Appendix 1

The numbers at risk at each time-point is described as $n_1, n_2,\ldots,n_p$ at $t_1, t_2,\ldots,t_p$. Survival rate is read from the survival curves at $t_1, t_2,\ldots,t_p$ as $s_1, s_2,\ldots,s_p$. Suppose censoring is assumed to be constant within each time interval

$$s_j = s_i\left(1-d_{i,j}/\left[n_i-c_{i,j}/2\right]\right)$$

$$n_j = n_i - d_{i,j} - c_{i,j}$$

Define $d_{i,j}$= number of deaths during the interval of $[t_i,t_j]$ and $c_{i,j}$= censored number during the interval of $[t_i,t_j]$

$$d_{i,j} = \left(n_i+n_j\right)\left(s_i-s_j\right)/\left(s_i+s_j\right)$$

$$c_{i,j} = 2\left(n_i s_j - n_j s_i\right)/\left(s_i+s_j\right)$$

For each year of follow-up, we redistributed the numbers of deaths ($d_{i,j}$) and censored ($c_{i,j}$) in equal quantities ($d_{k-1,k}$ and $c_{k-1,k}$). Then interval survival rate $s_{k-1,k}$ was determined as follows

$$s_{k-1,k} = 1-d_{k-1,k}/\left(n_{k-1}-c_{k-1}/2\right)$$

To obtain a pooled interval survival rate ($S_{k-1,k}$), study specific interval survival rates ($s_{k-1,k}$) were combined via inverse variance weight averages in the random-effects model.

Finally, pooled interval survival rates yielded cumulative survival rate at year k, S_k as follows

$$s_k = s_{0,1}s_{1,2}s_{2,3}\cdots s_{k-1,k}$$

Also, with the inverse variance method, binomial equation for variance can be calculated to obtain the individual study weights:

$$var\left(p\right) = \frac{p\left(1-p\right)}{n}$$

Where p is the prevalence proportion and n is the population size. Therefore, the pooled prevalence estimate P then becomes:

$$P = \frac{\sum_i \frac{p_i}{var\left(p_i\right)}}{\sum_i \frac{1}{var\left(p_i\right)}}$$

With SE:

$$SE\left(P\right) = \sqrt{\frac{1}{\sum_i \frac{1}{var\left(p_i\right)}}}$$

The CI of the pooled prevalence can be obtained by:

$$CI\left(P\right) = P \pm Z_{\frac{\alpha}{2}} SE\left(P\right)$$

Where $Z_{\frac{\alpha}{2}}$ denotes the appropriate factor from the standard normal distribution for the desired confidence percentage. (e.g., $Z_{0.025}$=1.96).

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Table S1 Risk of bias assessment

Study	Selection				Comparability	Outcomes			Total
	Representativeness of exposed cohort	Selection of nonexposed cohort	Ascertainment of exposure	Outcomes not present at the start of the study		Assessment of outcomes	Length of follow-up	Adequacy of follow-up	
Aboud 2021 (5)			*	*		*	*		****
Buratto 2018 (6)			*	*		*	*		****
Martin 2017 (7)			*	*		*	*		****
Mazine 2022 (8)	*	*	*	*	*	*	*		*******
Romero 2021 (9)			*	*		*	*	*	*****
Ryan 2021 (10)			*	*		*	*	*	*****

*, one score.

Table S2 Survival rate of each study

Author	4-year	5-year	8-year	10-year	12-year	15-year	16-year	20-year
Aboud 2021 (5)		98%		94.7%		90.0%		79.1%
Buratto 2018 (6)		99.2%		98.4%		97.5%		95.2%
Martin 2017 (7)	98.5%		94.8%		93.8%		89.0%	84.7%
Mazine 2022 (8)		100%		96.9%		93.0%		90.4%
Romero 2021 (9)	98.2%		96.0%	95.0%	92.8%		87.6%	74.0%
Ryan 2021 (10)		97.2%		94.4%		90.5%		81.8%

Table S3 Freedom from autograft reintervention of each study

Author	4-year	5-year	8-year	10-year	12-year	15-year	16-year	20-year
Aboud 2021 (5)		97.4%		95.1%		90.0%		85.2%
Buratto 2018 (6)								
Martin 2017 (7)		97.8%		95.8%		90.5%		76.3%
Mazine 2022 (8)								
Romero 2021 (9)	98.4%		96.9%	95.3%	94.0%		92.5%	84.3%
Ryan 2021 (10)		95.9%		87.0%		74.6%		60.4%

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Table S4 Freedom from homograft reintervention of each study

Author	4-year	5-year	8-year	10-year	12-year	15-year	16-year	20-year
Aboud 2021 (5)		97.8%		95.7%		92.6%		89.2%
Buratto 2018 (6)								
Martin 2017 (7)		98.9%		96.5%		91.9%		82.8%
Mazine 2022 (8)								
Romero 2021 (9)	99.2%		98.9%	98.9%	98.2%		97.2%	99.2%
Ryan 2021 (10)		95.7%		95.7%		92.8%		85.1%

Table S5 Freedom from autograft or homograft reintervention of each study

Author	4-year	5-year	8-year	10-year	12-year	15-year	16-year	20-year
Aboud 2021 (5)		95.0%		91.1%		84.5%		84.5%
Buratto 2018 (6)								
Martin 2017 (7)		97.2%		92.8%		86.1%		70.2%
Mazine 2022 (8)		96.2%		94.0%		91.2%		88.6%
Romero 2021 (9)	96.7%		95.5%	93.7%	92.2%		90.9%	82.3%
Ryan 2021 (10)		94.2%		83.6%		72.0%		55.1%

Table S6 Causes of death in a late phase

Author	Cause of late death
Aboud 2021 (5)	191 deaths: 86 cardiac-related (7 after redo procedure)
Buratto 2018 (6)	N/A
Martin 2017 (7)	28 deaths: 12 non-cardiac, 12 cardiac (not Ross related), and 4 Ross related
Mazine 2022 (8)	7 deaths: 1 valve-related, 6 non-cardiac
Romero 2021 (9)	N/A
Ryan 2021 (10)	24 deaths: 1 valve-related, 3 Ross-related (1 from redo SAVR, 2 from endocarditis of HG)

NA, not available; SVAR, surgical aortic valve replacement; HG, homograft.

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