1   **AO-2024-67 - (17729) One-year results of lumbar spinal stenosis surgery in Finland**
2   **a national FinSpine register study**

3   **SUPPLEMENTARY MATERIAL**

4   Table S1. Demographic details between the patients who answered and did not answer the PROM
5   questionnaire preoperatively. The P-values are from Fisher's exact test (F), non-parametric bootstrap (B), or
6   a chi-squared test (C) depending on the distribution of the variable. Values are count (%) unless otherwise
7   specified

Variable		Respondent	Non-respondent	P value
Total n, %		4,663 (54)	4,011 (46)	
Age, mean (SD)		66 (11)	70 (11)	<0.001 (B)
Female		2,653 (57)	2,302 (57)	0.7 (F)
BMI (SD)		28.4 (4.6)	28.8 (4.4)	0.3 (B)
Nicotine		640 (15)	27 (17) (n=163)	0.5 (F)
Pain duration	< 6 weeks	108 (2.3)	4 (5.1)	<0.001 (C)
	6–12 weeks	192 (4.1)	6 (7.7)	
	3–12 months	1,221 (28)	16 (21)	
	> 12 months	2,794 (65)	52 (67)	
Usage of pain medication	no/occasional	1,644 (38)	30 (41)	0.7 (F)
	regular	2,682 (62)	44 (59)	
Employment status	working	1,025 (23)	10 (13)	<0.001 (C)
	unable to work	457 (10)	3 (3.8)	
	unemployed	146 (3.1)	2 (2.5)	
	retired	2,771 (63)	65 (81)	
LSS definition (spondylolisthesis)	Central canal < 3mm	2,224 (48)	2,178 (54)	<0.001 (C)
	Lateral recess < 3mm	919 (20)	660 (16)	
	Central canal > 3mm	1,188 (25)	949 (24)	
	Lateral recess > 3mm	332 (6.9)	224 (5.6)	
Other diagnoses	disc degeneration	61 (1.3)	30 (0.7)	0.01 (F)
	disc herniation	384 (8.2)	313 (7.8)	0.5 (F)
	other	1017 (22)	800 (20)	0.03 (F)

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Table S2. Demographic details between the patients who answered and did not answer the PROM questionnaire 1 year postoperatively. The P values are from Fisher's exact test (F), non-parametric bootstrap (B), or a chi-squared test (C) depending on the distribution of the variable.

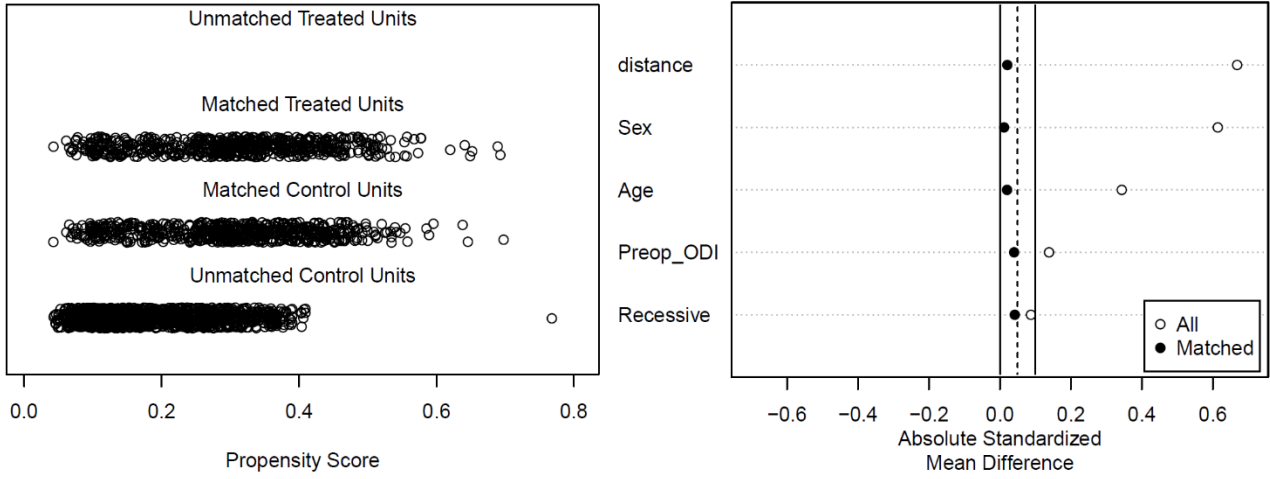| Variable		Respondent	Non-respondent	P value
Total n, %		3,301 (38)	5,373 (62)	
Age, mean (SD)		67 (10)	68 (10)	<0.001 (B)
Female		1,896 (57)	3,059 (57)	0.7 (F)
BMI (SD)		28.3 (4.7)	28.6 (4.5)	0.03 (B)
Nicotine		324 (13)	343 (17)	<0.001 (F)
Pain duration	< 6 weeks	59 (2.4)	53 (3)	<0.001 (C)
	6– 12 weeks	109 (4.4)	89 (5)	
	3– 12 months	709 (29)	528 (28)	
	> 12 months	1,597 (65)	1,249 (65)	
Usage of pain medication	no/occasional	982 (39)	692 (36)	0.03 (F)
	regular	1505 (61)	1,221 (64)	
Employment status	working	570 (23)	465 (24)	<0.001 (C)
	unable to work	271 (11)	189 (10)	
	unemployed	72 (2.9)	76 (4)	
	retired	1612 (64)	1,224 (63)	
LSS definition (spondylolisthesis)	Central canal < 3mm	1522 (46)	2,880 (54)	<0.001 (C)
	Lateral recess < 3mm	621 (19)	958 (18)	
	Central canal > 3mm	893 (27)	1,244 (23)	
	Lateral recess > 3mm	265 (8.0)	291 (5.4)	
Other diagnoses	disc degeneration	47 (1.4)	44 (0.8)	0.009 (F)
	disc herniation	275 (8.3)	422 (7.9)	0.4 (F)
	other	762 (23)	1055 (20)	<0.001 (F)
Preoperative PROM	ODI, % (SD)	41.8 (16.4)	43.7 (16.6)	
	ODI [CI]	[41.2–42.5]	[42.9–44.4]	<0.001 (B)
	VAS leg pain, % (SD)	59.9 (27.7)	65.6 (25.6)	
	VAS leg pain [CI]	[58.8–61.0]	[64.5–66.8]	<0.001 (B)
	VAS back pain, % (SD)	56.0 (27.9)	61.2 (26.3)	
	VAS back pain [CI]	[54.8–57.1]	[60.0–62.4]	<0.001 (B)

19   **Propensity score matching**

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Distribution of Propensity Scores

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22   Figure S1. Distribution of propensity scores for matched and unmatched decompression patients (Control)

23   and the distribution for the deco+fusion patients (Treated) [left panel] and the average distance measured

24   by generalized-linear-model-based propensity scores, and the standardized distances for the covariates

25   used in the matching: sex, age, preoperative ODI score, and recessive/central LSS.
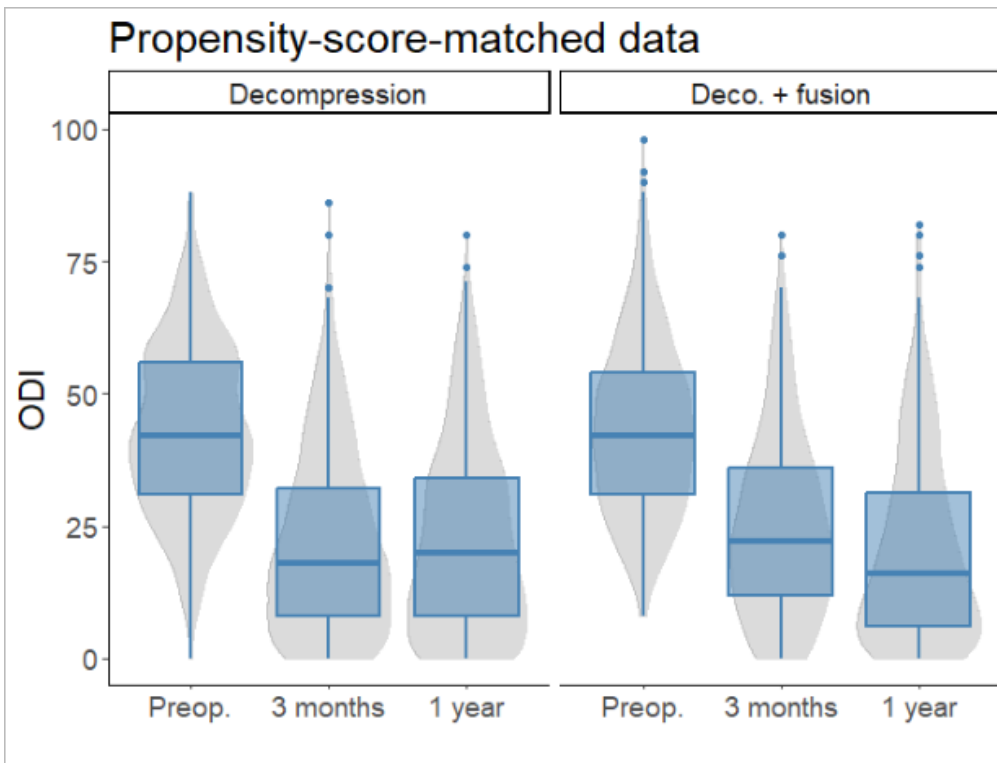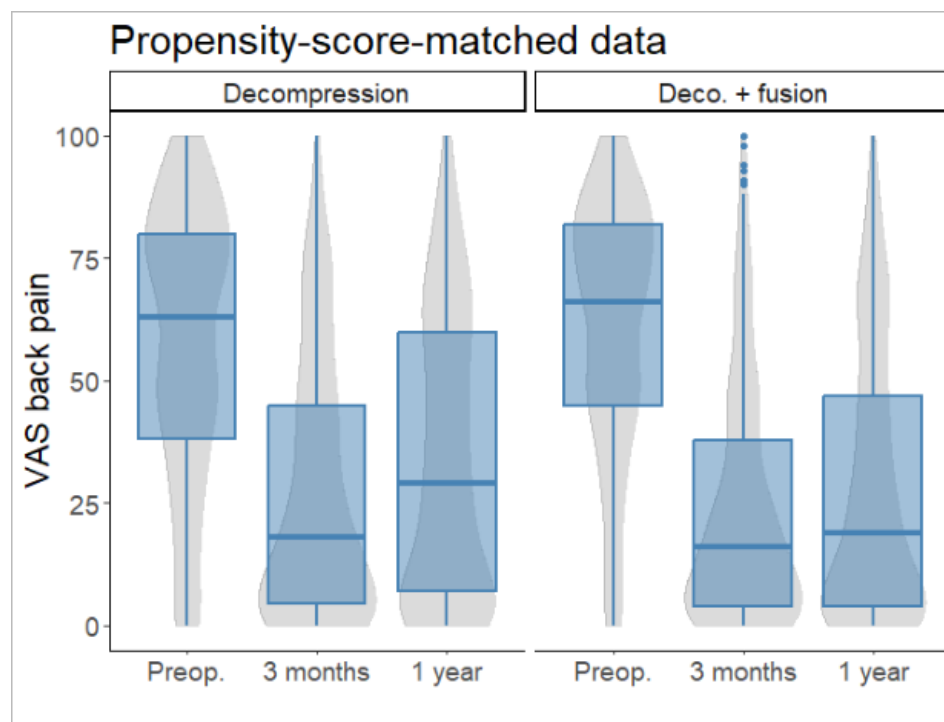
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Figure S2. Patient-reported Oswestry Disability Index (ODI) values for lumbar spinal stenosis patients in the FinSpine-registry treated with decompression, and decompression and fusion (Deco. + fusion) for patients matched by propensity score matching.

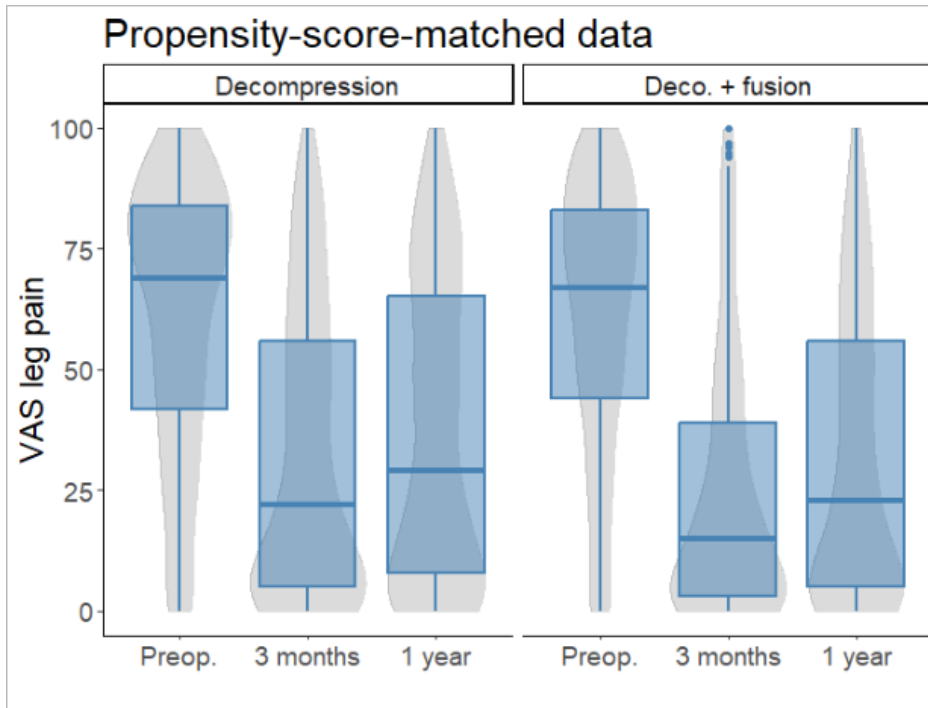Figure S3. Patient-reported Visual Analogue Scale (VAS) values for lower back pain for lumbar spinal stenosis patients in the FinSpine-registry treated with decompression, and decompression and fusion (Deco. + fusion) for patients matched by propensity score matching.

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Figure S4. Patient-reported Visual Analogue Scale (VAS) values for leg pain for lumbar spinal stenosis patients in the FinSpine-registry treated with decompression, and decompression and fusion (Deco. + fusion) for patients matched by propensity score matching.

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Table S3. Sub-group analysis by stenosis type. Values are mean difference between preoperative and 1 year with (standard deviation) and [95% confidence intervals]

	Central			Recessive		
	Deco.	Deco. + fusion	P-value	Deco. (matched)	Deco.+fusion (full ODI)	P value
ODI	-20.2 (17.9) [-21.9 to -18.6]	-22.5 (18.2) [-24.1 to -20.8]	0.07 (B)	-20.7 (18.4) [-23.6 to -17.9]	-23.9 (26.6) [-26.6 to -21.2]	0.1 (B)
VAS leg pain	-23.5 (36.2) [-27.4 to -19.6]	-29.6 (36.5) [-33.3 to -26.0]	0.02 (B)	-25.9 (35.3) [-32.1 to -19.8]	-27.5 (34.8) [-33.7 to -21.3]	0.7 (B)
VAS back pain	-23.6 (33.5) [-27.0 to -20.2]	-33.2 (34.9) [-36.7 to -29.7]	<0.001 (B)	-26.1 (37.5) [-32.5 to -19.8]	-33.5 (29.4) [-38.8 to -28.3]	0.07 (B)

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Table S4. Sub-group analysis for patients with < 3 mm spondylolisthesis. Values are mean difference between preoperative and 1 year with (standard deviation) and [95% confidence intervals]

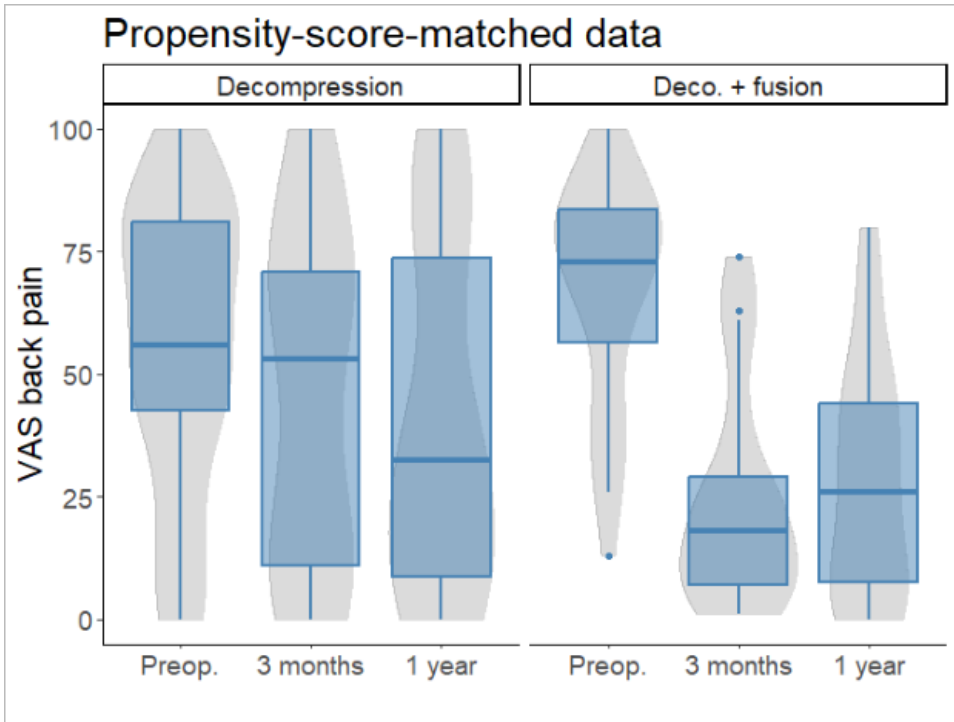|	Central < 3mm			Recessive < 3mm		
	Deco.	Deco. + fusion	P-value	Deco. (matched)	Deco.+fusion (full ODI)	P-value
ODI	-18.9 (18.1) [-23.0 to -14.8]	-17.0 (20.0) [-21.5 to -12.5]	0.6 (B)	-21.0 (19.5) [-28.3 to -13.8]	-23.1 (18.1) [-29.8 to -16.4]	0.9 (B)
VAS leg pain	-24.9 (35.3) [-33.7 to -16.2]	-29.3 (41.9) [-39.8 to -18.8]	0.5 (B)	-33 (39.8) [-49.7 to -16.4]	-31 (33.9) [-44.8, 17.1]	0.8 (B)
VAS back pain	-24.9 (35.3) [-33.7 to -16.2]	-29.3 (41.9) [-39.8 to -18.8]	0.3 (B)	-17.3 (38.4) [-33.1 to -1.6]	-40.8 (30.8) [-52.7, -29.0]	0.01 (B)

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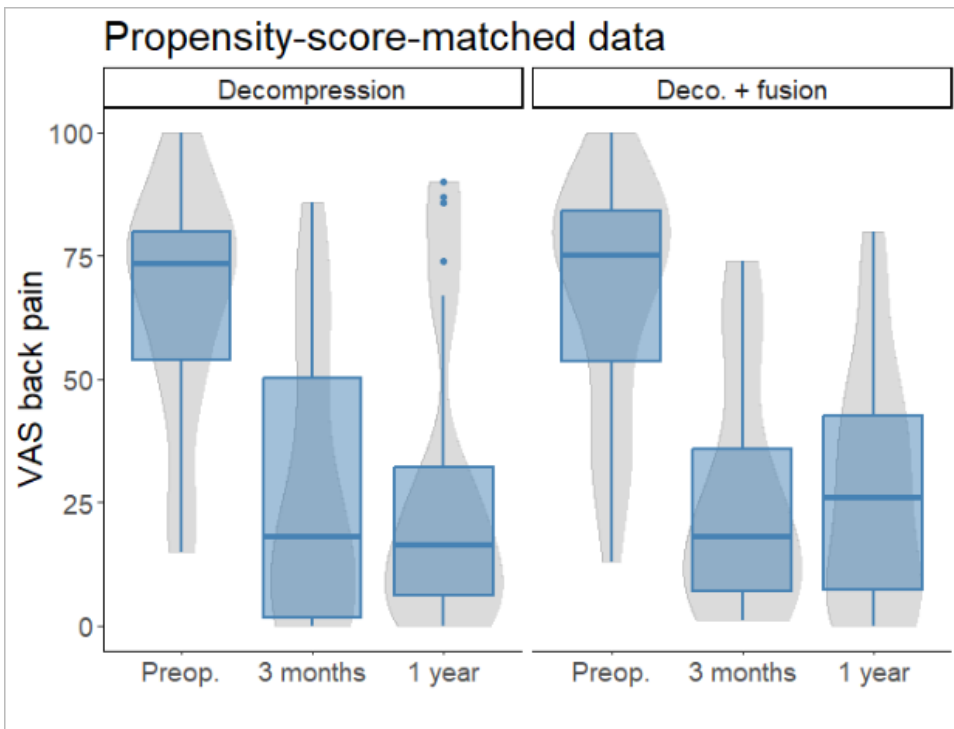Table S5. Sub-group analysis for patients with ≥3 mm spondylolisthesis.

	Central ≥ 3mm			Recessive ≥ 3mm		
	Deco.	Deco. + fusion	p-value	Deco. (matched)	Deco.+fusion (full ODI)	p-value
ODI	-19.7 (17.1) [-21.7 to -17.8]	-22.8 (18.1) [-24.8 to -20.7]	0.04 (B)	-19.5 (19.8) [-23.6 to -15.3]	-23.7 (15.4) [-26.9 to -20.5]	0.1 (B)
VAS leg pain	-25.4 (35.5) [-30.2 to -20.5]	-29.2 (36.2) [-33.7 to -24.7]	0.2 (B)	-27.6 (35.3) [-36.1 to -19.1]	-26.1 (38.2) [-35.2 to -17.0]	0.8 (B)
VAS back pain	-24.0 (33.2) [-28.4 to -19.7]	-32.3 (34.5) [-36.6 to -28.0]	0.007 (B)	-29.0 (30.5) [-36.0 to -22.0]	-32.3 (28.7) [-39.2 to -25.4]	0.5 (B)

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Figure S5. VAS back pain scores for recessive stenosis with <3 mm spondylolisthesis.

Figure S6. VAS back pain scores for recessive stenosis with < 3 mm spondylolisthesis when propensity score matching uses preoperative VAS back pain score instead of preoperative ODI.