

2023 대한심장혈관흉부외과학회

# 제55차 추계학술대회 & APELSO 2023

2023. 11. 02 (Thu) - 11. 04 (Sat), 그랜드 인터컨티넨탈 파르나스 서울

## Bovine Pericardial versus Porcine Bioprosthetic Aortic Valves: A Nationwide Population-based Cohort Study in Korea

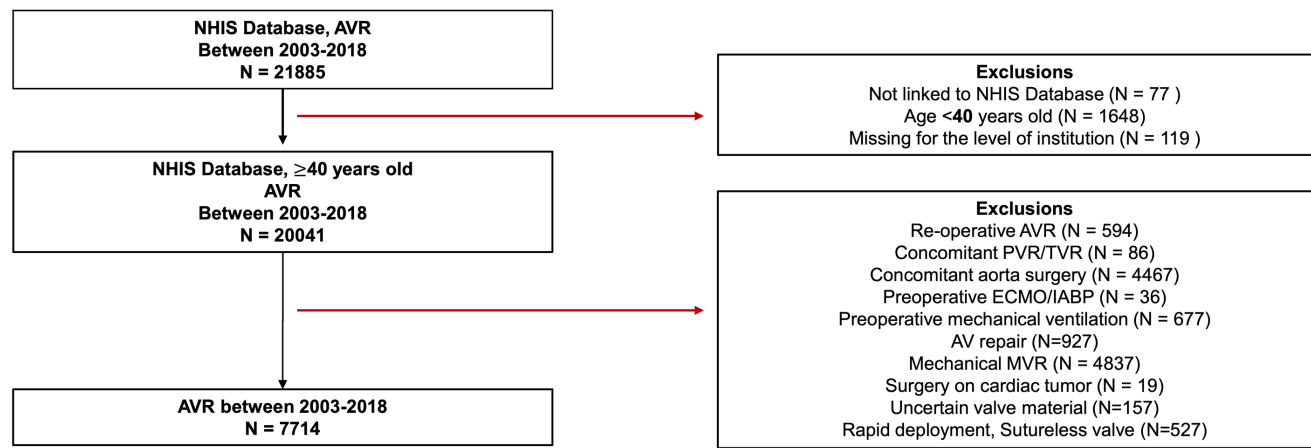
### 공지사항

- 소속기관이나 저자명이 드러나지 않도록 해주세요.
- 제목 슬라이드 포함 최대 6장, Font size 20 이상
- PPT 파일 작성 후 PDF로 전환해서 접수(필수)



- To compare the clinical outcomes of aortic valve replacement using bovine pericardial and porcine bioprostheses, utilizing a nationwide administrative claims database.

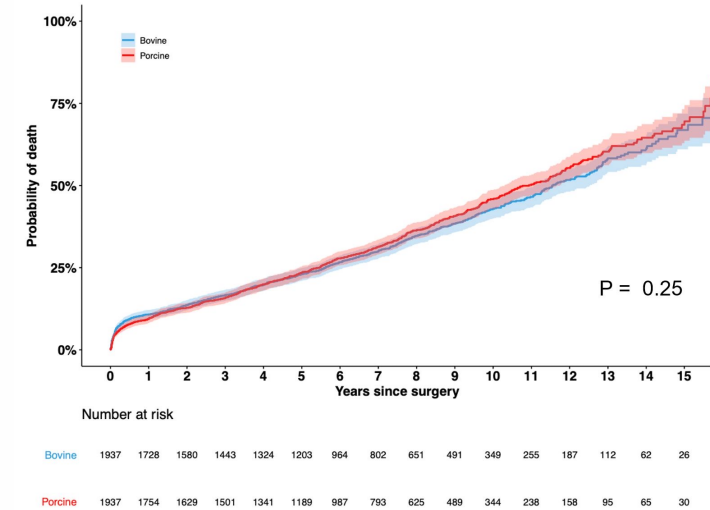
- Adult patients ( $\geq 40$  years old) who underwent bioprosthetic aortic valve replacement, without other valve replacements, between 2013 and 2018 were identified from the Korean National Health Insurance Service database.



- The outcomes of interest were all-cause mortality, cardiac mortality, and valve-related events, including the incidence of reoperation, endocarditis, systemic thromboembolism, and major bleeding
- Baseline adjustment was performed using propensity score matching
- Time-related outcomes were evaluated using a competing risk analysis, with death as a competing risk

Variable	Unadjusted			Bovine (N=1937)	Porcine (N=1937)	SMD
	Bovine (N=5621)	Porcine (N=2093)	P value			
<i>Baseline demographics</i>						
Age, years	72.06 ± 7.02	72.23± 6.62	0.33	72.06 ± 6.67	72.11± 6.64	0.009
Female, n (%)	2583 (46.0)	953 (45.5)	0.74	886 (45.7)	888 (45.8)	0.002
<i>Baseline comorbidities, n (%)</i>						
Hypertension	1069 (65.7)	1043 (68.5)	0.59	1388 (71.7)	1394 (72.0)	0.007
Diabetes mellitus	4090 (32.0)	1510 (29.7)	0.049	579 (29.9)	575 (29.7)	0.005
Dyslipidemia	1799 (26.6)	621 (21.6)	<.0001	413 (21.3)	421 (21.7)	0.01
Atrial fibrillation	1497 (8.8)	452 (8.4)	0.60	153 (7.9)	159 (8.2)	0.011
Chronic kidney disease	319 (5.7)	96 (4.6)	0.06	93 (4.8)	88 (4.5)	0.012
Dialysis	162 (2.9)	61 (2.9)	0.94	53 (2.7)	56 (2.9)	0.009
Stroke	758 (13.5)	301(14.4)	0.31	276 (14.2)	269 (13.9)	0.01
Ischemic heart disease	2565(45.6)	930 (44.4)	0.35	873 (45.1)	870 (44.9)	0.003
Myocardial infarction	225 (4.0)	86 (4.1)	0.83	81 (4.2)	82 (4.2)	0.003
Previous PCI	436 (7.8)	141 (6.7)	0.13	127 (6.6)	136 (7.0)	0.018
Congestive heart failure	1860 (33.1)	642 (30.7)	0.04	603 (31.1)	595 (30.7)	0.009
Anemia	755 (13.4)	240 (11.5)	0.02	243 (12.5)	226 (11.7)	0.027
COPD	425 (7.6)	160 (7.6)	0.90	154 (8.0)	150 (7.7)	0.008
Asthma	1056 (18.8)	340 (16.2)	0.01	337 (17.4)	325 (16.8)	0.016
Peripheral vascular disease	485 (8.6)	194 (9.3)	0.38	183 (9.4)	181 (9.3)	0.004
Previous cardiac surgery	35 (0.6)	12 (0.6)	0.80	8 (0.4)	9 (0.5)	0.008
Previous cancer	559 (9.9)	173 (8.3)	0.03	154 (8.0)	162 (8.4)	0.015

SMD, standardized mean difference; PCI, Percutaneous coronary intervention; COPD, Chronic obstructive pulmonary disease



There was no significant difference in **mortality** risks between group.

**After PS matching (incorporating baseline conditions, Health screening data, operative variable) baseline covariates were well-balanced with SMD <0.1**

Outcomes	Propensity score matching			
	No. of events (rate)		sHR (95% CI)	P-value
	Bovine (N=1170)	Porcine (N=1170)		
Outcomes, n (%/PY)				
Death	710 (5.9)	750 (6.2)	1.06 (0.96-1.17)	0.25
Cardiovascular death	317 (2.6)	337 (2.8)	1.06 (0.91-1.23)	0.46
Non-cardiovascular death	393 (3.2)	413 (3.4)	1.04 (0.91-1.20)	0.53
Valve related events				
Endocarditis	34 (0.3)	24 (0.2)	0.69 (0.41-1.16)	0.17
Reoperation	25 (0.2)	47 (0.4)	1.87 (1.16-3.01)	0.01
Thromboembolism	154 (1.5)	137 (1.3)	0.87 (0.69-1.09)	0.23
Hemorrhage	474 (5.3)	528 (5.9)	1.11 (0.98-1.25)	0.11

AVR (N=7714)	Bovine (N=5621)	Porcine (N=2093)	Hazard Ratio	95% CI	P value	P value for interaction
Age, n (%)						
< 70 years	402	158	1.05	0.85–1.30	0.639	0.843
≥ 70 years	1306	558	1.07	0.90–1.21	0.175	
Sex, n (%)						
Male	990	432	1.12	0.99–1.26	0.077	0.384
Female	718	283	1.03	0.88–1.19	0.749	
Diabetes mellitus, n (%)						
No	1099	487	1.16	1.03–1.30	0.014	0.043
Yes	610	228	0.94	0.79–1.11	0.438	
Chronic kidney disease, n (%)						
No	1551	660	1.10	0.99–1.21	0.063	0.129
Yes	158	56	0.83	0.58–1.17	0.294	
Dialysis, n (%)						
No	1602	681	1.10	0.99–1.21	0.056	0.016
Yes	106	35	0.59	0.36–0.97	0.037	

- After adjustment with propensity matching, the use of porcine bioprostheses was associated higher risk of **aortic valve reoperation**
- Subgroup analyses revealed that the utilization of bovine valves was associated with improved survival in patients with diabetes mellitus, whereas in patients undergoing dialysis, porcine valves exhibited better survival than bovine valves

- In this large nationwide cohort study of patients undergoing bioprosthetic aortic valve replacement, utilization of porcine prostheses was significantly associated with an increased risk of reoperation than that of bovine prostheses, supporting previous findings.