New stent design for use in small coronary arteries during percutaneous coronary intervention

Juan F Granada¹
Barbara A Huibregtse²
Keith D Dawkins²
¹The Jack H Skirball Center for Cardiovascular Research, Cardiovascular Research Foundation, Columbia University Medical Center, New York, NY, USA; ²Boston Scientific Corporation, Natick, MA, USA

Abstract: Patients with diabetes mellitus, of female gender, increased age, and/or with peripheral vascular disease often develop coronary stenoses in small caliber vessels. This review describes treatment of these lesions with the paclitaxel-eluting 2.25 mm TAXUS® Liberté® Atom™ stent. Given the same stent composition, polymer, antirestenotic drug (paclitaxel), and release kinetics as the first-generation 2.25 mm TAXUS® Express® AtomTM stent, the second-generation TAXUS Liberté Atom stent incorporates improved stent design characteristics, including thinner struts (0.0038 versus 0.0052 inches), intended to increase conformability and deliverability. In a porcine noninjured coronary artery model, TAXUS Liberté Atom stent implantation in small vessels demonstrated complete strut tissue coverage compared with the bare metal stent control, suggesting a similar degree of tissue healing between the groups at 30, 90, and 180 days. The prospective, single-armed TAXUS ATLAS Small Vessel trial demonstrated improved instent late loss (0.28 ± 0.45 versus 0.84 ± 0.57 mm, P < 0.001), instent binary restenosis (13.0% versus 38.1%, P < 0.001), and target lesion revascularization (5.8% versus 17.6%, P < 0.001) at nine months with the TAXUS Liberté Atom stent as compared with the bare metal Express stent control, with similar safety measures between the two groups. The TAXUS Liberté Atom also significantly reduced nine-month angiographic rates of both instent late loss (0.28 ± 0.45 versus 0.44 ± 0.61 mm, P = 0.03) and instent binary restenosis (13.0% versus 25.9%, P = 0.02) when compared with the 2.25 mm TAXUS Express Atom control. The observed reduction in target lesion revascularization with the TAXUS Liberté Atom compared with the TAXUS Express Atom at nine months (5.8% versus 13.7%, P = 0.02) was sustained through three years (10.0% versus 22.1%, P = 0.008) with similar, stable safety outcomes between the groups. In conclusion, these data confirm the safety and favorable performance of the TAXUS Liberté Atom stent in the treatment of small coronary vessels.

Keywords: small vessel, paclitaxel, stent

Introduction

Treatment of small vessels, historically defined as <3.0 mm in diameter, constitutes an estimated 30%–50% of all percutaneous coronary interventions.¹² As interventional practice has developed, vessels <2.5 to 2.75 mm by visual estimate are currently considered to be small vessels.³ Female gender, diabetes mellitus, increased age, and peripheral vascular disease are often associated with small vessel coronary atherosclerotic lesions.⁴–⁶ The increasing prevalence of diabetes, along with prolonged life expectancy, will likely increase the number of small coronary vessels requiring treatment. Although the use of bare metal stents versus plain balloon angioplasty has reduced restenosis and major adverse cardiac events among patients undergoing percutaneous coronary intervention in coronary vessels ≥3.0 mm,⁷⁸ several studies...
comparing bare metal stenting versus balloon angioplasty in
small vessels have demonstrated conflicting and inconclusive
clinical and angiographic results. The introduction of
drug-eluting stents in the treatment of small coronary vessels
has shown favorable and improved outcomes in this high-risk
subgroup of patients. This review examines the use of the
paclitaxel-eluting TAXUS® Liberté® Atom™ 2.25 mm stent
in the treatment of very small coronary vessels (2.25–2.5 mm
vessel diameter).

**Challenges of small vessel stent implantation**

Performing interventional procedures on small vessels pres-
tains a number of technical challenges. Delivering a stent to a
given lesion in a small vessel may be hampered by more
difficult visualization, distal and branch vessel locations, vessel
tortuosity, and greater lesion complexity, including calcifica-
tation. Distal lesions are also more frequently diffuse, requiring
longer, more flexible stents to cover the diseased segment.

Endothelial injury, as well as deeper arterial wall trauma, usually occurs following stent implantation. Injury
stimulates excessive smooth muscle cell proliferation, with consequent migration into the intima, leading to neointimal
hyperplasia, the primary mechanism of late lumen loss and
instent restenosis.

A comparison of clinical restenosis between bare metal and
drug-eluting stents demonstrated a difference in the
restenosis patterns, with a more focal restenosis in the
drug-eluting stents compared with bare metal stents, and a
higher incidence of bifurcation lesions in the drug-eluting
cohort. Neointimal tissue within instant restenotic lesions
was observed to be similar between drug-eluting stents and
bare metal stents, and comprised mainly proteoglycan-rich
smooth muscle cells and fibrolipidic areas rich in collagen
and reticular fibers. Although no difference in smooth muscle
cell proliferation rate was observed between drug-eluting
and bare metal stent samples, the smooth muscle cell
phenotype was characterized as contractile or intermediate in
the drug-eluting stent samples, and synthetic phenotype in the
bare metal stent samples, suggesting different mechanisms
of restenosis.

Although drug-eluting stents reduce neointimal hyperplasia
and resulting late lumen loss compared with bare metal stents,
lesions located in small vessels are more prone to develop
hemodynamically significant restenosis compared with
those in larger vessels. A possible explanation is that
small vessels have a limited ability to accommodate lumen
renarrowing after percutaneous coronary intervention, an
outcome attenuated following implantation of a thinner
strut stent. This may explain why no bare metal stent has
received US Food and Administration (FDA) approval for
vessels ≤2.5 mm in diameter. The combined challenges of
deliverability, lesion complexity, and increased restenosis in
smaller vessels highlight the need for dedicated stent systems
to treat this ever-increasing subset of patients.

**TAXUS Liberté Atom stent system components**

**Drug**

Paclitaxel, derived from the Pacific yew tree (Taxus brevifolia), delays restenosis by binding and stabilizing
the assembly of microtubules, thereby arresting cellular
replication in the G2/M phases. In contrast, the
-olimus (rapamycin) drugs diminish microtubule activity
by inhibiting mTOR, a key intermediary in the PI-3-kinase
pathway. In human arterial smooth muscle cells, paclitaxel
binds β-tubulin dimers and inhibits their depolymerization
resulting in stable microtubules. This nonfunctional assem-
bly of microtubules disrupts a variety of cellular processes,
resulting in the inhibition of smooth muscle cell migration
and proliferation and, ultimately, neointimal hyperplasia and
restenosis. Importantly, paclitaxel does not cause smooth
muscle cell apoptosis. Paclitaxel is insoluble in water, which
minimizes loss to the blood during stent implantation and
facilitates tissue uptake when in contact with the arterial
wall. The highly lipophilic nature of paclitaxel enhances
cellular uptake, resulting in effective inhibition of neointimal
formation.

**Polymer**

The TAXUS Liberté Atom coronary stent uses a soft, hydro-
phobic, elastomeric triblock copolymer known as Translute™
styrene-b-isobutylene-b-styrene). This polymer provides
homogeneous coverage of paclitaxel along all stent surfaces,
retention and protection of paclitaxel during routine handling
of the stent, controlled local target delivery of paclitaxel,
and long-term vascular compatibility. The TAXUS polymer
formulation provides an early burst release of paclitaxel in
the first 48 hours to blunt the initial response to implant
injury, followed by a lower level of paclitaxel release for
approximately 10 days to maintain this inhibited inflamma-
tory response and yet allow for vascular healing.

**Stent**

The TAXUS Liberté Atom 2.25 mm stent evolved from
the FDA-approved first-generation TAXUS Express Atom
The TAXUS Liberté Atom stent system features a low tip profile (0.017 inches) designed to cross tighter lesions, as well as a low stent crossing profile (0.041 inches), and a 13% more trackable stent delivery system as compared with the TAXUS Express2 Atom stent system (data on file, Boston Scientific Corporation). The continuous cell design of the TAXUS Liberté Atom stent provides better vessel coverage and more uniform drug delivery along the length of the stent compared with the TAXUS Express Atom stent (Figure 2). The TAXUS Liberté Atom stent was designed to provide dedicated sizing for small vessels (2.25–2.50 mm) and is crimped on a balloon delivery catheter of a corresponding diameter.

**Preclinical testing**

Extensive safety testing was conducted using a porcine coronary artery model.33 Sixty small vessel stents (30 TAXUS Liberté Atom [paclitaxel-eluting stent] and 30 bare metal Liberté stents [bare metal]) were implanted in all three coronary arteries of 30 female domestic crossbred swine. Each animal...
Figure 2 TAXUS paclitaxel-eluting stent designs. Improved stent-to-artery ratio and more homogeneous drug delivery with the TAXUS Liberté stent compared with the TAXUS Express stent.

Abbreviations: SV, small vessel; WH, workhorse; LV, large vessel.

received one test stent (paclitaxel-eluting stent, 2.0 × 12 mm or 2.5 × 20 mm) and one control stent (bare metal stent, 2.25 × 16 mm or 2.5 × 16 mm) in separate vessels. As shown in Figure 3, TAXUS Liberté Atom demonstrated greater than 90% endothelial cell strut coverage, as assessed by scanning electron microscopy and no visible evidence of luminal thrombi at 30, 90, and 180 days. Vascular compatibility using histologic analysis demonstrated complete strut tissue coverage, complete endothelialization, a small amount of fibrin deposition, and no adverse positive or negative remodeling in both groups at 30 days, and persisting out to 90 and 180 days (Figure 4). Since delayed healing has been associated with persistent fibrin deposition and reduced or delayed endothelialization in humans, the vascular response supports the favorable safety profile of the TAXUS Liberté Atom stent compared with the bare metal stent control in a noninjured swine model.

**Clinical outcomes**

Clinical trials with TAXUS stents in small vessels

The definition for small vessels varies in range from <3.0 mm (historic definition) to anywhere from <2.5 to 2.75 mm as assessed by visual estimate. Since angiographic outcomes are affected by stent size and small vessel diameter, this review focuses on either the TAXUS Liberté Atom stent size (2.25 mm) or within its indicated reference vessel diameter (≤2.5 mm). Small vessel subgroup analyses from three multicenter, randomized TAXUS trials, as well as a...
Figure 4 Vascular compatibility using histologic analysis in a noninjured porcine model. Representative hematoxylin and eosin staining (40 × total magnification) of bare Liberté (a–c) and TAXUS Liberté Atom (d–f) mid-stent in cross section at 30 days (a, d), 90 days (b, e), and 180 days (c, f) postimplantation. Copyright © 2009, Wiley. Used with permission from Thompson CA, Huibregtse B, Poff B, Wilson GJ. Time dependent vascular and myocardial responses of a second generation, small vessel, paclitaxel-eluting stent platform. Catheter Cardiovasc Interv. 2009;73(5):597–604.

TAXUS Small Vessel trial is briefly described below.

TAXUS IV trial
The TAXUS IV study evaluated the safety and effectiveness of the TAXUS Express slow-release paclitaxel eluting stent system for treatment of de novo coronary artery lesions compared with an identical Express bare metal stent control. In a small vessel subgroup of patients with a reference vessel diameter ≤2.5 mm (n = 176), the TAXUS Express-treated patients had lower nine-month insegment restenosis (10.2% versus 38.5, \(P < 0.001\)) and nine-month target lesion revascularization (3.4% versus 15.4, \(P < 0.001\)) rates than those treated with bare metal stents.\(^{37,38}\) The reduction in target lesion revascularization rate following treatment of small vessels (<2.5 mm) was maintained at three years, being 8.2% in the paclitaxel-eluting stent group versus 26.9% in the bare metal stent group (\(P < 0.001\)).\(^{39}\)

TAXUS V de novo study evaluated the use of the TAXUS Express\(^2\) slow-release paclitaxel-eluting stent system versus an Express bare metal stent control in a more complex patient population consisting of de novo lesions, reference vessel diameter 2.25–4.0 mm and a lesion length of 10 mm–46 mm. In the subgroup of patients (n = 385) with small vessels (reference vessel diameter ≤2.5 mm), lower revascularization rates were observed with paclitaxel-eluting stents when compared with bare metal stents. At two years, the target lesion revascularization rate in patients with treated small vessels was lower in paclitaxel-eluting stent-treated patients (16.6%, n = 195) compared with those receiving a bare metal stent (29.8%, \(P = 0.002\), n = 190).\(^{40}\) This benefit was maintained through five years (20.6% versus 33.6%, \(P = 0.004\)).\(^{41}\)

A separate subset analysis of TAXUS V de novo patients receiving a 2.25 mm TAXUS Express stent (TAXUS Express Atom, n = 108) versus a bare metal stent (n = 95) was also
performed. The nine-month angiographic results revealed improved instant late loss (0.49 ± 0.61 versus 0.90 ± 0.63 mm, \(P < 0.001\)) and instant binary restenosis with paclitaxel-eluting stents (24.7% versus 44.7%, \(P = 0.007\)) than with bare metal stents (Table 1). The corresponding target lesion revascularization rate at nine months was lower in the paclitaxel-eluting stent group (10.4%) than in the bare metal stent group (21.5%, \(P = 0.03\)), with comparable rates of death, myocardial infarction, and stent thrombosis between the two groups. These differences persisted through 12 months in patients treated with the 2.25 mm TAXUS Express stent. At three years, the target lesion revascularization rate was still numerically lower in patients receiving the 2.25 mm TAXUS Express stent (19.6%) than in those with a bare metal stent (27.1%, \(P = 0.13\)), but the difference was no longer statistically significant.

**TAXUS VI trial**
The TAXUS VI trial was a randomized, double-blind, controlled study assessing the safety and performance of the 1 µg/mm² moderate-release formulation TAXUS Express paclitaxel-eluting stent in patients with high-risk (longer length) de novo coronary artery lesions. The TAXUS moderate-release investigational device used in this trial releases 33 µg of paclitaxel per 3.0 × 24 mm stent over 30 days (data from a preclinical animal model), approximately three times the dose released from the commercially available TAXUS slow-release stents. In the subgroup of patients (\(n = 124\)) with small vessels (reference vessel diameter <2.5 mm), the target lesion revascularization rate at nine months was significantly lower in patients receiving a paclitaxel-eluting stent (5.0%) versus a bare metal stent (29.7%, \(P < 0.001\)). This benefit in target lesion revascularization rate was maintained at two years with the use of paclitaxel-eluting stents (8.3%) versus bare metal stents (29.5%, \(P = 0.005\)), and continued through five years (14.0% versus 31.0%, \(P = 0.02\)).

**Table 1 Safety and efficacy in patients receiving a 2.25 mm TAXUS Express Atom stent in the TAXUS V de novo study**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>TAXUS V Patients receiving a 2.25 mm stent</th>
<th>TAXUS Express atom ((n = 108))</th>
<th>BMS Express ((n = 95))</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Angiographic follow-up</strong>&lt;sup&gt;21&lt;/sup&gt;</td>
<td>9 Months</td>
<td>0.49 ± 0.61</td>
<td>0.90 ± 0.63</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>In-stent late loss, mm</td>
<td></td>
<td>24.7%</td>
<td>44.7%</td>
<td>0.007</td>
</tr>
<tr>
<td>In-stent binary restenosis</td>
<td></td>
<td>1.9%</td>
<td>1.1%</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td><strong>Clinical follow-up</strong>&lt;sup&gt;21&lt;/sup&gt;</td>
<td>9 Months</td>
<td>10.4%</td>
<td>21.5%</td>
<td>0.03</td>
</tr>
<tr>
<td>TLR</td>
<td></td>
<td>16.0%</td>
<td>24.7%</td>
<td>0.16</td>
</tr>
<tr>
<td>TVR</td>
<td></td>
<td>18.9%</td>
<td>26.9%</td>
<td>0.23</td>
</tr>
<tr>
<td>MACE&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td>1.9%</td>
<td>1.1%</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td>Cardiac death</td>
<td></td>
<td>1.0%</td>
<td>1.1%</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td>ST&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td>14.6%</td>
<td>24.9%</td>
<td>0.047</td>
</tr>
<tr>
<td>Follow-up&lt;sup&gt;42&lt;/sup&gt;</td>
<td>12 Months</td>
<td>22.6%</td>
<td>30.4%</td>
<td>0.26</td>
</tr>
<tr>
<td>TLR</td>
<td></td>
<td>26.4%</td>
<td>32.6%</td>
<td>0.35</td>
</tr>
<tr>
<td>TVR</td>
<td></td>
<td>2.8%</td>
<td>1.2%</td>
<td>0.63</td>
</tr>
<tr>
<td>MACE&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td>1.0%</td>
<td>1.1%</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td>Follow-up&lt;sup&gt;43&lt;/sup&gt;</td>
<td>36 Months</td>
<td>19.6</td>
<td>27.1</td>
<td>0.13</td>
</tr>
</tbody>
</table>

**Notes:**<sup>3</sup>Includes cardiac death, myocardial infarction, and target vessel revascularization. *Per protocol definition.

**Abbreviations:** BMS, bare metal stent; TLR, target lesion revascularization; TVR, target vessel revascularization; MACE, major adverse cardiac event; ST, stent thrombosis.

---

**TAXUS ATLAS Small Vessel trial**

TAXUS ATLAS (Δ multi-center, single-arm study of the TAXUS Liberté<sup>TM</sup>-SR stent for the treatment of patients with de novo coronary artery lesions) Small Vessel was the first prospective TAXUS trial dedicated to investigation of TAXUS stent use in small vessels. The preclinical data described earlier is further supported by the results of the TAXUS ATLAS Small Vessel trial. The TAXUS ATLAS Small Vessel trial evaluated the safety and effectiveness of the 2.25 mm TAXUS Liberté (TAXUS Liberté Atom) stent in the treatment of de novo coronary artery lesions in patients with small vessels, compared with historical controls drawn from the TAXUS V randomized clinical trial. A total of 261 patients, with a reference vessel diameter 2.2–2.5 mm (visual estimate), from 23 investigational sites were enrolled to receive a 2.25 mm TAXUS Liberté stent. The trial had two prespecified control groups, i.e., a bare metal stent control (\(n = 155\)) comprising TAXUS V patients treated with either a 2.25 mm or 2.5 mm bare metal Express stent or a TAXUS Express control (\(n = 75\)) comprised of TAXUS V patients treated with a 2.25 mm TAXUS Express (TAXUS Express Atom) stent. Patients received dual antiplatelet therapy (clopidogrel or ticlopidine and aspirin) for a minimum of six months (aspirin for a minimum of nine months), and were scheduled for quantitative coronary angiography at nine months. The study met its primary nine-month superiority endpoint compared with bare metal stents and the nine-month noninferiority endpoint compared with TAXUS Express for in-segment % diameter stenosis.

The nine-month angiographic results revealed improved instant late loss (0.28 ± 0.45 versus 0.84 ± 0.57 mm, \(P < 0.001\)) and instant binary restenosis (13.0% versus 38.1%, \(P < 0.001\)) with the paclitaxel-eluting stent than with the bare metal stent control. The corresponding target
lesion revascularization rate at nine months was lower in the paclitaxel-eluting stent group (5.8%) than in the bare metal stent group (17.6%, \( P < 0.001 \)), with comparable rates of death, myocardial infarction, and stent thrombosis between the two groups.\(^47\)

When compared with the 2.25 mm TAXUS Express stent, the 2.25 mm TAXUS Liberté stent significantly reduced the nine-month angiographic rates of both instant late loss (0.44 ± 0.61 versus 0.28 ± 0.45 mm, \( P = 0.03 \)) and instant binary restenosis (25.9% versus 13.0%, \( P = 0.02 \)) as well as the nine-month target lesion revascularization rate (13.7% versus 5.8%, \( P = 0.02 \)) in the small vessel population\(^47\) (Table 2). The reduction in target lesion revascularization rate with the TAXUS Liberté compared with the TAXUS Express control was maintained at 12 months (6.1% versus 16.9%, \( P = 0.004 \)), at two years (8.2% versus 20.3%, \( P = 0.005 \)), and at three years (10.0% versus 22.1%, \( P = 0.008 \)), with similar safety outcomes throughout the small vessel population.\(^49-51\) An independent multivariate analysis revealed that treatment with the TAXUS Liberté significantly reduced the risk of target lesion revascularization versus the TAXUS Express through three years (hazard ratio 0.34; 95% confidence interval 0.17–0.66, \( P = 0.001 \)).\(^51\)

### Summary

The three TAXUS trial subgroup analyses and the dedicated TAXUS ATLAS Small Vessel trial demonstrate an overall consistent and sustained lowering of late loss and angiographic and clinical restenosis with the TAXUS stents compared with bare metal stent controls in small vessels.

### Registry data with TAXUS stents in small vessels

TAXUS ARRIVE (Peri-Approval Registry: A Multi-Center Safety Surveillance Program) included two consecutively enrolling, multicenter safety surveillance registries in the US (ARRIVE 1 and ARRIVE 2). The program captured usage patterns and two-year outcomes with the TAXUS Express stent in 7492 patients treated during routine practice, including 4794 patients who would have been excluded from pivotal randomized controlled trials.\(^52,53\) In the combined registry cohort of patients with reference vessel diameter <2.5 mm (n = 251), target lesion revascularization was 7.5% in the first year and 1.3% in the second year. In the ARRIVE 1 small vessel subgroup (reference vessel diameter ≤2.5 mm, n = 743) target lesion revascularization was 6.6% after 12 months and 2.7% in the second year.

TAXUS OLYMPIA was a multicenter, prospective, global registry capturing safety and clinical outcomes in patients receiving the TAXUS Liberté stent in routine clinical practice. From a preliminary population of 22,345 patients, the 12-month target lesion revascularization rate was 2.8% and composite cardiac event (cardiac death, myocardial infarction, and target vessel revascularization) rate was 4.8% in treated patients (n = 2460) with small vessels (<2.5 mm).\(^54\)

The TAXUS ARRIVE and TAXUS OLYMPIA registries have reported low safety event rates and acceptable clinical outcomes when treating small vessels with either TAXUS Express or TAXUS Liberté stents. These outcomes observed in routine interventional practice further support the findings from the TAXUS randomized clinical trials.

### Sirolimus-eluting 2.25 mm stent in small vessels

In addition to the TAXUS Express Atom and the TAXUS Liberté Atom stents, a third 2.25 mm drug-eluting stent that has
received FDA approval is the CYPHER® sirolimus-elutingBX-velocity stent system (Cordis Corporation, Bridgewater,NJ). The CYPHER Mini (2.25 mm) is mounted on a rapidexchange stent delivery system with a cramped profile of0.044 inches. The pivotal trial for approval of the 2.25 mmCYPHER drug-eluting stent was SIRIUS 2.25, the primaryendpoint of which was six-month binary restenosis, revealedto be at a rate of 16.9%, with a target lesion revascularizerrate at six months of 4.0% compared with 15.0% in historicbare metal stent controls.55 A comparison of target lesionrevascularization rates between the CYPHER 2.25 mm stento inSIRIUS 2.25 and the TAXUS Liberté 2.25 mm stent fromthe TAXUS ATLAS Small Vessel trial reveal numericallysimilar outcomes at 12 months (7.0% versus 6.1%) andat two years (9.0% versus 8.2%).48,50,56 Numerically similartarget lesion revascularization rates were also observedwith the TAXUS Liberté Atom and the CYPHER stent instrials with vessels ≤2.75 mm in diameter.57,58 Target lesionrevascularization with TAXUS Liberté 2.25 mm at 12 months(6.1%)48 and at 24 months (8.2%)49 compared favorablywith the sirolimus-eluting stent at 12 months (6.6%)56 andat 24 months (7.9%).57 Definitive conclusions cannot bedrawn from an indirect comparison between sirolimus- andpaclitaxel-eluting stents because appropriately poweredclinical trials directly comparing the TAXUS Liberté Atomstent and the CYPHER mini stent in small vessels have notbeen reported.

Conclusions
In the treatment of small coronary vessels, drug-elutingstents have provided consistently improved outcomes com-pared with bare metal stents across different stent platformsand antirestenotic drugs. The safety and performance of theTAXUS paclitaxel-eluting stent have been demonstrated withpreclinical, clinical trial, and registry data. In particular, theimproved design of the second-generation, thin-strut2.25 mm TAXUS Liberté Atom stent compared with the2.25 mm TAXUS Express Atom stent results in less revascular-ization over time, without increasing mortality or myocardialinfarction. A third-generation stent, TAXUS Element™,is currently being investigated for use in small vessels inthe PERSEUS (A Prospective Evaluation in a RandomizedTrial of the Safety and Efficacy of the Use of the TAXUS®Element™ Paclitaxel-Eluting Coronary Stent System forthe Treatment of De Novo Coronary Artery Lesions) SmallVessel trial and has demonstrated 12-month superiority ineffectiveness to the bare metal Express stent control.59,60

Disclosure
JFG has received research grant support from BostonScientific; BAH and KDD are employees of and shareholdersin Boston Scientific Corporation. This study was supportedby Boston Scientific Corporation.

References


42. Stone GW, Mann T, Ellis SG, et al. Beneficial effects of the 2.25 mm paclitaxel-eluting TAXUS stent in patients with lesions in small coronary arteries: 9 and 12 month results from the TAXUS-V trial. Presented at American Heart Association meeting, 2005; Dallas, TX.


47. Turco MA, Ormiston JA. TAXUS ATLAS small vessel and long lesion: First report of nine-month clinical and angiographic results. Presented at Transcatheter Cardiovascular Therapeutics meeting, 2007 Oct 20–25, Washington, DC.


