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euro PCR 2018 LATE BREAKING TRIALS

Complete two-year follow-up with formal non-inferiority testing on primary outcomes of the AIDA trial comparing the Absorb bioresorbable scaffold with the XIENCE drug-eluting metallic stent in routine PCI

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KEYWORDS

- bioresorbable scaffold
- drug-eluting stent
- stent thrombosis

Abstract

Aims: The aim of this report of the AIDA trial is to provide full two-year outcomes for the primary endpoint of target vessel failure (TVF) and an update on device thrombosis.

Methods and results: AIDA was a single-blind, multicentre, investigator-initiated, non-inferiority, randomised (1:1) clinical trial. At complete two-year follow-up, the primary endpoint of TVF had occurred in 100 patients in the Absorb BVS arm versus 90 patients in the XIENCE EES arm (HR 1.12, 95% CI: 0.94-1.49; $p_{superiority}$=0.436). Estimated two-year Kaplan-Meier event rates of TVF were 11.0% and 9.9%, respectively (95% CI: −0.9%-3.0%; $p_{non\text{-}inferiority}$=0.003). Definite or probable device thrombosis at two years occurred in 30 patients in the Absorb BVS arm and in eight patients in the XIENCE EES arm. Kaplan-Meier estimates of device thrombosis were 3.3% in the Absorb BVS arm and 0.9% in the XIENCE EES arm (HR 5.22, 95% CI: 2.00-13.59; p<0.001).

Conclusions: AIDA formally met its criterion for non-inferiority of Absorb BVS versus XIENCE EES in terms of the combined endpoint of TVF. The Absorb BVS, however, was associated with higher rates of scaffold thrombosis and target vessel myocardial infarction at complete two-year follow-up.

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Abbreviations

BVS	bioresorbable vascular scaffold
DAPT	dual antiplatelet therapy
DES	drug-eluting stent
DSMB	data and safety monitoring board
EES	everolimus-eluting stent
PCI	percutaneous coronary intervention
ScT	scaffold thrombosis
TLF	target lesion failure
TVF	target vessel failure
TVMI	target vessel myocardial infarction

Introduction

Coronary bioresorbable vascular scaffolds were developed in order to overcome the shortcomings of conventional coronary metallic drug-eluting stents (DES)[1]. The most widely used and studied bioresorbable vascular scaffold was the Absorb everolimus-eluting bioresorbable vascular scaffold (Absorb BVS; Abbott Vascular, Santa Clara, CA, USA). The Absorb BVS received the Conformité Européenne (CE) mark in 2010 and was approved by the Food and Drug Administration (FDA) in 2016. While it gained acceptance in ordinary practice, no adequately powered, randomised, all-comers study addressing the safety and efficacy of the Absorb BVS had been performed at the time of commercialisation. Between 2013 and 2015 we performed the Amsterdam Investigator-initiateD Absorb strategy (AIDA) trial comparing the Absorb BVS with the XIENCE everolimus-eluting stent family (XIENCE EES; Abbott Vascular) in a population reflecting daily clinical practice with a primary endpoint of target vessel failure (TVF) at two years.

The data and safety monitoring board (DSMB) observed an increased rate of early and late scaffold thrombosis (ScT) and recommended considering prolonged dual antiplatelet therapy (DAPT) in all patients treated with Absorb BVS, as well as early reporting of the then available outcomes. This recommendation was implemented and the preliminary results with a median follow-up of 707 days were published[2]. In this manuscript, we report the full two-year primary outcomes and all clinical outcomes following treatment with Absorb BVS and XIENCE EES in the AIDA trial.

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Methods

STUDY DESIGN

The AIDA trial was a single-blind, multicentre, investigator-initiated, non-inferiority, randomised (1:1) clinical trial. The study design and oversight of the AIDA trial have been described previously[3].

AIDA enrolled patients with coronary artery disease who were eligible for inclusion if they were undergoing PCI, and were suitable candidates for treatment with a DES in accordance with the applicable guidelines and instructions for use (IFU) of the Absorb BVS and XIENCE EES families. Key exclusion criteria were target lesions longer than 70 mm, a reference vessel diameter of <2.5 mm or >4.0 mm estimated visually and treatment of bifurcation lesions in which a two-device strategy was planned, and treatment of in-stent restenosis. All included patients provided oral and written informed consent. In case of urgent PCI, oral consent was given before randomisation, and full written consent was obtained after the procedure.

After successful predilatation of the first lesion, patients were randomised to either Absorb BVS or XIENCE EES. Randomisation was performed with the use of a centralised web-based system in random block sizes. Patients were blinded to the study-group assignment, operators were not. During the first year of enrolment, scaffolds were implanted according to the manufacturer's IFU, which, at that time, did not include mandatory post-dilatation. Post-dilatation was performed in 63% of the lesions in the scaffold group during the first year of enrolment. After the IFU changed, the steering committee recommended routine post-dilatation of the Absorb BVS-treated lesions from October 2014 onwards. DAPT was administered according to the guidelines of the European Society of Cardiology and the IFU of the Absorb BVS or the XIENCE EES. DAPT was recommended for at least one year after scaffold implantation in patients with acute coronary syndrome. Due to unexpected higher rates of ScT, the DSMB recommended a cross-sectional data sweep in November 2016 and consequent publication of the descriptive information (without formal hypothesis testing) on all endpoint events that occurred before December 2016 [2]. At the time of the publication of the preliminary results, all patients were unblinded and informed.

Clinical endpoints have been described previously and included the primary endpoint of target vessel failure (TVF), a composite of cardiac death, myocardial infarction and target vessel revascularisation, at two years (powered for non-inferiority)[3]. Secondary endpoints were all-cause death, all myocardial infarctions, all revascularisations, and device thrombosis. All myocardial infarctions were defined by the third universal definition of myocardial infarction and all other events were defined according to the Academic Research Consortium definitions[4,5]. An independent clinical events committee adjudicated all reported adverse events. Follow-up is ongoing annually up to five years, and is currently complete up to two years. Baseline SYNTAX score calculations were performed by the core laboratory staff of Cardialysis BV (Rotterdam, the Netherlands).

STATISTICAL ANALYSIS

This report provides the pre-specified two-year primary endpoint analysis from the AIDA trial. The AIDA trial was designed to test whether Absorb BVS was non-inferior to XIENCE EES, as determined by the rates of TVF at two years. To satisfy the non-inferiority hypothesis, the upper limit of the (two-sided) 95% confidence interval for the rate difference (equivalent to non-inferiority testing at a one-sided alpha level of 2.5%) had to fall below a pre-specified margin of 4.5 percentage points. Under the assumption of a 7.3% event rate for the primary endpoint at two years and a rate of loss to follow-up of 3.0%, we estimated that we would need to enrol

1,790 patients for the study to have at least 95% power. The first version of the protocol included a non-inferiority margin of 3.3 percentage points, which required enrolment of 2,690 patients for 90% power. After publication of the results of the ABSORB III trial, we amended the protocol, on the basis of FDA guidance, to adopt the non-inferiority margin of 4.5 percentage points used in that trial[6]. At the time that the protocol change was approved by the institutional review board in December 2015, a total of 1,845 patients had been enrolled, and enrolment was complete.

Analyses of primary and secondary endpoints were performed according to the intention-to-treat principle. Two-year event rates were based on Kaplan-Meier estimates in time-to-event analyses. Follow-up of the patients was censored at 730 days or at the last known event-free time point, whichever came first. For time-to-event analysis, hazard ratios with 95% confidence intervals were determined, and Kaplan-Meier curves were compared by means of the log-rank test.

For non-inferiority testing of the primary endpoint of TLF, we calculated the 95% confidence interval for the rate difference (the rate in the scaffold group minus the rate in the stent group) according to the method of Com-Nougue with the use of two-year Kaplan-Meier estimates of the TVF rate and Greenwood estimators of the standard error. We used the chi-square test or Fisher's exact test to compare categorical variables and the independent t-test to compare continuous variables. All statistical analyses were performed with SPSS software, Version 23.0 (IBM Corp., Armonk, NY, USA).

Results

Between August 2013 and December 2015, AIDA enrolled 1,845 patients, of whom 924 were randomised to treatment with Absorb BVS and 921 to XIENCE EES. The baseline characteristics in the two study arms were well balanced and have been reported previously[2] **(Table 1)**. At complete two-year follow-up, clinical status was known in 96.9% of the patients **(Supplementary Figure 1)**.

Procedural characteristics have been reported previously[2] **(Table 2)**. Briefly, a total of 2,446 lesions were treated. Successful implantation of at least one or more study devices was achieved in 895/924 (96.7%) patients in the Absorb BVS arm and in 919/921 (99.8%) patients in the XIENCE EES arm. Only assigned study devices were implanted in 859/924 (93.0%) patients in the Absorb BVS arm versus 910/921 (98.8%) in the XIENCE EES arm. The characteristics of the treated lesions are listed in **Supplementary Table 1**.

At complete two-year follow-up, TVF had occurred in 100 patients in the Absorb BVS arm versus 90 patients in the XIENCE EES arm

Table 1. Baseline characteristics of the patients*.

Characteristics		Absorb BVS group N=924	XIENCE EES group N=921
Age, years		64.3±10.6	64.0±10.5
Male sex, n (%)		670 (73%)	700 (76%)
Risk factors, n/total n (%)	Diabetes mellitus	171/924 (19%)	153/921 (17%)
	Requiring oral medication	95/171 (56%)	97/153 (63%)
	Requiring insulin	65/171 (38%)	45/153 (37%)
	Hypertension	468/920 (51%)	464/919 (51%)
	Hypercholesterolaemia	344/915 (38%)	350/914 (38%)
	Family history of coronary artery disease	451/886 (51%)	469/886 (53%)
	Current smoker	248/867 (29%)	273/861 (32%)
History, n/total n (%)	Chronic renal failure	70/924 (8%)	91/921 (10%)
	Ejection fraction <30%	22/910 (2%)	17/900 (2%)
	Previous stroke or transient ischaemic attack	46/923 (5%)	58/921 (6%)
	Peripheral vascular disease	65/924 (7%)	56/918 (6%)
	Previous myocardial infarction	166/924 (18%)	172/921 (19%)
	Previous percutaneous coronary intervention	202/924 (22%)	184/921 (20%)
	Previous bypass surgery	38/924 (4%)	26/921 (3%)
Clinical presentation, n (%)	ST-segment elevation myocardial infarction	240 (26%)	225 (24%)
	Non ST-segment elevation myocardial infarction	185 (20%)	192 (21%)
	Unstable angina	70 (8%)	87 (9%)
	Stable angina and/or documented ischaemia	361 (39%)	370 (40%)
	Angiographically driven	51 (6%)	36 (4%)
	Other	17 (2%)	11 (1%)
SYNTAX score	Mean	13.2±8.6	12.6±8.4
	Median (interquartile range)	11 (7-18)	11 (7-17)

*plus-minus variables are means±SD. Absorb BVS: Absorb bioresorbable vascular scaffold; n: number; XIENCE EES: XIENCE everolimus-eluting stent

Table 2. Procedural characteristics at baseline*.

Outcome		Absorb BVS group	XIENCE EES group	*p*-value
Patients				
Total number		924	921	–
Treated lesions per patient		1.34±0.63	1.31±0.59	0.360
Number of devices per patient		1.54±0.84	1.45±0.79	0.014
Total device length per patient, mm		31.1±19.6	29.7±19.2	0.113
Minimum device diameter per patient, mm		2.73±0.27	2.88±0.35	0.050
Device implantation, n (%)	Any assigned study device	895 (96.9%)	919 (99.8%)	<0.001
	Only assigned study devices	859 (93.0%)	910 (98.8%)	<0.001
	Any unassigned device	65 (7.0%)	11 (1.2%)	<0.001
	Only unassigned devices	29 (3.1%)	2 (0.2%)	<0.001
	After failure assigned device	20	1	–
	Unassigned device first choice	9	1	–
Procedure time, min mean (total n) ±SD		49 (919)±26	44 (918)±23	<0.001
Contrast use, ml mean (total n) ±SD		160 (902)±74	151 (897)±72	0.016
Predilatation first treated lesion, n (%)		911 (99%)	892 (97%)	0.012
Procedure success		834 (90%)	889 (97%)	<0.001
Treated lesions¶				
Total number		1,237	1,209	–
Rotational atherectomy, n/total n of target lesions (%)		24/1,232 (1.9%)	26/1,208 (2.2%)	0.776
Predilatation performed, n (%)		1,199 (97%)	1,103 (91%)	<0.001
Total number of devices implanted		1,425	1,336	–
Number of devices per lesion		1.15±0.40	1.11±0.34	0.001
Post-dilatation performed, n (%)		915 (74%)	594 (49%)	<0.001

*plus-minus variables are means±SD. ¶All treated lesions at time of randomisation and scheduled staged procedures. Absorb BVS: Absorb bioresorbable vascular scaffold; mm: millimetres; n: number; XIENCE EES: XIENCE everolimus-eluting stent

(HR 1.12, 95% CI: 0.94-1.49; $p_{superiority}$=0.436). Estimated two-year Kaplan-Meier event rates of TVF were 11.0% and 9.9%, respectively, 95% CI: –0.9%-3.0%; $p_{non\text{-}inferiority}$=0.003) **(Figure 1, Table 3)**. Cardiac death occurred in 17 patients in the Absorb BVS arm and in 20 patients in the XIENCE EES arm, 1.9% and 2.2%, respectively (HR 0.85, 95% CI: 0.44-1.62; p=0.618). Rates of target vessel myocardial infarction (TVMI) were 5.1% in the Absorb BVS arm and 3.1% in the XIENCE EES arm (HR 1.65, 95% CI: 1.03-2.64; p=0.034). Rates of target vessel revascularisation (TVR) were 8.2% in the Absorb BVS arm and 7.0% in the XIENCE EES arm (HR 1.18, 95% CI: 0.84-1.65; p=0.333). Rates of TLR were 6.5% in the Absorb BVS arm and 4.8% in the XIENCE EES arm (HR 1.35, 95% CI: 0.91-1.99; p=0.133). Rates of TLR caused by device thrombosis were 2.8% in the Absorb BVS arm and 0.5% in the XIENCE EES arm (HR 5.02, 95% CI: 1.92-13.10; p<0.001). Rates of TLR caused by device stenosis were 3.9% in the Absorb BVS arm versus 4.3% in the XIENCE EES arm (HR 0.89, 95% CI: 0.57-1.41; p=0.626).

Definite or probable device thrombosis at two years occurred in 30 patients in the Absorb BVS arm and in eight patients in the XIENCE EES arm. Kaplan-Meier estimates of device thrombosis were 3.3% in the Absorb BVS arm and 0.9% in the XIENCE EES arm (HR 5.22, 95% CI: 2.00-13.59; p<0.001) **(Table 4, Figure 2,**

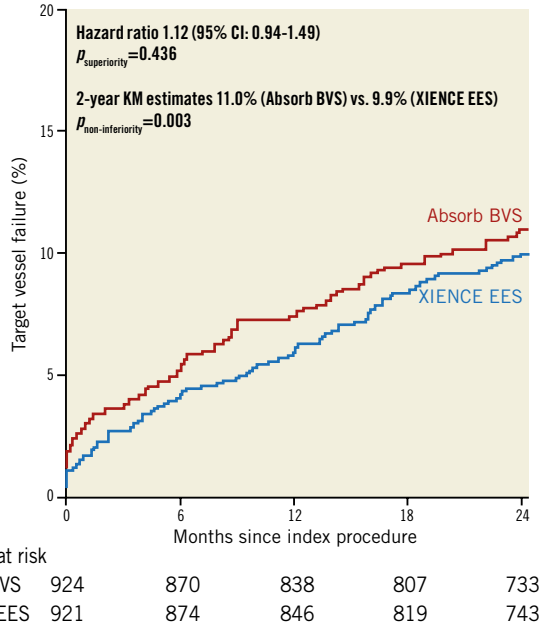

Figure 1. *Kaplan-Meier curve for the composite endpoint of target vessel failure. Absorb BVS: Absorb bioresorbable vascular scaffold; KM: Kaplan-Meier; XIENCE EES: XIENCE everolimus-eluting stent*

Table 3. Safety and efficacy outcomes at 2-year follow-up*.

	Absorb BVS group (n=924)	XIENCE EES group (n=921)	Hazard ratio for Absorb BVS group (95% CI)	*p*-value¶	Total number of events reported before data lock on 28 February 2018‡	
					Absorb BVS group	XIENCE EES group
Clinical events						
All-cause death	30 (3.3)	37 (4.1)	0.81 (0.50-1.31)	0.385	41	49
Cardiac	17 (1.9)	20 (2.2)	0.85 (0.44-1.62)	0.618	22	24
Cardiovascular	21 (2.3)	22 (2.4)	0.95 (0.52-1.73)	0.874	26	26
Non-cardiovascular	9 (1.0)	15 (1.5)	0.60 (0.26-1.37)	0.218	15	23
All myocardial infarction	59 (6.5)	37 (4.1)	1.61 (1.07-2.42)	0.022	69	46
Target vessel myocardial infarction	46 (5.1)	28 (3.1)	1.65 (1.03-2.64)	0.034	53	33
During index procedure	9 (1.0)	6 (0.7)	1.50 (0.53-4.20)	0.441	9	6
Not during index procedure	37 (4.1)	22 (2.4)	1.69 (1.00-2.86)	0.049	44	26
Non-target vessel	14 (1.6)	9 (1.0)	1.55 (0.67-3.59)	0.300	17	13
Death or myocardial infarction	72 (8.2)	65 (6.4)	1.12 (0.80-1.57)	0.504	102	91
Any revascularisation	115 (12.8)	98 (10.8)	1.18 (0.90-1.54)	0.237	133	117
Target vessel	74 (8.2)	63 (7.0)	1.18 (0.84-1.65)	0.333	89	72
Target lesion	59 (6.5)	44 (4.8)	1.35 (0.91-1.99)	0.133	69	51
Device thrombosis-related	25 (2.8)	5 (0.5)	5.02 (1.92-13.10)	<0.001	30	6
Device stenosis-related	35 (3.9)	39 (4.3)	0.89 (0.57-1.41)	0.626	40	45
Non-target lesion	20 (2.2)	20 (2.2)	1.00 (0.54-1.86)	0.995	26	24
Non-target vessel	58 (6.5)	48 (5.3)	1.20 (0.82-1.76)	0.345	65	61
Composite endpoints						
Target vessel failure*	100 (11.0)	90 (9.9)	1.12 (0.94-1.49)	0.436	120	103
Target lesion failure#	88 (9.7)	75 (8.0)	1.18 (0.87-1.61)	0.290	103	86
Patient-oriented composite endpoint△	155 (17.0)	140 (15.3)	1.09 (0.88-1.34)	0.352	184	170

*Percentages are Kaplan-Meier estimates of the rate of the endpoint at 2 years. ¶*p*-values were calculated by the log-rank test. # Composite of cardiac death, target vessel myocardial infarction and target lesion revascularisation. △ Composite of death from any cause, all myocardial infarction, or all revascularisation. ‡No data sweep has been performed, therefore no *p*-value or KM estimates are given. Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent

Table 4. Outcomes of device thrombosis at 2-year follow-up*.

Device thrombosis	Absorb BVS group (n=924)	XIENCE EES group (n=921)	Hazard ratio for Absorb BVS group (95% CI)	*p*-value¶	Total number of events reported before data lock on 28 February 2018‡	
					Absorb BVS group	XIENCE EES group
Definite	26 (2.9)	5 (0.5)	5.2 (2.00-13.59)	<0.001	31	6
Probable	4 (0.4)	3 (0.3)	1.33 (0.30-5.93)	0.710	4	3
Possible	5 (0.6)	10 (1.0)	0.5 (0.17-1.46)	0.196	9	13
Definite/probable device thrombosis	30 (3.3)	8 (0.9)	3.76 (1.73-8.21)	<0.001	35	9
≤24 hours (acute)	3	3	–	–	3	3
>24 hours to 30 days (subacute)	10	2	–	–	10	2
31 days to 1 year (late)	8	1	–	–	8	1
1-2 years (very late)	9	2	–	–	9	2
2-3 years (very late)	–	–	–	–	4	0
3-4 years (very late)	–	–	–	–	1	0
4-5 years (very late)	–	–	–	–	0	1
Any device thrombosis	35 (3.9)	18 (2.0)	1.96 (1.11-3.46)	<0.018	44	22

*Percentages are Kaplan-Meier estimates of the rate of the endpoint at 2 years. ¶*p*-values were calculated by the log-rank test. ‡No data sweep has been performed, therefore no *p*-value or KM estimates are given. Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent

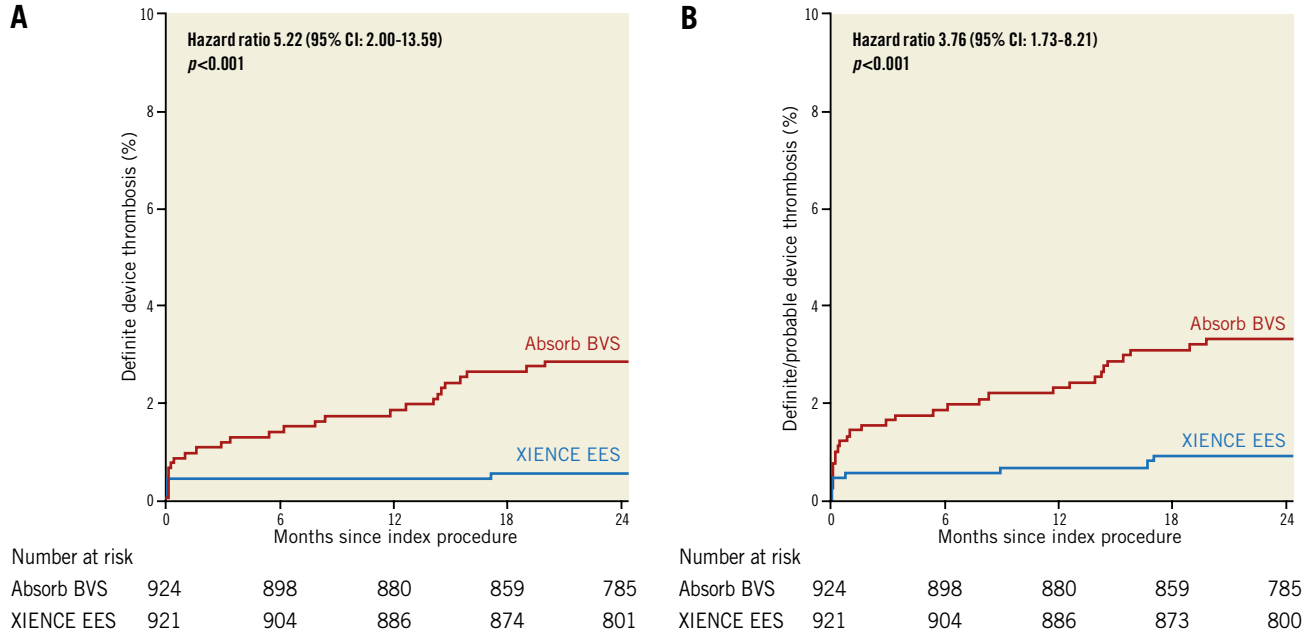

Figure 2. *Kaplan-Meier curve analysis. A) Definite device thrombosis. B) Definite or probable device thrombosis. Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent*

Supplementary Table 2). At median follow-up of 1,092 days, definite or probable device thrombosis occurred in 35 patients in the Absorb BVS arm versus nine patients in the XIENCE EES arm. Very late device thrombosis occurred in 14 patients in the Absorb BVS arm versus three patients in the XIENCE EES arm. The 30-day landmark analysis for definite or definite and probable device thrombosis is shown in **Supplementary Figure 2**. The subgroup analysis of definite and probable ScT is shown in **Supplementary Figure 3**. Event rates at one year, and between one and two years, are shown in **Supplementary Table 3** and **Supplementary Table 4**, respectively. Event rates of the "as treated population" and the "per protocol treatment population" are shown in **Supplementary Table 5** and **Supplementary Table 6**, respectively.

Discussion

First, we found a slightly increased rate of TVF at two years (11.0% versus 9.9%) in Absorb BVS. Nevertheless, the 95% CI for the rate difference in TVF fell below the pre-specified non-inferiority criterion of 4.5%. So, AIDA formally met its criterion for non-inferiority of Absorb BVS versus XIENCE EES in terms of TVF. Second, we found that Absorb BVS was associated with higher two-year rates of ScT and related myocardial infarction. Third, rates of TLR due to device thrombosis were statistically significantly higher in the Absorb BVS arm (2.8% vs. 0.5%; HR 5.02, 95% CI: 1.92-13.10; p<0.001). The rates of TLR not due to device thrombosis were similar.

The initial results of the first registries and clinical randomised trials with the Absorb BVS showed promising results with acceptable rates of TLF and ScT at one year. Initial enthusiasm was dampened when various studies reported increased rates of ScT as compared to conventional metallic DES[7-9].

Efforts are ongoing to develop a second generation of safer bioresorbable coronary scaffolds. The hope is that, after absorption and integration processes are complete, event rates will be lower than those of DES. An analytic Markov model of the most recent updated corresponding meta-analyses of randomised clinical trials with Absorb BVS versus metallic stents, performed under the assumption of no scaffold thrombosis or TLR between three and 25 years, suggested that the observed three-year increased rate of ScT would be offset 19 years after PCI[10]. This means that the allowable excess risk of ScT during the first three years after scaffold implantation must decline significantly in order to justify the value of treatment with a bioresorbable scaffold.

Optimised scaffold implantation techniques have been suggested to mitigate the risk of early and late ScT[11]. However, serial OCT examples from the INVEST registry demonstrated that ScT also occurs in scaffolds with initially well apposed and well covered struts. This implies that additional non-procedural factors (such as intraluminal late scaffold disintegration) may contribute to the occurrence of ScT[12,13]. Due to the complex process of scaffold degradation and coronary vessel healing, the exact cause of the reported higher rates of (very) late ScT remain partly understood. Early ScT is most often caused by scaffold underexpansion, and late ScT is caused by scaffold malapposition, either pre-existent or acquired[14].

After publication of the preliminary results of the AIDA trial, the steering committee and the Dutch Society of Cardiology advised considering restarting or prolonging DAPT for up to three years after scaffold implantation. In AIDA, twelve of thirteen cases of very late definite ScT occurred in patients who did

not take DAPT at the time of the event **(Supplementary Table 5)**. It is still not known whether DAPT is able to mitigate the risk of (very) late ScT. Full three-year follow-up of AIDA might shed light on this issue. Whether the risk of ScT disappears after three years remains to be seen. The four-year results of the ABSORB II trial were encouraging, with no additional scaffold thromboses reported beyond three-year follow-up[15]. However, in AIDA we observed one case of definite ScT at 1,277 days. We note that, currently, 63.6% of AIDA patients were randomised more than three years ago, but follow-up of these patients is limited. Long-term follow-up of AIDA will provide insights into the long-term risk of ScT beyond the expected time of scaffold resorption and integration (at three and five years, respectively). These insights could be useful for the development of future-generation bioresorbable coronary devices with broader expansion limits, better tensile strength and a more optimal resorption process.

Limitations

First, intracoronary imaging was not performed routinely. It is therefore not possible to distinguish between successful and unsuccessful lesion preparation and/or scaffold implantation. Second, post-procedural cardiac enzymes were only measured when clinically indicated. Therefore, potential post-procedural myocardial infarctions could have been missed. Third, restarting or prolonging DAPT therapy up to three years after scaffold implantation was recommended at the request of the DSMB. This recommendation might have influenced the occurrence of thrombosis-related outcomes in patients on prolonged or restarted DAPT compared to patients who were treated according to the applicable guidelines and IFU.

Conclusions

AIDA formally met its criterion for non-inferiority of Absorb BVS versus XIENCE EES in terms of the combined endpoint of TVF. The Absorb BVS, however, was associated with higher rates of scaffold thrombosis and target vessel myocardial infarction at complete two-year follow-up.

Impact on daily practice

Coronary bioresorbable vascular scaffolds were developed in order to overcome the shortcomings of conventional coronary metallic drug-eluting stents (DES). In AIDA, as in other trials, Absorb BVS was associated with higher rates of scaffold thrombosis and target vessel myocardial infarction than XIENCE EES. In spite of this, AIDA formally met its criterion for non-inferiority of Absorb BVS versus XIENCE EES in terms of TVF. Although Absorb is not available anymore, long-term follow-up of AIDA will provide insights into the long-term risk of scaffold thrombosis beyond the expected time of scaffold resorption and integration (at three and five years, respectively). These insights could be useful for the development of future-generation bioresorbable coronary devices with broader expansion limits and better tensile strength.

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Conflict of interest statement

J. Piek is a member of the Medical Advisory Board of Abbott Vascular. J. Tijssen served on the DSMB of the early ABSORB trials, including ABSORB II. J. Henriques receives research grants from Abbott Vascular. J. Wykrzykowska receives consultancy fees and research grants from Abbott Vascular. The other authors have no conflicts of interest to declare.

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Supplementary data

Supplementary Figure 1. Flow chart of patients included in the AIDA trial.

Supplementary Figure 2. 30-day landmark analysis with Kaplan-Meier curves for definite device thrombosis or definite and probable device thrombosis.

Supplementary Figure 3. Subgroup analysis of definite or probable scaffold thrombosis at complete two-year follow-up.

Supplementary Table 1. Characteristics of the treated lesions at baseline.

Supplementary Table 2. Descriptive characteristics of cases of definite device thrombosis.

Supplementary Table 3. Safety and efficacy outcomes at one-year follow-up.

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Supplementary Table 6. Safety and efficacy outcomes per protocol treatment at two-year follow-up.

The supplementary data are published online at: http://www.pcronline.com/eurointervention/137th_issue/76

Supplementary data

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Supplementary Figure 1. Flow chart of patients included in the AIDA trial.
Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent

Supplementary Figure 2. 30-day landmark analysis with Kaplan-Meier curves for definite device thrombosis (A) or definite and probable device thrombosis (B).
Absorb BVS: Absorb bioresorbable vascular scaffold; CI: confidence interval; XIENCE EES: XIENCE everolimus-eluting stent

Supplementary Figure 3. Subgroup analysis of definite or probable device thrombosis at complete 2-year follow-up. Percentages are Kaplan-Meier estimates of the endpoint at 2-year follow-up. P-value for interaction between the variable and relative treatment effects. Patients with multiple target lesions were classified according to the most complex lesion treated. All subgroup analyses are pre-specified, except the ‘Time of randomisation', and 'Patients per site'.
Absorb BVS: Absorb bioresorbable vascular scaffold; ACS: acute coronary syndrome; AHA/ACC: American Heart Association/American College of Cardiology; CI: confidence interval; XIENCE EES: XIENCE everolimus-eluting stent

Supplementary Table 1. Characteristics of the treated lesions at baseline.
¥ Target lesion measures as reported by the site. ¶ Visual estimation. Plus-minus values are means±SD. Absorb BVS: Absorb bioresorbable vascular scaffold; AHA/ACC: American Heart Association/American College of Cardiology; XIENCE EES: XIENCE everolimus-eluting stent

Supplementary Table 2. Descriptive characteristics of cases of definite device thrombosis.

Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent; AO-OM: aorta-obtuse marginal; AP: angina pectoris; ASA: aspirin; DAPT: dual antiplatelet therapy;

HIV: human immunodeficiency virus ; LAD: left anterior descending coronary artery; NSTEMI: non-ST-elevation myocardial infarction; MI: myocardial infarction; OAC: oral anticoagulant medication; OCT: optical coherence tomography; OM: obtuse marginal; RCA: right coronary artery; RcX: ramus circumflex; ST: scaffold thrombosis; STEMI: ST-elevation myocardial infarction; UAP: unstable angina pectoris; UN: unknown

Supplementary Table 3. Safety and efficacy outcomes at 1-year follow-up.

[$] Percentages are Kaplan-Meier estimates of the rate of the endpoint at 1 year. [¶] P-values were calculated by the log-rank test. [#] Composite of cardiac death, target vessel myocardial infarction and target lesion revascularisation. [¥] Composite of death from any cause, all myocardial infarction, or all revascularisation. Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent

Supplementary Table 4. Safety and efficacy outcomes between 1st and 2nd year follow-up.

[$] Percentages are Kaplan-Meier estimates of the rate of the endpoint at 2 years. [¶] P-values were calculated by the log-rank test. [#] Composite of cardiac death, target vessel myocardial infarction and target lesion revascularisation. [¥] Composite of death from any cause, all myocardial infarction, or all revascularisation. Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent

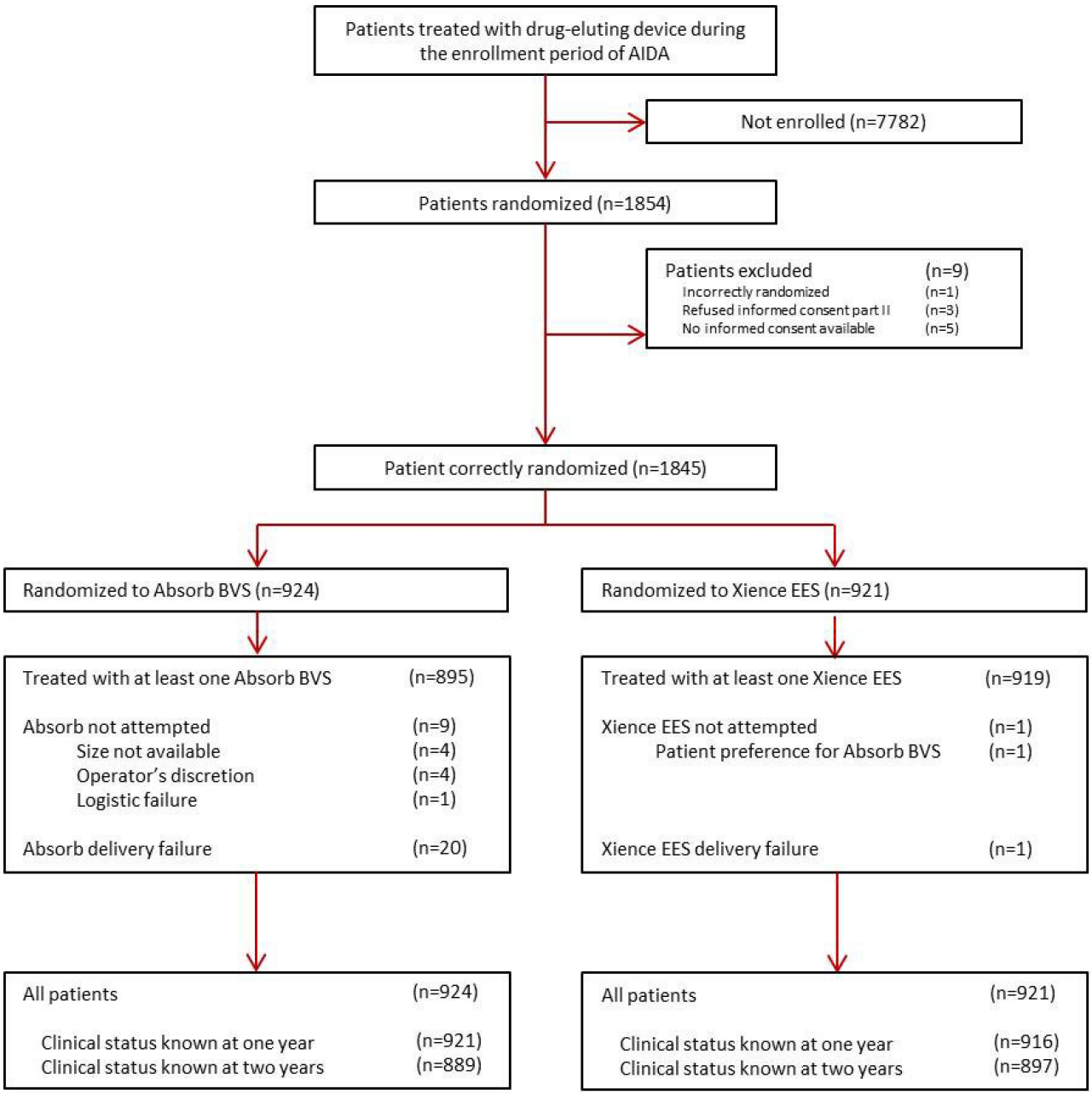
Supplementary Table 5. Safety and efficacy outcomes in the "as treated" population at 2-year follow-up.

[$] Percentages are Kaplan-Meier estimates of the rate of the endpoint at 2 years. [¶] P-values were calculated by the log-rank test. [#] Composite of cardiac death, target vessel myocardial infarction and target lesion revascularisation. [¥] Composite of death from any cause, all myocardial infarction, or all revascularisation. Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent

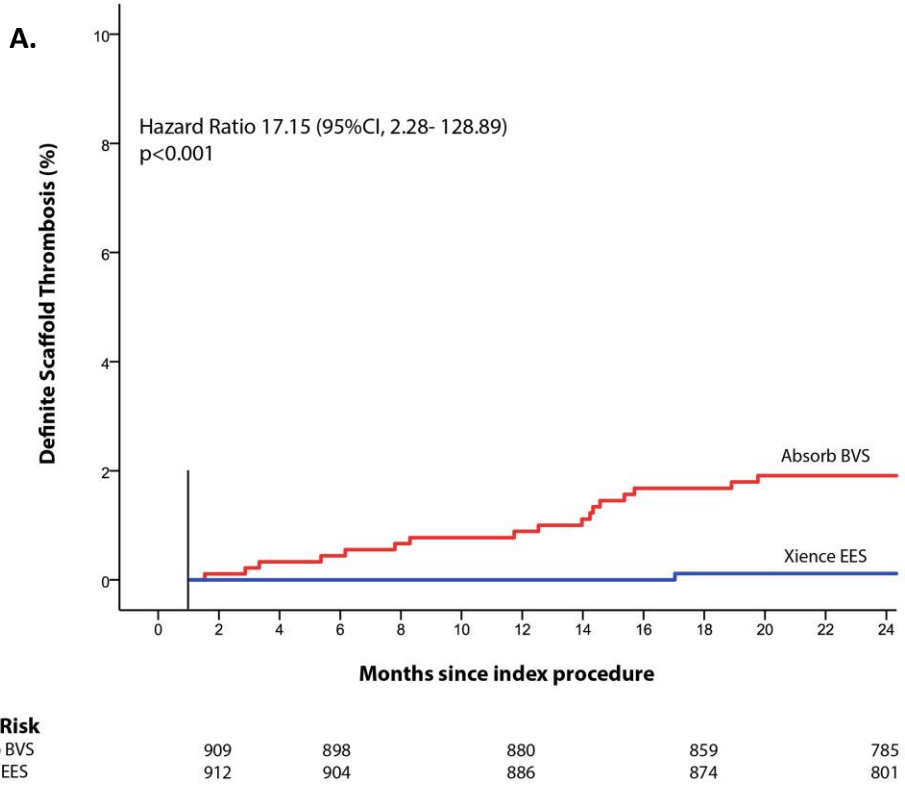
Supplementary Table 6. Safety and efficacy outcomes per protocol treatment at 2-year follow-up.

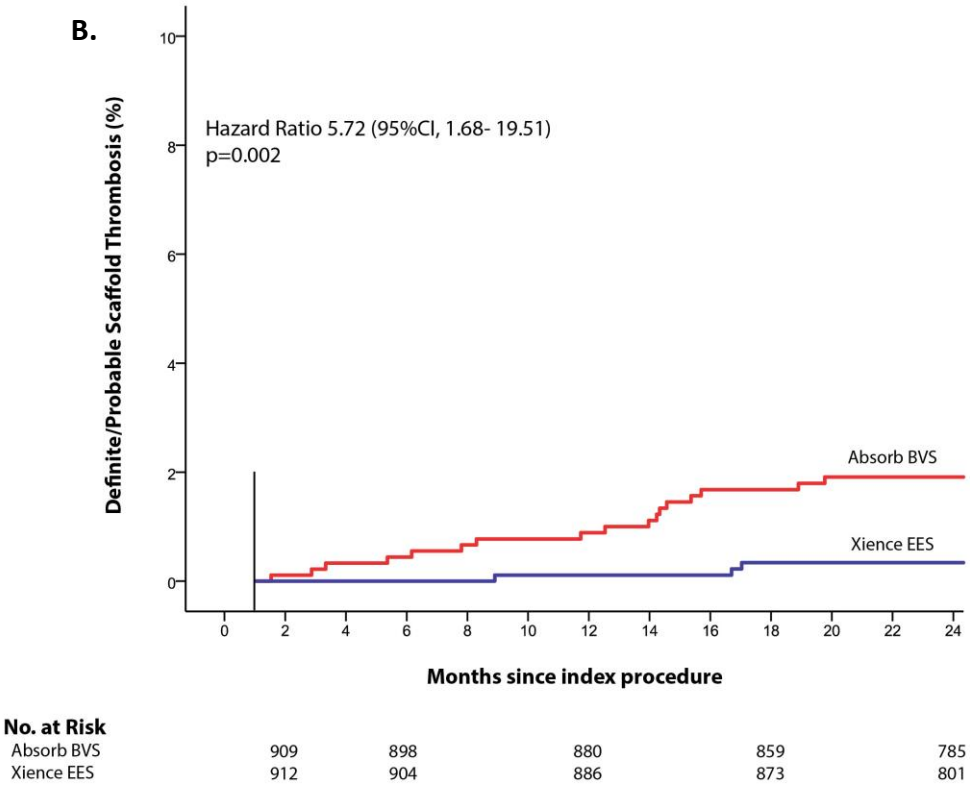
[$] Percentages are Kaplan-Meier estimates of the rate of the endpoint at 2 years. [¶] P-values were calculated by the log-rank test. [#] Composite of cardiac death, target vessel myocardial infarction and target lesion revascularisation. [¥] Composite of death from any cause, all myocardial infarction, or all revascularisation. Absorb BVS: Absorb bioresorbable vascular scaffold; XIENCE EES: XIENCE everolimus-eluting stent

Supplementary Figure 1. Flow chart of patients included in the AIDA trial.

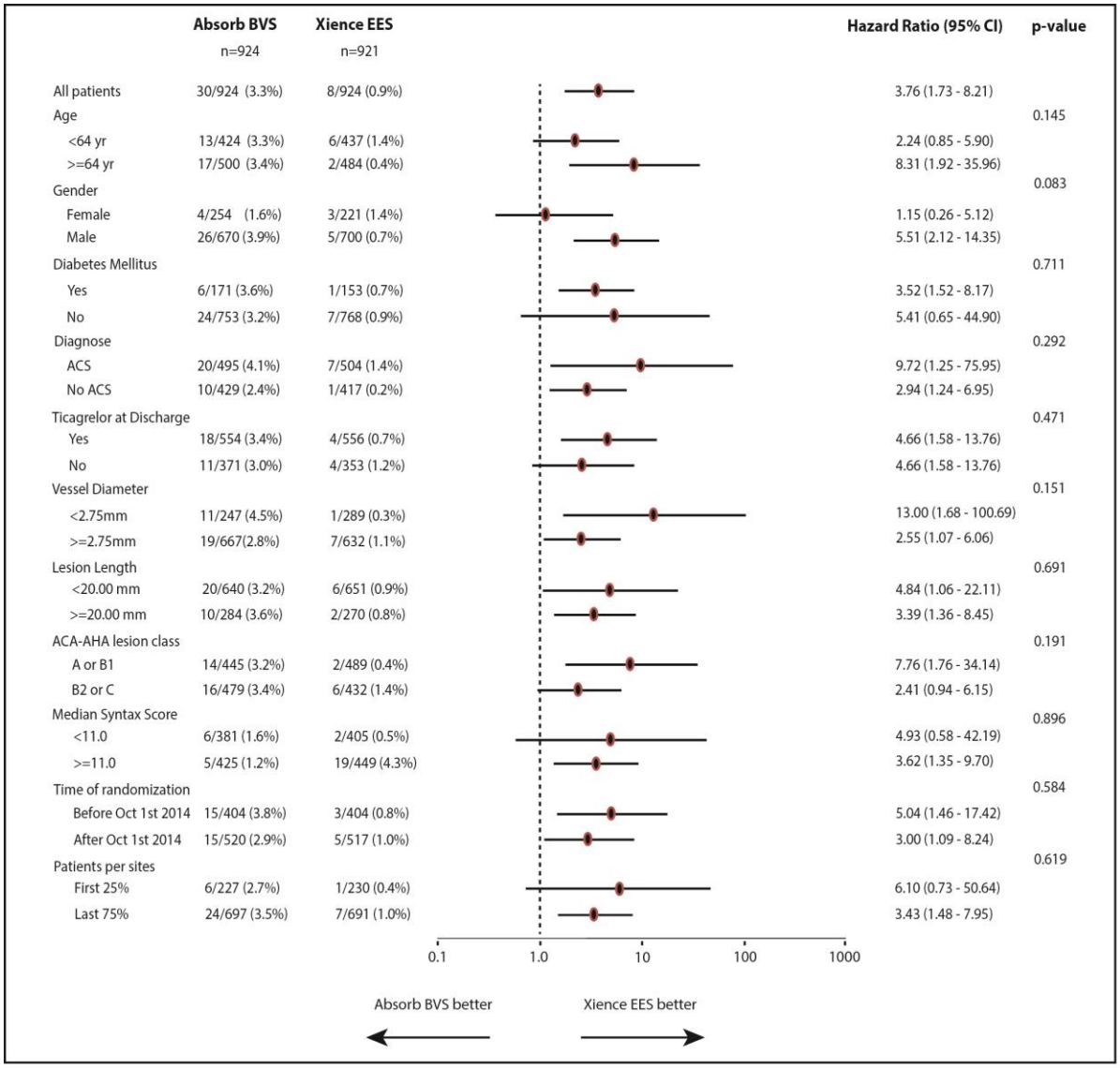


Supplementary Figure 2. 30-day landmark analysis with Kaplan-Meier curves for definite device thrombosis (A) or definite and probable device thrombosis (B).





Supplementary Figure 3. Subgroup analysis of definite or probable device thrombosis at complete 2-year follow-up.



Supplementary Table 1. Characteristics of the treated lesions at baseline.				
	Absorb BVS group		**XIENCE EES group**	
Target lesion measures[¥]				
Total no.	1,237		1,209	
Coronary artery location – no. (%)				
Left main	7	(6%)	8	(0.7%)
Left anterior descending	526	(42%)	528	(44%)
Left circumflex	297	(24%)	318	(26%)
Right	401	(32%)	348	(29%)
Arterial bypass graft	2	(0.2%)	0	(0.0%)
Venous bypass graft	4	(0.3%)	7	(0.6%)
AHA/ACC lesion type – no./total no. of target lesions (%)				
A	123/1,233	(10%)	124/1,206	(10%)
B1	437/1,233	(35%)	467/1,206	(39%)
B2	439/1,233	(36%)	415/1,206	(34%)
C	234/1,233	(19%)	200/1,206	(17%)
Bifurcation – no. (%)	67	(5%)	74	(6%)
Chronic total occlusion – no. (%)	54	(4%)	39	(3%)
Moderately or severely calcified – no. (%)	368	(30%)	336	(28%)
Thrombus present – no. (%)	164	(13%)	162	(13%)
Ostial - no. (%)	69/1,235	(6%)	76	(6.3%)
Lesion length >20 mm[¶] – no. (%)	389	(31%)	324	(27%)
Reference vessel diameter ≤2.75 mm[¶] – no./total no. of target lesions (%)	285/1,233	(23%)	338/1,207	(28%)
Lesion length, mm[¶]	19.1	±9.0	18.8	±9.5
Reference vessel diameter, mm[¶]	3.07	±0.41	3.03	±0.43

Supplementary Table 2. Descriptive characteristics of cases of definite device thrombosis.

Case	Group	Initial PCI indication	Treated vessel	Lesion type	Ref size (mm)	Predilatation (atm)	Stent size (atm)	Post-dilatation (atm)	Initial DAPT therapy	Days to ST	DAPT therapy time of ST	Clinical outcome (worst)	Patients note
1	Absorb BVS	STEMI	Mid RCA	B2	4.0x15	3.0x15 (12)	3.5x18 (13)	4.0x12 (13)	ASA Ticagrelor	0	ASA Ticagrelor	Myocardial infarction	Dissection distal of stent (OCT)
2	Absorb BVS	STEMI	Prox LAD	B2	3.5x18	3.5x20 (6)	3.5x18 (14)	3.5x12 (20)	ASA Ticagrelor	1	ASA Ticagrelor	Myocardial infarction	Distal rdge dissection (OCT)
3	Absorb BVS	AP	Mid RCA	B2	3.0x15	3.0x15 (10)	3.5x18 (14)	4.0x12 (14)	ASA Clopidogrel	2	ASA Clopidogrel	Myocardial infarction	Malapposition stent (OCT)
4	Absorb BVS	AP	Mid RCA	C	3.0x46	2.5x20 (16)	3.0x28 (12) 3.0x18 (14)	3.0x20 (18)	ASA Clopidogrel	3	ASA Clopidogrel	Myocardial infarction	
5	Absorb BVS	STEMI	Prox LAD	C	3.5x21	2.0x12 (12)	3.0x15 (14) 3.5x12 (16)	3.75x15 (22)	ASA Clopidogrel	4	ASA Clopidogrel	Myocardial infarction	
6	Absorb BVS	AP	Distal RcX	B2	2.5x28	2.5x20 (10)	2.5x28 (10)	2.5x20 (14)	ASA Clopidogrel	5	ASA Clopidogrel	Myocardial infarction	Possible low therapy compliance
7	Absorb BVS	Stabilised STEMI	Prox RCA	C	3.0x30	3.5x15 (12) Rotablation	3.5x18 (14) 3.5x18 (14)	3.5x15 (14)	ASA Ticagrelor	6	ASA	Myocardial infarction	Patient forgot to take Ticagrelor
8	Absorb BVS	NSTEMI	Prox LAD	B2	2.5x15	2.5x15(UN)	2.5x18 (10)	3.0x12 (12)	ASA Ticagrelor	11	ASA Ticagrelor	Myocardial infarction	
9	Absorb BVS	STEMI	Prox LAD Distal RCA Mid RCA Mid RCA	C C C C	3.0x25 2.7x25 2.7x25 2.7x25	2.5x20 (8) 3.5x20 (12) 2.5x20 (10) 3.5x20 (10)	3.0x28 (10) 2.5x28 (14) 3.0x28 (14) 2.5x28 (14)	3.5x15 (10) No No No	ASA Ticagrelor	29	ASA Ticagrelor	Myocardial infarction	ST in both LAD and RCA
10	Absorb BVS	NSTEMI	Mid LAD Prox LAD	B2 B1	3.0x45 4.0x15	2.5x20 (14) 2.5x20 (14)	2.5x23 (16) 3.0x28 (18) 3.5x18 (18)	4.0x15 (18) 4.0x15 (18)	ASA Ticagrelor OAC	46	Clopidogrel OAC	Myocardial infarction	Malapposition stent (OCT)
11	Absorb BVS	UAP	Mid LAD	B1	3.0x12	2.5x15 (10)	3.0x18 (12)	No	ASA Ticagrelor	86	ASA Ticagrelor	Myocardial infarction	Interaction Ticagrelor and HIV medication
12	Absorb BVS	NSTEMI	Prox RCA	B1	3.5x10	3.0x15 (12)	3.5x12 (14)	3.5x8 (22)	ASA Clopidogrel OAC	100	Clopidogrel OAC	Non-fatal MI followed by cardiac death	

13	Absorb BVS	UAP	Mid LAD	B1	15x3.5	2.0x15 (18)	3.5x18 (10)	3.5x15 (16)	ASA Ticagrelor	161	None	Myocardial infarction	DAPT cessation during surgery
15	Absorb BVS	NSTEMI	Prox RcX	B2	3.0x28	2.5x15 (12)	3.0x28 (14)	3.5x15 (14)	ASA Ticagrelor	185	None	Myocardial infarction	DAPT cessation during surgery
16	Absorb BVS	STEMI	Mid LAD	B1	2.5x23	2.0x20 (14)	2.5x23 (14)	2.5x15 (18)	ASA Ticagrelor	234	ASA Ticagrelor	Myocardial infarction	
17	Absorb BVS	AP	RcX, OM	B1	2.5x12	2.5x15 (8)	2.5x18 (6)	No	ASA Ticagrelor	249	ASA	Myocardial infarction	History of low therapy compliance
18	Absorb BVS	NSTEMI	Prox RcX	B2	2.5x15	2.5x15 (8) Rotablation	2.5x18 (14)	2.75x15 (16)	ASA Ticagrelor Ticagrelor	352	ASA	Myocardial infarction	Dissection after stent implantation (Angio)
19	Absorb BVS	AP	Mid RCA Distal RCA	B2 B2	3.5x25 3.0x15	2.5x20 (12) 2.5x20 (12)	3.5x28 (12) 3.0x18 (14)	4.0x15 (10) No	ASA Ticagrelor	376	ASA	Myocardial infarction	Malapposition distal stent (OCT)
20	Absorb BVS	STEMI	Distal RCA	B2	3.0x24	2.0x20 (10)	3.0x27 (8)	3.5x15 (18)	ASA Ticagrelor	419	ASA	Myocardial infarction	
21	Absorb BVS	AP	Dist RcX	B1	3.0x10	3.0x15 (18)	3.0x18 (12)	No	ASA Ticagrelor OAC	427	OAC only	Myocardial infarction	
22	Absorb BVS	STEMI	Mid RCA	B2	3.5x23	3.5x20 (10)	3.5x28 (12)	3.5x15 (12)	ASA Prasugrel OAC ASA stop after 3 months	430	None	Non-fatal MI followed by cardiac death	OAC cessation during surgery (Clexane)
23	Absorb BVS	Angio-driven	Prox RCA Prox RcX	B1 A	4.0x16 3.5x12	3.0x20 (16) 3.0x12 (14)	3.5x28 (16) 3.0x23 (16)	4.0x20 (12) 3.5x40 (16)	ASA Clopidogrel	437	Unknown	Myocardial infarction	
23	Absorb BVS	STEMI Staged	Prox RCA Prox RcX	B2 B1	2.5x15 3.0x12	2.5x15 (10) 3.0x15 (10)	3.0x18 (12) 3.0x18 (14)	No No	ASA Ticagrelor	461	ASA	Myocardial infarction	
24	Absorb BVS Absorb BVS XIENCE EES	AP	Distal LAD Prox LAD RcX, OM	B1 A B1	3.0x8 3.5x12 2.5x12	2.5x28 (14) 3.0x12 (14) 2.5x15 (10)	3.0x28 (14) 3.5x12 (14) 2.5x12 (12)	3.0x28 (14) 3.5x14 (14) No	ASA Ticagrelor	471	ASA Ticagrelor	Myocardial infarction	

25	Absorb BVS	STEMI	Prox RCA	C	3.5x18	3.0x15 (12)	3.5x23 (16)	4.0x20 (16)	ASA Prasugrel	567	ASA	Myocardial infarction	
26	Absorb BVS	STEMI	Mid RCA	B2	3.0x25	3.0x15 (12)	3.0x28 (10)	2.25x20 (13)	ASA Ticagrelor	593	ASA	Myocardial infarction	
27	Absorb BVS	STEMI	Prox LAD	C	3.5x21	2.5x20 (10)	3.5x23 (18)	3.5x15 (18)	ASA Ticagrelor	733	ASA	Myocardial infarction	Patient refused re-start of DAPT
28	Absorb BVS	NSTEMI	AO-OM graft	B2	3.0x18	2.0x15 (12)	3.0x18 (10)	3.0x12 (14)	ASA Clopidrogrel	769	ASA	Myocardial infarction	
29	Absorb BVS	AP	Prox LAD	A	3.5x8	3.0x15 (12)	2.5x12 (12)	3.5x8 (20)	ASA Clopidrogrel	817	ASA	Myocardial infarction	OCT malapposed non-covered struts distally
30	Absorb BVS	NSTEMI	RcX, OM	B1	2.5x10	2.5x15 (20)	2.5x12 (16)	2.75x15 (18)	ASA Ticagrelor	825	ASA	Myocardial infarction	
31	Absorb BVS	Stabilised STEMI	Distal LAD	C	2.5x45	2.5x30 (12)	2.5x28 (16)	No	ASA Ticagrelor	1,277	Unknown	Myocardial infarction	ST in LAD
			First diagonal	B2	3.5x12	3.5x15 (16)	2.5x28 (16) 3.5x12 (14)	4.0x9 (14)					

1	XIENCE EES	Stabilised STEMI	Mid RCA	B2	3.5x15	No	3.5x10 (18)	3.5x18 (14)	ASA Ticagrelor	0	ASA Ticagrelor	Myocardial infarction	
			Dist RCA	C	2.5x25	2.5x20 (14)	2.75x28 (14)	2.5x15 (8)					
2	XIENCE EES	STEMI	Prox LAD	B2	3.0x28	3.0x20 (6)	3.0x38 (14)	3.5x15 (12)	ASA Ticagrelor	0	ASA Ticagrelor	Myocardial infarction	
3	XIENCE EES	STEMI	Prox LAD	B2	3.5x15	3.0x15 (16)	3.5x15 (12)	No	ASA Ticagrelor	1	ASA Ticagrelor	Myocardial infarction	Jailing stent (Angio)
4	XIENCE EES	AP	Distal RcX	A	3.0x15	2.5x15 (10)	3.0x18 (12)	No	ASA Clopidogrel	3	ASA Clopidogrel	Myocardial infarction	
5	XIENCE EES	STEMI	Prox RCA	B2	3.0x15	3.0x15 (10)	3.0x12 (16)	No	ASA Prasugrel	511	ASA	Myocardial infarction	Malapposition proximal stent strut (OCT)
6	XIENCE EES	AP	LAD (7)	B1	3.0x15	2.5x12 (10)	3.0x18 (12)	No	ASA Prasugrel	1,472	ASA	Myocardial infarction	

Supplementary Table 3. Safety and efficacy outcomes at 1-year follow-up[$].

	Absorb BVS group		XIENCE EES group		Hazard ratio (95% CI)		*p*-value[¶]
	924		921				
Clinical events							
All-cause death	19	(2.1)	23	(2.5)	0.82	(0.45–1.51)	0.528
Cardiac	12	(1.3)	11	(1.2)	1.09	(0.48–2.47)	0.841
Cardiovascular	15	(1.6)	12	(1.3)	1.25	(0.58–2.66)	0.569
Non-cardiovascular	4	(0.4)	11	(1.2)	0.36	(0.11–1.14)	0.069
All myocardial infarction	40	(4.4)	28	(3.1)	1.43	(0.89–2.32)	0.141
Target vessel	34	(3.7)	20	(2.2)	1.71	(0.98–2.96)	0.055
During index procedure	9	(1.0)	6	(0.7)	1.50	(0.53–4.20)	0.441
Not during index procedure	25	(2.7)	14	(1.5)	1.79	(0.93–3.44)	0.077
Non-target vessel	7	(0.8)	8	(0.9)	0.87	(0.32–2.40)	0.790
Death or myocardial infarction	56	(6.1)	47	(5.1)	1.20	(0.81–1.76)	0.363
Any revascularisation	77	(8.4)	67	(7.3)	1.15	(0.83–1.59)	0.414
Target vessel	48	(5.2)	38	(4.2)	1.27	(0.83–1.94)	0.278
Target lesion	38	(4.2)	27	(3.0)	1.41	(0.86–2.31)	0.171
Device thrombosis-related	16	(1.7)	4	(0.4)	4.00	(1.34–11.96)	0.007
Device stenosis-related	22	(2.4)	23	(2.5)	0.89	(0.58–1.36)	0.869
Non-target lesion	11	(1.2)	11	(1.2)	1.00	(0.43–2.30)	0.996
Non-target vessel	36	(3.9)	36	(3.9)			
Composite endpoints							
Target vessel failure[*]	70	(7.6)	56	(6.1)	1.26	(0.88–1.78)	0.204
Target lesion failure[#]	60	(6.5)	48	(5.3)	1.25	(0.86–1.83)	0.243
Patient-oriented composite endpoint[¥]	107	(11.6)	97	(10.6)	1.09	(0.88–1.34)	0.481
Device thrombosis							
Any device thrombosis	23	(2.5)	10	(1.1)	2.30	(1.10–4.84)	0.023
Definite	17	(1.9)	4	(0.4)	4.25	(1.43–12.63)	0.005
Probable	4	(0.4)	2	(0.2)	1.99	(0.37–10.88)	0.417
Possible	2	(0.2)	4	(0.4)	0.50	(0.09–2.72)	0.410
Definite/probable	21	(2.3)	6	(0.7)	3.5	(1.41–8.68)	0.004
≤24 h (acute)	3		3				
>24 h to 30 d (subacute)	10		2				
31 d to 1 y (late)	8		1				

Supplementary Table 4. Safety and efficacy outcomes between 1st and 2nd year follow-up[$].

	Absorb BVS group 924		XIENCE EES group 921		Hazard ratio (95% CI)		*p*-value[¶]
Clinical events							
All-cause death	11/896	(1.3)	14/890	(1.6)	0.79	(0.36–1.73)	0.547
Cardiac	5	(0.6)	9	(1.0)	0.56	(0.19–1.66)	0.285
Cardiovascular	6	(0.7)	10	(1.1)	0.60	(0.22–1.65)	0.317
Non-cardiovascular	5	(0.6)	4	(0.5)	1.25	(0.34–4.65)	0.741
All myocardial infarction	19/859	(2.2)	9/867	(1.0)	2.15	(0.97–4.74)	0.053
Target vessel	12	(1.4)	8	(0.9)	1.52	(0.62–3.72)	0.356
Non-target vessel	7	(0.8)	1	(0.001)	7.11	(0.88–57.79)	0.032
Death or myocardial infarction	27/859	(3.2)	23/867	(2.7)	1.20	(0.69–2.09)	0.529
Any revascularisation	38/821	(4.7)	31/825	(3.8)	1.24	(0.77–2.00)	0.369
Target vessel	24	(3.0)	23	(2.8)	1.05	(0.59–1.87)	0.859
Target lesion	19	(2.4)	15	(1.8)	1.28	(0.65–2.52)	0.473
Device thrombosis-related	7	(0.9)	1	(0.001)	7.07	(0.87–57.45)	0.033
Device stenosis-related	12	(1.5)	14	(1.7)	0.86	(0.40–1.87)	0.707
Non-target lesion	7	(0.9)	8	(1.0)	0.88	(0.32–2.43)	0.808
Non-target vessel	19	(2.4)	9	(1.1)	2.15	(0.97–4.74)	0.053
Composite endpoints							
Target vessel failure[*]	30/838	(3.7)	34/846	(4.1)	0.90	(0.55–1.46)	0.661
Target lesion failure[#]	28/848	(3.4)	27/845	(3.2)	1.05	(0.62–1.79)	0.851
Patient-oriented composite endpoint[¥]	48/809	(6.1)	43/817	(5.3)	1.07	(0.78–1.47)	0.534
Device thrombosis							
Any device thrombosis	12/880	(1.4)	8/886	(0.9)	1.52	(0.62–3.73)	0.352
Definite	9	(1.0)	1	(0.1)			
Probable	0	(0.0)	1	(0.001)	0.015	(0.000–148,382.68)	0.319
Possible	3	(0.4)	6	(0.7)	0.51	(0.13–2.03)	0.329
Definite/probable	9	(1.0)	2	(0.2)	4.55	(0.98–21.06)	0.033

Supplementary Table 5. Safety and efficacy outcomes in the "as treated" population at 2-year follow-up[$].

	Absorb BVS group N=895		XIENCE EES group N=919		Hazard ratio (95% CI)		*p*-value[¶]
Clinical events							
All-cause death	30	(3.4)	37	(4.1)	0.83	(0.52-1.35)	0.457
Cardiac	17	(1.9)	20	(2.2)	0.88	(0.46-1.67)	0.684
Cardiovascular	21	(2.4)	22	(2.4)	0.98	(0.54-1.79)	0.953
Non-cardiovascular	9	(1.0)	15	(1.7)	0.62	(0.27-1.41)	0.247
All myocardial infarction	58	(6.6)	37	(4.1)	1.63	(1.08-2.46)	0.019
Target vessel	45	(5.1)	28	(3.1)	1.67	(1.04-2.67)	0.032
During index procedure	9	(1.0)	6	(0.7)	1.54	(0.55-4.33)	0.408
Not during index procedure	36	(4.1)	22	(2.4)	1.69	(1.00-2.88)	0.049
Non-target vessel	14	(1.6)	9	(1.0)	1.60	(0.69-3.70)	0.267
Death or myocardial infarction	82	(9.3)	70	(7.3)	1.22	(0.89-1.68)	0.223
Any revascularisation	112	(12.8)	98	(10.9)	1.18	(0.90-1.55)	0.227
Target vessel	73	(8.4)	63	(7.0)	1.20	(0.86-1.68)	0.285
Target lesion	59	(6.8)	44	(4.9)	1.39	(0.94-2.05)	0.097
Device thrombosis-related	25	(2.9)	5	(0.5)	5.17	(1.98-13.51)	<0.001
Device stenosis-related	35	(4.0)	39	(4.4)	0.92	(0.58-1.45)	0.723
Non-target lesion	19	(2.2)	20	(2.2)	0.98	(0.52-1.83)	0.943
Non-target vessel	55	(6.3)	48	(5.3)	1.18	(0.80-1.73)	0.414
Composite endpoints							
Target vessel failure[*]	98	(11.1)	90	(10.0)	1.13	(0.85-1.51)	0.396
Target lesion failure[#]	87	(9.9)	75	(8.3)	1.20	(0.88-1.64)	0.238
Patient-oriented composite endpoint[¥]	151	(17.1)	140	(15.4)	1.09	(0.89-1.35)	0.336
Device thrombosis							
Definite	26	(3.0)	5	(0.5)	5.38	(2.07-14.02)	<0.001
Probable	4	(0.4)	3	(0.3)	1.37	(0.31-6.11)	0.680
Possible	5	(0.6)	10	(1.1)	0.52	(0.18-1.51)	0.218
Definite/probable device thrombosis	30	(3.4)	8	(0.7)	3.88	(1.78-8.47)	<0.001
≤24 h (acute)	3		3				
>24 h to 30 d (subacute)	10		2				
31 d to 1 y (late)	8		1				
1-2 y (very late)	9		2				
Any device thrombosis	35	(4.0)	18	(2.0)	2.02	(1.14-3.57)	0.013

Supplementary Table 6. Safety and efficacy outcomes per protocol treatment at 2-year follow-up[$].

	Absorb BVS group N=915		XIENCE EES group N=920		Hazard ratio (95% CI)		*p*-value[¶]
Clinical events							
All-cause death	30	(3.3)	37	(4.1)	0.82	(0.50-1.32)	0.406
Cardiac	17	(1.9)	20	(2.2)	0.86	(0.45-1.63)	0.637
Cardiovascular	21	(2.3)	22	(2.4)	0.96	(0.53-1.75)	0.897
Non-cardiovascular	9	(1.0)	15	(1.7)	0.60	(0.26-1.38)	0.226
All myocardial infarction	59	(6.6)	37	(4.1)	1.62	(1.08-2.45)	0.020
Target vessel	46	(5.1)	28	(3.1)	1.67	(1.04-2.67)	0.031
During index procedure	9	(1.0)	6	(0.7)	1.51	(0.54-4.24)	0.431
Not during index procedure	37	(4.1)	22	(2.4)	1.70	(1.01-2.89)	0.045
Non-target vessel	14	(1.6)	9	(1.0)	1.57	(0.68-3.62)	0.290
Death or myocardial infarction	72	(8.2)	65	(7.4)	1.13	(0.81-1.58)	0.469
Any revascularisation	115	(12.9)	98	(10.9)	1.19	(0.91-1.56)	0.210
Target vessel	74	(8.3)	63	(7.0)	1.19	(0.85-1.67)	0.307
Target lesion	59	(6.6)	44	(4.9)	1.36	(0.92-2.01)	0.121
Device thrombosis-related	25	(2.8)	5	(0.5)	5.06	(1.94-13.22)	<0.001
Device stenosis-related	35	(3.9)	39	(4.4)	0.90	(0.57-1.42)	0.654
Non-target lesion	20	(2.3)	20	(2.2)	1.01	(0.54-1.87)	0.982
Non-target vessel	58	(6.5)	48	(5.3)	1.21	(0.83-1.78)	0.321
Composite endpoints							
Target vessel failure [*]	100	(11.1)	90	(10.0)	1.13	(0.85-1.50)	0.399
Target lesion failure [#]	88	(9.8)	75	(8.3)	1.19	(0.88-1.62)	0.263
Patient-oriented composite endpoint[¥]	155	(17.1)	140	(15.0)	1.09	(0.89-1.35)	0.311
Device thrombosis							
Definite	26	(2.9)	5	(0.5)	5.27	(2.02-13.72)	<0.001
Probable	4	(0.4)	3	(0.3)	1.34	(0.30-5.99)	0.701
Possible	5	(0.6)	10	(1.1)	0.51	(0.17-1.48)	0.203
Definite/probable device thrombosis	30	(3.3)	8	(0.9)	3.80	(1.74-8.28)	<0.001
≤24 h (acute)	3		3				
>24 h to 30 d (subacute)	10		2				
31 d to 1 y (late)	8		1				
1-2 y (very late)	9		2				
Any device thrombosis	35	(3.9)	18	(2.0)	1.98	(1.12-3.49)	0.017