Comparison of 5-Year Clinical Outcomes Between Sirolimus-Versus Paclitaxel-Eluting Stent

Korean Multicenter Network Analysis of 9000-Patient Cohort

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Background—The paclitaxel-eluting stent (PES) and sirolimus-eluting stent (SES) are first-generation drug-eluting stents (DES) that have been the most widely used; however, it is unclear whether there are differences in the long-term safety and efficacy between the 2 stents. The long-term effectiveness of DES in unselected people with diabetes is also currently unclear. Moreover, the possibility of late catch-up is suggested in the DES population.

Methods and Results—This study is an 8-center collaborative network analysis of all comers who received SES and PES. All patients who received SES and PES from February 2003 to October 2006 were enrolled. We analyzed 9315 patients (33.3% with diabetes) treated with SES or PES in the major 8 centers representing whole area of Korea. The primary end point was a major adverse cardiac event (MACE) composite of overall death, myocardial infarction, and target lesion revascularization. All analyses were performed using multivariable, adjusted models and propensity score-matching methods. Long-term MACE for 5 years were significantly lower in the SES than the PES group (13.3% versus 15.6%; hazard ratio, 0.82; 95% confidence interval, 0.71 to 0.96; $P=0.01$), which was mainly driven by the difference of MACE within the first year (hazard ratio, 0.73; 95% CI, 0.59 to 0.90; $P=0.003$), but the rate of MACE between 1 and 5 years in the landmark analysis was not different between the 2 stents (1.9 versus 2.0%/yr). In the subpopulation of people with diabetes, in contrast to the whole population, PES was comparable to SES in terms of any clinical outcome, both within the first year and from 1 to 5 years (MACE for 5 years, 20.3 versus 17.9%; MACE within the first year, 9.6 versus 8.2%; MACE 1 to 5 years, 2.9 versus 2.6%/yr).

Conclusions—The PES was inferior to the SES in the clinical follow-up of more than 9000 patients' cohort for 5 years, which was mainly driven by the difference in the first year. In the subpopulation of people with diabetes that showed higher MACE than people without diabetes, however, PES was comparable to SES in any clinical outcome for 5 years. Although these 2 stents are not frequently used as before, the data would be useful to expect the long-term clinical course of the current DES. **(*Circ Cardiovasc Interv*. 2012;5:174-184.)**

Key Words: drug-eluting stents ■ sirolimus ■ paclitaxel ■ coronary restenosis ■ diabetes mellitus

The paclitaxel-eluting (PES) and sirolimus-eluting stent (SES) are first-generation drug-eluting stents (DES), and thus, have been the most widely used DES. Both paclitaxel and sirolimus are known to potently reduce vascular smooth-muscle cell proliferation, and consequently reduces the risk of restenosis[1,2] ; however, the mechanism of action of the 2 drugs is different.[3–7] In addition to the specific drug, different designs and coating materials were used for these stents. There has been some controversy on long-term clinical outcomes between patients treated with SES and PES.[8–16] Moreover, recent reports suggest that there may be a "catch-up " phenomena associated with DES with more progressive delayed late loss occurring in SES compared with PES[17–21] ; however, published randomized trials detected the absence of a "catch-up " effect.[22,23]

Considering such controversies, it would be important to confirm the maintenance of long-term efficacy and safety of these first-generation DES. Furthermore, long-term data

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WHAT IS KNOWN

- Numerous randomized clinical trials and registries have demonstrated the short- and long-term efficacy and safety between sirolimus-eluting stents and paclitaxel-eluting stents.
- There has been some controversy on long-term clinical outcomes between patients treated with sirolimus-eluting stents and paclitaxel-eluting stents.

WHAT THE STUDY ADDS

- The present analysis presents the largest and longest follow-up data of unselected patients treated with sirolimus-eluting stents and paclitaxel-eluting stents.
- In the whole population, paclitaxel-eluting stents were inferior to sirolimus-eluting stents in the 5-year clinical outcomes, which was mainly derived from the difference within the first year.
- In the patients with diabetes, paclitaxel-eluting stents were comparable to sirolimus-eluting stents in all the clinical variables for 5 years, within the first years, or beyond 1 year.

obtained from the first-generation DES would be helpful for us to expect the future long-term outcome with the current newer DES. The primary purpose of the present study was to compare 5-year clinical outcomes in patients receiving an SES or PES to determine differences in the long-term safety and efficacy.

Methods

Study Population

The present study was a multicenter collaborative network analysis of all comers who received SES and PES (SES: Cypher, Cordis, Johnson & Johnson) (PES: Taxus, Boston Scientific). Eight referral hospitals representing the whole area of Korea participated in this network analysis. We enrolled patients having lesions treated with only SES or PES from February 2003 to October 2006. All data input was done by database managers and independent research nurses who were not aware of the purpose of the study and had not participated in the management and care of the study patients. Patients were followed up for clinical events and evaluated for development of target lesion revascularization (TLR) or myocardial infarction (MI), using medical records or telephone interview. When needed, referring physicians and institutions were contacted for additional information. All outcomes of interest were confirmed by documentation at each hospital and were centrally adjudicated by Seoul National University Hospital, Seoul, South Korea. The registry was initiated and sponsored by the Korean Society of Interventional Cardiology, and there was no industry involvement in the design, conduct, or analysis of this study. This study was approved by the institutional review board at each hospital, which allowed the use of clinical data for this study.

Procedures and Postintervention Medications

All procedures were performed according to standard clinical guidelines. The operator was responsible for the decision to choose a specific treatment strategy. Lesions could be pretreated with balloon angioplasty or other devices and could receive postdilatation. The choice of SES or PES was at the discretion of the physician. Angiographic success was defined as a residual stenosis ≤30% by visual analysis in the presence of Thrombolysis In Myocardial Infarction (TIMI) grade 3 flow. All patients were pretreated with 300 mg of clopidogrel. Patients received clopidogrel 75 mg/d for at least 6 months. Extended use of clopidogrel beyond 6 months was at the discretion of the physician. All patients were advised to maintain aspirin (≥80 mg/d) lifelong.

Table 1. Baseline Characteristics Before Propensity Matching

Characteristics	SES (n=5775)	PES (n=3378)	*P*
Age, mean±SD, y	63.2±10.6	63.7±10.7	0.06
Male sex, n (%)	3813 (66.0%)	1961 (64.3%)	0.10
Weight, mean±SD, kg	64.5±10.4	64.4±10.4	0.76
Height, mean±SD, cm	162.4±8.6	162.1±8.9	0.22
Current smoking, n (%)	1896 (32.8%)	1325 (39.2%)	<0.001
Clinical presentation, n (%)			
Silent ischemia	112 (2.0%)	70 (2.1%)	0.69
Stable angina	1752 (31.0%)	972 (29.2%)	0.07
Unstable angina	2076 (36.7%)	1135 (34.1%)	0.01
Acute myocardial infarction	1714 (30.3%)	1153 (34.6%)	<0.001
History, n (%)			
Hypertension	3009 (52.1%)	1785 (52.8%)	0.49
Diabetes mellitus	1922 (33.3%)	1129 (33.4%)	0.89
Dyslipidemia	1479 (25.6%)	815 (24.1%)	0.11
Chronic kidney disease	515 (8.9%)	303 (9.0%)	0.93
Prior myocardial infarction	594 (10.3%)	329 (9.7%)	0.40
Prior percutaneous coronary intervention	667 (11.6%)	387 (11.5%)	0.96
Prior coronary bypass graft	142 (2.5%)	72 (2.1%)	0.32
Prior cerebrovascular accident	421 (7.4%)	237 (7.0%)	0.50
Lab			
HbA1c, mean±SD, %	6.76±1.56	6.62±1.44	0.003
Creatinine, mean±SD, mg/dL	1.19±1.16	1.19±1.19	0.98
Extent of coronary artery disease, n (%)			
Left main	241 (4.2%)	136 (4.0%)	0.74
1 vessel	2446 (42.4%)	1495 (44.3%)	0.08
2 vessel	2058 (35.6%)	1101 (32.6%)	0.003
3 vessel	1271 (22.0%)	782 (23.1%)	0.21
Average stent diameter per patient, mean±SD, mm	3.02±0.33	3.07±0.35	<0.001
Total stent length per patient, mean±SD, mm	30.41±15.31	32.97±20.30	<0.001
No. of lesions per patient, mean±SD	1.33±0.63	1.49±0.80	<0.001
No. of implanted stents per patient, mean±SD	1.23±0.54	1.38±0.76	<0.001
Type of lesion, n (%)			
A	119 (2.3%)	45 (1.4%)	0.01
B1	861 (16.8%)	605 (19.2%)	0.004
B2	1681 (32.7%)	916 (29.1%)	0.001
C	2474 (48.2%)	1579 (50.2%)	0.07
Intravascular ultrasound use, n (%)	827 (21.0%)	506 (19.6%)	0.16
Ejection fraction, mean±SD, %	57.6±12.9	57.8±12.7	0.41

Values are presented as percentage for categorical variables and as mean±SD for continuous variables. $P<0.05$ defined as statistically significant.
SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent.

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Study End Points and Definitions

The goals of present study were to determine the long-term safety and efficacy of SES as compared with PES. The primary end point was a major adverse cardiac event (MACE) composite of overall death, MI, or TLR during follow-up.[24] Overall deaths were categorized as cardiac or noncardiac. All deaths were considered cardiac unless an unequivocal noncardiac cause could be established. MI was defined as the presence of at least 2 of the following: ischemic symptoms, concentrations of cardiac enzymes (creatine kinase-MB fraction of greater than 3× the normal upper limit), and new ECG changes compatible with MI. TLR was defined as a repeat intervention to control a luminal stenosis within the stent or in the 5-mm proximal or distal segments adjacent to the stent. Secondary end points included individual components of the composite end point, cardiac death, and stent thrombosis (ST). ST was defined as angiographic evidence of thrombus within the stent or a reduction in Thrombolysis In Myocardial Infarction grade to 0, 1, or 2 in the previously treated target vessel, in association with an acute clinical cardiac presentation of unstable angina or MI. By the timing of presentation, ST was classified as early, late, and very late if it occurred within 30 days, 30 days to <1 year, or >1 year, respectively, after the procedure.

Diabetes mellitus was defined as a history of diabetes, a fasting plasma glucose concentration more than 126 mg/dL, or the presence of therapy. Dyslipidemia was defined as current use of statin or initial low-density lipoprotein-cholesterol level >160 mg/dL. Chronic kidney disease (CKD) is defined as estimated glomerular filtration rate <60 mL/min per 1.73 m^2, using the modification of diet in renal disease (MDRD) formula or serum creatinine (Cr) >1.5 mg/dL.[25] The MDRD formula was defined in the following way. Where the Cr concentration is in mg/dL:

Estimated glomerular filtration rate=$186\times$serum $Cr^{-1.154}\times age^{-0.203}\times(0.742$ if female)

Statistical Analysis

Continuous variables were compared using the *t* test or the Wilcoxon rank sum test, and categorical variables were compared with the χ^2 test or Fisher exact test as appropriate. Unadjusted time-to-event rates in the SES and PES groups were calculated and compared using Cox proportional hazard models to estimate the hazard ratios (HRs) with 95% confidence intervals (CIs).

Table 2. Unadjusted Clinical Outcomes At 5 Years, Comparing the SES and PES Groups Before Propensity Matching

	SES (n=5775)	PES (n=3378)	*P**
Primary end point, n (%)			
MACE	745 (12.9)	460 (13.6)	0.06
Secondary end points, n (%)			
Cardiac death	169 (2.9)	113 (3.3)	0.17
Overall death	308 (5.3)	182 (5.4)	0.56
MI	254 (4.4)	138 (4.1)	0.89
TLR	365 (6.3)	243 (7.2)	0.02
ST	47 (0.8)	41 (1.2)	0.02
Early ST	15 (0.3%)	22 (0.7%)	0.04
Late ST	6 (0.1%)	7 (0.2%)	0.14
Very late ST	26 (0.5%)	12 (0.4%)	0.40

P<0.05 defined as statistically significant.

SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; MACE, major adverse cardiac event; MI, myocardial infarction; TLR, target lesion revascularization; ST, stent thrombosis.

*The SES groups versus PES groups. The Fisher exact test was used for all outcomes.

Table 3. Characteristics of Propensity-Matched Cohorts

Characteristics	SES (n=2810)	PES (n=2810)	*P*
Age, mean±SD, y	63.3±10.6	63.9±10.7	0.07
Male sex, n (%)	1825 (64.9)	1816 (64.6)	0.08
Weight, mean±SD, kg	64.9±10.3	64.4±10.5	0.08
Height, mean±SD, cm	163.1±8.6	162.3±8.7	0.06
Current smoking, n (%)	994 (35.4%)	955 (34.0%)	0.26
Clinical presentation, n (%)			
Silent ischemia	62 (2.2%)	60 (2.1%)	0.87
Stable angina	842 (30.0%)	847 (30.1%)	0.83
Unstable angina	891 (31.7%)	892 (31.7%)	0.92
Acute myocardial infarction	1019 (36.3%)	1007 (35.9%)	0.80
History, n (%)			
Hypertension	1468 (52.2%)	1484 (52.8%)	0.59
Diabetes mellitus	918 (32.7%)	936 (33.3%)	0.56
Dyslipidemia	672 (23.9%)	663 (23.6%)	0.46
Chronic kidney disease	255 (9.1%)	248 (8.8%)	0.77
Prior myocardial infarction	253 (9.0%)	229 (8.1%)	0.27
Prior percutaneous coronary intervention	311 (11.1%)	295 (10.5%)	0.57
Prior coronary bypass graft	62 (2.2%)	53 (1.9%)	0.41
Prior cerebrovascular accident	211 (7.5%)	189 (6.7%)	0.26
Lab			
HbA1c, mean±SD, %	6.7±1.6	6.6±1.4	0.06
Creatinine, mean±SD, mg/dL	1.2±1.1	1.2±1.2	0.97
Extent of coronary artery disease, n (%)			
Left main	115 (4.1%)	106 (3.8%)	0.56
1 vessel	1395 (49.6%)	1427 (50.8%)	0.34
2 vessel	908 (32.3%)	854 (30.4%)	0.14
3 vessel	511 (18.2%)	525 (18.7%)	0.59
Average stent diameter per patient, mean±SD, mm	3.1±0.3	3.1±0.3	0.34
Total stent length per patient, mean±SD, mm	32.5±18.4	32.1±18.0	0.44
No. of lesions per patient, mean±SD	1.4±0.7	1.4±0.7	0.83
No. of implanted stents per patient, mean±SD	1.3±0.6	1.3±0.6	0.81
Type of lesion, n (%)			
A	43 (1.5%)	41 (1.5%)	0.82
B1	519 (18.5%)	569 (20.2%)	0.09
B2	695 (24.7%)	729 (25.9%)	0.30
C	1481 (52.7%)	1401 (49.9%)	0.07
Intravascular ultrasound use, n (%)	541 (19.3%)	521 (18.5%)	0.27
Ejection fraction, mean±SD, %	57.5±12.6	57.7±12.5	0.34

Values are presented as percentage for categorical variables and as mean±SD for continuous variables.

P<0.05 defined as statistically significant.

SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

A propensity score analysis was also performed to control selection biases among the DES groups. We employed a propensity score-matching method to reweight our sample. Propensity scores were generated and included as a regression adjustment in each of the Cox

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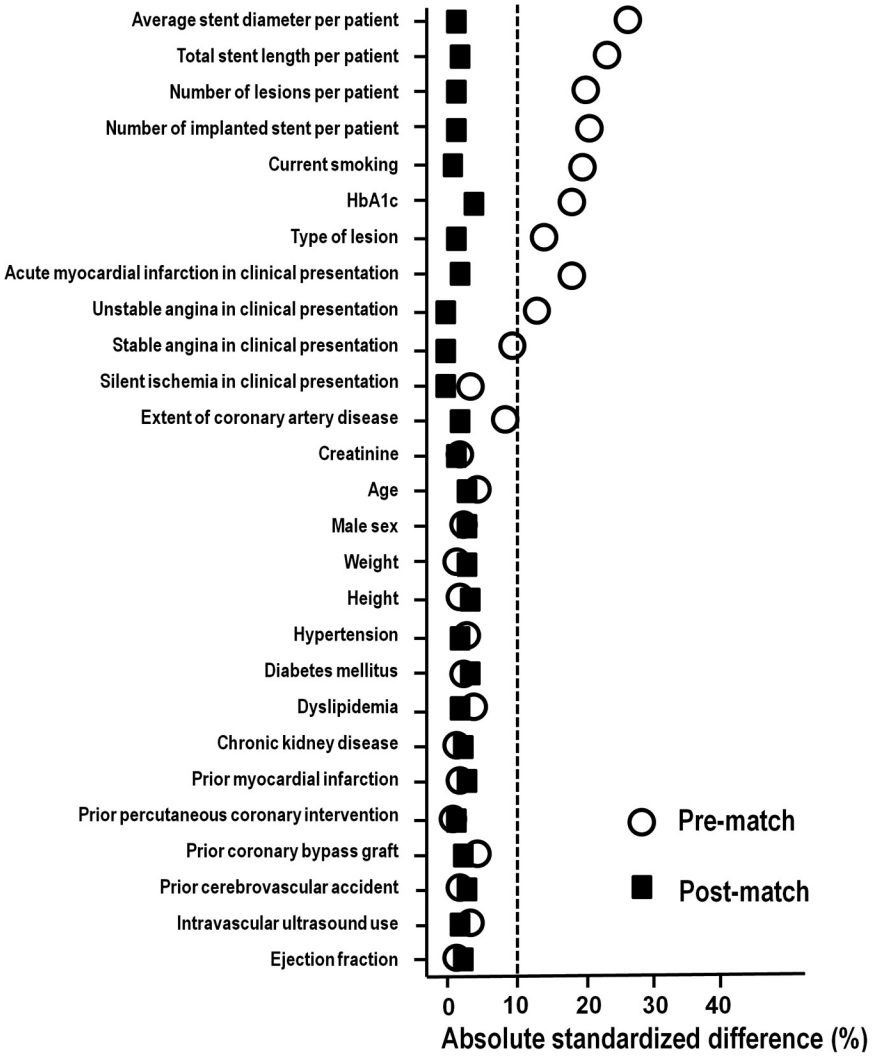

Figure 1. Absolute standardized differences in baseline covariates between patients with SES and PES, before and after propensity score matching. SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent.

proportional hazard regression models. In our study, 1-to-1 matching was used for each control group member as a matching partner for each comparison group member with the closest estimated propensity score. With use of propensity scoring, patients in the SES group were 1-to-1 matched with patients in the PES group to achieve groups with similar baseline characteristics. For the prediction model, discrimination was assessed by the c-statistic and calibration assessed by the Hosmer-Lemeshow goodness-of-fit test. After adjusting for propensity score matching, crude and adjusted risks for adverse outcomes were compared by univariate and multivariate Cox proportional hazard regression analysis. Also, we ran the Cox model, respectively, with all raw data adjusting for major factors that discriminate between the 2 groups and the inverse weighted propensity score. The final models were determined by backward elimination procedure. Analyses were truncated at 5 years of follow-up because of the small number of patients with data thereafter. The cumulative event rates for the end points were estimated by the Kaplan-Meier method and compared with the log-rank test.

To provide separate descriptions of the early and late relative risks of events, we performed landmark analysis with a prespecified landmark set at 1 year,[26] using a conditional logistic regression model. The primary and secondary end points were analyzed in the prespecified subgroups of patients defined by DM because diabetes was an independent parameter to predict the clinical events in the published report.[27–29] All probability values were 2-sided, and a probability value of $P<0.05$ was considered significant. All statistical analyses were performed with SPSS version 16.0 for Windows (SPSS Inc).

Results

Patient Population and Long-Term Clinical Outcomes Before Propensity Score Matching

A total of 9315 consecutive patients were included in the study. SES was the predominant DES in this study: 5775 (63.1%) patients received SES, whereas 3378 (36.9%) received PES. Table 1 showed the baseline clinical, demographic, and angiographic characteristics of patients chosen to receive a SES alone or PES.

The median follow-up was 1623 days (interquartile range [IQR], 1173 to 2023 days) in the overall population, 1675 days (IQR, 1231 to 2113 days) in the SES group, and 1548 days (IQR, 1051 to 1855 days) in the PES group. The mean follow-up was 1450±664 days, and mean lost-to-follow-up was 1199±601 days in the overall population. Five-year unadjusted clinical outcomes are shown in Table 2. No significant differences were observed between SES and PES groups in terms of MACE, cardiac death, overall death, and MI within 5 years; however, TLR and ST were significantly higher in the PES group than in SES ($P=0.02$ and $P=0.02$, respectively).

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Table 4. Crude and Adjusted Hazard Ratios of Clinical Outcomes, According to Stent Group, After Adjusting for Propensity

			Crude		Multivariable Adjusted	
Outcome Rates (%) at 5 Y*	SES	PES	HR† (95% CI)	*P*	HR† (95% CI)	*P*
Primary end point						
MACE						
1 y	6.0	8.2	0.72 (0.58–0.89)	0.002	0.73 (0.59–0.90)	0.003
1–5 y	7.3	7.3	1.04 (0.83–1.30)	0.43	0.93 (0.74–1.17)	0.53
0–5 y	13.3	15.6	0.85 (0.73–1.00)	0.01	0.82 (0.71–0.96)	0.01
Secondary end points						
Cardiac death						
1 y	1.8	2.6	0.69 (0.48–0.99)	0.04	0.72 (0.50–1.04)	0.08
1–5 y	0.9	1.2	0.82 (0.64–1.42)	0.27	0.73 (0.42–1.41)	0.29
0–5 y	2.7	3.8	1.40 (1.03–1.91)	0.02	0.72 (0.53–1.02)	0.12
Overall death						
1 y	2.5	3.7	0.69 (0.51–0.94)	0.02	0.70 (0.51–0.95)	0.02
1–5 y	2.1	2.2	0.82 (0.64–1.42)	0.56	0.91 (0.60–1.37)	0.65
0–5 y	4.6	5.9	0.77 (0.60–0.99)	0.02	0.76 (0.59–1.09)	0.10
MI						
1 y	2.0	2.7	0.77 (0.54–1.10)	0.13	0.74 (0.52–1.05)	0.09
1–5 y	2.2	2.0	1.14 (0.76–1.71)	0.90	1.14 (0.74–1.75)	0.54
0–5 y	4.2	4.7	0.92 (0.70–1.20)	0.32	0.86 (0.66–1.13)	0.29
TLR						
1 y	2.6	3.7	0.73 (0.53–0.99)	0.03	0.71 (0.51–0.97)	0.03
1–5 y	4.2	4.9	0.95 (0.71–1.27)	0.22	0.82 (0.61–1.11)	0.20
0–5 y	6.8	8.6	0.83 (0.67–1.04)	0.02	0.77 (0.62–0.96)	0.02
ST						
1 y	0.5	1.0	0.49 (0.25–0.97)	0.04	0.50 (0.26–0.97)	0.04
1–5 y	0.4	0.6	0.90 (0.36–2.21)	0.66	0.82 (0.30–2.21)	0.69
0–5 y	0.9	1.5	0.61 (0.35–0.99)	0.04	0.59 (0.34–1.02)	0.06

P<0.05 defined as statistically significant.

SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; HR, hazard ratios; CI, confidence interval; MACE, major adverse cardiac event; MI, myocardial infarction; TLR, target lesion revascularization; ST, stent thrombosis.

*Outcomes rates were derived from Kaplan-Meier curves.

†HR, presented as median with 95% CI, are for the occurrence of an event among patients with SES, as compared with those with PES.

Long-Term Clinical Outcomes After Propensity Score Matching

Propensity score matching was successful, defined as absolute standard differences <10% for all measured covariates after propensity score matching, in ensuring comparability of baseline clinical, demographic, and angiographic covariates. After propensity score matching was completed, there were 2810 matched pairs of patients (Table 3). There were no significant differences between SES and PES in any of baseline characteristics (Figure 1).

Matching by propensity score slightly changed the previous results. The MACE rate was changed from 12.9% to 13.3% in SES and from 13.6% to 15.6% in PES at 5-year follow up. The incidences of secondary end points were also different after applying propensity score matching. The incidences of MACE were different between 2 stents in the propensity score-matched cohort (Table 4), whereas not different in the whole cohort (Table 2). Propensity score-adjusted Cox regression analysis showed that long-term MACE for 5 years was significantly lower in the SES than the PES group (13.3% versus 15.6%; HR, 0.82; 95% CI, 0.71 to 0.96; *P*=0.01) (Figure 2), which was derived mainly from the results within the first year by landmark analysis (HR, 0.73; 95% CI, 0.59 to 0.90; *P*=0.003) (Figure 3), but, during the period between 1 and 5 years, there were no significant differences in the clinical outcomes between 2 stents: MACE (HR, 0.93; 95% CI, 0.74 to 1.17; *P*=0.53), cardiac death (HR, 0.73; 95% CI, 0.42 to 1.41; *P*=0.29), overall death (HR, 0.91; 95% CI, 0.60 to 1.37; *P*=0.65), MI (HR, 1.14; 95% CI, 0.74 to 1.75; *P*=0.54), TLR (HR, 0.82; 95% CI, 0.61 to 1.11; *P*=0.20), and ST (HR, 0.82; 95% CI, 0.33 to 2.21; *P*=0.69). The proportion of MACE events in the first year, compared to after year 1 was 45.1% in the SES group and 52.5% in the PES group. The cumulative incidence of MACE was 6.0% in

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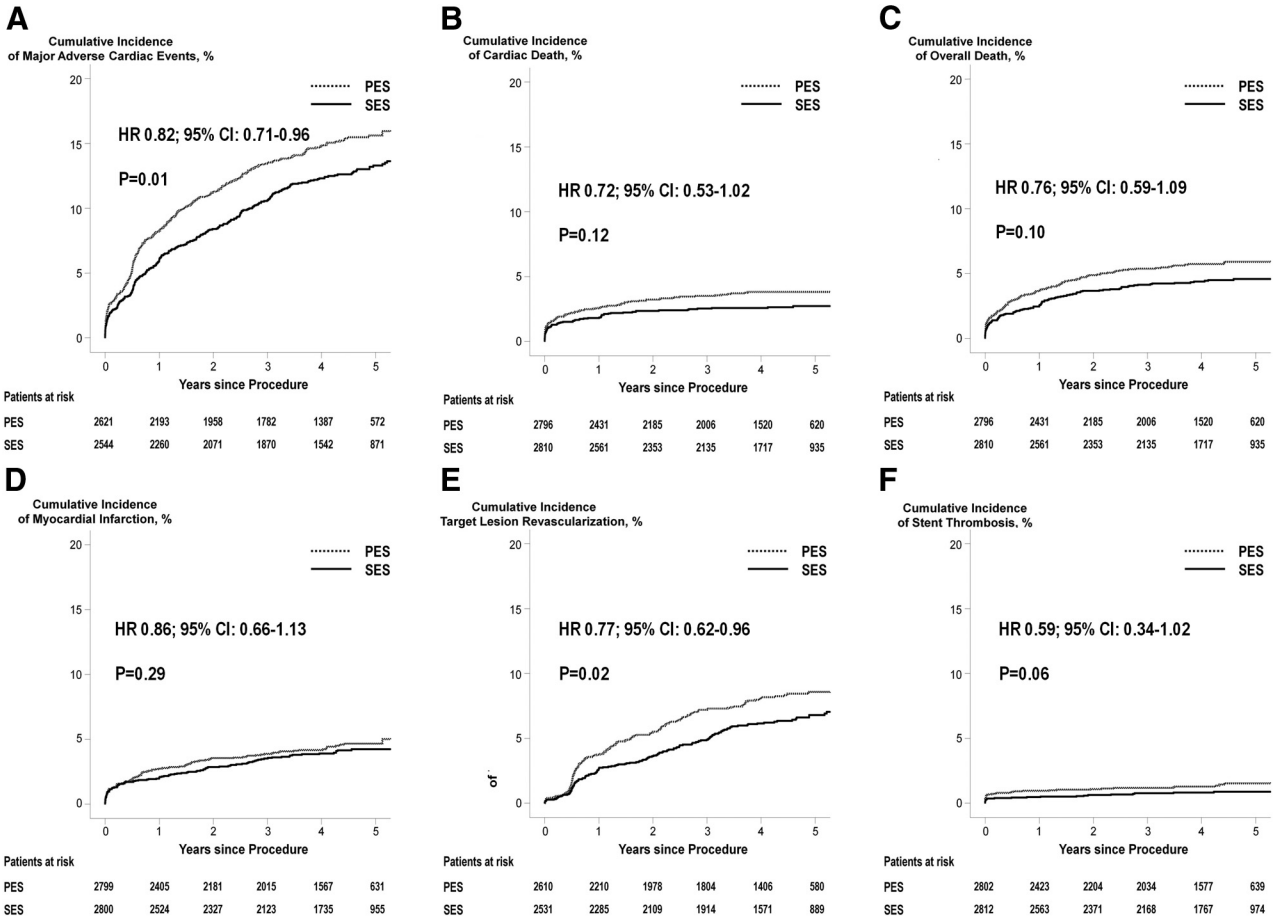

Figure 2. Five-year propensity score adjusted cumulative incidence in patients implanted with SES or PES of (**A**) major cardiac adverse event, (**B**) cardiac death, (**C**) overall death, (**D**) myocardial infarction, (**E**) target lesion revascularization, and (**F**) stent thrombosis. HR, presented as median with 95% CI, are for the occurrence of an event among patients with PES, as compared with those with SES. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; HR, hazard ratios; CI, confidence interval.

the SES group and 8.2% in the PES group at 1 year, and the slope of the linear portion of the cumulative incidence curve between 1 and 5 years was approximately 2% per year in both groups, and a cumulative incidence of ST at 1 year was 0.5% in the SES and 1.0% in the PES group. Also, ST occurred steadily at an annual rate of 0.1% to 0.2% for up to 5 years after 1 year of follow-up. Table 5 summarizes the long-term relative risks of clinical outcomes during the 5-year follow-up between the 2 groups. Within the first year, SES showed a significantly lower risk of all clinical events except for cardiac death and MI than PES.

Subgroup Analysis

The primary and secondary end points were analyzed, also, in the prespecified subgroup of patients defined by diabetes (Figure 4). The diabetes-based analysis was performed in the matched population. Interestingly, among patients with diabetes after the propensity score-adjusted analysis, PES was not inferior to SES in terms of all clinical variables. In the landmark analysis of patients with diabetes, also, PES was comparable to SES in terms of MACE, cardiac death, overall death, MI, TLR, and ST during both periods, within the first year, and from 1 to 5 years (Figure 4).

In addition, we estimated MACE for the patients with and without diabetes, receiving either PES or SES. The 5-year rate of MACE was 19.4% in patients with diabetes and 12.4% in patients without diabetes (HR, 1.57; 95% CI, 1.35 to 1.83; $P<0.001$). In the landmark analysis, significant differences in rates of MACE existed at 1 year (8.9% versus 6.2%; HR, 1.43; 95% CI, 1.16 to 1.77; $P=0.001$), as well as between years 1 and 5 (11.7% versus 6.3%; HR, 1.76; 95% CI, 1.41 to 2.20; $P<0.001$) in patients with diabetes versus those without diabetes. The slope of the cumulative incidence curve between 1 and 5 years was approximately 3% per year in the diabetes group and 1.5% per year in the nondiabetes group.

Figure 5 shows results of subgroup analysis for the associations between DES implantation and risk of MACE at 5 years. Interaction terms were added to the logistic regression analysis to explore whether the reduction in MACE at 5 years with SES compared with PES was consistent across important subgroups. As shown in Figure 5, there were insignificant interactions between treatment assignment and MACE at 5 years among 10 subgroups, with the exception of patients with the presence of a vessel <3 mm in diameter at the target lesion. The superiority of SES to PES was more remarkable in small vessels. Results of detailed subgroup analysis are presented in the online-only data supplement.

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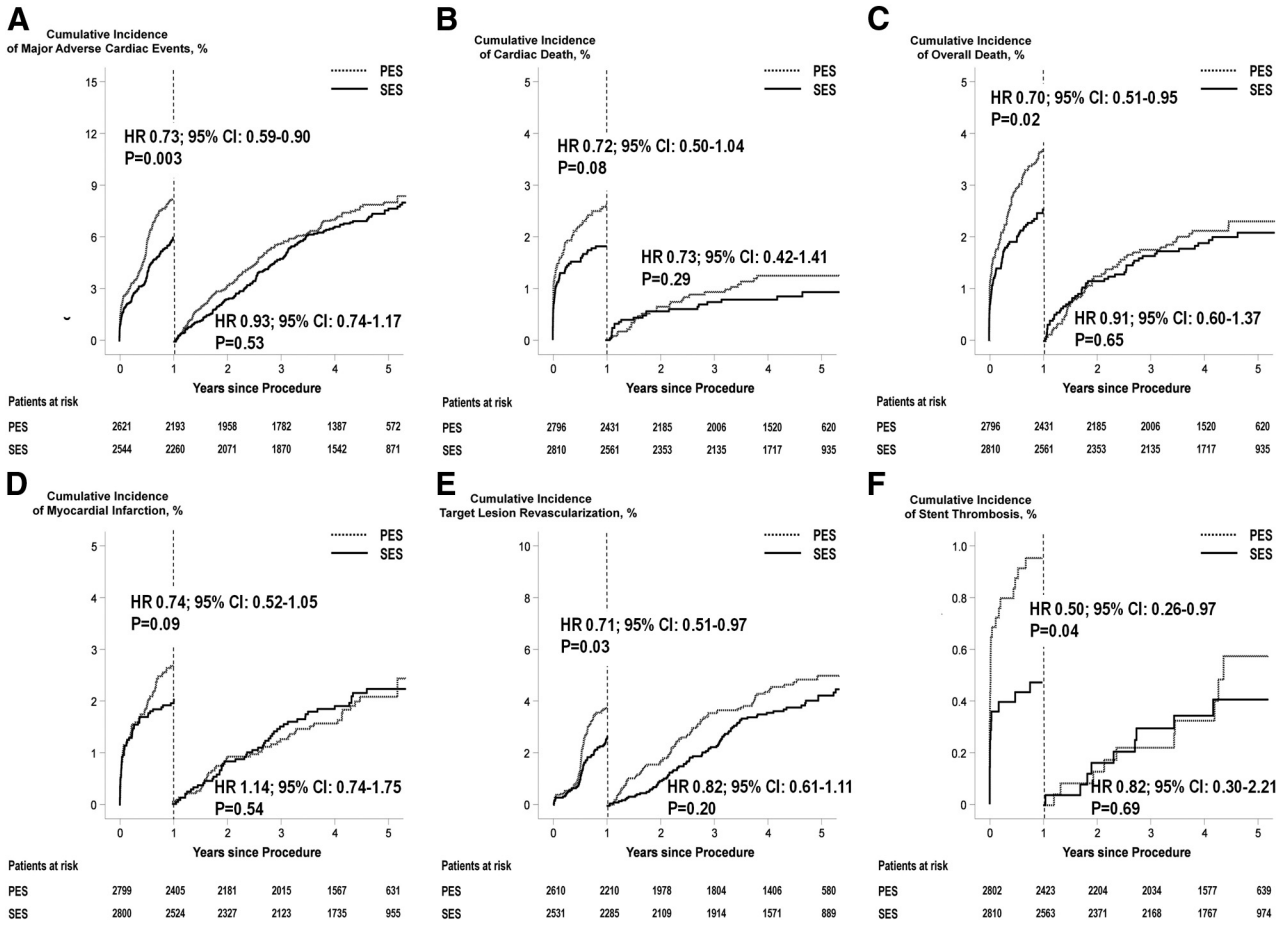

Figure 3. Landmark analysis of the propensity score-matched patients. Cumulative risk of (**A**) major cardiac adverse event, (**B**) cardiac death, (**C**) overall death, (**D**) myocardial infarction, (**E**) target lesion revascularization, and (**F**) stent thrombosis during the first 1 year and thereafter for patients treated with PES versus SES. HR, presented as median with 95% CI, are for the occurrence of an event among patients with PES, as compared with those with SES. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; HR, hazard ratios; CI, confidence interval.

Discussion

The purpose of this study was to compare the long term efficacy and safety after the use of first-generation DES in an all-comers, real world registry. The major findings of the present study, comparing 5-year clinical outcomes in patients with either SES or PES for coronary artery disease, were as follows: (1) In the whole population, PES was inferior to SES in the 5-year clinical outcomes, which was mainly derived from the difference within the first year. There were no differences of clinical outcomes beyond 1 year. (2) In the patients with diabetes, PES was comparable to SES in all the clinical variables for 5 years, within the first years, or beyond 1 year.

Differences in Clinical Course of 2 Stents Between 2 Different Periods, Within or Beyond the First Year

First, clinical events most commonly occurred from 6 to 9 months after DES implantation, probably because the neointimal growth mainly occurs during the several months after DES implantation. It may be also influenced by the follow-up angiography performed around 9 months. Of the patients, 45.8% completed the follow-up angiogram, with a similar proportion for the PES and SES groups (46.9% versus 44.7%, P=NS). The

Table 5. Adjusted Relative Risks of Clinical Outcomes, According to Stent Group After Adjusting for Propensity

Outcome Rates (%) at 5 Y*	SES	PES	Relative Risk With SES (95% CI)	P
Primary end point				
MACE				
1 y	6.0	8.2	0.73 (0.59–0.92)	0.006
Secondary end points				
Cardiac death				
1 y	1.8	2.6	0.71 (0.49–1.04)	0.08
Overall death				
1 y	2.5	3.7	0.68 (0.50–0.94)	0.02
MI				
1 y	2.0	2.7	0.75 (0.52–1.08)	0.12
TLR				
1 y	2.6	3.7	0.73 (0.53–0.99)	0.04
ST				
1 y	0.5	1.0	0.50 (0.26–0.98)	0.04

*Outcome rates were derived from Kaplan-Meier curves.

$P<0.05$ defined as statistically significant.

SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; CI; confidence interval; MACE, major adverse cardiac event; MI, myocardial infarction; TLR, target lesion revascularization; and ST, stent thrombosis.

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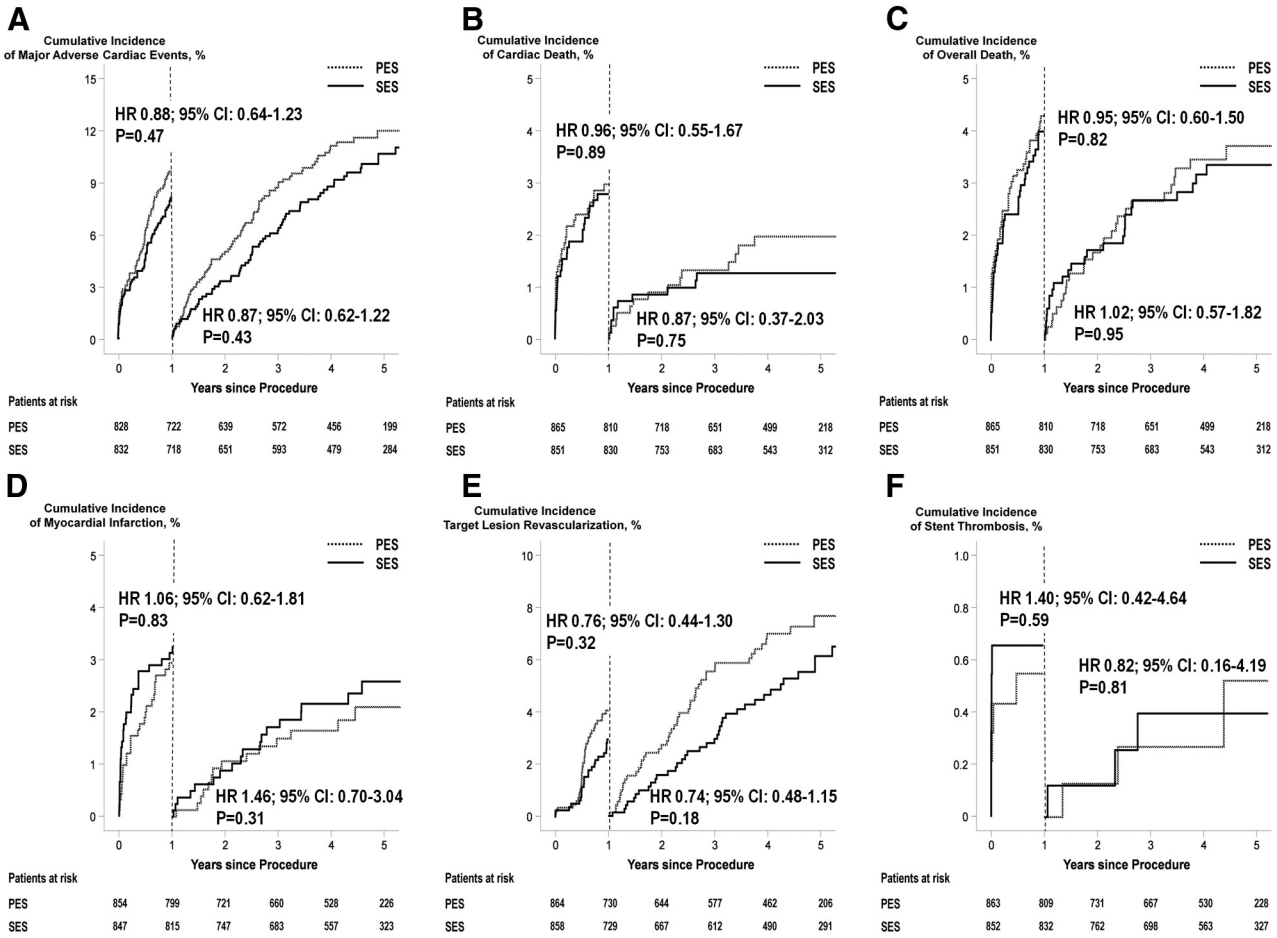

Figure 4. Landmark analysis of patients with diabetes. Propensity score-adjusted hazard ratios were shown for (**A**) major cardiac adverse event, (**B**) cardiac death, (**C**) overall death, (**D**) myocardial infarction, (**E**) target lesion revascularization, and (**F**) stent thrombosis during the first 1 year after stent placement and after the first 1 year. HR, presented as median with 95% CI, are for the occurrence of an event among patients with PES, as compared with those with SES. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; HR, hazard ratios; CI, confidence interval.

differences in neointimal growth between the 2 stents may result in the differences in TLR within 1 year (2.6% in the SES group and 3.7% in the PES at 1 year). The rate of ST within a year was also different between the 2 stents (0.5% in the SES and 1.0% in the PES group), which contributed to overall differences in MACE within 1 year between 2 stents (6.0% in the SES group and 8.2% in the PES at 1 year). In a large cohort study from the West, the rate of ST was approximately 1.0% in SES and 1.3% in PES at 1 year,[30] and these results were higher than ours where cumulative incidence of ST at 1 year was 0.5% in the SES and 1.0% in the PES group. Such differences between West and East may be related to ethnic differences in vascular thrombosis or technical differences in coronary intervention.

Second, the recent studies have suggested the possibility of late catch up beyond 1 year after DES implantation, especially in SES compared with PES[17–21]; however, there have been few studies reporting long-term outcomes of DES beyond 1 year. For that reason, we compared a trend of different temporal pattern in clinical outcomes between 2 groups during the period from 1 to 5 years after DES implantation. Notably, the present study demonstrated that clinical events continuously occurred from 1 to 5 years after stent implantation, despite the cumulative incidence of clinical events over time that showed a gentle slope. Our study shows a continuous linear hazard of ST comparable to a large meta-analysis study,[13] but, the incidence of ST in our study was slightly lower compared with other large cohort studies in the West.[11,15,30,31]

It is notable that there were significant differences between the 2 stents in the rate of clinical events until 1 year, but these differences between 2 stents disappeared after 1 year. This phenomenon is biologically explainable because neointimal growth or thrombotic milieu around a stent is more activated during the early period after implantation and thus would be influenced by the different drugs, polymers, or design of DES. In contrast, during a later period after 1 year, the activity of neointimal growth or thrombotic milieu around a stent would be more subsided and less influenced by the differences in the several components of DES. Thus, even between DES and BMS, long-term clinical course after 1 year would not be different, which was corroborated by several studies in the West.[13,23]

Differences in the Efficacy and Safety Between 2 Stents in the Early Period (Within the First Year)

The present study shows that MACE occurs less frequently with SES than with PES, which was consistent with previous

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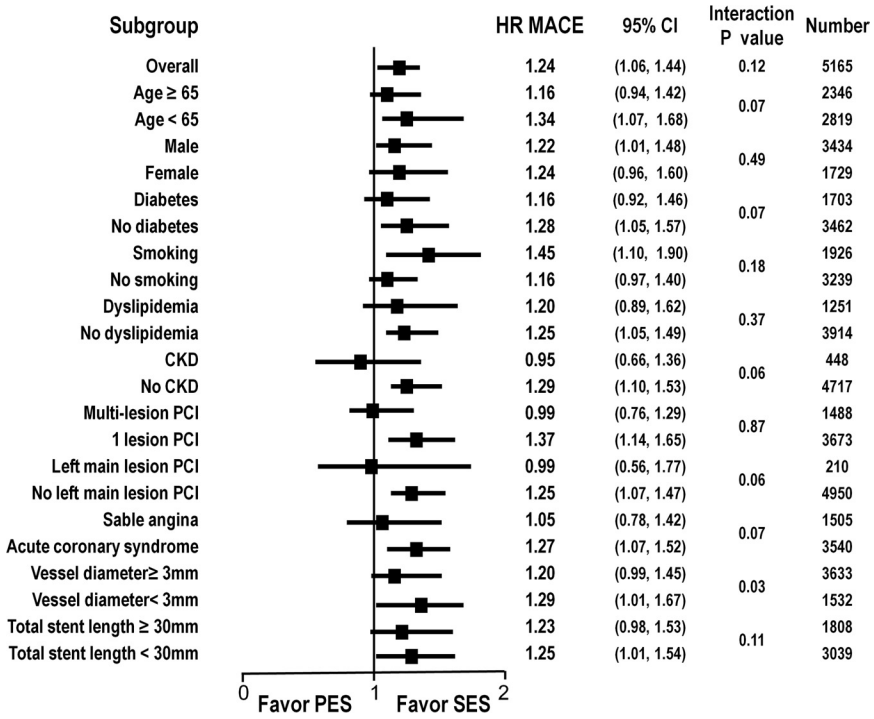

Figure 5. Subgroup analyses of the primary end point of 5-year follow-up among patients treated with PES versus SES. Probability for interaction represents the likelihood for interaction between the variable and the relative treatment effect. SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; HR, hazard ratios; CI, confidence interval; MACE, major adverse cardiac event; CKD, chronic kidney disease; PCI, percutaneous coronary intervention.

reports.[11,12] In contrast, there have been several studies demonstrating no significant difference in MACE between patients receiving SES and PES.[9,15,16,32] This discrepancy would be explained by the differences in the risk profiles of the enrolled patients or the rate of angiographic follow-up.

This study shows a significant difference in MACE rate that is mostly attributable to the higher TLR rate in the PES than the SES recipients. The high rate of routine angiographic follow-up would have potentiated the impact of the differences in late loss on the TLR rate between the 2 stents. The rate in this study is high, although the angiographic follow-up rate was similar for SES and PES groups. Therefore the difference in the clinical outcomes between stents is probably accentuated by the high rate of follow-up angiography, but, in the deeper analysis between patients with follow-up angiography versus those without follow-up angiography, the superiority of SES to PES was still observed in patients without follow-up angiography, suggesting that differences of MACE are mainly because of differences in the efficacy and safety between 2 stents. Our study is the largest study in the East comparable to worldwide data. Therefore, this trial has a historical role in supporting the previous findings in the West.

Different Response to SES and PES Between Diabetic Versus Nondiabetic Population

Patients with diabetes mellitus have worse clinical outcomes than those without diabetes after percutaneous coronary intervention, and diabetes is related to a high in-stent restenosis rate after DES implantation.[33–36] Recent studies with patients with diabetes reported that there were reductions in late luminal loss in favor of the SES compared with PES,[35,37,38] whereas a meta-analysis using an indirect comparison of randomized controlled trials indicated that outcomes in patients with diabetes were similar for 2 stents.[39] These discrepancies suggest that mild difference in late loss between the 2 stents may not be extrapolated to the difference in the clinical outcomes. In the subgroup analyses for patients with diabetes in this study, we found that SES and PES showed similar long-term clinical outcomes in cardiac death, overall death, TLR, MI, and ST at 12 months, which is concordant with a recent study,[40–43] and these results maintained up to 5 years.

The present study nicely demonstrated the different prognosis after DES implantation between patients with and without diabetes. First, the rate of MACE was higher in the patients with diabetes than in the patients without diabetes. These differences in MACE between patients with diabetes and patients without diabetes in the Korean cohort is smaller than those of the West.[35,44] One possible reason would be the characteristics of Korean patients with type 2 diabetes that differ from those of Western patients.[45] Min[45] reported that most Korean patients with type 2 diabetes have characteristics similar to those of patients with so-called type 1.5 diabetes, "nonobese insulin-resistance." Therefore, the different types of diabetes may influence the different results.

Second, the difference in the efficacy between the 2 DES is clearly evident in patients without diabetes but similar in patients with diabetes. Previous studies demonstrated that superiority of SES to PES disappeared in patients with diabetes.[40–43] The possible explanation for the loss of superiority of SES to PES in the diabetic subset is that the phosphatidylinositol/Akt/mammalian target of rapamycin (mTOR) signaling cascade activated via insulin receptor substrate 1 is already attenuated by the patients with type 2 diabetes,[46] and this may weaken the impact of sirolimus, which blocks mTOR.

Study Limitations

First, such kind of study cannot be free from selection bias because the selection of specific DES type was mainly deter-

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mined by physician preference. We tried to overcome such limitation by adopting the propensity score matching with multivariable adjustment, but hidden biases might persist because of the influence of unmeasured hidden confounders. Second, because we did not perform an analysis of angiographic lesion, we could not exclude the possibility of concealed impact of angiographic superiority for a specific type of DES. Third, the 5-year follow-up data are based on relatively small patients, and our findings can be limited by under-reporting of events, therefore this may limit the interpretation of data. Another limitation is the lack of information about the duration of clopidogrel treatment in individual patients. As a result, we can't show the potential role of the discontinuation of antiplatelet therapy in the later onset of adverse outcomes in patients treated with PES and SES. Although no details on long-term use of clopidogrel were available, most patients were prescribed dual antiplatelet therapy for at least 6 months after implantation of DES. Additionally, we only reported angiographically documented cases of ST. This practice might have led to an underestimation of the actual incidence of ST. Nonetheless, this is the largest registry of first-generation DES patients with very long-term follow-up, and the analysis does provide the important insight of the different clinical course between an early and late follow-up period.

Implications

In the last decade, numerous randomized clinical trials and registries have demonstrated the short- and long-term efficacy and safety between SES and PES. The results of meta-analyses had been produced by indirect comparisons of SES and PES from several different trials that compared SES or PES with BMS separately. Results of the observational studies had been generated by short-term follow-up of the relatively small populations. Therefore, it remains in doubt whether there are differences between SES and PES with regard to their long-term safety and efficacy profile. Although previous studies comparing SES and PES were limited to a follow-up of 12 to 24 months, this study extends it to 5 years and provides valuable data regarding longer term safety and efficacy. To the best of our knowledge, this analysis presents the largest and the longest follow-up data of unselected patients treated with SES or PES. Because the present study was performed with all-comer patients, our results would be more directly applied to the routine clinical practice.

Conclusions

In the 5-year clinical follow-up of 2500 matched pairs who underwent DES implantation, SES was superior to PES in terms of a reduction in MACE, cardiac death, overall death, TLR, and ST. This difference was mainly derived from the result within the first year. In 850 matched pairs of people with diabetes, however, the efficacy and safety of PES might be comparable to SES with regard to MACE, cardiac death, overall death, MI, TLR, and ST for up to 5 years, within, or beyond the first year.

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Disclosures

None.

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SUPPLEMENTAL MATERIAL

Supplemental Tables

Supplemental Table 1: Baseline clinical characteristics of diabetic and non-diabetic patients

Characteristics	Diabetic	Non-diabetic	*P*
Patients, n	2881	6220	
Demographic findings			
Age, mean ± SD	64.15 ± 9.231	63.11 ± 10.774	< 0.001
Men, n (%)	1722 (59.8%)	4246 (68.3%)	< 0.001
Hypertension, n (%)	2020 (70.1%)	2913 (46.8%)	< 0.001
Hypercholesterolemia, n (%)	952 (33.1%)	1675 (26.9%)	< 0.001
Smoker, n (%)	695 (24.1%)	1930 (31.2%)	< 0.001
Prior myocardial infarction, n (%)	421 (14.7%)	752 (12.3%)	0.002
Prior coronary angioplasty, n (%)	469 (16.4%)	874 (14.3%)	0.011
Prior bypass graft, n (%)	123 (4.3%)	165 (2.7%)	< 0.001
Renal failure, n (%)	277 (9.6%)	129 (2.1%)	< 0.001
Cerebrovascular accident, n (%)	321 (11.1%)	439 (7.1%)	< 0.001
Clinical indication for index procedure			
Silent ischemia, n (%)	8 (0.3%)	9 (0.2%)	0.207
Stable angina, n (%)	992 (36.0%)	1659 (29.8%)	< 0.001
Unstable angina, n (%)	950 (34.5%)	2081 (37.3%)	0.012
NSTEMI, n (%)	239 (9.5%)	525 (10.1%)	0.489
STEMI, n (%)	427 (17.0%)	1216 (23.3%)	< 0.001
Extent of diseased vessel			
Left main disease, n (%)	131 (4.6%)	222 (3.6%)	0.026
1-vessel disease, n (%)	847 (29.5%)	2658 (43.1%)	< 0.001
2-vessel disease, n (%)	1048 (36.5%)	2122 (34.4%)	0.047
3-vessel disease, n (%)	973 (33.9%)	1391 (22.5%)	< 0.001
Number of lesions/patients, mean ± SD	1.44 ± 0.713	1.37 ± 0.663	< 0.001
Number of stents/patients, mean ± SD	1.48 ± 0.804	1.35 ± 0.686	< 0.001

Average stent diameter (mm), mean ± SD	2.97 ± 0.324	3.03 ± 0.362	< 0.001
Total stent length (mm)/patients, mean ± SD	36.98 ± 23.484	33.28 ± 19.634	< 0.001
ACC Lesion class			
A, n (%)	74 (2.6%)	149 (2.5%)	0.662
B1, n (%)	415 (14.7%)	894 (14.7%)	0.974
B2, n (%)	798 (28.2%)	2357 (38.8%)	< 0.001
C, n (%)	1542 (54.5%)	2677 (44.1%)	< 0.001

Values are presented as percentage for categorical variables and as mean±SD for continuous variables.

P< 0.05 defined as statistically significant. DM indicates diabetes mellitus; NSTEMI, non-ST elevation myocardial infarction; and STEMI, ST elevation myocardial infarction.

Supplemental Table 2: Incidence of major adverse cardiac events among diabetic and non-diabetic patients

Variables	Diabetic	Non-diabetic	*P*
Patients, n	2881	6220	
Death			
Cardiac death	52 (1.8%)	123 (2.0%)	0.623
Non-cardiac death	38 (1.3%)	74 (1.2%)	0.610
Myocardial infarction	195 (6.8%)	260 (4.2%)	<0.001
Stent thrombosis	67 (2.3%)	139 (2.2%)	0.820
Target lesion revascularization	254 (8.8%)	371 (6.0%)	<0.001
Target vessel revascularization	278 (9.6%)	429 (6.9%)	<0.001
MACE (Death, MI, TLR)	503 (17.5%)	765 (12.3%)	<0.001

MACE indicates major adverse cardiac event; MI, myocardial infarction; and TLR, target lesion revascularization.

Supplemental Table 3: Incidence of Stent thrombosis among diabetic and non-diabetic patients

Variables	Diabetic	Non-diabetic	*P*
Type			
Early (≤1m)	22 (0.8%)	42 (0.7%)	0.686
Late (>1m)	19 (0.7%)	40 (0.6%)	0.889
Very Late (>1y)	25 (0.9%)	57 (0.9%)	0.905
ARC			
Definite/Confirmed	21 (0.7%)	63 (1.0%)	0.197
Probable	18 (0.6%)	38 (0.6%)	1.000
Possible	29 (1.0%)	49 (0.8%)	0.328
Stent thrombosis	67 (2.3%)	139 (2.2%)	0.820

Supplemental Table 4: Baseline clinical characteristics of diabetic population

Characteristics	SES	PES	*P*
Patients, n	2011	870	
Demographic findings			
Age, mean ± SD	63.97 ± 9.319	64.58 ± 9.013	0.104
Men, n (%)	1188 (59.1%)	534 (61.4%)	0.264
Hypertension, n (%)	1441 (71.7%)	579 (66.6%)	0.007
Hypercholesterolemia, n (%)	658 (32.8%)	294 (33.8%)	0.605
Smoker, n (%)	465 (23.1%)	230 (26.5%)	0.058
Prior myocardial infarction, n (%)	316 (15.8%)	105 (12.2%)	0.011
Prior coronary angioplasty, n (%)	351 (17.5%)	118 (13.7%)	0.011
Prior bypass graft, n (%)	89 (4.4%)	34 (3.9%)	0.616
Renal failure, n (%)	187 (9.3%)	90 (10.3%)	0.409
Cerebrovascular accident, n (%)	216 (10.7%)	105 (12.1%)	0.303
Clinical indication for index procedure			
Silent ischemia, n (%)	5 (0.3%)	3 (0.4%)	0.700
Stable angina, n (%)	732 (37.6%)	260 (32.2%)	0.008
Unstable angina, n (%)	668 (34.3%)	282 (34.9%)	0.758
NSTEMI, n (%)	152 (8.7%)	87 (11.6%)	0.026
STEMI, n (%)	284 (16.2%)	143 (19.1%)	0.082
Extent of diseased vessel			
Left main disease, n (%)	91 (4.5%)	40 (4.6%)	0.923
1-vessel disease, n (%)	568 (28.3%)	279 (32.3%)	0.032
2-vessel disease, n (%)	774 (38.6%)	274 (31.7%)	< 0.001
3-vessel disease, n (%)	663 (33.1%)	310 (35.9%)	0.144
Number of lesions/patients, mean ± SD	1.34 ± 0.599	1.66 ± 0.877	< 0.001
Number of stents/patients, mean ± SD	1.36 ± 0.646	1.75 ± 1.032	< 0.001
Average stent diameter (mm), mean ± SD	2.96 ± 0.318	3.00 ± 0.339	0.014
Total stent length (mm)/patients, mean ± SD	34.16 ± 19.088	43.74 ± 30.586	< 0.001

ACC Lesion class			
A, n (%)	58 (2.9%)	16 (1.9%)	0.123
B1, n (%)	311 (15.7%)	104 (12.2%)	0.017
B2, n (%)	548 (27.7%)	250 (29.4%)	0.339
C, n (%)	1063 (53.7%)	479 (56.4%)	0.188

Values are presented as percentage for categorical variables and as mean±SD for continuous variables.

P< 0.05 defined as statistically significant. SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; DM, diabetes mellitus; NSTEMI, non-ST elevation myocardial infarction; and STEMI, ST elevation myocardial infarction.

Supplemental Table 5: Incidence of Clinical events among diabetic population

Variables	SES	PES	*P*
Patients, n	2011	870	
Death			
Cardiac death	29 (1.4%)	23 (2.6%)	0.032
Non-cardiac death	22 (1.1%)	16 (1.8%)	0.112
Myocardial infarction	136 (6.5%)	59 (6.8%)	0.875
Stent thrombosis	48 (2.4%)	19 (2.2%)	0.789
Target lesion revascularization	157 (7.8%)	97 (11.1%)	0.004
Target vessel revascularization	168 (8.4%)	110 (12.6%)	0.000
MACE (Death, MI, TLR)	322 (16.0%)	181 (20.8%)	0.002

SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; MACE, major adverse cardiac event; MI, myocardial infarction; and TLR, target lesion revascularization.

Supplemental Table 6: Incidence of Stent thrombosis in diabetic patients

Variables	SES	PES	*P*
Type			
Early (≤1m)	14 (0.7%)	8 (0.9%)	0.495
Late (>1m)	13 (0.6%)	6 (0.7%)	1.000
Very Late (>1y)	20 (1.0%)	5 (0.6%)	0.381
ARC			
Definite/Confirmed	14 (0.7%)	7 (0.8%)	0.812
Probable	12 (0.6%)	6 (0.7%)	0.798
Possible	22 (1.1%)	7 (0.8%)	0.548
Stent thrombosis	48 (2.4%)	19 (2.2%)	0.789

SES indicates sirolimus-eluting stent and PES, paclitaxel-eluting stent.

Supplemental Table 7: Baseline clinical characteristics of non-diabetic population

Characteristics	SES	PES	*P*
Patients, n	4254	1966	
Demographic findings			
Age, mean ± SD	62.66 ± 10.790	64.10 ± 10.677	0.000
Men, n (%)	2954 (69.4%)	1292 (65.8%)	0.004
Hypertension, n (%)	1932 (45.4%)	981 (49.9%)	0.001
Hypercholesterolemia, n (%)	1168 (27.5%)	507 (25.8%)	0.176
Smoker, n (%)	1290 (30.4%)	640 (32.8%)	0.072
Prior myocardial infarction, n (%)	559 (13.3%)	193 (10.1%)	0.000
Prior coronary angioplasty, n (%)	635 (15.1%)	239 (12.4%)	0.005
Prior bypass graft, n (%)	126 (3.0%)	39 (2.0%)	0.033
Renal failure, n (%)	82 (1.9%)	47 (2.4%)	0.251
Cerebrovascular accident, n (%)	283 (6.7%)	156 (7.9%)	0.070
Clinical indication for index procedure			
Silent ischemia, n (%)	6 (0.2%)	3 (0.2%)	0.732
Stable angina, n (%)	1196 (30.6%)	463 (27.9%)	0.047
Unstable angina, n (%)	1452 (37.1%)	629 (38.9%)	0.607
NSTEMI, n (%)	343 (9.5%)	182 (11.3%)	0.052
STEMI, n (%)	806 (22.4%)	410 (25.4%)	0.018
Extent of diseased vessel			
Left main disease, n (%)	148 (3.5%)	74 (3.8%)	0.557
1-vessel disease, n (%)	1757 (41.5%)	901 (46.4%)	0.000
2-vessel disease, n (%)	1505 (35.6%)	617 (31.8%)	0.004
3-vessel disease, n (%)	967 (22.9%)	424 (21.8%)	0.376
Number of lesions/patients, mean ± SD	1.29 ± 0.569	1.53 ± 0.800	0.000
Number of stents/patients, mean ± SD	1.26 ± 0.583	1.54 ± 0.836	0.000
Average stent diameter (mm), mean ± SD	3.03 ± 0.329	3.05 ± 0.430	0.027
Total stent length (mm)/patients, mean ± SD	31.79 ± 17.092	36.55 ± 24.011	0.000

ACC Lesion class			
A, n (%)	104 (2.5%)	45 (2.3%)	0.722
B1, n (%)	591 (14.2%)	303 (15.7%)	0.129
B2, n (%)	1572 (37.9%)	785 (40.7%)	0.034
C, n (%)	1883 (45.4%)	794 (41.2%)	0.002

Values are presented as percentage for categorical variables and as mean±SD for continuous variables.

P< 0.05 defined as statistically significant. SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; DM, diabetes mellitus; NSTEMI, non-ST elevation myocardial infarction; and STEMI, ST elevation myocardial infarction.

Supplemental Table 8: Incidence of Clinical events among non-diabetic population

Variables	SES	PES	*P*
Patients, n	4254	1966	
Death			
Cardiac death	77 (1.8%)	46 (2.3%)	0.171
Non-cardiac death	45 (1.1%)	29 (1.5%)	0.167
Myocardial infarction	163 (3.8%)	97 (4.9%)	0.154
Stent thrombosis	82 (1.9%)	57 (2.9%)	0.021
Target lesion revascularization	226 (5.3%)	145 (7.4%)	0.002
Target vessel revascularization	268 (6.3%)	161 (8.2%)	0.007
MACE (Death, MI, TLR)	473 (11.1%)	292 (14.9%)	0.000

SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; and MACE, major adverse cardiac event; MI, myocardial infarction; and TLR, target lesion revascularization.

Supplemental Table 9: Incidence of Stent thrombosis in non-diabetic patients

Variables	SES	PES	*P*
Type			
Early (≤1m)	22 (0.5%)	20 (1.0%)	0.030
Late (>1m)	18 (0.4%)	22 (1.1%)	0.003
Very Late (>1y)	42 (1.0%)	15 (0.8%)	0.475
ARC			
Definite/Confirmed	35 (0.8%)	28 (1.4%)	0.040
Probable	17 (0.4%)	21 (1.1%)	0.003
Possible	35 (0.8%)	14 (0.7%)	0.758
Stent thrombosis	82 (1.9%)	57 (2.9%)	0.021

SES indicates sirolimus-eluting stent and PES, paclitaxel-eluting stent.

Supplemental Table 10: Comparison of the estimated treatment effect of SES and PES on MACE using Cox regression analysis

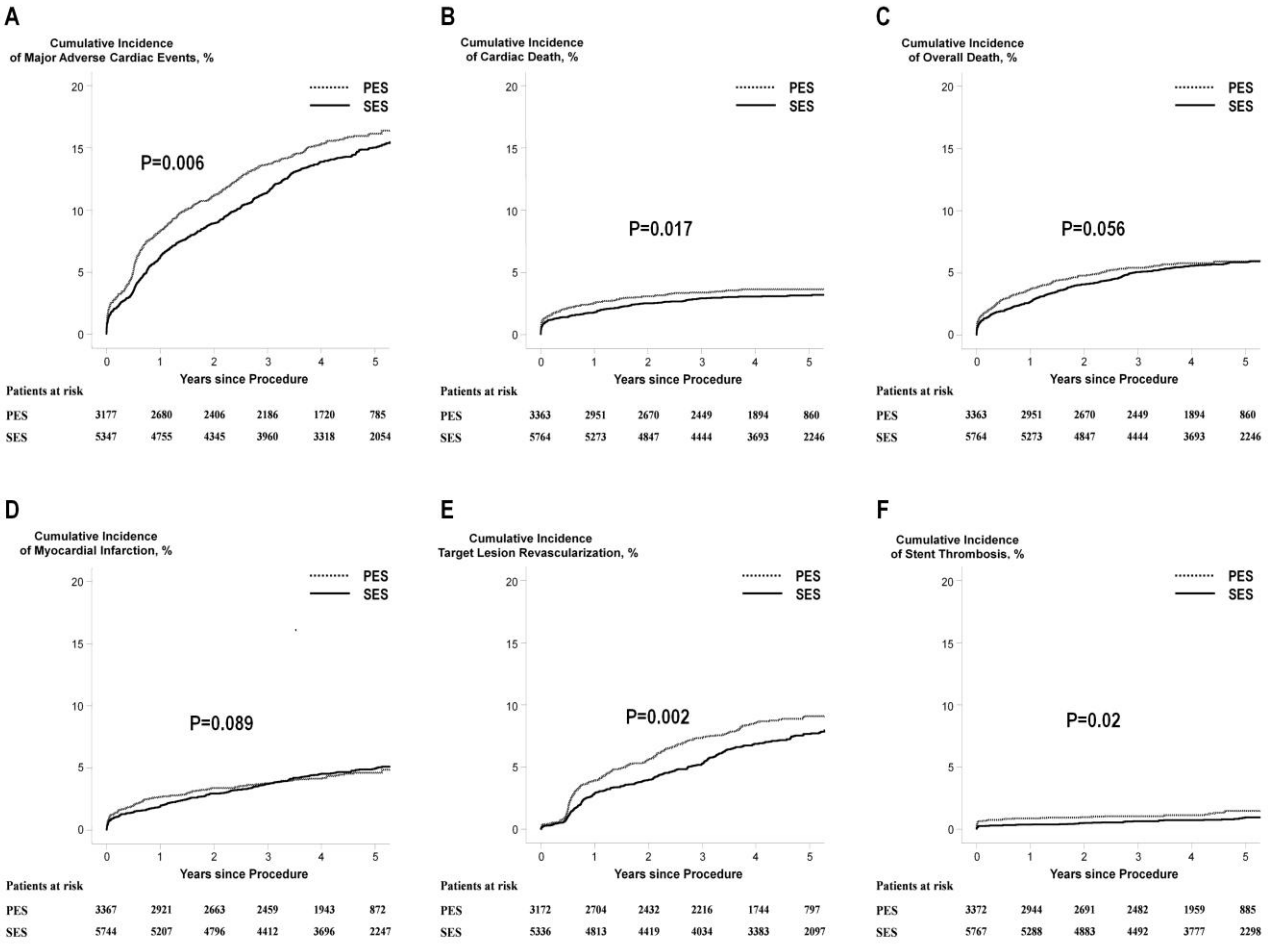
	Number.	HR	95% CI
Multivariable model with raw data	9153	0.836	0.731, 0.957
Inverse weighted propensity score-matched model	5620	0.823	0.705, 0.961

SES indicates sirolimus-eluting stent; PES, paclitaxel-eluting stent; MACE, major adverse cardiac event; HR, hazard ratio; CI, confidence interval.

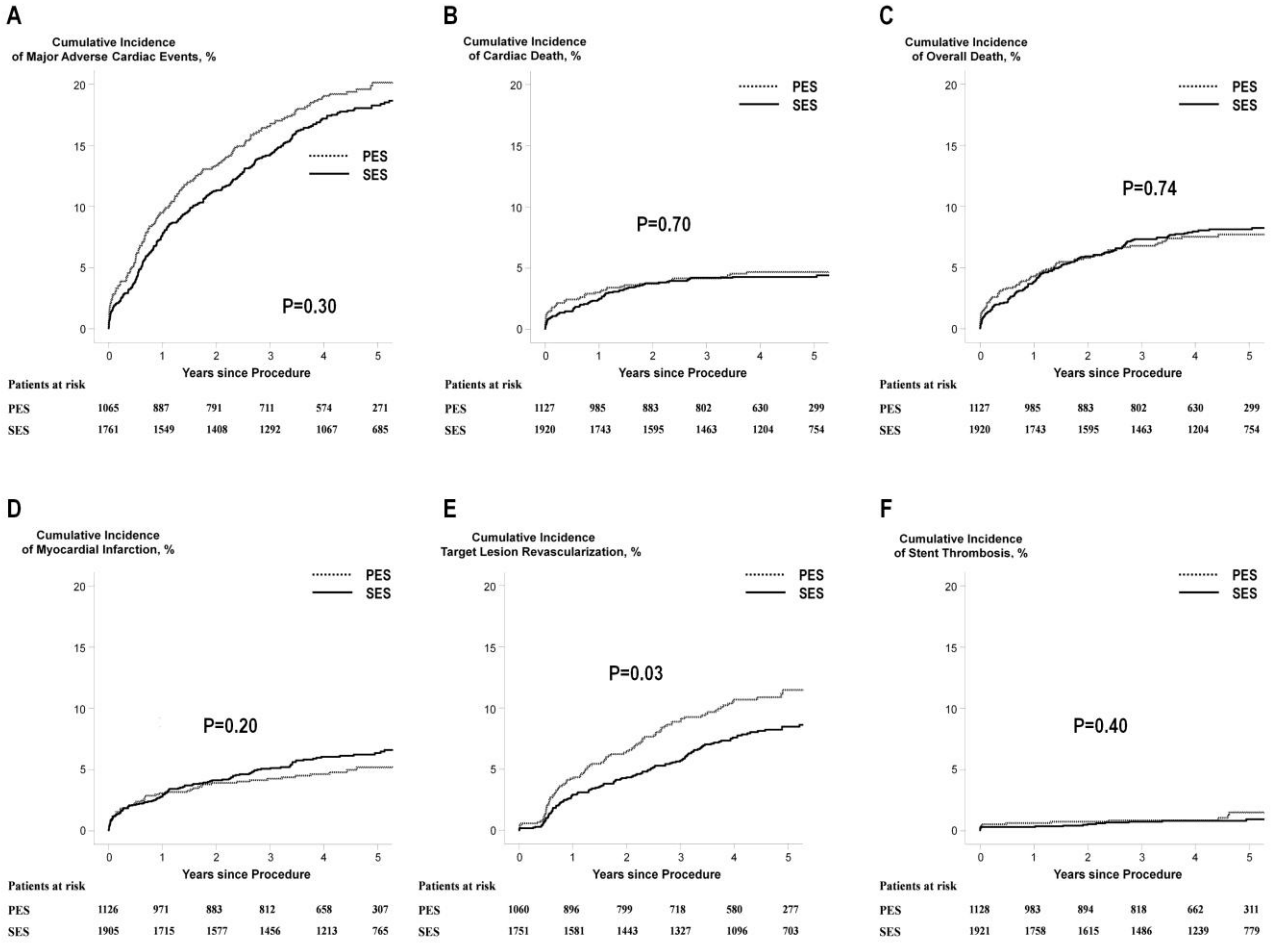
Adjusted for type of stent, age, sex, hypertension, diabetes mellitus, current smoking, dyslipidemia, chronic kidney disease, prior percutaneous coronary intervention, clinical presentation, extent of coronary artery disease, average stent diameter per patient, total stent length per patient, number of lesions per patient, number of implanted stents per patient, and type of lesion.

Supplemental Figures

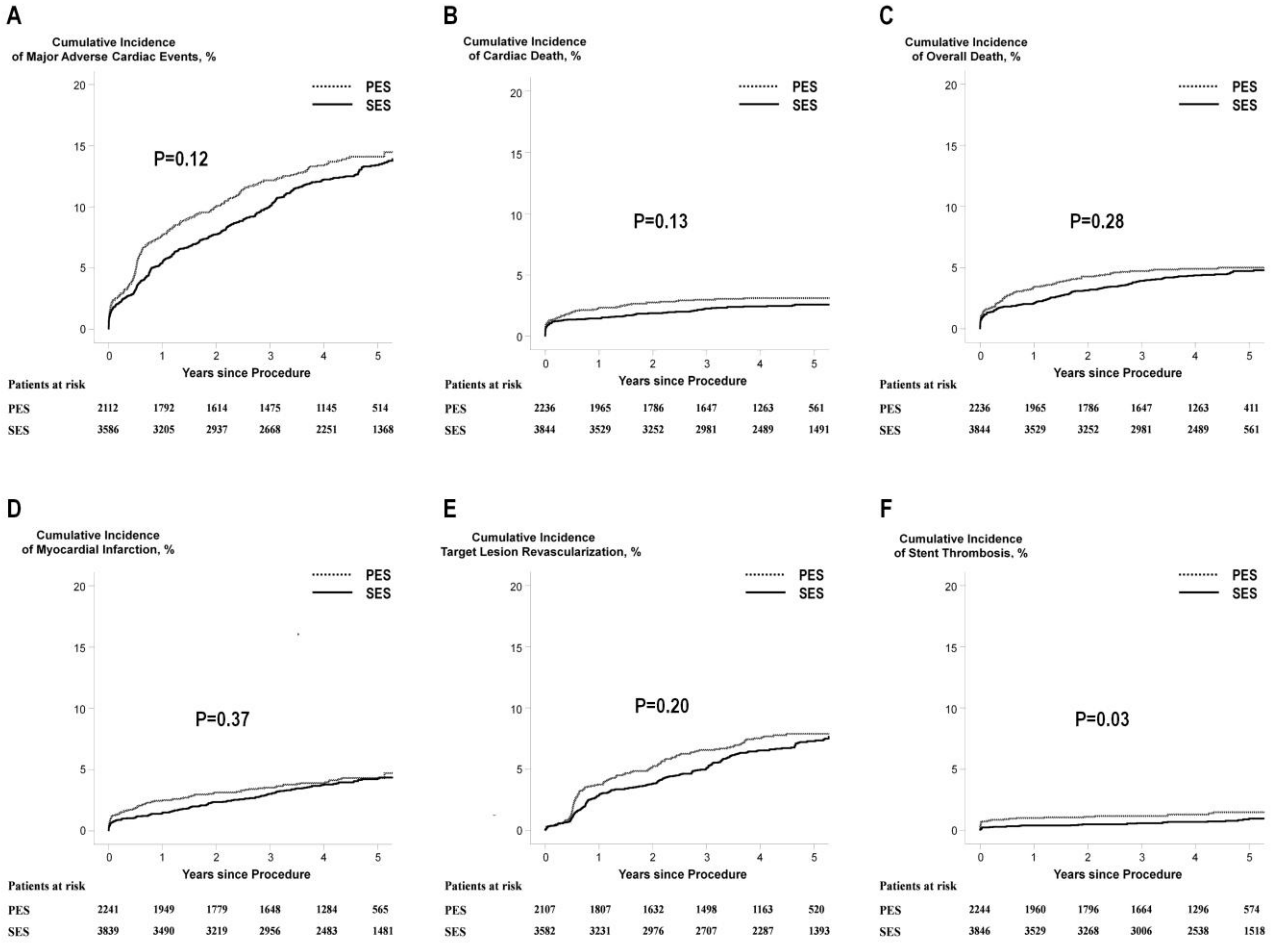
Supplemental Figure 1



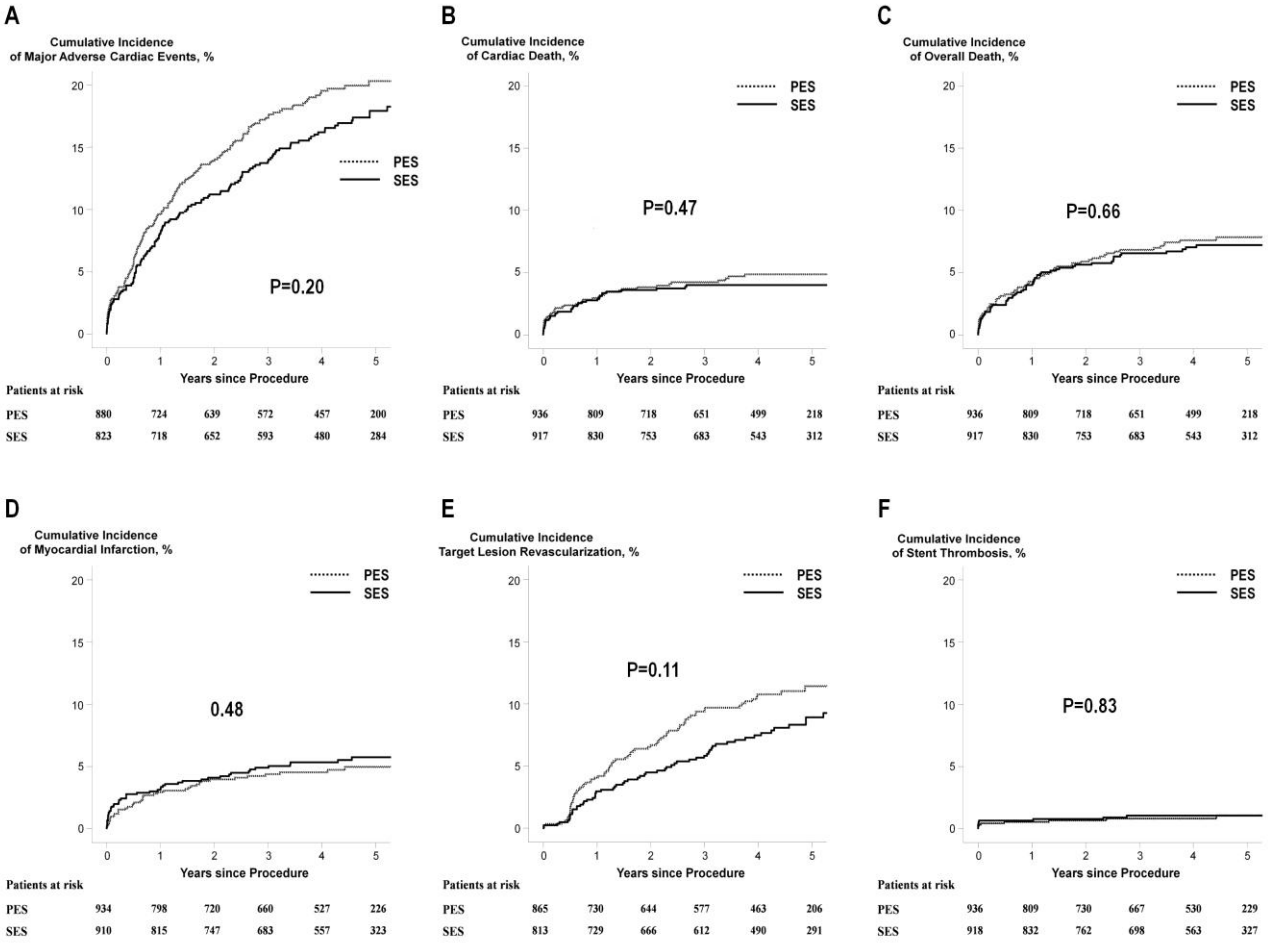
Supplemental Figure 2



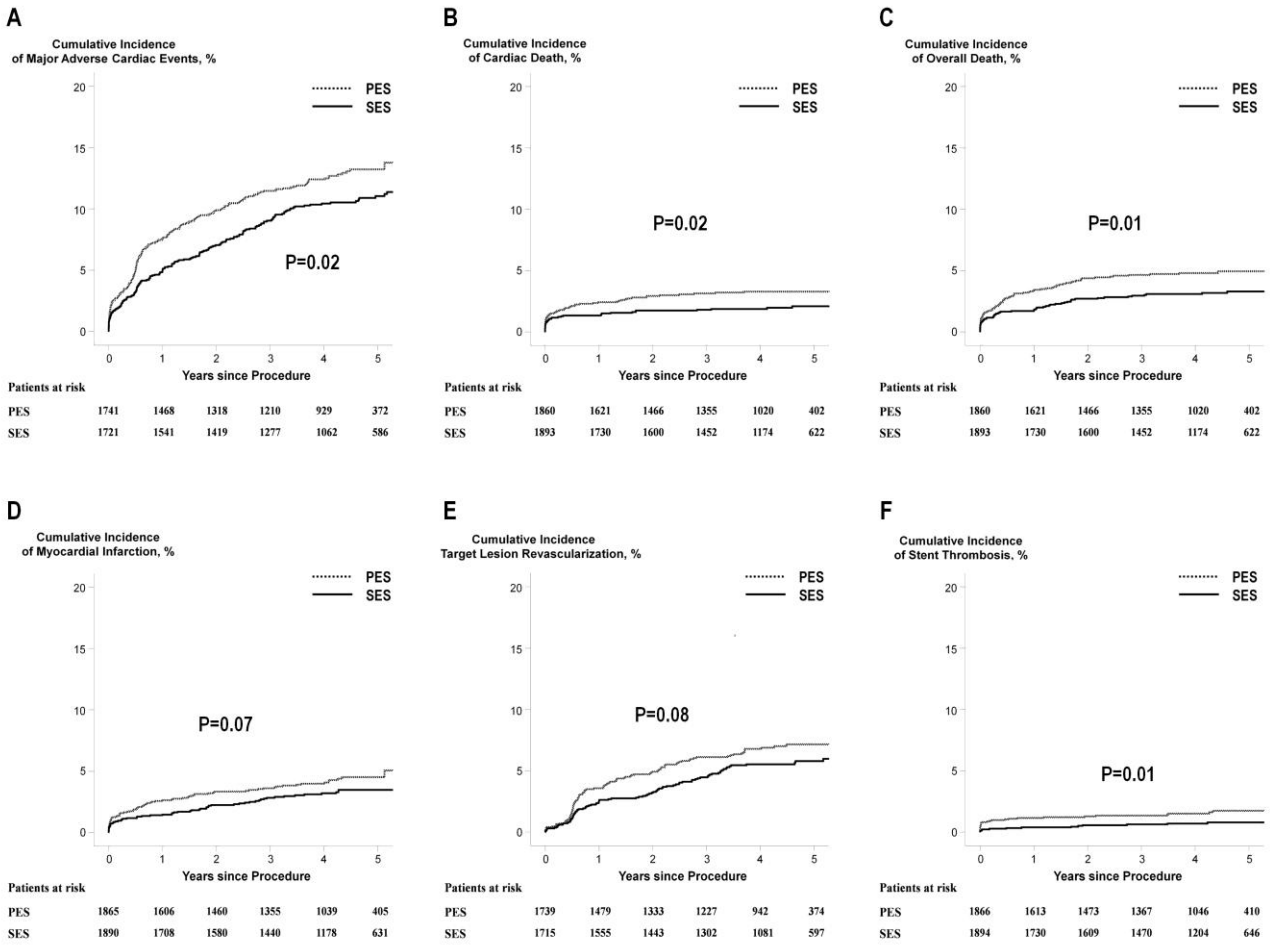
Supplemental Figure 3



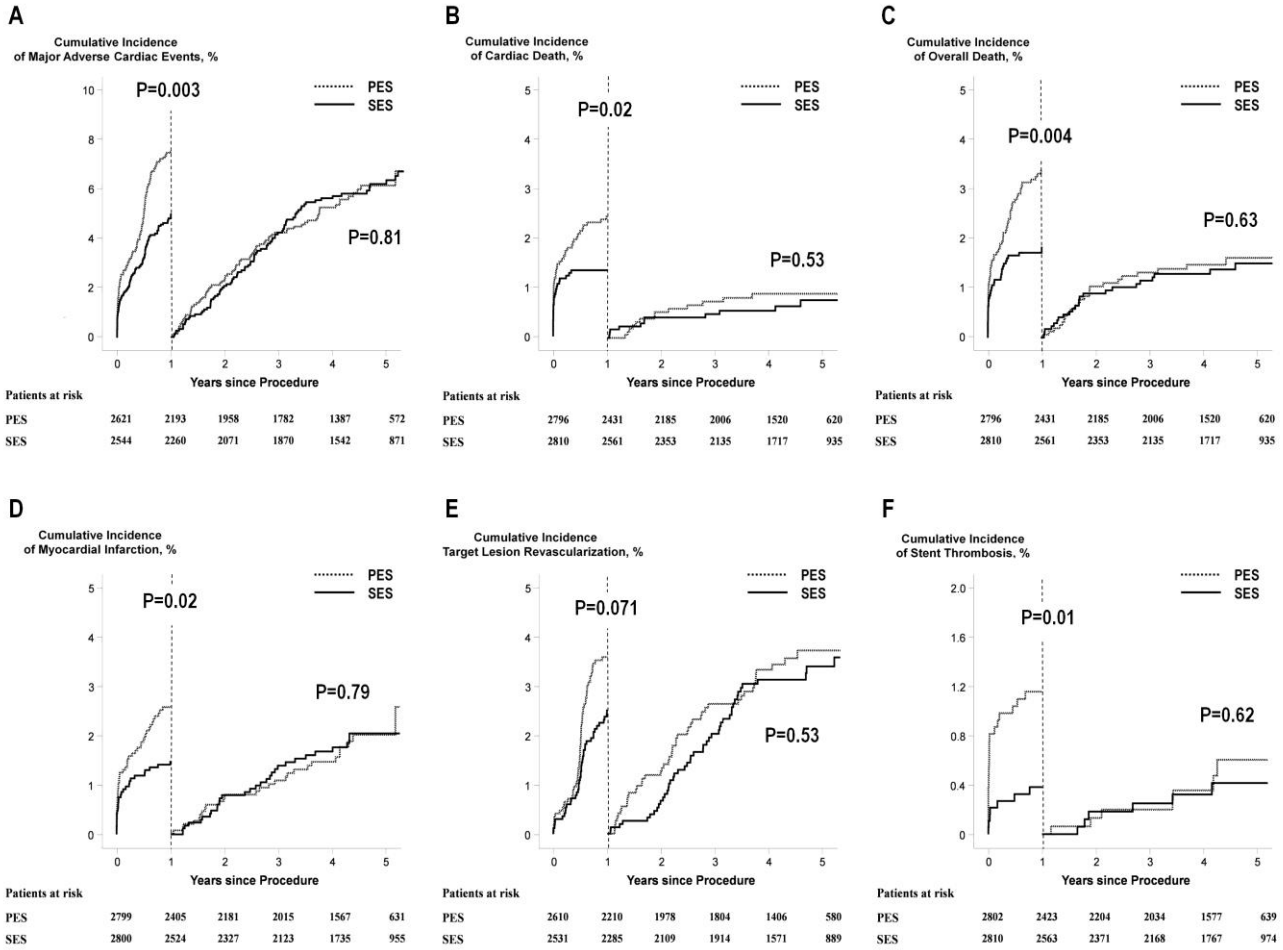
Supplemental Figure 4



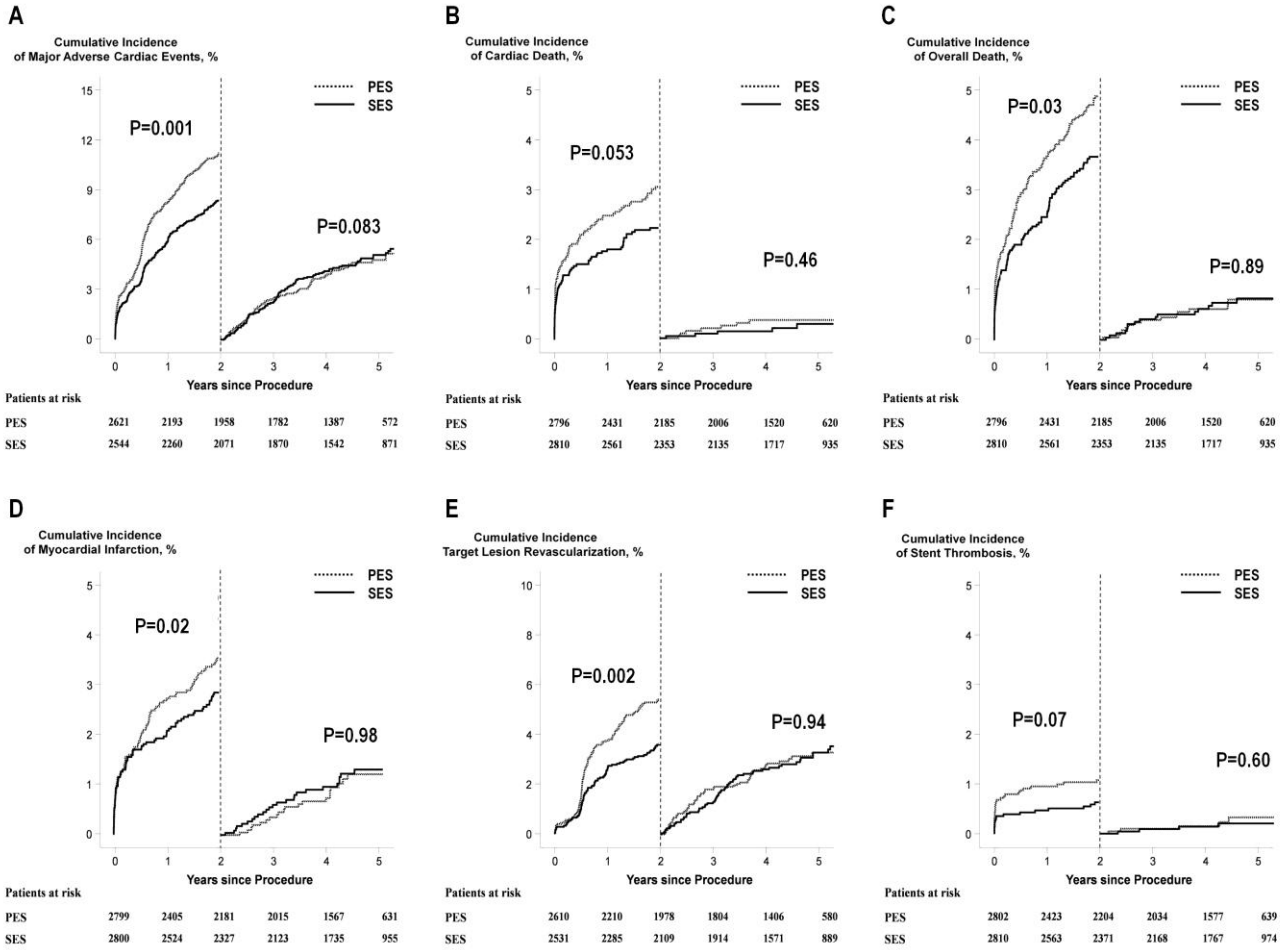
Supplemental Figure 5



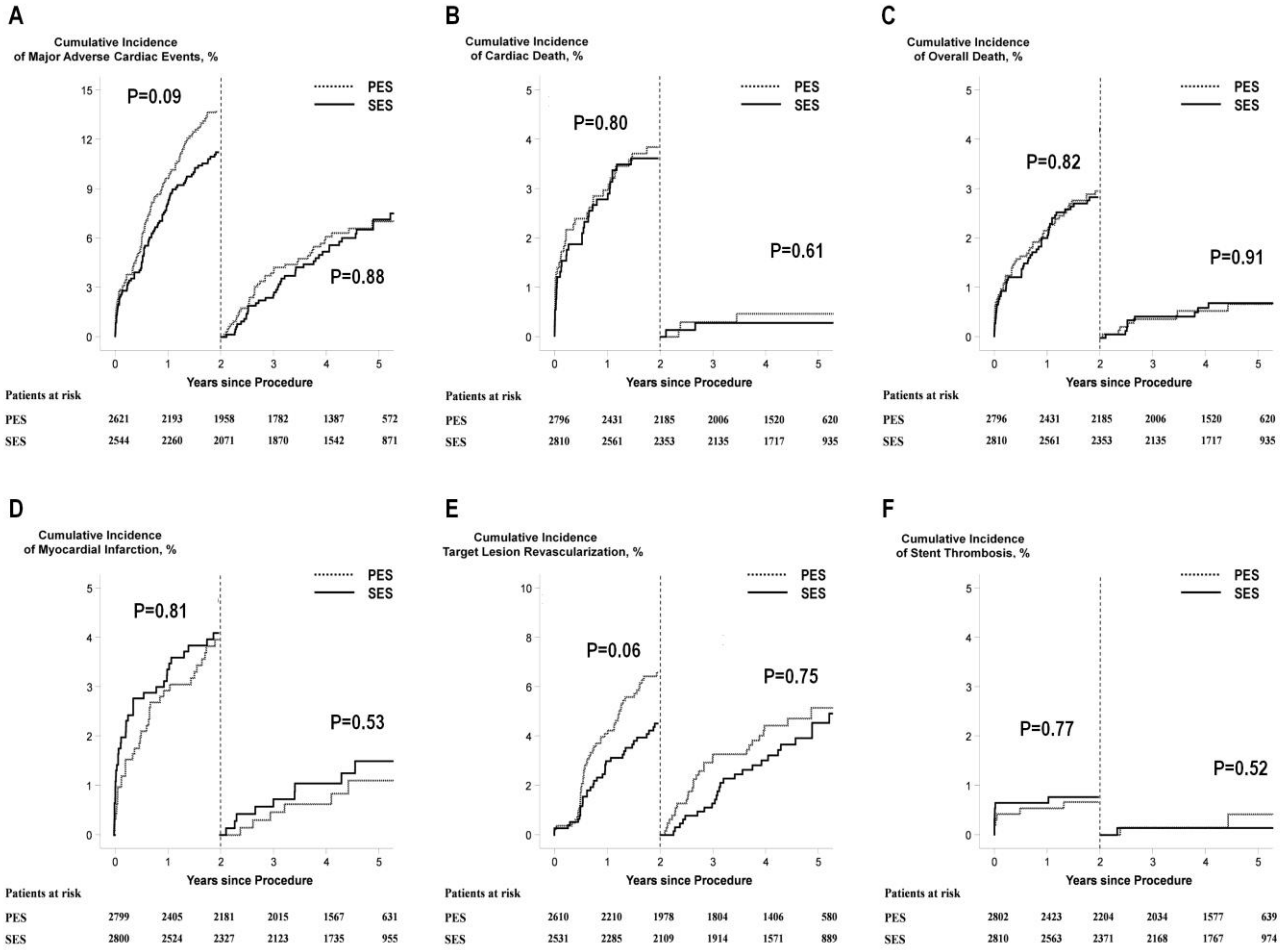
Supplemental Figure 6



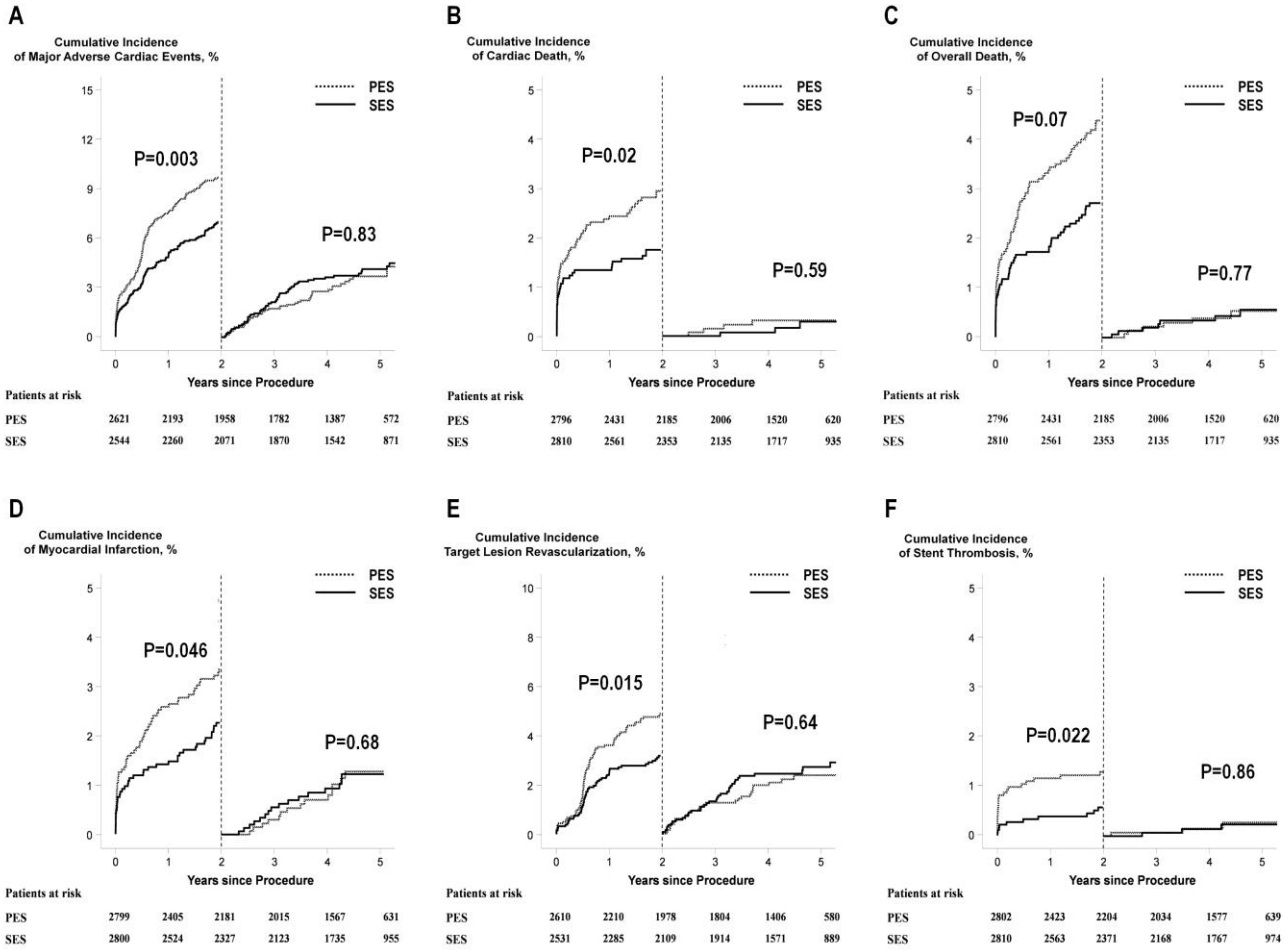
Supplemental Figure 7



Supplemental Figure 8



Supplemental Figure 9



Supplemental Figure Legends

Supplemental Figure 1: Kaplan-Meier curves in patients implanted with SES or PES of (A) major cardiac adverse event, (B) cardiac death, (C) overall death, (D) myocardial infarction, (E) target-lesion revascularization, and (F) stent thrombosis before propensity score matching

P values were calculated with the use of the log-rank test. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

Supplemental Figure 2: Kaplan-Meier curves in diabetic patients implanted with SES or PES of (A) major cardiac adverse event, (B) cardiac death, (C) overall death, (D) myocardial infarction, (E) target-lesion revascularization, and (F) stent thrombosis before propensity score matching

P values were calculated with the use of the log-rank test. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

Supplemental Figure 3: Kaplan-Meier curves in non-diabetic patients implanted with SES or PES of (A) major cardiac adverse event, (B) cardiac death, (C) overall death, (D) myocardial infarction, (E) target-lesion revascularization, and (F) stent thrombosis before propensity score matching

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P values were calculated with the use of the log-rank test. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

Supplemental Figure 6: One-year landmark analysis of non-diabetic patients implanted with SES or PES of (A) major cardiac adverse event, (B) cardiac death, (C) overall death, (D) myocardial infarction, (E) target-lesion revascularization, and (F) stent thrombosis after propensity score matching

P values were calculated with the use of the log-rank test. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

Supplemental Figure 7: Two-year landmark analysis using the Kaplan-Meier methods for patients implanted with SES or PES of (A) major cardiac adverse event, (B) cardiac death, (C) overall death, (D) myocardial infarction, (E) target-lesion revascularization, and (F) stent thrombosis after propensity score matching

P values were calculated with the use of the log-rank test. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

Supplemental Figure 8: Two-year landmark analysis using the Kaplan-Meier methods for diabetic patients implanted with SES or PES of (A) major cardiac adverse event, (B) cardiac death, (C) overall death, (D) myocardial infarction, (E) target-lesion revascularization, and (F) stent thrombosis after propensity score matching

P values were calculated with the use of the log-rank test. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

Supplemental Figure 9: Two-year landmark analysis using the Kaplan-Meier methods for non-diabetic patients implanted with SES or PES of (A) major cardiac adverse event, (B) cardiac death, (C) overall death, (D) myocardial infarction, (E) target-lesion revascularization, and (F) stent thrombosis after propensity score matching

P values were calculated with the use of the log-rank test. Numbers of patients at risk are shown below each graph. SES indicates sirolimus-eluting stent; and PES, paclitaxel-eluting stent.

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Comparison of 5-Year Clinical Outcomes Between Sirolimus-Versus Paclitaxel-Eluting Stent: Korean Multicenter Network Analysis of 9000-Patient Cohort

Kyungil Park, Kyung Woo Park, Seung-Woon Rha, Jang-Ho Bae, Seung-Ho Hur, Jong-Seon Park, Jung-Han Yoon, Yangsoo Jang, Myung-Ho Jeong and Hyo-Soo Kim

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