

SUPPLEMENTARY MATERIAL

Supplementary Table 1: Histological grading criteria for semiquantitative evaluation

Evaluation items	Grade definition				
	0	1	2	3	4
Regenerated wall, maturity					
Granulation tissue	None	Very slight near suture site or around patch	Proliferation from suture site to around patch or luminal surface	Proliferation across the entire patch	
Smooth muscle cells	None	Very few near suture site or around patch	Proliferation from suture site to around patch or luminal surface	Diffuse proliferation across the patch	
Collagen fibres	None	Very few near suture site	Half the thickness of native vascular wall	Same thickness as native vascular wall	Thicker than native vascular wall
Endothelial cells (luminal surface)	None	Covering luminal surface near suture site	Covering luminal surface almost entirely	Covering luminal surface entirely	
Elastic fibres	None	Very slight at luminal surface	Slight proliferation across entire luminal surface	Considerable proliferation across entire luminal surface	

Bridge formation	None	Little near suture site	Some near suture site and other in the SHF	Across almost the entire area	Across the entire area
Inflammatory cells infiltration					
Neutrophils	None	Barely visible at HPM (×400)	Barely visible at MPM (×100)	Clearly visible at LPM (×40)	High concentration at LPM (×40)
Lymphocytes	None	Barely visible at HPM (×400)	Barely visible at MPM (×100)	Clearly visible at LPM (×40)	High concentration at LPM (×40)
Plasma cells	None	Barely visible at HPM (×400)	Barely visible at MPM (×100)	Clearly visible at LPM (×40)	High concentration at LPM (×40)
Macrophages / giant cells	None	Barely visible at HPM (×400)	Barely visible at MPM (×100)	Clearly visible at LPM (×40)	High concentration at LPM (×40)
Material condition (SHF)					
Gelatin remaining	None	≤30%	About 50%	50% to 80%	Almost 100%
Calcium deposition	None	Slight	Mild	Moderate	Marked

Modified from Nemoto *et al.* Eur J Cardiothorac Surg 2018;54:318-27.

HPM: high power magnification; MPM: medium power magnification; LPM: low power magnification; SHF: synthetic hybrid fabric.

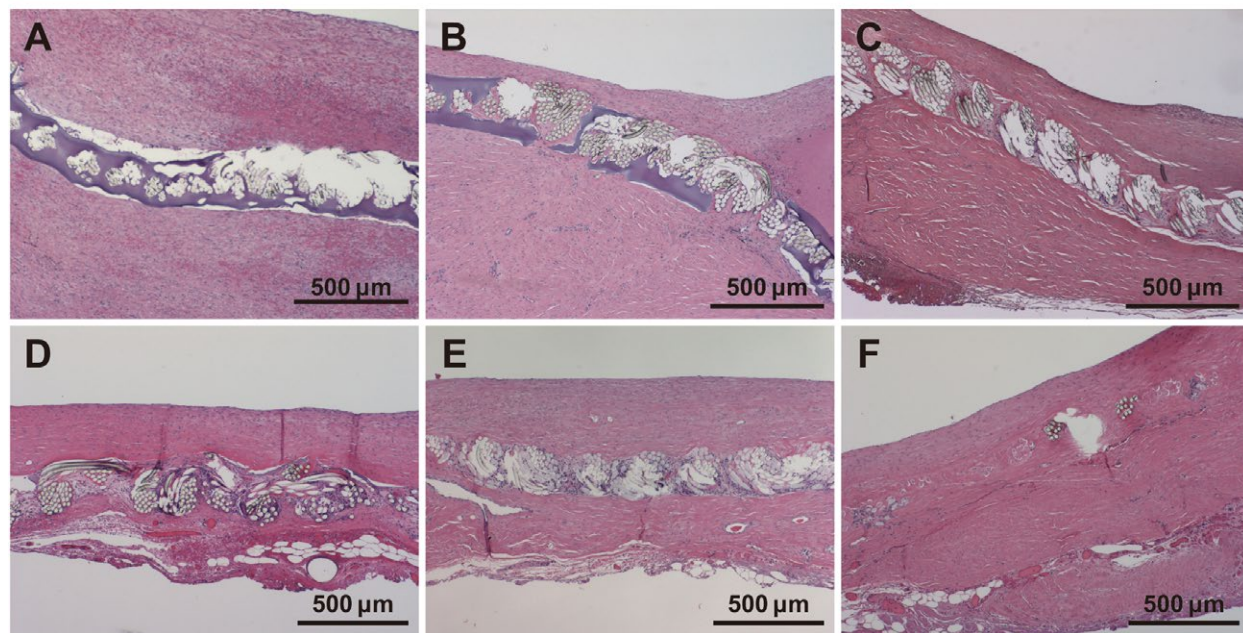
Supplementary Table 2: Quantitative scoring (acute stage to 36 months)

Evaluation items	Implantation period						
	2 weeks (n = 4)	1 month (n = 2)	3 months (n = 2)	6 months (n = 1)	12 months (n = 3)	24 months (n = 2)	36 months (n = 2)
Regenerated wall, maturity							
Tissue regeneration							
Granulation tissue	1, 1, 2, 3	1, 1	2, 1	1	1, 0, 1	0, 0	0, 0
Smooth muscle cells	0, 0, 2, 3	3, 2	1, 2	1	1, 2, 2	3, 3	2, 2
Collagen fibres	0, 0, 2, 3	3, 3	3, 3	3	4, 2, 2	2, 3	2, 2
Endothelial cells (luminal surface)	1, 1, 3, 3	3, 3	3, 3	3	3, 3, 3	3, 3	3, 3
Elastic fibres	0, 0, 0, 0	1, 0	0, 1	1	0, 2, 0	1, 2	1, 1
Bridge formation	0, 0, 1, 1	1, 1	1, 3	4	1, 3, 4	4, 3	4, 4
Inflammatory cells infiltration							
Neutrophils	0, 0, 0, 0	0, 0	0, 0	0	0, 0, 0	0, 0	0, 0
Lymphocytes	0, 0, 0, 0	0, 0	1, 0	0	0, 1, 1	1, 1	1, 0
Plasma cells	0, 0, 0, 0	0, 0	0, 0	0	0, 0, 0	0, 0	0, 0
Macrophages / giant cells	0, 0, 1, 1	1, 1	2, 2	1	1, 1, 3	1, 1	1, 0
Material condition (SHF)							
Gelatin remaining	4, 4, 3, 3	2, 2	1, 1	0	2, 1, 1	0, 0	0, 0
Calcium deposition	0, 0, 0, 0	0, 0	0, 0	0	0, 0, 0	0, 0	0, 0

Data up to 6 months are reproduced from Nemoto *et al.* Eur J Cardiothorac Surg 2018;54:318-27. Elastic fibres are additionally evaluated.

SHF: synthetic hybrid fabric.

Supplementary Figure 1: Changes over time in representative histological images (acute stage to 36 months; haematoxylin and eosin staining).



(A) 1 month, (B) 3 months, (C) 6 months, (D) 12 months, (E) 24 months, (F) 36 months after implantation. (A-C) were created from pathology specimens prepared for a previous publication (Nemoto *et al.* Eur J Cardiothorac Surg 2018;54:318-27).