

TABLE E-1 Patient Baseline Demographic Characteristics, Comorbidities, and Health Status Measures According to Study Cohort and Treatment Received

	SPORT Study Cohort			Randomized and Observational Cohorts Combined: Treatment Received*		
	Randomized (N = 301)	Observational (N = 300)	P Value	Surgery (N = 391)	Nonoperative (N = 210)	P Value
Mean age (SD) (yr)	66 (10)	66.1 (10.6)	0.86	64.7 (10.1)	68.6 (10.2)	<0.001
Female	200 (66%)	212 (71%)	0.30	269 (69%)	143 (68%)	0.93
Ethnicity: non-Hispanic†	292 (97%)	295 (98%)	0.42	382 (98%)	205 (98%)	0.82
Education: at least some college	201 (67%)	199 (66%)	0.98	264 (68%)	136 (65%)	0.55
Marital status: married	198 (66%)	198 (66%)	0.98	263 (67%)	133 (63%)	0.38
Work status			0.42			0.92
Full-time or part-time	116 (39%)	102 (34%)		142 (36%)	76 (36%)	
Disabled	21 (7%)	30 (10%)		35 (9%)	16 (8%)	
Retired	129 (43%)	128 (43%)		167 (43%)	90 (43%)	
Other	35 (12%)	40 (13%)		47 (12%)	28 (13%)	
Compensation‡	21 (7%)	20 (7%)	0.99	34 (9%)	7 (3%)	0.021
Mean body mass index (SD)§	29.1 (5.7)	29.2 (6.7)	0.91	29.3 (6.4)	28.9 (5.8)	0.46
Current smoker	23 (8%)	28 (9%)	0.55	35 (9%)	16 (8%)	0.69
Comorbidities						
Hypertension	141 (47%)	134 (45%)	0.65	174 (45%)	101 (48%)	0.45
Diabetes	39 (13%)	41 (14%)	0.89	50 (13%)	30 (14%)	0.70
Osteoporosis	33 (11%)	36 (12%)	0.79	41 (10%)	28 (13%)	0.36
Heart problem	61 (20%)	61 (20%)	0.94	71 (18%)	51 (24%)	0.094
Stomach problem	64 (21%)	69 (23%)	0.68	86 (22%)	47 (22%)	1
Bowel or intestinal problem	17 (6%)	26 (9%)	0.20	31 (8%)	12 (6%)	0.40
Depression	56 (19%)	42 (14%)	0.16	70 (18%)	28 (13%)	0.18
Joint problem	175 (58%)	169 (56%)	0.72	218 (56%)	126 (60%)	0.36
Other¶	121 (40%)	113 (38%)	0.58	158 (40%)	76 (36%)	0.36
Symptom duration >6 months	185 (61%)	176 (59%)	0.54	240 (61%)	121 (58%)	0.42
SF-36 bodily pain score (SD)	32.8 (18.6)	33.9 (19.7)	0.48	31 (18.7)	37.6 (19.3)	<0.001
SF-36 physical function score (SD)	34.4 (21.5)	34.3 (23.3)	0.98	31.4 (20.9)	39.7 (24)	<0.001
SF-36 mental component summary score (SD)	49.8 (11.8)	50.4 (11.2)	0.53	49.5 (11.7)	51.1 (11.1)	0.11
Oswestry Disability Index (SD)**	41.8 (16.5)	41.3 (19.1)	0.72	44.5 (16.7)	36.1 (18.7)	<0.001
Stenosis Bothersomeness Index (SD)††	14.8 (5.6)	14.6 (5.6)	0.79	15.4 (5.5)	13.3 (5.5)	<0.001
Low Back Pain Bothersomeness Scale (SD)‡‡	4.3 (1.8)	4.3 (1.8)	0.99	4.4 (1.8)	4.1 (1.8)	0.083
Leg Pain Bothersomeness Scale (0-6) (SD)§§	4.5 (1.8)	4.5 (1.6)	0.98	4.7 (1.6)	4.3 (1.8)	0.007
Satisfaction with symptoms: very dissatisfied	203 (67%)	213 (71%)	0.39	303 (77%)	113 (54%)	<0.001
Patient self-assessed health trend			0.73			<0.001
Problem getting better	17 (6%)	21 (7%)		19 (5%)	19 (9%)	
Problem staying about the same	100 (33%)	94 (31%)		98 (25%)	96 (46%)	
Problem getting worse	179 (59%)	182 (61%)		270 (69%)	91 (43%)	
Treatment preference			<0.001			<0.001
Definitely prefer nonop.	44 (15%)	83 (28%)		43 (11%)	84 (40%)	
Probably prefer nonop.	71 (24%)	37 (12%)		45 (12%)	63 (30%)	
Not sure	117 (39%)	20 (7%)		89 (23%)	48 (23%)	
Probably prefer surgery	30 (10%)	31 (10%)		52 (13%)	9 (4%)	
Definitely prefer surgery	38 (13%)	129 (43%)		162 (41%)	5 (2%)	
Neurogenic claudication	259 (86%)	252 (84%)	0.56	337 (86%)	174 (83%)	0.33
Straight leg raise or femoral tension sign	44 (15%)	41 (14%)	0.83	52 (13%)	33 (16%)	0.49
Dermatomal pain radiation	239 (79%)	229 (76%)	0.42	305 (78%)	163 (78%)	1
Any neurological deficit	160 (53%)	167 (56%)	0.59	210 (54%)	117 (56%)	0.70
Reflexes: asymmetrically depressed	87 (29%)	63 (21%)	0.03	101 (26%)	49 (23%)	0.56
Sensory: asymmetrical decrease	79 (26%)	90 (30%)	0.35	110 (28%)	59 (28%)	0.93

Motor: asymmetrical weakness	74 (25%)	72 (24%)	0.94	90 (23%)	56 (27%)	0.37
Spondylolisthesis level			0.17			0.90
L3-L4	34 (11%)	23 (8%)		37 (9%)	20 (10%)	
L4-L5	267 (89%)	277 (92%)		354 (91%)	190 (90%)	
Stenosis level						
L2-L3	31 (10%)	22 (7%)	0.26	34 (9%)	19 (9%)	1
L3-L4	136 (45%)	100 (33%)	0.004	156 (40%)	80 (38%)	0.73
L4-L5	285 (95%)	295 (98%)	0.03	378 (97%)	202 (96%)	0.94
L5-S1	27 (9%)	30 (10%)	0.77	33 (8%)	24 (11%)	0.30
No. of moderate/severe stenotic levels			0.10			0.31
0	7 (2%)	16 (5%)		11 (3%)	12 (6%)	
1	179 (59%)	191 (64%)		245 (63%)	125 (60%)	
2	96 (32%)	76 (25%)		110 (28%)	62 (30%)	
≥3	19 (6%)	17 (6%)		25 (6%)	11 (5%)	
Stenosis location						
Central	277 (92%)	272 (91%)	0.65	359 (92%)	190 (90%)	0.69
Lateral recess	286 (95%)	260 (87%)	<0.001	358 (92%)	188 (90%)	0.50
Neuroforamen	123 (41%)	120 (40%)	0.89	162 (41%)	81 (39%)	0.55
Stenosis severity			0.08			0.17
Mild	7 (2%)	16 (5%)		11 (3%)	12 (6%)	
Moderate	116 (39%)	99 (33%)		138 (35%)	77 (37%)	
Severe	178 (59%)	185 (62%)		242 (62%)	121 (58%)	
Instability¶¶	26 (9%)	21 (7%)	0.55	36 (9%)	11 (5%)	0.12

*The patients in the combined cohort were classified according to whether they had received surgical treatment or only nonoperative treatment during the first four years of enrollment. †Race or ethnic group was self-assessed. Whites and blacks could be either Hispanic or non-Hispanic. ‡This category includes patients who were receiving or had applications pending for Workers' Compensation, Social Security compensation, or other compensation. §The body mass index is the weight in kilograms divided by the square of the height in meters. ¶Other = problems related to stroke; cancer; fibromyalgia; chronic fatigue syndrome; posttraumatic stress disorder; alcohol or drug dependency; lung, liver, kidney, blood vessel, and nervous system disease; migraine; and anxiety. ||The SF-36 scores range from 0 to 100 points, with higher scores indicating less severe symptoms. **The Oswestry Disability Index ranges from 0 to 100 points, with lower scores indicating less severe symptoms. ††The Stenosis Bothersomeness Index ranges from 0 to 24 points, with lower scores indicating less severe symptoms. ‡‡The Low Back Pain Bothersomeness Scale ranges from 0 to 6 points, with lower scores indicating less severe symptoms. §§ The Leg Pain Bothersomeness Scale ranges from 0 to 6 points, with lower scores indicating less severe symptoms. ¶¶Instability is defined as a change of >10° of angulation or >4 mm of translation of the vertebrae between flexion and extension of the spine.

TABLE E-2 Operative Treatments, Complications, and Events

	Randomized Cohort (N = 178)*	Observational Cohort (N = 209)*	P Value
Specific procedures†			0.87
Decompression only	11 (6%)	12 (6%)	
Fusion without instrumentation	35 (20%)	46 (22%)	
Fusion with instrumentation‡	128 (74%)	149 (72%)	
Multilevel fusion	47 (27%)	42 (20%)	0.18
Decompression level#			
L2-L3	27 (16%)	18 (9%)	0.062
L3-L4	98 (56%)	90 (44%)	0.024
L4-L5	174 (98%)	198 (96%)	0.33
L5-S1	65 (37%)	48 (23%)	0.004
No. of levels decompressed			0.005
0	1 (1%)	3 (1%)	
1	58 (33%)	100 (48%)	
2	67 (38%)	70 (33%)	
≥3	52 (29%)	36 (17%)	
Mean operation time (SD) (min)	210.4 (81.1)	203.2 (85.7)	0.40
Mean blood loss (SD) (mL)	569.2 (425.4)	594.4 (505.2)	0.60
Blood replacement			
Intraoperative replacement	62 (35%)	69 (33%)	0.70
Postoperative transfusion	29 (16%)	51 (24%)	0.08
Mean length of hospital stay (SD) (days)	6.8 (28)	4.8 (3.3)	0.31
Intraoperative complications§			
Dural tear/spinal fluid leak	22 (12%)	19 (9%)	0.38
Vascular injury	1 (1%)	0 (0%)	0.94
Other	3 (2%)	6 (3%)	0.67
None	152 (85%)	185 (89%)	0.55
Postoperative complications/events¶			
Nerve-root injury	1 (1%)	0 (0%)	0.93
Wound dehiscence	0 (0%)	1 (0.5%)	0.93
Wound hematoma	0 (0%)	1 (0.5%)	0.93
Wound infection	8 (5%)	3 (1%)	0.13
Other	22 (13%)	14 (7%)	0.07
None	121 (70%)	145 (69%)	0.94
Postoperative mortality (death within 6 weeks after surgery)	0 (0%)	1 (0.5%)	0.95
Postoperative mortality (death within 3 months after surgery)	1 (0.5% ††)	1 (0.5% ‡‡)	0.54
Additional operations (1-year rate)	15 (8%)	11 (5%)	0.29
2-year rate	25 (14%)	24 (11%)	0.53
3-year rate	28 (16%)	27 (13%)	0.49
4-year rate	28 (16%)	31 (15%)	0.84
Recurrent stenosis/progressive spondylolisthesis	10 (6%)	9 (4%)	
Pseudarthrosis/fusion exploration	0	4 (2%)	
Complication or other (e.g., incision and drainage for deep wound infection)	13 (7%)	12 (6%)	
New condition**	2 (1%)	7 (3%)	

*184 patients in the randomized cohort and 210 in the observational cohort had surgery; surgical information was available for 178 patients in the randomized cohort and 209 patients in the observational cohort. †Specific procedure data were available for 174 patients in the randomized cohort and 207 patients in the observational cohort. ‡All 277 patients who underwent fusion with instrumentation had pedicle screws; forty-eight underwent additional interbody fusion. #The denominators are different for each level because of missing data. §No cases of aspiration into the respiratory tract or nerve-root injury or operations at the wrong level were reported. ¶Complications or events occurring

up to eight weeks after the surgery are listed. There were no reported bone-graft complications or cases of cerebrospinal fluid leakage, paralysis, cauda equina injury, or pseudarthrosis. ||Rates of repeated surgery at one, two, three, and four years are Kaplan-Meier estimates. P values were calculated with the use of the log-rank test. Numbers and percentages are based on the first additional surgery if more than one additional surgery was performed. **One new case of stenosis and one new case of spondylolisthesis occurred in the randomized cohort; three new herniations and four new cases of stenoses occurred in the observational cohort. ††N = 184. ‡‡N = 210.

TABLE E-3 Significant Predictors of Adherence to Treatment Among Patients in the Randomized Cohort

	Patients Assigned to Receive Surgery			Patients Assigned to Receive Nonoperative Treatment		
	Received Surgery within 4 Yr (N = 104)	Treated Only Nonoperatively (N = 53)	P Value	Received Surgery within 4 Yr (N = 79)	Treated Only Nonoperatively (N = 65)	P Value
Mean age (SD) (yr)	64.6 (9)	69.5 (9.5)	0.002	63.4 (10.7)	68.3 (10.1)	0.006
Marital status: married	64 (62%)	36 (68%)	0.54	62 (78%)	36 (55%)	0.005
SF-36 bodily pain score (SD)*	29.2 (17.7)	37.1 (19.1)	0.01	32.4 (18.8)	35.4 (18.5)	0.34
Oswestry Disability Index (SD)†	44.2 (15.5)	35.6 (15.9)	0.001	44 (15.4)	40.6 (18.8)	0.24
Leg Pain Bothersomeness Scale (SD)‡	4.9 (1.5)	4 (2.2)	0.004	4.7 (1.7)	4.3 (1.8)	0.21
Satisfaction with symptoms: very dissatisfied	75 (72%)	30 (57%)	0.076	60 (76%)	38 (58%)	0.039
Patient self-assessed health trend			0.45			0.046
Problem getting better	4 (4%)	3 (6%)		3 (4%)	7 (11%)	
Problem staying about the same	31 (30%)	20 (38%)		23 (29%)	26 (40%)	
Problem getting worse	68 (65%)	29 (55%)		52 (66%)	30 (46%)	
Treatment preference			<0.001			<0.001
Definitely prefer nonop.	6 (6%)	12 (23%)		8 (10%)	18 (28%)	
Probably prefer nonop.	22 (21%)	13 (25%)		10 (13%)	26 (40%)	
Not sure	47 (45%)	25 (47%)		35 (44%)	10 (15%)	
Probably prefer surgery	10 (10%)	3 (6%)		12 (15%)	5 (8%)	
Definitely prefer surgery	19 (18%)	0 (0%)		14 (18%)	5 (8%)	

*The SF-36 scores range from 0 to 100, with higher scores indicating less severe symptoms. †The Oswestry Disability Index ranges from 0 to 100 points, with lower scores indicating less severe symptoms. ‡The Leg Pain Bothersomeness Scale ranges from 0 to 6 points, with lower scores indicating less severe symptoms.