.

RESULTS Of the 1141 patients with CSM who underwent surgery, 230 (20.2%) were obese and 911 (79.8%) were not. The 24-month follow-up rate was 87.4% for PROs. Patients who were obese were younger (58.1 ± 12.1 years vs 61.2 ± 11.6 years, $p = 0.001$), more frequently female (57.4% vs 44.9%, $p = 0.001$), and African American (22.6% vs 13.4%, $p = 0.002$) and had a lower education level (high school or less: 49.1% vs 40.8%, $p = 0.002$) and a higher American Society of Anesthesiologists grade (2.7 ± 0.5 vs 2.5 ± 0.6 , $p < 0.001$). Clinically at baseline, the obese group had worse neck pain (VAS score: 5.7 ± 3.2 vs 5.1 ± 3.3), arm pain (VAS score: 5.4 ± 3.5 vs 4.8 ± 3.5), disability (NDI score: 42.7 ± 20.4 vs 37.4 ± 20.7), quality of life (EQ-5D score: 0.54 ± 0.22 vs 0.56 ± 0.22), and function (mJOA score: 11.6 ± 2.8 vs 12.2 ± 2.8) (all $p < 0.05$). At the 24-month follow-up, however, there was no difference in the change in PROs between the two groups. Even after accounting for relevant covariates, no significant difference in achievement of MCID and satisfaction was observed between the two groups at 24 months.

ABBREVIATIONS ASA = American Society of Anesthesiologists; CSM = cervical spondylotic myelopathy; LOS = length of stay; MCID = minimal clinically important difference; mJOA = modified Japanese Orthopaedic Association; NASS = North American Spine Society; NDI = Neck Disability Index; QOD = Quality Outcomes Database; VAS = visual analog scale.

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CONCLUSIONS Despite the class III obese group having worse baseline clinical presentations, the two cohorts achieved similar rates of satisfaction and MCID in PROs. Class III obesity should not preclude and/or delay surgical management for patients who would otherwise benefit from surgery for CSM.

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KEYWORDS cervical spondylotic myelopathy; patient-reported outcomes; satisfaction; obesity; Quality Outcomes Database

THE increasing prevalence and economic burden of obesity is a pressing global health issue, affecting approximately one-third of individuals in the United States.¹ Alongside its myriad associated medical complications such as hypertension, diabetes mellitus, and coronary artery disease, obesity has long been linked to a heightened incidence of musculoskeletal disorders, particularly with advancing age.² Consequently, the burgeoning aging population, coupled with medical advancements, portends an increased likelihood of spine surgeons encountering obese patients necessitating surgical intervention.³

BMI serves as a widely used clinical measure for assessing body habitus, with studies indicating its role as an independent risk factor for high hospital costs and surgical complications in spine surgery patients.⁴⁻⁷ Consequently, historical practice trends have leaned toward favoring less invasive procedures for obese patients given the insufficient evidence supporting improved patient-reported outcomes (PROs).^{2,3,5} However, recent research has shed light on comparable pain relief and functional improvement among both nonobese and obese patients following surgery.^{6,8-10}

Patient selection is important for optimizing outcomes following cervical spine surgery. Extensive evidence underscores the high complication rates among obese patients, particularly those with a BMI > 30 kg/m², undergoing cervical spine surgery.^{5,7,11,12} The multifactorial nature of these complications encompasses systemic changes alongside technical challenges during surgery, often culminating in increased blood loss and prolonged operative durations, which in turn result in higher mortality and worse PROs.¹³ Conversely, some studies have suggested that obesity has no effect on postoperative complication rates and PROs.¹⁴⁻¹⁶

Despite existing literature on complications and PROs following lumbar spine surgery among nonobese and obese cohorts, there is a lack of data regarding long-term clinical outcomes and patient satisfaction after cervical spine surgery in a large cohort of class III obese patients. This study aimed to bridge this gap by evaluating the achievement rate of the minimal clinically important difference (MCID) in PROs and satisfaction among cervical spondylotic myelopathy (CSM) patients, distinguishing between those with and without class III obesity who underwent surgery.

Methods

Patient Selection

This was a retrospective study using the prospective Quality Outcomes Database (QOD) CSM subset. Participating sites obtained institutional review board approval.

This registry consists of adult patients diagnosed with primary CSM at the 14 highest-enrolling hospital sites who met the following inclusion criteria: 1) underwent elective cervical spine surgery between January 2016 and December 2018 and 2) had a modified Japanese Orthopaedic Association (mJOA) score < 17.¹⁷⁻³³ Patients were excluded if they had a spinal infection, tumor, fracture, traumatic dislocation, deformity, or neurological paralysis due to preexisting spine disease or injury.

Study Variables

The cohort was divided into two groups based on whether patients had a BMI that is classified as class III obesity (BMI > 35 kg/m²). Baseline variables included age, sex, insurance status, education level, race, socioeconomic status index, employment status, smoking status, medical comorbidities, American Society of Anesthesiologists (ASA) grade, baseline symptoms and symptom duration, underlying pathology, and PROs such as mJOA, visual analog scale (VAS) for neck and arm pain, Neck Disability Index (NDI), and EQ-5D (measured in quality-adjusted life-years) scores.

Study Outcomes

Clinical outcomes of interest included length of stay (LOS), nonroutine discharge disposition (defined as discharge destination other than home), and readmission/reoperation rates along with complications (i.e., hematoma, surgical site infection, and wound dehiscence) at various time points. PROs of interest were patient satisfaction and achievement of MCID in VAS neck and arm pain, NDI, ED-5D, and mJOA scores. Satisfaction was measured based on the 4-point North American Spine Society (NASS) scale; patients were considered satisfied if they had an NASS score of 1 or 2. NDI percentage scores (ranging from 0 to 100) were captured, with higher scores indicating greater disability. VAS pain scores ranged from 0 to 10, with higher scores signifying more intense pain. The EQ-5D is a tool to assess the health-related quality of life of patients and is graded on a scale from -0.11 (state equivalent to being dead) to 1 (full health). The MCID for mJOA was calculated based on the CSM severity at baseline, as previously described;³⁴ the MCID for VAS neck and arm pain and NDI was defined as a reduction of 30% from baseline;³⁵ and the MCID for ED-5D was defined as an increase of 0.240 points.³⁶

Statistical Analysis

Continuous variables are presented as means with standard deviations, and categorical variables are presented as frequencies with percentages. Univariate analyses of continuous outcomes were performed using the Student t-test,

TABLE 1. Baseline characteristics of patients with and without class III obesity

	Obese (n = 230)	Not Obese (n = 911)	p Value
Age, yrs, mean (SD)	58.1 (12.1)	61.2 (11.6)	0.001
Female sex, n (%)	132 (57.4)	409 (44.9)	0.001
Insurance, n (%)			0.43
Medicaid	14 (6.1)	65 (7.1)	
Medicare	86 (37.4)	354 (38.9)	
Private	125 (54.3)	454 (49.8)	
Uninsured	3 (1.3)	12 (1.3)	
VA/government	2 (0.9)	26 (2.9)	
Education level, n (%)			0.002
High school or less	113 (49.1)	372 (40.8)	
Graduate level or higher	111 (48.3)	493 (54.1)	
Race, n (%)			
Caucasian	154 (67.0)	716 (78.6)	0.001
African American	52 (22.6)	122 (13.4)	0.002
Other	7 (3.0)	40 (4.4)	0.57
Smoking, n (%)	36 (15.7)	166 (18.2)	0.24
Comorbidities, n (%)			
Diabetes	75 (32.6)	170 (18.7)	<0.001
Depression	58 (25.2)	193 (21.2)	0.21
Anxiety	53 (23.0)	159 (17.5)	0.07
CAD	20 (8.7)	88 (9.7)	0.65
PVD	9 (3.9)	33 (3.6)	0.84
Arthritis	82 (35.7)	244 (26.8)	0.01
Chronic kidney disease	15 (6.5)	33 (3.6)	0.10
COPD	19 (8.3)	62 (6.8)	0.47
ASA grade, mean (SD)	2.7 (0.5)	2.5 (0.6)	<0.001
ASA grade, n (%)			<0.001
I	0 (0)	21 (2.3)	
II	71 (30.9)	429 (47.1)	
III	139 (60.4)	384 (42.2)	
IV	7 (3.0)	11 (1.2)	
Employed, n (%)	102 (44.3)	422 (46.3)	0.20
Radicular deficit, n (%)	83 (36.1)	272 (29.9)	0.08
Radicular arm pain, n (%)	121 (52.6)	403 (44.2)	0.02
Numbness, n (%)	139 (60.4)	537 (58.9)	0.68
Neck pain, n (%)	155 (67.4)	574 (63.0)	0.21
Motor deficit, n (%)	143 (62.2)	552 (60.6)	0.66
Symptom duration, n (%)			0.56
<3 mos	30 (13.0)	116 (12.7)	
3–12 mos	67 (29.1)	298 (32.7)	
>12 mos	109 (47.4)	408 (44.8)	
Dependent ambulation, n (%)	50 (21.7)	159 (17.5)	0.17
Underlying pathology, n (%)			
Intervertebral disc herniation	69 (30.0)	246 (27.0)	0.37
Foraminal stenosis	96 (41.7)	392 (43.0)	0.72
Central stenosis	165 (71.7)	696 (76.4)	0.16

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TABLE 1. Baseline characteristics of patients with and without class III obesity

	Obese (n = 230)	Not Obese (n = 911)	p Value
Underlying pathology, n (%) (continued)			
Dynamic instability at level of surgery	1 (0.4)	31 (3.4)	<0.001
Surgical approach			0.80
Anterior, n (%)	161 (70.0)	630 (69.2)	
No. of treated levels, mean (SD)	1.7 (0.8)	1.8 (0.9)	0.78
Posterior, n (%)	69 (30.0)	281 (30.8)	
No. of treated levels, mean (SD)	2.5 (2.2)	2.6 (2.2)	0.82
Socioeconomic status index, mean (SD)	52.0 (4.3)	53.3 (5.1)	<0.001
Baseline VAS neck pain score, mean (SD)	5.7 (3.2)	5.1 (3.3)	0.008
Baseline VAS arm pain score, mean (SD)	5.4 (3.5)	4.8 (3.5)	0.03
Baseline NDI score, mean (SD)	42.7 (20.4)	37.4 (20.7)	0.001
Baseline EQ-5D score, mean (SD)	0.54 (0.22)	0.56 (0.22)	0.1
Baseline mJOA score, mean (SD)	11.6 (2.8)	12.2 (2.8)	0.005

CAD = coronary artery disease; COPD = chronic obstructive pulmonary disease; PVD = peripheral vascular disease; VA = Veterans Affairs. Boldface type indicates statistical significance.

while chi-square tests were used for binary outcomes. To adjust for differences in baseline characteristics between the two groups that could influence clinical outcomes, we performed multivariable logistic regressions for all binary outcomes. Multivariable linear regression was performed for continuous variables. All clinically relevant baseline variables ($p < 0.2$) were adjusted in all multivariable models. Patients with unavailable data were excluded from all analyses. Multiple imputation was performed using the MissForest imputation algorithm to generate replacement values for missing baseline data, and the final imputed data were used for our analysis.³⁷ The R software (version 4.1.1, R Foundation for Statistical Computing) was used for all statistical analyses.

Results

Demographics and Baseline Characteristics

Of the 1141 patients with CSM who underwent surgery, 230 (20.2%) were obese and 911 (79.8%) were not. The 24-month follow-up rate was 87.4% for PROs. Table 1 summarizes the baseline characteristics of class III obesity versus nonobese patients. Compared to those without class III obesity, obese patients were younger (58.1 ± 12.1 years vs 61.2 ± 11.6 years, $p = 0.001$), more frequently female (57.4% vs 44.9%, $p = 0.001$), and African American

TABLE 2. Univariate analysis comparing clinical outcomes in patients with and without class III obesity

	Obese	Not Obese	p Value
Total	n = 230	n = 911	
LOS, days, mean (SD)	2.1 (2.5)	2.1 (2.3)	0.88
Nonroutine discharge, n (%)	33 (14.3)	100 (11.0)	0.11
Readmission w/in 30 days, n (%)	3 (1.3)	18 (2.0)	0.47
Hematoma	1 (0.4)	3 (0.3)	0.82
Surgical site infection	0 (0)	2 (0.2)	0.16
Wound dehiscence	0 (0)	2 (0.2)	0.16
Readmission w/in 3 mos, n (%)	17 (7.4)	54 (5.9)	0.21
Hematoma	1 (0.4)	6 (0.7)	0.08
Surgical site infection	1 (0.4)	4 (0.4)	0.64
Wound dehiscence	2 (0.9)	5 (0.5)	0.40
Reop w/in 30 days, n (%)	5 (2.2)	14 (1.5)	0.54
Reop w/in 3 mos, n (%)	10 (4.3)	21 (2.3)	0.61
Reop w/in 12 mos, n (%)	12 (5.2)	24 (2.6)	0.40
Reop w/in 24 mos, n (%)	16 (7.0)	41 (4.5)	0.66
Anterior approach	n = 161	n = 630	
LOS, days, mean (SD)	1.2 (1.6)	1.3 (1.4)	0.40
Nonroutine discharge, n (%)	6 (3.7)	27 (4.3)	0.67
Readmission w/in 30 days, n (%)	3 (1.9)	11 (1.7)	0.88
Hematoma	1 (0.6)	3 (0.5)	0.83
Surgical site infection	0 (0)	1 (0.2)	0.32
Wound dehiscence	0 (0)	1 (0.2)	0.32
Readmission w/in 3 mos, n (%)	13 (8.1)	34 (5.4)	0.21
Hematoma	1 (0.6)	6 (1.0)	0.08
Surgical site infection	0 (0)	2 (0.3)	0.32
Wound dehiscence	0 (0)	1 (0.2)	0.32
Reop w/in 30 days, n (%)	2 (1.2)	6 (1.0)	0.75
Reop w/in 3 mos, n (%)	5 (3.1)	10 (1.6)	0.27
Reop w/in 12 mos, n (%)	7 (4.3)	12 (1.9)	0.32
Reop w/in 24 mos, n (%)	8 (5.0)	24 (3.8)	0.51
Posterior approach	n = 69	n = 281	
LOS, days, mean (SD)	4.0 (3.0)	3.7 (2.8)	0.55
Nonroutine discharge, n (%)	27 (39.1)	74 (26.3)	0.04
Readmission w/in 30 days, n (%)	0 (0)	7 (2.5)	0.008
Hematoma	0 (0)	0 (0)	0
Surgical site infection	0 (0)	1 (0.4)	0.32
Wound dehiscence	0 (0)	1 (0.4)	0.32
Readmission w/in 3 mos, n (%)	4 (5.8)	20 (7.1)	0.72
Hematoma	0 (0)	0 (0)	0
Surgical site infection	1 (1.4)	2 (0.7)	0.47
Wound dehiscence	2 (2.9)	4 (1.4)	0.40
Reop w/in 30 days, n (%)	3 (4.3)	8 (2.8)	0.58
Reop w/in 3 mos, n (%)	5 (7.2)	11 (3.9)	0.39
Reop w/in 12 mos, n (%)	5 (7.2)	12 (4.3)	0.32
Reop w/in 24 mos, n (%)	8 (11.6)	17 (6.0)	0.18

Boldface type indicates statistical significance.

(22.6% vs 13.4%, $p = 0.002$) and had a lower education level (high school or less: 49.1% vs 40.8%, $p = 0.002$) and a higher ASA grade (2.7 ± 0.5 vs 2.5 ± 0.6 , $p < 0.001$). There was no difference in the surgical approach and the number of treated levels. Those who were obese also had a lower socioeconomic status index (52.0 ± 4.3 vs 53.3 ± 5.1 , $p < 0.001$) compared with those who were not obese. For symptoms, a higher number of obese patients experienced radicular arm pain (52.6% vs 44.2%, $p = 0.02$) compared with nonobese patients. Clinically at baseline, the obese group had worse neck pain (VAS score: 5.7 ± 3.2 vs 5.1 ± 3.3), arm pain (VAS score: 5.4 ± 3.5 vs 4.8 ± 3.5), disability (NDI score: 42.7 ± 20.4 vs 37.4 ± 20.7), quality of life (EQ-5D score: 0.54 ± 0.22 vs 0.56 ± 0.22), and function (mJOA score: 11.6 ± 2.8 vs 12.2 ± 2.8) (all $p < 0.05$).

Univariate Analysis Comparing Clinical and Patient-Reported Outcomes in Obese Versus Nonobese Patients

In univariate analysis, there was no difference in LOS (2.1 ± 2.5 vs 2.1 ± 2.3 , $p = 0.88$); nonroutine discharge rates (14.3% vs 11.0%, $p = 0.11$); readmission at 30 days (1.3% vs 2.0%, $p = 0.47$) and 3 months (7.4% vs 5.9%, $p = 0.21$); and reoperation rates at 30 days (2.2% vs 1.5%, $p = 0.54$), 3 months (4.3% vs 2.3%, $p = 0.61$), 12 months (5.2% vs 2.6%, $p = 0.40$), and 24 months (7.0% vs 4.5%, $p = 0.66$) between the two cohorts (Table 2). When stratified by surgical approach, the obese group undergoing the posterior approach had higher rates of nonroutine discharge (39.1% vs 26.3%, $p = 0.04$) but a lower rate of readmission within 30 days compared with the nonobese group (0% vs 2.5%, $p = 0.008$). There was no difference in the anterior approach stratification. There also was no difference in LOS or complications (i.e., hematoma, infection, and wound dehiscence). At the 24-month follow-up, there also was no difference in the change in PROs between the two groups (neck pain: -2.7 ± 3.6 vs -2.5 ± 3.5 , $p = 0.60$; arm pain: -2.5 ± 4.0 vs -2.6 ± 3.8 , $p = 0.74$; NDI: -18.8 ± 21.4 vs -16.4 ± 21.0 , $p = 0.17$; EQ-5D: 0.14 ± 0.27 vs 0.17 ± 0.24 , $p = 0.17$; and mJOA: 1.7 ± 3.3 vs 2.0 ± 3.1 , $p = 0.32$) (Table 3).

Multivariable Analysis of 24-Month PROs in Achievement of MCID

The results of the multivariable analysis are summarized in Table 4. After adjusting for all relevant covariates, there was no difference in achievement of MCID and satisfaction between the two groups at 24 months (neck pain: OR 0.99, 95% CI 0.91–1.07, $p = 0.8$; arm pain: OR = 1.06, 95% CI 0.98–1.15, $p = 0.12$; NDI: OR = 0.95, 95% CI 0.87–1.03, $p = 0.21$; EQ-5D: OR = 0.99, 95% CI 0.92–1.06, $p = 0.71$; mJOA: OR = 0.96, 95% CI 0.89–1.04, $p = 0.30$; and satisfaction: OR 1.03, 95% CI 0.96–1.09, $p = 0.44$).

Discussion

Obese patients were younger, more frequently female, and African American and had a lower education level and a higher ASA grade. At baseline, the class III obese group had worse neck pain, arm pain, disability, quality of life, and function. However, the two cohorts had simi-

TABLE 3. Univariate analysis comparing clinical and patient-reported outcomes in patients with and without class III obesity at 24-month follow-up

	Obese (n = 230)	Not Obese (n = 911)	p Value
Change, mean (SD)			
Neck pain score	-2.7 (3.6)	-2.5 (3.5)	0.60
Arm pain score	-2.5 (4.0)	-2.6 (3.8)	0.74
NDI score	-18.8 (21.4)	-16.4 (21.0)	0.17
EQ-5D score	0.14 (0.27)	0.17 (0.24)	0.17
mJOA score	1.7 (3.3)	2.0 (3.1)	0.32
MCID, n (%)			
Neck pain score	63 (27.4)	217 (23.8)	0.40
Arm pain score	65 (28.3)	175 (19.2)	0.008
NDI score	63 (27.4)	263 (28.9)	0.53
EQ-5D score	73 (31.7)	294 (32.3)	0.88
mJOA score	78 (33.9)	380 (41.7)	0.03
NASS satisfaction score	159 (69.1)	634 (69.6)	0.62

Boldface type indicates statistical significance.

lar LOSs, nonroutine discharge rates, and readmission/reoperation rates. Furthermore, at the 24-month follow-up, there was no difference in the change in PROs between the two groups. Even after accounting for relevant covariates, no significant difference in achievement of MCID and satisfaction was observed between the two groups at 24 months.

Our study demonstrates that despite having worse baseline characteristics, the class III obese group had similar clinical outcomes to the nonobese group. Many of the studies investigating surgical outcomes in class III obese patients are for lumbar spine surgeries. For example, in an analysis of 10,387 patients using the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database, Buerba et al. reported that class III obese patients have higher complication rates, a longer duration of surgery, and a substantially increased risk of complications compared with nonobese patients.³⁸ Similarly, in their retrospective study including 123 patients, Katsevman et al. found that super obese patients, defined as BMI ≥ 50 kg/m², had significantly higher complication rates compared with nonobese patients.³⁹ In terms of outcomes, in their study of 8049 instrumented lumbar spine surgeries, Flippin et al. illustrated that the rate of reoperation was 1.1 times higher with every 5-kg/m² increase in BMI.⁴⁰ Specifically for cervical spine surgery, a study by Naik et al. involving 10,381 patients in the cervical spine QOD showed that class II and III obese patients have higher odds of postoperative complications compared with nonobese patients.⁴¹ Furthermore, Subramanian et al. in their query of the ACS NSQIP database including 5397 patients undergoing cervical disc replacement reported that class II and III obesity were independent risk factors for readmission and nonroutine discharges.⁴²

For PROs and satisfaction, our study found that class III obese patients had similar rates of achievement of MCID

TABLE 4. Multivariable analysis in achieving MCID in PROs for patients with and without class III obesity

	OR	95% CI	p Value
24-mo MCID for neck pain	0.99	0.91–1.07	0.80
24-mo MCID for arm pain	1.06	0.98–1.15	0.12
24-mo MCID for NDI	0.95	0.87–1.03	0.21
24-mo MCID for EQ-5D	0.99	0.92–1.06	0.71
24-mo MCID for mJOA	0.96	0.89–1.04	0.30
24-mo satisfaction	1.03	0.96–1.09	0.44

Odds ratios for satisfaction and achievement of MCID in class III obese patients are reported such that a value > 1 represents superior outcomes and a value < 1 represents inferior outcomes compared with the reference (nonobese patients).

and satisfaction to non-class III obese patients. There are a limited number of studies that have specifically investigated the severely obese patient population, but the existing studies suggest that high BMI is a risk factor for poorer outcomes. For example, Park et al. in their study using the QOD including 31,765 patients showed that a BMI > 30 kg/m² resulted in worsening disability and patient dissatisfaction at 24 months after lumbar surgery.⁴³ In their cervical spine surgery cohort, Naik et al. reported that class II and III obese patients have lower odds of achieving an optimal mJOA score at the 12-month follow-up compared with nonobese patients.⁴¹ Furthermore, in their multi-institutional study including 757 patients, Wilson et al. found that NDI scores were about 6 points higher for obese patients compared with nonobese patients at the 12 month follow-up.⁴⁴

It is likely that previous studies have shown an increased risk of nonroutine discharges and postoperative complications leading to higher readmission/reoperation rates and worse postoperative outcomes for higher-BMI patients given their higher comorbidity burden. Our study agrees with this observation in that class III obese patients tended to have worse baseline characteristics preoperatively with a high ASA score and worse pain, disability, function, and quality of life scores. One of the contributing factors to their worse clinical course may be related to the challenges encountered during surgery given their large body habitus, which could lead to the need for more extensive incisions to access appropriate landmarks and consequently lengthen the duration of surgery. Another contributing factor may be related to the high expectations that obese patients may have for their symptom improvement and recovery after surgery.⁴³ Our study results show that symptomatic obese patients with degenerative cervical spine disease can benefit from surgery and achieve similar postoperative PROs and satisfaction to nonobese patients. Advancements in navigation technology and surgical techniques will continue to liberalize the criteria for patient selection for cervical spine surgery. Moreover, transparency and delineation of clear expectations for surgical recovery and outcomes between the surgeon and patients will also help with improving the satisfaction in this patient cohort.

Conclusions

Despite the class III obese group having worse baseline clinical presentations, the two cohorts achieved similar rates of satisfaction and MCID in PROs. Class III obesity should not preclude and/or delay surgical management for patients who would otherwise benefit from surgery for CSM.

Acknowledgments

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Supplemental Information

Previous Presentations

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Disclosures

Dr. Bhowmick reported personal fees from Bioventus and Medtronic outside the submitted work. Dr. C. Shaffrey reported personal fees from Medtronic, Globus/NuVasive, SI-Bone, and