

Supplementary Material

Supplementary Tables

Table S1: Demographic data

		Heparin/ Uncoated				History of:							Smoki ng			Medication s:		
Patie nt No.	age	Sampl e 1	Sample 2	sample 3	SEX	HYPERTENS ION	Hypercholesterola emia	PV D	D M	Cerebrovasc ular disease	CVD	PC I	Curren t	Previo us year stopp ed	Nev er			
EV 002	60	low S/Hep	High/u nc	High/H ep	Male	0	0	0	0	0	0	0			1	Clonazepa m		
EV 003	56	Low/H ep	High/H ep	High/u nc	Fema le	0	0	0	0	0	0	0		1989		Premarin (HRT)		
EV 004	51	Low/ unc	High/H ep	High/u nc	Fema le	0	0	0	0	0	0	0			1	-		
EV 005	55	High/ Hep	High/u nc	low/He p	Fema le	0	0	0	0	0	0	0		1999		-		
EV 006	52	low S/Hep	High/H ep		Fema le	0	0	0	0	0	0	0			1	-		
EV 007	57	High/u nc	Low/ unc		male	1	0	0	0	0	0	0			1	-		
EV 008	52	low S/Hep	High/H ep		Fema le	0	0	0	0	0	0	0			1	oxytetracyc line	Vitamin D	
EV 009	64	Low/ unc	High/u nc		Fema le	0	0	0	0	0	0	0			1			
EV 010	52	low/ Hep	High/H ep	<--New Batch	male	0	0	0	0	0	0	0			1	Citalopram	Lansopraz ole	
EV 011	64	low/ Hep	High/H ep	<--New Batch	Fema le	1	0	0	0	0	0	0			1	Amlodipine	Lansopraz ole	Narpox en

**Table S2:** Hydrodynamic measurements and durability of non-sterilised valves and valves sterilised in ethylene oxide.

	Hydrodynamics			Durability (*10 <sup>-6</sup> )	
		EOA (cm <sup>2</sup> )	REG (%)		
Non-sterilised	n=6	1.65 ± 0.13	4.30 ± 0.82	n=3	37.5 ± 13.9
Sterilised in EtO	n=1	1.64 ± 0.05	2.72 ± 0.21	n=1	33

## Supplementary Video Legends

### Video 1: - Polymeric valve in accelerated fatigue tester

Accelerated fatigue tester at 30 Hz with water at 37°C as the working fluid, under test conditions specified by ISO 5840:2015.

### Video 2: - Polymeric valve subjected to hydrodynamic performance in a heart pulse duplicator

The test conditions conformed to ISO 5840:2015 requirements i.e. frequency of 70 bpm, simulated cardiac output 5 l/min, systolic duration 35% at normotensive conditions

### Video 3: Elastic/dynamic properties of the polymeric valve

These properties were uniquely engineered to achieve an artificial valve able to follow the physiologic systo-diastolic dynamics of the native valvular annulus after implant.

### Video 4: Echocardiography of polymeric valve in-vivo

Showing no peri-valvular jets of regurgitation.

### Video 5: Echocardiography of polymeric valve in-vivo

Showing no trans-valvular jet of regurgitation.