Supplementary

Table S1 Follow up aortic remodeling

Variables	Non-DS (N=50)	DS (N=56)	Total (N=106)	P value
Dissection type				0.105
Type A	43 [86]	41 [73.2]	84 [79.2]	
Type B	7 [14]	15 [26.8]	22 [20.8]	
Dissection phase				0.216
Acute	9 [18]	13 [23.2]	22 [20.8]	
Subacute	14 [28]	8 [14.3]	22 [20.8]	
Chronic	27 [54]	35 [62.5]	62 [58.5]	
Stent-graft				<0.001
Soft Elephant Trunk	0 [0]	56 [100]		
Thoraflex Hybrid	10 [20]	0 [0]		
E-Vita Open Plus	29 [58]	0[0]		
Medtronic Valiant	11 [22]	0 [0]		
Redo Aortic	14 [28]	9 [16.1]	23 [21.7]	0.137
CTD	1 [5.6]	10 [25]	11 [19]	0.081
Aortic diameter at LA level (level A)				
TL (P), cm	6.9 (1.2)	6.4 (1.7)	6.6 (1.6)	0.263
TL (S), cm^2	2.3 [1.7, 3.15]	2.3 [1.8, 3.3]		>0.99
AL (P), cm	11.35 [9.7, 12.9]	11.5 [10.2, 12.9]		0.89
AL (S), cm^2	8.6 [7.5, 12]	10.1 [8, 12.3]		0.60
TL/AL (P)	0.6 (0.2)	0.6 (0.1)	0.6 (0.1)	0.265
TL/AL (S)	0.26 [0.17, 0.39]	0.22 [0.15, 0.33]		0.85
Aortic diameter at distal DTA level (level B)				
TL (P), cm	6.4 (1.2)	5.9 (1.5)	6.0 (1.4)	0.191
TL (S), cm^2	2 [1.7, 3.35]	2 [1.55, 2.6]		0.36
AL (P), cm	10.85 [9.62, 12.45]	10.65 [9.52, 12.3]		0.66
AL (S), cm^2	8.3 [6.4, 11.1]	8.6 [6.9, 11.4]		0.76
TL/AL (P)	0.55 [0.49, 0.65]	0.54 [0.5, 0.6]		0.71
TL/AL (S)	0.26 [0.19, 0.35]	0.22 [0.17, 0.31]		0.38
Aortic dilatation (>45 mm) at LA level (level A)				>0.99
Perimeter	3/18 [17]	6/40 [15]	9/58 [16]	
Square	3/18 [17]	6/40 [15]	9/58 [16]	
Aortic dilatation at distal DTA level (level B)				
Perimeter	2/18 [11]	2/40 [5]	4/58 [6.8]	>0.99
Square	2/18 [11]	3/40 [7.5]	5/58 [8.6]	

Table S1 (*continued*)

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Table S1 (*continued*)

Variables	Non-DS (N=50)	DS (N=56)	Total (N=106)	P value
Intercostal arteries (FL) at level A	4 [2, 8]	7 [4, 9]	6 [3, 9]	0.24
Intercostal arteries (FL) at level B	3.7 (2.9)	4.4 (2.7)	4.2 (2.7)	0.365
The origin of the CT				0.561
AL	2.0 [11.1]	1 [2.5]	3 [5.2]	
From TL	12 [66.7]	27 [67.5]	39 [67.2]	
From FL	1 [5.6]	3 [7.5]	4 [6.9]	
From TL and FL	3 [16.7]	9 [22.5]	12 [20.7]	
The origin of the SMA				0.706
AL	1 [5.9]	1 [2.5]	2 [3.5]	
From TL	13 [76.5]	29 [72.5]	42 [73.7]	
From TL and FL	3 [17.6]	10 [25]	13 [22.8]	
The origin of the left RA				0.736
AL	1 [5.9]	1 [2.5]	2 [3.5]	
From TL	5 [29.4]	16 [40]	21 [36.8]	
From FL	7 [41.2]	12 [30]	19 [33.3]	
From TL and FL	4 [23.5]	11 [27.5]	15 [26.3]	
The origin of the right RA				0.389
AL	1 [5.9]	1 [2.5]	2 [3.5]	
From TL	12 [70.6]	21 [52.5]	33 [57.9]	
From FL	2 [11.8]	13 [32.5]	15 [26.3]	
From TL and FL	2 [11.8]	5 [12.5]	7 [12.3]	
The origin of the IMA				0.349
AL	1 [5.9]	3 [7.7]	4 [7.1]	
From TL	12 [70.6]	18 [46.2]	30 [53.6]	
From FL	3 [17.6]	16 [41]	19 [33.9]	
From TL and FL	1 [5.9]	2 [5.1]	3 [5.4]	
The origin of the left CIA				0.88
AL	1 [5.9]	4 [10.5]	5 [9.1]	
From TL	3 [17.6]	9 [23.7]	12 [21.8]	
From FL	1 [5.9]	2 [5.3]	3 [5.5]	
From TL and FL	12 [70.6]	23 [60.5]	35 [63.6]	
The origin of the left right CIA				0.763
AL	1 [5.9]	4 [10.5]	5 [9.1]	
From TL	4 [23.5]	11 [28.9]	15 [27.3]	
From FL	0 [0]	1 [2.6]	1 [1.8]	
From TL and FL	12 [70.6]	22 [57.9]	34 [61.8]	

Table S1 (*continued*)

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Table S1 (*continued*)

Variables	Non-DS (N=50)	DS (N=56)	Total (N=106)	P value
Primary entry				0.925
Root	8 [47.1]	20 [50]	28 [49.1]	
Ascending aorta	4 [23.5]	8 [20]	12 [21.1]	
Arch	3 [17.6]	9 [22.5]	12 [21.1]	
DTA	2 [11.8]	3 [7.5]	5 [8.8]	
Re-entries (Level A)	4 [2.9, 7.1]	6 [4.7, 7.3]		0.08
of them more 5 mm (Level A)	1 [0, 2.1]	2 [1, 4]		0.02
Re-entries (Level B)	4 [2, 5.3]	4.0 [2, 5]		0.83
of them more 5mm (Level B)	0 [0, 2]	1.0 [0, 2]		0.63
Re-entries (Level C)	7 [3, 11.5]	6.5 [4, 8]		0.84
of them more 5mm (Level C)	2 [1, 4.7]	2.0 [0, 4]		0.88
dSINE				
Post	1 [3.6]	0 [0]	1 [1.2]	0.722
6 months	2 [7.1]	1 [1.8]	3 [3.6]	0.533
1 year	3 [10.7]	2 [3.6]	5 [6]	0.415
2 years	6 [21.4]	4 [7.1]	10 [11.9]	0.121
3 years	7 [25]	5 [8.9]	12 [14.3]	0.098
4 years	8 [28.6]	6 [10.7]	14 [16.7]	0.078
5 years	10 [35.7]	6 [10.7]	16 [19]	0.014
>5-10 years	12 [42.9]	6 [10.7]	18 [21.4]	0.002
Endoleaks				
Post				
None	29 [69]	31 [56.4]	60 [61.9]	0.065
1b	2 [4.8]	0 [0]	2 [2.1]	0.22
2	10 [23.8]	24 [43.6]	34 [35.1]	0.013
4	1 [2.4]	0 [0]	1 [1]	0.472
6 months				
None	25 [71.4]	39 [69.6]	64 [70.3]	0.058
1b	3 [8.6]	0 [0]	3 [3.3]	0.102
2	7 [20]	17 [30.4]	24 [26.4]	0.062
1 year				
None	26 [74.3]	47 [83.9]	73 [80.2]	0.143
1b	4 [11.4]	1 [1.8]	5 [5.5]	0.186
2	5 [14.3]	8 [14.3]	13 [14.3]	0.565

Table S1 (*continued*)

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Table S1 (*continued*)

Variables	Non-DS (N=50)	DS (N=56)	Total (N=106)	P value
2 years				
None	26 [74.3]	47 [83.9]	73 [80.2]	0.028
1b	7 [20]	2 [3.6]	9 [9.9]	0.081
2	2 [5.7]	7 [12.5]	9 [9.9]	0.167
3 years				
None	26 [74.3]	48 [85.7]	74 [81.3]	0.089
1b	7 [20]	3 [5.4]	10 [11]	0.185
2	2 [5.7]	5 [8.9]	7 [7.7]	0.443
4 years				
None	26 [74.3]	47 [83.9]	73 [80.2]	0.064
1b	8 [22.9]	4 [7.1]	12 [13.2]	0.22
2	1 [2.9]	5 [8.9]	6 [6.6]	0.21
5 years				
None	25 [71.4]	48 [85.7]	73 [80.2]	0.039
1b	9 [25.7]	4 [7.1]	13 [14.3]	0.137
2	1 [2.9]	4 [7.1]	5 [5.5]	0.367
More 5 years				
None	23 [65.7]	48 [85.7]	71 [78]	0.009
1b	11 [31.4]	4 [7.1]	15 [16.5]	0.048
2	1 [2.9]	4 [7.1]	5 [5.5]	0.367

Data are presented as n [%], mean (standard deviation) or median [IQR]. AL, Aortic Lumen; CTD, Connective Tissue Disorder; CIA, Common Iliac Artery; DTA, Descending Thoracic Aorta; dSINE, Distal Stent-Graft Induced New Entry; ET, Elephant Trunk; FL, False Lumen; FET, Frozen Elephant Trunk; HR, Hazard Ratio; IMA, Inferior Mesenteric Artery; IQR, Interquartile Range; LA, Left Atrium; Non-DS, Non-Dissection-Specific; P, Perimeter; PSM, Propensity Score Matching; RA, Renal Artery; SG, Stent Graft; SMA, Superior Mesenteric Artery; S, Square; TEVAR, Thoracic Endovascular Aortic Repair; TL, True Lumen; Post, postoperative in-hospital period immediately following the index operation.

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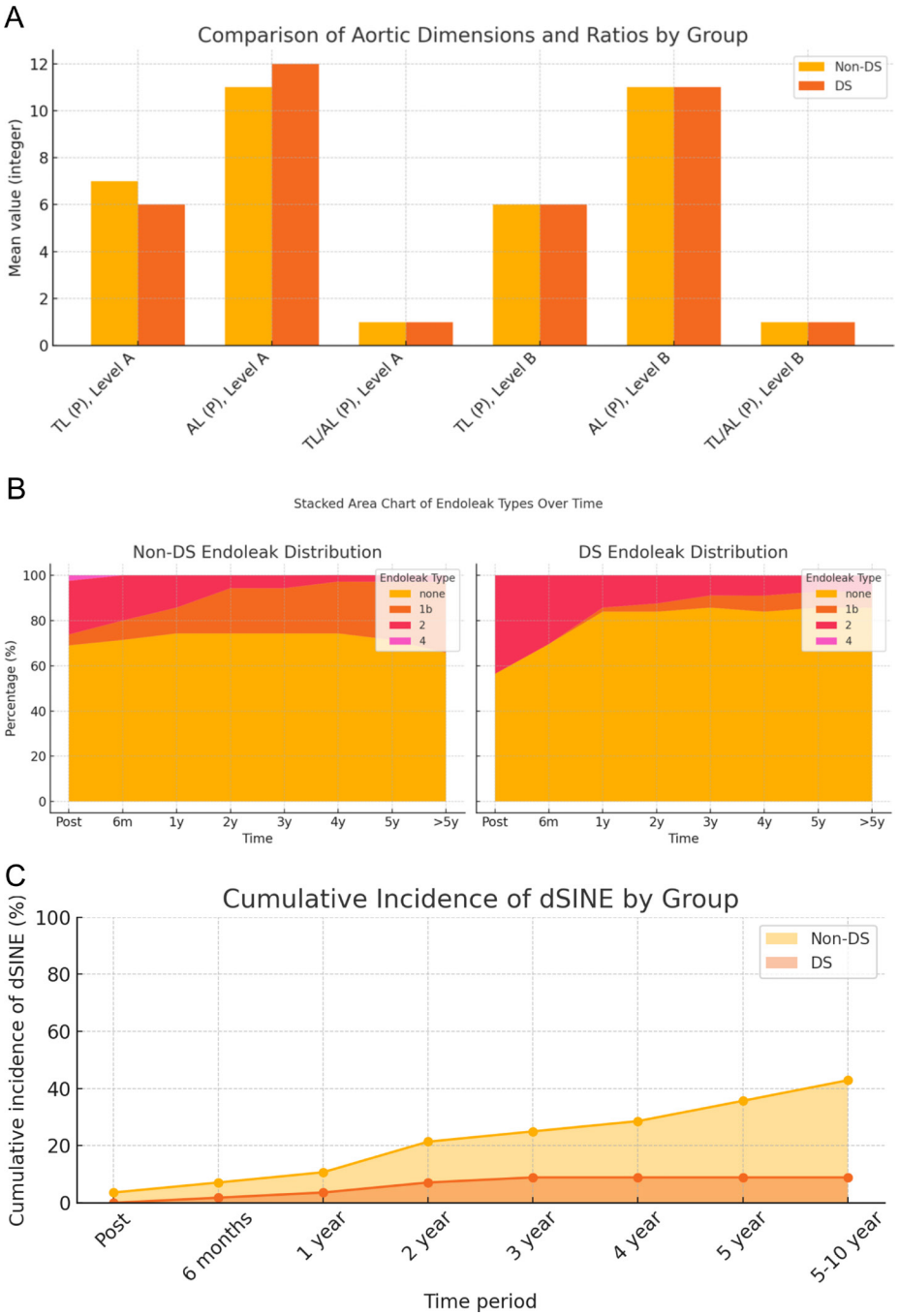

Figure S1 Comparative analysis of aortic dimensions, endoleak patterns, and dSINE incidence in Non-DS versus DS graft groups. (A) Bar chart of mean and median cross-sectional true-lumen (TL (P)), total aortic lumen (AL (P)), and their ratio (TL/AL (P))—rounded to the nearest integer—measured at two anatomic levels: level A (at the left atrium) and level B (distal descending thoracic aorta). Gold bars represent the Non-DS (conventional FET) graft cohort (N=50), and orange bars the DS (dissection-specific) graft cohort (N=56). (B) Stacked-area plots showing the temporal distribution of endoleak types (none, type 1b, type 2, type 4) at follow-up intervals (Post, 6 m, 1 y, 2 y, 3 y, 4 y, 5 y, >5 y). Left panel: Non-DS group; right panel: DS group. The vertical axis gives the percentage of patients with each endoleak type at each timepoint. (C) Cumulative incidence of distal stent-graft-induced new entry (dSINE) over time (Post through 5–10 y). Solid lines with circles denote non-DS (gold) and DS (orange) cohorts. The vertical axis shows the proportion of patients (%) experiencing dSINE. Asterisks mark timepoints at which the between-group difference reached $P<0.05$ by Fisher's exact test.

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Table S2 Patency of false lumen

Variables	Non-DS			DS			Total			P value
	Patent	Partial	Thrombosed	Patent	Partial	Thrombosed	Patent	Partial	Thrombosed	
Level stent-graft										
Pre	16 (66.7)	8 (33.3)	0 (0)	39 (60.9)	16 (29.1)	0 (0)	55 (69.6)	24 (30.4)	0 (0)	0.912
Post	1 (4.3)	14 (60.9)	8 (34.8)	1 (1.8)	31 (56.4)	23 (41.8)	2 (2.6)	45 (57.7)	31 (39.7)	0.718
6 months	0 (0)	16 (69.6)	7 (30.4)	0 (0)	27 (49.1)	28 (50.9)	0 (0)	43 (55.1)	35 (44.9)	0.159
1 year	0 (0)	15 (65.2)	8 (34.8)	0 (0)	25 (44.6)	31 (55.4)	0 (0)	40 (50.6)	39 (49.4)	0.157
2 years	0 (0)	12 (52.2)	11 (47.8)	0 (0)	19 (33.9)	37 (66.1)	0 (0)	31 (39.2)	48 (60.8)	0.209
3 years	0 (0)	12 (52.2)	11 (47.8)	0 (0)	17 (30.4)	39 (69.6)	0 (0)	29 (36.7)	50 (63.3)	0.116
4 years	0 (0)	12 (52.2)	11 (47.8)	0 (0)	15 (26.8)	41 (73.2)	0 (0)	27 (34.2)	52 (65.8)	0.057
5 years	0 (0)	12 (52.2)	11 (47.8)	0 (0)	15 (26.8)	41 (73.2)	0 (0)	27 (34.2)	52 (65.8)	0.057
Level distal DTA										
Pre	18 (75.0)	6 (25.0)	0 (0)	43 (78.2)	12 (21.8)	0 (0)	61 (77.2)	18 (22.8)	0 (0.0)	0.985
Post	9 (39.1)	13 (56.5)	1 (4.3)	16 (29.1)	37 (67.3)	2 (3.6)	25 (32.1)	50 (64.1)	3 (3.8)	0.662
6 months	9 (39.1)	12 (52.2)	2 (8.7)	9 (16.4)	44 (80.0)	2 (3.6)	18 (23.1)	56 (71.8)	4 (5.1)	0.045
1 year	9 (39.1)	12 (52.2)	2 (8.7)	8 (14.3)	46 (82.1)	2 (3.6)	17 (21.5)	58 (73.4)	4 (5.1)	0.023
2 years	7 (30.4)	14 (60.9)	2 (8.7)	8 (14.3)	44 (78.6)	4 (7.1)	15 (19.0)	58 (73.4)	6 (7.6)	0.225
3 years	7 (30.4)	14 (60.9)	2 (8.7)	7 (12.5)	45 (80.4)	4 (7.1)	14 (17.7)	59 (74.7)	6 (7.6)	0.147
4 years	7 (30.4)	14 (60.9)	2 (8.7)	7 (12.5)	45 (80.4)	4 (7.1)	14 (17.7)	59 (74.7)	6 (7.6)	0.147
5 years	6 (26.1)	15 (65.2)	2 (8.7)	7 (12.5)	44 (78.6)	5 (8.9)	13 (16.5)	59 (74.7)	7 (8.9)	0.330
Level visceral arteries										
Pre	21 (87.5)	2 (8.3)	1 (4.2)	48 (87.3)	7 (12.7)	0 (0.0)	69 (87.3)	9 (11.4)	1 (1.3)	0.276
Post	14 (60.9)	8 (34.8)	1 (4.3)	36 (65.5)	18 (32.7)	1 (1.8)	50 (64.1)	26 (33.3)	2 (2.6)	0.787
6 months	14 (60.9)	8 (34.8)	1 (4.3)	37 (67.3)	17 (30.9)	1 (1.8)	51 (65.4)	25 (32.1)	2 (2.6)	0.747
1 year	13 (56.5)	9 (39.1)	1 (4.3)	36 (64.3)	19 (33.9)	1 (1.8)	49 (62.0)	28 (35.4)	2 (2.6)	0.703
2 years	12 (52.2)	10 (43.5)	1 (4.3)	37 (66.1)	18 (32.1)	1 (1.8)	49 (62.0)	28 (35.4)	2 (2.5)	0.467
3 years	12 (52.2)	10 (43.5)	1 (4.3)	36 (64.3)	19 (33.9)	1 (1.8)	48 (60.8)	29 (36.7)	2 (2.5)	0.543
4 years	11 (47.8)	11 (47.8)	1 (4.3)	34 (60.7)	21 (37.5)	1 (1.8)	45 (57.0)	32 (40.5)	2 (2.5)	0.515
5 years	12 (52.2)	10 (43.5)	1 (4.3)	34 (60.7)	21 (37.5)	1 (1.8)	46 (58.2)	21 (37.5)	2 (2.5)	0.679

Table S2 (*continued*)

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Table S2 (*continued*)

Variables	Non-DS			DS			Total			P value
	Patent	Partial	Thrombosed	Patent	Partial	Thrombosed	Patent	Partial	Thrombosed	
Level abdominal aortic										
Pre	20 (83.3)	4 (16.7)	0 (0.0)	48 (87.3)	7 (12.7)	0 (0.0)	68 (86.1)	11 (13.9)	0 (0.0)	0.911
Post	17 (73.9)	6 (26.1)	0 (0.0)	39 (70.9)	15 (27.3)	1 (1.8)	56 (71.8)	21 (26.9)	1 (1.3)	0.800
6 months	17 (73.9)	6 (26.1)	0 (0.0)	40 (72.7)	13 (23.6)	2 (3.6)	57 (73.1)	19 (24.4)	2 (2.6)	0.644
1 year	17 (73.9)	6 (26.1)	0 (0.0)	41 (73.2)	14 (25.0)	1 (1.8)	58 (73.4)	20 (25.3)	1 (1.3)	0.811
2 years	17 (73.9)	6 (26.1)	0 (0.0)	40 (71.4)	15 (26.8)	1 (1.8)	57 (72.2)	21 (26.6)	1 (1.3)	0.807
3 years	17 (73.9)	6 (26.1)	0 (0.0)	39 (69.6)	15 (26.8)	2 (3.6)	56 (70.9)	21 (26.6)	2 (2.5)	0.648
4 years	15 (65.2)	8 (34.8)	0 (0.0)	39 (69.6)	15 (26.8)	2 (3.6)	54 (68.4)	23 (29.1)	2 (2.5)	0.542
5 years	15 (65.2)	8 (34.8)	0 (0.0)	39 (69.6)	15 (26.8)	2 (3.6)	54 (68.4)	23 (29.1)	2 (2.5)	0.542
Level Iliac arteries										
Pre	20 (83.3)	4 (16.7)	0 (0)	47 (85.5)	7 (12.7)	1 (1.8)	67 (84.8)	11 (13.9)	1 (1.3)	0.729
Post	19 (82.6)	4 (17.4)	0 (0)	39 (70.9)	13 (23.6)	3 (5.5)	58 (74.4)	17 (21.8)	3 (3.8)	0.398
6 months	18 (78.3)	5 (21.7)	0 (0)	42 (76.4)	9 (16.4)	4 (7.3)	60 (76.9)	14 (17.9)	4 (5.1)	0.379
1 year	18 (78.3)	5 (21.7)	0 (0)	42 (75.0)	9 (16.1)	5 (8.9)	60 (75.9)	14 (17.7)	5 (6.3)	0.305
2 years	18 (78.3)	5 (21.7)	0 (0)	40 (71.4)	11 (19.6)	5 (8.9)	58 (73.4)	16 (20.3)	5 (6.3)	0.334
3 years	18 (78.3)	5 (21.7)	0 (0)	40 (71.4)	11 (19.6)	5 (8.9)	58 (73.4)	16 (20.3)	5 (6.3)	0.334
4 years	16 (69.6)	7 (30.4)	0 (0)	40 (71.4)	11 (19.6)	5 (8.9)	56 (70.9)	18 (22.8)	5 (6.3)	0.235
5 years	16 (69.6)	7 (30.4)	0 (0)	40 (71.4)	11 (19.6)	5 (8.9)	56 (70.9)	18 (22.8)	5 (6.3)	0.235

Data are presented as n (%). DS, dissection-specific.

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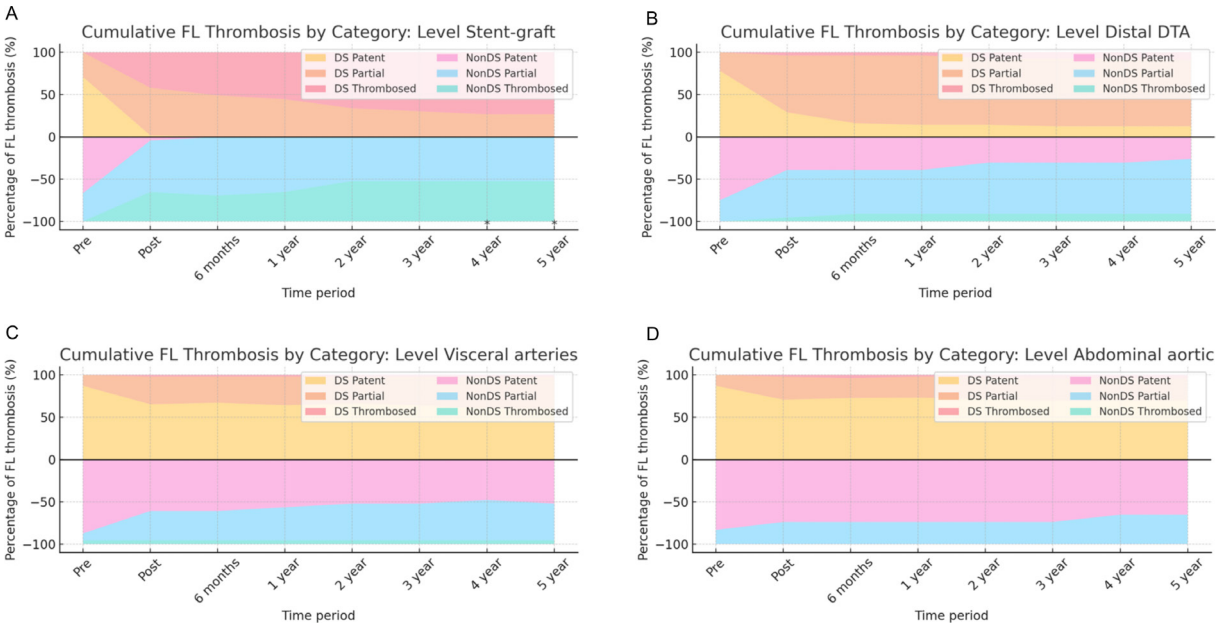

Figure S2 False-lumen thrombosis rate over time. (A-D) The cumulative percentage of patients with complete false-lumen (FL) thrombosis at four anatomic levels following hybrid aortic repair, stratified by device type (Non-DS *vs.* DS). In each panel, the X-axis denotes follow-up intervals (Post, 6 months, 1 year, 2 years, 3 years, 4 years, 5 years, and 5–10 years) and the Y-axis shows the proportion of patients (%) with FL thrombosis. Solid lines represent the DS (dissection-specific) stent graft group and dashed lines represent the Non-DS (conventional FET) graft group. Data are presented as mean ± SD. FL, false lumen; DS, dissection-specific graft; Non-DS, conventional FET graft.

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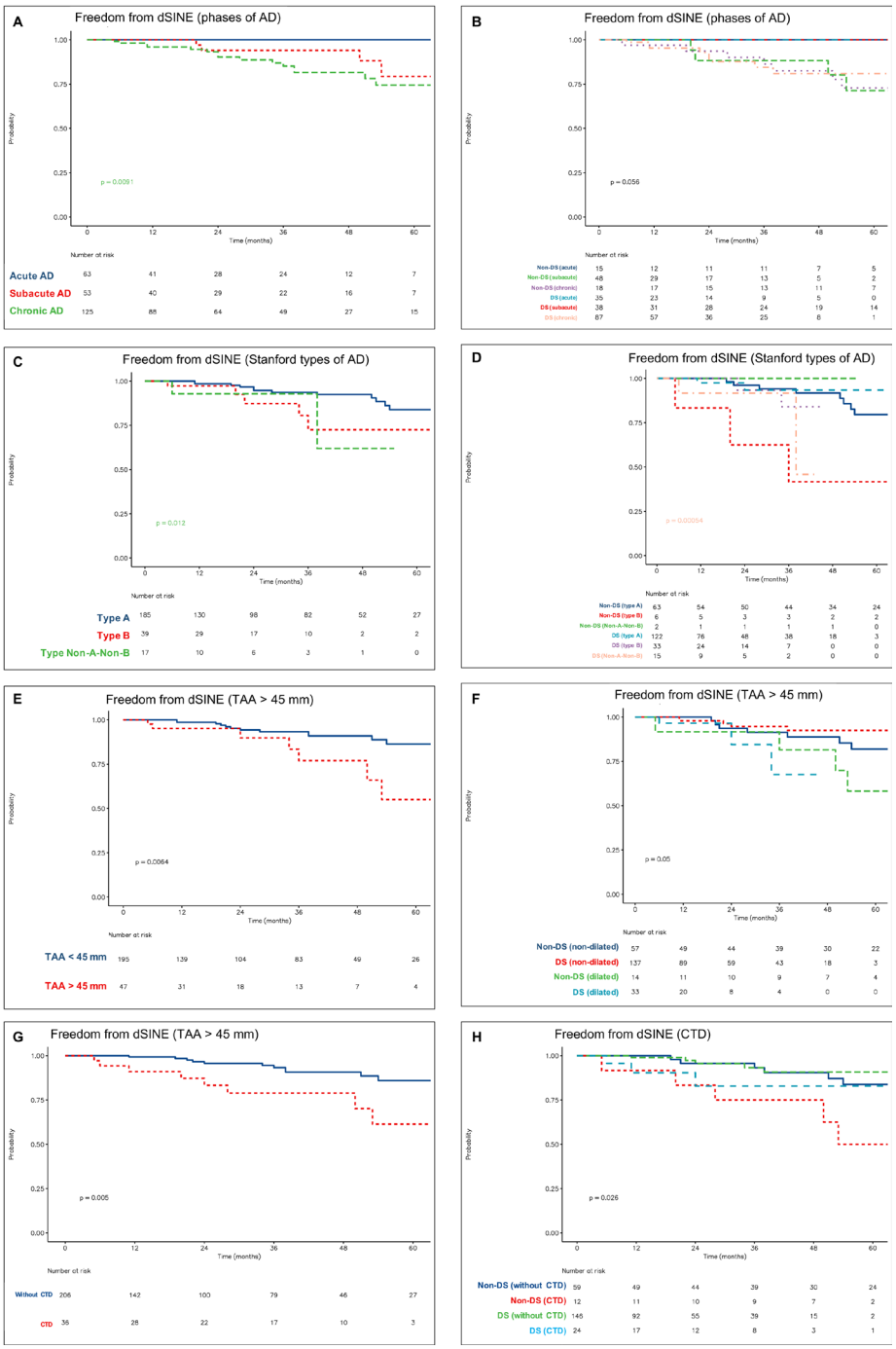

Figure S3 Freedom from dSINE in different risk factor groups. (A) Freedom from dSINE across different phases of AD. (B) Freedom from dSINE in DS and Non-DS groups across phases of AD. (C) Freedom from dSINE based on the Stanford classification of aortic dissection. (D) Freedom from dSINE based on the Stanford classification of AD and DS/Non-DS groups. (E) Freedom from dSINE in non-dilated and dilated aorta (TAA >45 mm). (F) Freedom from dSINE in non-dilated and dilated aorta (TAA >45 mm) stratified by DS/Non-DS groups. (G) Freedom from dSINE in relation to connective tissue disorders (CTD). (H) Freedom from dSINE in relation to CTD, stratified by DS/Non-DS groups. AD, Aortic Dissection; CTD, Connective Tissue Disorder; dSINE, Distal Stent-Graft Induced New Entry; DS, Dissection-Specific; FET, Frozen Elephant Trunk; Non-DS, Non-Dissection-Specific; PSM, Propensity Score Matching; SG, Stent Graft; TAA, Thoracic Aortic Aneurysm.

https://dx.doi.org/10.21037/acs-2025-evet-0046

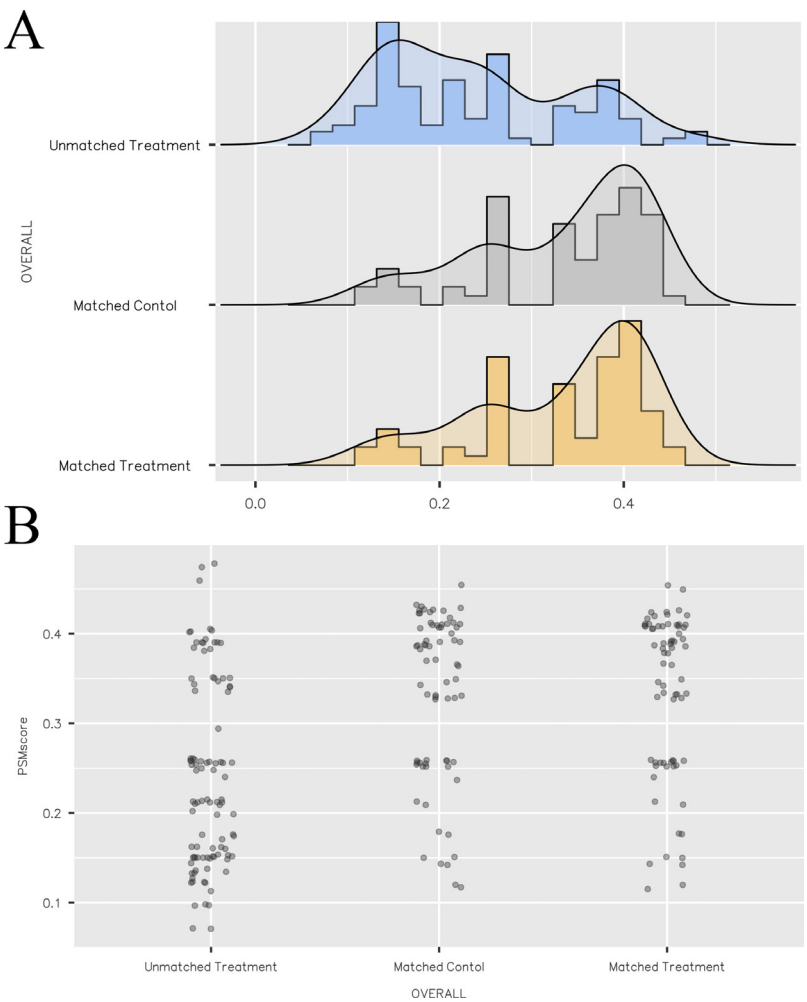

Figure S4 Distribution and matching quality of propensity scores. (A) Density plots showing the distribution of propensity scores across three groups: unmatched treatment DS group (blue), matched control Non-DS group (gray), and matched treatment DS group (yellow). The distributions demonstrate improved overlap between the matched groups, indicating effective propensity score matching. (B) Scatter plot illustrating individual propensity scores for patients in unmatched treatment, matched control, and matched treatment groups. Points indicate individual patients, highlighting the distribution and balance achieved after matching.

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