



# Diabetic and Nondiabetic Patients With Left Main and/or 3-Vessel Coronary Artery Disease

## Comparison of Outcomes With Cardiac Surgery and Paclitaxel-Eluting Stents

Adrian P. Banning, MD,\* Stephen Westaby, MS, PhD,\* Marie-Claude Morice, MD,†  
A. Pieter Kappetein, MD, PhD,‡ Friedrich W. Mohr, MD,§ Sergio Berti, MD,|| Mattia Glauber, MD,||  
Mirle A. Kellett, MD,¶ Robert S. Kramer, MD,¶ Katrin Leadley, MD,# Keith D. Dawkins, MD,#  
Patrick W. Serruys, MD, PhD‡

*Oxford, United Kingdom; Massy, France; Rotterdam, the Netherlands, Leipzig, Germany; Massa, Italy, Portland, Maine; and Natick, Massachusetts*

### Objectives

This study was designed to compare contemporary surgical revascularization (coronary artery bypass graft surgery [CABG]) versus TAXUS Express (Boston Scientific, Natick, Massachusetts) paclitaxel-eluting stents (PES) in diabetic and nondiabetic patients with left main and/or 3-vessel disease.

### Background

Although the prevalence of diabetes mellitus is increasing, the optimal coronary revascularization strategy in diabetic patients with complex multivessel disease remains controversial.

### Methods

The SYNTAX (SYnergy between percutaneous coronary intervention with TAXus and cardiac surgery) study randomly assigned 1,800 patients (452 with medically treated diabetes) to receive PES or CABG.

### Results

The overall 1-year major adverse cardiac and cerebrovascular event rate was higher among diabetic patients treated with PES compared with CABG, but the revascularization method did not impact the death/stroke/myocardial infarction rate for nondiabetic patients (6.8% CABG vs. 6.8% PES,  $p = 0.97$ ) or for diabetic patients (10.3% CABG vs. 10.1% PES,  $p = 0.96$ ). The presence of diabetes was associated with significantly increased mortality after either revascularization treatment. The incidence of stroke was higher among nondiabetic patients after CABG (2.2% vs. PES 0.5%,  $p = 0.006$ ). Compared with CABG, mortality was higher after PES use for diabetic patients with highly complex lesions (4.1% vs. 13.5%,  $p = 0.04$ ). Revascularization with PES resulted in higher repeat revascularization for nondiabetic patients (5.7% vs. 11.1%,  $p < 0.001$ ) and diabetic patients (6.4% vs. 20.3%,  $p < 0.001$ ).

### Conclusions

Subgroup analyses suggest that the 1-year major adverse cardiac and cerebrovascular event rate is higher among diabetic patients with left main and/or 3-vessel disease treated with PES compared with CABG, driven by an increase in repeat revascularization. However, the composite safety end point (death/stroke/myocardial infarction) is comparable between the 2 treatment options for diabetic and nondiabetic patients. Although further study is needed, these exploratory results may extend the evidence for PES use in selected patients with less complex left main and/or 3-vessel lesions. (SYnergy Between PCI With TAXus and Cardiac Surgery [SYNTAX]; [NCT00114972](#)) (J Am Coll Cardiol 2010;55:1067-75) © 2010 by the American College of Cardiology Foundation

Diabetes mellitus is a common life-threatening illness of increasing prevalence. More than 171 million (2.8%) people are currently diagnosed worldwide, with a projected increase to 366 million (4.4%) by 2030 (1). Diabetes increases the risk of developing cardiovascular disease (2), and is a consistent

predictor of mortality, myocardial infarction (MI), and restenosis after balloon angioplasty (3) and bare-metal stenting (4). Although drug-eluting stents (DES) reduce restenosis in

See page 1076

From the \*John Radcliffe Hospital, Oxford, United Kingdom; †Institut Hospitalier Jacques Cartier, Massy, France; ‡Thorax Center, Erasmus University Medical Center, Rotterdam, the Netherlands; §Herzzentrum Universität Leipzig, Leipzig, Germany; ||Institute of Clinical Physiology, CNR Massa, Massa, Italy; ¶Maine Medical Center, Portland, Maine; and the #Boston Scientific Corporation, Natick, Massachusetts. This study was funded by Boston Scientific Corporation, Natick, Massachusetts. Drs. Banning, Kellett, and Kramer have

received research grant support from and Drs. Leadley and Dawkins have stock options/equity interest and are salary/full-time employees of Boston Scientific. Dr. Banning is partially funded by the NIHR Biomedical Research Centre in Oxford, United Kingdom.

Manuscript received June 8, 2009; revised manuscript received September 16, 2009, accepted September 30, 2009.

### Abbreviations and Acronyms

**CABG** = coronary artery bypass graft surgery  
**CVA** = cerebrovascular accident  
**DES** = drug-eluting stent(s)  
**MACCE** = major adverse cardiac and cerebrovascular event  
**MI** = myocardial infarction  
**PCI** = percutaneous coronary intervention  
**PES** = paclitaxel-eluting stent(s)  
**TIA** = transient ischemic attack

comparison with bare-metal stents in diabetic patients (5), DES studies have consistently shown higher repeat revascularization rates after percutaneous coronary intervention (PCI) compared with surgical revascularization (6–11). However, most prior studies comparing DES with surgery in diabetic patients have studied a limited range of lesion complexity, were not randomized, and typically did not distinguish between DES types (i.e., sirolimus versus paclitaxel).

In randomized controlled trials of patients with less complex 1- and 2-vessel disease, 4-year repeat revascularization rates in patients treated with paclitaxel-eluting

stents (PES) were similar for diabetic and nondiabetic patients (12). The SYNTAX (SYNergy between percutaneous coronary intervention with TAXus and cardiac surgery) study is the first to compare coronary artery bypass graft surgery (CABG) and the TAXUS Express PES (Boston Scientific, Natick, Massachusetts) in nondiabetic and diabetic patients with complex left main and/or 3-vessel disease.

## Methods

**Study design and device description.** The SYNTAX trial is a prospective, 85-center clinical trial (13,14). Patients with de novo left main and/or 3-vessel disease were randomly allocated 1:1 to either the TAXUS Express PES or CABG, with a priori stratification based on the presence or absence of medically treated diabetes and left main disease. Exploratory subgroup analysis of patients with medically treated diabetes was pre-specified per study protocol; no formal statistical hypotheses were defined a priori to test for superiority or noninferiority between CABG and PES in diabetic patients.

The institutional review board at each participating center approved the protocol, and all patients provided written consent. The protocol and consent forms were consistent with the International Conference on Harmonisation Guidance for Industry E6 Good Clinical Practice, the Declaration of Helsinki, and all local regulations, as appropriate. The study is registered on the National Institutes of Health website as identifier NCT00114972.

**Definitions.** For the primary analysis, medically treated diabetes was defined as treatment with oral hypoglycemic agents or insulin at the time of enrollment in accordance with prior studies (12,15–17). Further analyses of all patients with diabetes (included those treated by diet alone) and with fasting plasma glucose  $\geq 126$  mg/dl (7.0 mmol/l) were also conducted. Major adverse cardiac and cerebrovascular events (MACCE) included a composite of all-cause death, cerebrovascular accident

(CVA), MI, or repeat revascularization (any subsequent PCI or CABG procedure in any coronary vessel) (14).

**Statistical methods.** Analysis of the intent-to-treat sample was conducted using SAS system software, version 8.0 or higher (SAS Institute, Cary, North Carolina). Data are summarized using descriptive statistics, presented as proportions (%), count/sample size) or mean  $\pm$  SD. Continuous variables were compared with the use of the Student *t* test; differences in discrete variables were assessed by means of the chi-square test or Fisher exact test, as appropriate. The *p* values for interaction between diabetic status and treatment were generated by logistic regression. Binary 12-month MACCE rates were reported by SYNTAX score tercile for coronary anatomic complexity (low  $\geq 22$ , intermediate 23 to 32, and high  $\geq 33$ ) (18). Logistic regression was used to determine predictors of composite death/CVA/MI and repeat revascularization in diabetic and nondiabetic patients (see Online Supplement).

## Results

**Patients included in the analysis.** Of the 1,800 patients with left main (isolated or in addition to 1-, 2-, or 3-vessel disease) or isolated 3-vessel disease randomly allocated into SYNTAX, 452 (221 CABG, 231 PES) had medically treated diabetes. An additional 59 patients with diabetes treated by diet alone were included in the nondiabetic group ( $n = 1,348$ ). Among patients with medically treated diabetes, 182 (40.3%) were treated with insulin, and 270 (59.7%) were treated with oral hypoglycemic agents only. Type 2 diabetes accounted for 94% of patients with medically treated diabetes. One-year MACCE was evaluated in 849 (94.6%) CABG patients (645 nondiabetic and 204 with medically treated diabetes) and 891 (98.7%) PES patients (664 nondiabetic and 227 with medically-treated diabetes). While pre-specified, these subgroup analyses are intended to be observational and hypothesis generating, as the primary end point was not met.

**Patient demographic, lesion, and procedural characteristics.** Patient baseline and lesion characteristics were relatively well matched in the SYNTAX randomized cohort (14) and between patients with medically treated diabetes and patients treated with either CABG and PES, with the exception of increased incidence of high triglycerides ( $\geq 150$  mg/dl) in CABG compared with PES (47.1% vs. 37.0%,  $p = 0.04$ ) and increased incidence of elevated blood pressure  $\geq 130/85$  mm Hg in PES (65.2% vs. 74.5%,  $p = 0.03$ ). In nondiabetic patients, there were no significant differences in baseline patient or lesion characteristics, with the exception of a higher incidence of smoking (70.5% vs. 60.7%,  $p < 0.001$ ), triglycerides  $\geq 150$  mg/dl (36.0% vs. 30.6%,  $p = 0.046$ ), and high-density lipoprotein  $< 40$  mg/dl male or  $< 50$  mg/dl female (48.6% vs. 42.3%,  $p = 0.03$ ) in CABG patients compared with PES patients.

Overall, compared with nondiabetic patients, diabetic patients had increased incidence of comorbid risk factors and increased lesion complexity (Table 1).

Download English Version:

<https://daneshyari.com/en/article/2949511>

Download Persian Version:

<https://daneshyari.com/article/2949511>

[Daneshyari.com](https://daneshyari.com)