Pronounced Benefit of Coronary Stenting and Adjunctive Platelet Glycoprotein IIb/IIIa Inhibition in Complex Atherosclerotic Lesions

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Background—Previous trials testing stents compared with balloon angioplasty excluded patients with complex lesions and did not assess the effect of adjunctive platelet IIb/IIIa inhibition. This analysis sought to assess the effect of stenting and abciximab specifically for patients with complex lesions.

Methods and Results—Patients with complex lesions (long, tandem, severely calcified, restenotic, thrombotic, or ostial; total occlusions; bifurcations; saphenous vein grafts; and multivessel interventions) from the Evaluation of PTCA to Improve Long-Term Outcome by c7E3 GP IIb/IIIa Receptor Blockade (EPILOG) and the Evaluation of Platelet IIb/IIIa Inhibitor for Stenting (EPISTENT) trials were included in the analysis. The 1-year combined death or myocardial infarction rates in the 4 treatment groups were as follows: balloon angioplasty/placebo, 14.2%; stent/placebo, 15.8%; balloon angioplasty/abciximab, 7.6%; and stent/abciximab, 8.0% (P<0.001). Death rates were 3.2%, 3.1%, 2.1%, and 0.5%, respectively (P=0.03). The incidence of target vessel revascularization at 1 year was 30.5%, 18.0%, 24.4%, and 19.7% in the 4 groups, respectively (P<0.001). After adjustment for baseline differences, multivariate analysis demonstrated that the rate of death or myocardial infarction was independently reduced by balloon angioplasty/abciximab (hazard ratio, 0.51; P<0.001) and stent/abciximab (hazard ratio, 0.60; P=0.02) but was not affected by the use of stents alone. Conversely, target vessel revascularization was reduced by stent/placebo (hazard ratio, 0.53; P<0.001), stent/abciximab (hazard ratio, 0.58; P<0.001), and balloon angioplasty/abciximab (hazard ratio, 0.74; P=0.006) compared with balloon angioplasty/placebo, respectively.

Conclusions—The combination of stenting and abciximab during percutaneous coronary interventions for patients with angiographically complex lesions confers additive long-term benefit with respect to death, myocardial infarction, and target vessel revascularization. (Circulation. 2000;102:28-34.)

Key Words: lesion ■ angioplasty ■ stents ■ platelets ■ inhibitors

Stenting has proved to be superior to balloon angioplasty in reducing the incidence of repeated revascularization procedures. However, stenting has been compared mainly with balloon angioplasty in patients with single, de novo, focal atherosclerotic lesions of large native coronary arteries.1–4 The convincing data from the Stent Restenosis Study (STRESS) and Belgium Netherlands Stent (BENESTENT) randomized trials, along with the better angiographic results obtained by stenting, stimulated a veritable explosion of stent use beyond the Food and Drug Administration–approved indications. However, only a minority of patients undergoing percutaneous coronary interventions have lesions that fit the STRESS/BENESTENT entry criteria. Patients with complex coronary atherosclerotic lesions undergoing percutaneous coronary interventions have higher acute ischemic complications and target vessel revascularization (TVR) compared with patients with simple lesions.5–10

On the other hand, blockade of the platelet surface glycoprotein (GP) IIb/IIIa receptor with abciximab has been demonstrated to reduce the ischemic complications of angioplasty by 35% to 56% in a broad spectrum of angiographic morphologies and in diverse clinical scenarios.11–17 However, the specific impact of this adjunctive therapy for coronary stenting or balloon angioplasty in an angiographically high-risk group of patients has not been fully studied.

This analysis sought to assess the short- and long-term effects of coronary stenting and balloon angioplasty with or without the use of adjunctive abciximab specifically for patients with complex coronary lesions. Furthermore, we compared the relative benefit of coronary stenting and the use...
of abciximab in reducing TVR and ischemic events, respectively, among patients with simple and complex coronary lesions.

Methods

Study Population

The study protocols of the Evaluation of PTCA to Improve Long-Term Outcome by c7E3 GP IIb/IIIa Receptor Blockade (EPILOG) and Evaluation of Platelet IIb/IIIa Inhibitor for Stenting (EPISTENT) trials have been previously described in detail. In summary, in the EPILOG trial, 2792 patients eligible for angioplasty or atherectomy without unstable angina with associated ECG changes or acute myocardial infarction (MI) within the previous 24 hours were randomized to bolus and infusion for 12 hours of abciximab and 1 of the 2 heparin regimens (target activated clotting time [ACT] ≥300 or ≥200 seconds) or heparin therapy alone (target ACT ≥300 seconds).

In the EPISTENT trial, 2399 patients eligible for coronary stenting with similar entry criteria as in the EPILOG trial were randomized to stent plus placebo, stent plus abciximab, or balloon angioplasty plus abciximab. Patients received abciximab in the same doses as in the EPILOG trial with weight-adjusted heparin to achieve a target ACT of ≥200 seconds for the abciximab group and ≥300 seconds for the placebo group. Both studies permitted patients assigned balloon angioplasty to undergo stenting if there was an abrupt or threatened vessel closure or a suboptimum result (>50% residual stenosis). The only angiographic exclusion criterion of both studies was having a left main trunk stenosis of ≥50%. Patients allocated to coronary stenting arms received preferentially a Johnson and Johnson Palmaz-Schatz stent. If multiple target lesions were identified that were suitable for balloon angioplasty or coronary stenting in a single patient, they were assigned to the same intervention for all lesions. Data were collected by study coordinators on case report forms and verified with source documentation by study monitors before data entry. Both trials were randomized, prospective, and double-blind for study drug.

Because EPILOG and EPISTENT are contemporary studies with similar entry criteria, both databases were pooled (Figure 1), excluding only a small proportion of patients who underwent coronary atherectomy. Patients who would not fit the angiographic entry criteria of the STRESS/BENESTENT trials (complex lesion group) were the population of this analysis. Specifically, patients were included if they had ≥1 of the following angiographic lesion characteristics: lesion length ≥20 mm, moderate to severe calcification, bifurcation lesions, thrombotic lesions, restenosis, total occlusion, ostial stenosis, tandem lesions, multivessel interventions and lesions within a saphenous vein graft. In contrast, the STRESS/BENESTENT or simple lesion group was defined as patients without the characteristics described above. The lesion morphology was defined according to the modified American College of Cardiology/American Heart Association (ACC/AHA) classification and based on the assessment of the enrolling investigator at the study site. Definitions of angiographic characteristics that are not explicitly defined have been previously published.

Therefore, this study analyzed 4 current strategies: balloon angioplasty or coronary stenting with or without adjunctive abciximab therapy in patients with complex coronary lesions. All analyses were performed by intention to treat.

Study End Points

The primary analysis of this study focused on the 30-day and 1-year combined incidence of death or MI and rate of TVR. The latter was defined as the need to repeat revascularization of any segment in the previously intervened vessel. MI was defined as new pathological Q waves or a value of creatine kinase or its MB isoenzyme ≥4 times the upper limit in the participating hospital. After hospital discharge, MI was defined by the occurrence of Q waves or elevation of creatine kinase or its MB isoenzyme to ≥2 times the upper limit of normal. Major bleeding events were defined according to the criteria used by TIMI Study Group. One-year follow-up was obtained by telephone calls by study site coordinators. All end-point events were assessed and confirmed by an independent adjudication committee that was unaware of study group assignment.

Statistical Analysis

The percentages reported for demographic, procedural, and safety data are based on nonmissing observations. Kaplan-Meier estimates were calculated for the 1-year death or MI and TVR end points, and the log-rank test was used to compare event rates between groups. A multivariate Cox proportional-hazards model was used to assess the independent benefit of coronary stents and/or abciximab in reducing 1-year death or MI and TVR after adjustment for baseline demo-

TABLE 1. Clinical Characteristics of the Study Population

<table>
<thead>
<tr>
<th></th>
<th>Balloon Angioplasty Plus Placebo (n=402)</th>
<th>Stent Angioplasty Plus Abciximab (n=1184)</th>
<th>Overall P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y (mean±SD)</td>
<td>60.2±11</td>
<td>60.7±11</td>
<td>0.21</td>
</tr>
<tr>
<td>Male sex, %</td>
<td>72</td>
<td>75</td>
<td>0.23</td>
</tr>
<tr>
<td>Diabetes mellitus, %</td>
<td>26</td>
<td>22</td>
<td>0.53</td>
</tr>
<tr>
<td>Current smoker, %</td>
<td>30</td>
<td>31</td>
<td>0.004</td>
</tr>
<tr>
<td>Hypertension, %</td>
<td>59</td>
<td>60</td>
<td>0.001</td>
</tr>
<tr>
<td>PVD, %</td>
<td>8</td>
<td>9</td>
<td>0.03</td>
</tr>
<tr>
<td>Prior MI, %</td>
<td>48</td>
<td>50</td>
<td>0.09</td>
</tr>
<tr>
<td>Prior CABG, %</td>
<td>15</td>
<td>14</td>
<td>0.19</td>
</tr>
<tr>
<td>Unstable angina, %</td>
<td>70</td>
<td>65</td>
<td>0.001</td>
</tr>
</tbody>
</table>

PVD indicates peripheral vascular disease.
graphic characteristics and clinical presentations, such as age, sex, hypertension, diabetes, history of smoking, coronary bypass surgery, prior MI, multivessel disease, and unstable angina. Interactions between lesion type (complex or simple) and procedure technique (balloon angioplasty or coronary stenting for TVR) or adjunctive treatments (placebo or abciximab for death/MI) were also tested. A value of \( \alpha = 0.05 \) was used for all analyses.

Results

Study Population
The EPILOG trial enrolled 2792 patients from February 1995 to December 1995; the EPISTENT trial enrolled 2399 patients from July 1996 to September 1997. From a total population of 5191 patients, 287 patients (5.5%) were excluded from analysis because they were treated with laser, rotablation, extraction, or directional atherectomy. A total of 2409 patients (49%) with complex lesions were included in the analysis, whereas 2495 patients (51%) had simple coronary lesions. Baseline demographic and angiographic features of the patients in the complex lesion group are shown in Tables 1 and 2. Most patients were middle-aged and male. The overall incidence of complex lesions defined as B2 or C by ACC/AHA score classification was 83%.

Early Outcome
As determined by site investigators, successful angiographic result defined as <50% of residual stenosis in the absence of any procedural complication was lower in the balloon angioplasty plus placebo arm (Table 3). The incidence of unplanned stent use among patients treated with balloon angioplasty with abciximab was similar to that of patients in the balloon angioplasty with placebo arm (16.6% versus 18.4%, \( P=0.40 \), respectively). The incidence of patients with increased creatine kinase or its MB isoenzyme was higher after the use of coronary stents. However, those who received

### TABLE 2. Angiographic Characteristics of the Study Population

<table>
<thead>
<tr>
<th></th>
<th>Balloon Angioplasty Plus Placebo (n=402)</th>
<th>Stent Plus Placebo (n=424)</th>
<th>Balloon Angioplasty Plus Abciximab (n=1184)</th>
<th>Stent Plus Abciximab (n=399)</th>
<th>Overall P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long lesions, %</td>
<td>21</td>
<td>13</td>
<td>21</td>
<td>13</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bifurcation lesions, %</td>
<td>20</td>
<td>11</td>
<td>13</td>
<td>9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Calcified lesions, %</td>
<td>23</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>0.9</td>
</tr>
<tr>
<td>Ostial stenosis, %</td>
<td>18</td>
<td>13</td>
<td>15</td>
<td>11</td>
<td>0.03</td>
</tr>
<tr>
<td>SVG, %</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0.08</td>
</tr>
<tr>
<td>Thrombotic lesions, %</td>
<td>0</td>
<td>24</td>
<td>8</td>
<td>24</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total occlusions, %</td>
<td>0</td>
<td>12</td>
<td>4</td>
<td>12</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Restenotic lesions, %</td>
<td>19</td>
<td>8</td>
<td>15</td>
<td>10</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Multivessel intervention, %</td>
<td>18</td>
<td>27</td>
<td>23</td>
<td>26</td>
<td>0.01</td>
</tr>
<tr>
<td>Tandem lesions, %</td>
<td>36</td>
<td>31</td>
<td>37</td>
<td>33</td>
<td>0.10</td>
</tr>
<tr>
<td>ACC/AHA B2-C, %</td>
<td>86</td>
<td>84</td>
<td>82</td>
<td>80</td>
<td>0.16</td>
</tr>
</tbody>
</table>

SVG indicates saphenous vein grafts.

### TABLE 3. Early Outcome

<table>
<thead>
<tr>
<th></th>
<th>Balloon Angioplasty Plus Placebo (n=402)</th>
<th>Stent Plus Placebo (n=424)</th>
<th>Balloon Angioplasty Plus Abciximab (n=1184)</th>
<th>Stent Plus Abciximab (n=399)</th>
<th>Overall P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful intervention, %</td>
<td>91.0</td>
<td>97.9</td>
<td>94.6</td>
<td>96.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stent used, %</td>
<td>18.4</td>
<td>98.1</td>
<td>16.6</td>
<td>98.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>In-hospital CK abnormal, %</td>
<td>23</td>
<td>37</td>
<td>18</td>
<td>28</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1–2 times ULN</td>
<td>10</td>
<td>19</td>
<td>11</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>3–5 times ULN</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>&gt;5 times ULN</td>
<td>8</td>
<td>12</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>30-d Death, %</td>
<td>1.0</td>
<td>0.9</td>
<td>0.6</td>
<td>0.0</td>
<td>0.25</td>
</tr>
<tr>
<td>30-d MI, %</td>
<td>10.3</td>
<td>11.1</td>
<td>4.9</td>
<td>6.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>30-d Death or MI, %</td>
<td>10.6</td>
<td>12.1</td>
<td>5.1</td>
<td>6.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>30-d Any TVR, %</td>
<td>9.5</td>
<td>3.1</td>
<td>5.7</td>
<td>2.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>30-d Major bleeding, %</td>
<td>4.2</td>
<td>1.7</td>
<td>2.0</td>
<td>1.5</td>
<td>0.031</td>
</tr>
</tbody>
</table>

CK indicates creatine kinase. ULN, upper limit of normal.
stents and adjunctive GP IIb/IIIa platelet inhibitors had less enzyme release compared with those treated with stents alone (Table 3).

The incidence of 30-day MI was reduced among patients treated with abciximab regardless of the mechanical strategy used. However, the rate of Q-wave MI was similarly distributed among patients treated with balloon alone, stent alone, balloon plus abciximab, and stent plus abciximab (0.8%, 1.4%, 1.0%, and 1.5%; \( P = 0.62 \)). In contrast, the incidence of non–Q-wave MI was 9.5%, 9.7%, 3.9%, and 4.5% for the respective groups (\( P < 0.001 \)). The frequency of death was not statistically different among the studied groups (\( P = 0.25 \)). Notably, the incidence of 30-day TVR was significantly reduced by the use of coronary stents or abciximab. Bleeding complications were increased in patients treated with balloon angioplasty and placebo (Table 3).

### Long-Term Outcome

The 1-year incidence of death or MI was lower in both abciximab groups combined either with balloon angioplasty or stenting, with an event rate of 8.0% and 7.6%, respectively, compared with 14.2% for balloon angioplasty plus placebo and 15.8% for stenting plus placebo (Figure 2). There were no differences between both abciximab and both placebo arms. For 1-year mortality, there was a considerable reduction among patients assigned to stent plus abciximab compared with the other 3 groups (\( P = 0.032 \); Table 4). The rate of MI was significantly lower among patients assigned to abciximab than in patients receiving placebo (6.6% versus 15.0%, \( P < 0.001 \)). After adjustment for baseline clinical characteristics, the hazard ratio for 1-year death or MI for balloon angioplasty/abciximab was 0.51 (95% CI, 0.36 to 0.71; \( P < 0.001 \)) and for stent/abciximab was 0.60 (95% CI, 0.39 to 0.93; \( P = 0.02 \)); for stent/placebo, the hazard ratio was 1.14 (95% CI, 0.80 to 1.64; \( P = 0.46 \)) compared with the balloon angioplasty/placebo arm.

One-year TVR rates were reduced among patients assigned to stents (Figure 3). The overall incidence of repeated revascularization procedures at 1 year among patients treated with stents was 18.8% compared with 25.9% in those treated with balloon angioplasty regardless of the use of GP IIb/IIIa inhibitors (\( P < 0.001 \)). Patients assigned to balloon angioplasty/abciximab experienced fewer repeated revascularization procedures compared with the balloon angioplasty/placebo arm (\( P = 0.016 \)). However, this reduction was manifested within the first few weeks after the index intervention. The long-term TVR among patients treated with stents was not affected by the use of abciximab. Compared with the balloon angioplasty/placebo arm, the hazard ratio for 1-year TVR for stent/placebo was 0.53 (95% CI, 0.39 to 0.70; \( P < 0.001 \)); for stent/abciximab, 0.58 (95% CI, 0.44 to 0.78; \( P < 0.001 \)); and for balloon angioplasty/abciximab, 0.74 (95% CI, 0.59 to 0.91; \( P = 0.006 \)).

### Comparison Between Patients With Complex and Simple Lesions

Patients undergoing percutaneous coronary interventions of simple lesions had a lower incidence of 1-year composite
death or MI compared with patients with complex lesions (7.3% versus 10.1%, respectively; \( P < 0.001 \)). Likewise, the overall incidence of 1-year TVR rate was 15.5% compared with 23.1%, respectively (\( P < 0.001 \)). The event-free survival (free of death, MI, or TVR) at 1 year was 79.7% and 70.6%, respectively (\( P < 0.001 \)).

Coronary stents decreased TVR by 27% in complex lesions (absolute reduction of 7.0%, \( P < 0.001 \)) and by 36% in simple lesions (absolute reduction of 7.0%, \( P < 0.001 \)) (Figure 4). However, abciximab reduced death or MI by 50% in the complex lesion group (absolute reduction, 7.3%; \( P < 0.001 \)) and by 35% in the simple lesion group (absolute reduction, 3.5%; \( P < 0.001 \)) (Figure 5). Analysis of the interaction between the relative benefit of stenting among simple and complex lesions showed \( P = 0.48; \) for abciximab, \( P = 0.17 \).

**Discussion**

The present study demonstrates that patients with complex or non-STRESS/BENESTENT–like lesions have a pronounced benefit from the use of stents with adjunctive abciximab with respect to death, MI, and TVR. Although the use of platelet GP IIb/IIIa blockade has a significant impact on the reduction of death or MI after percutaneous coronary interventions, coronary stenting provides an additive role in decreasing the incidence of repeated revascularization procedures in this high-risk subset of patients.

Although the treatment effect of abciximab was present in both high- and low-risk angiographic subgroups, patients with complex coronary lesions appear to derive particular benefit: decreasing ischemic events. This study suggests that in this angiographically high-risk group of patients, the use of adjunctive abciximab may prevent 7 to 8 ischemic events per 100 patients treated at 1 year compared with 3 to 4 events among patients with simple lesions treated. On the other hand, the magnitude of absolute reduction in TVR provided by coronary stenting is similar in patients with simple lesions compared with those with complex coronary anatomy. Therefore, stenting would eliminate the need for TVR at 1 year in 7 patients per 100 treated compared with balloon angioplasty among simple and complex lesion interventions.

This study compares for the first time 2 different strategies, balloon angioplasty and coronary stenting with or without background abciximab, for the treatment of patients with angiographically complex coronary morphologies. Several randomized stent–balloon angioplasty controlled studies have been reported.1,2,4 In all these trials, stenting has been shown to be superior to balloon angioplasty primarily in reducing the incidence of repeated revascularization proce-

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**Figure 4.** Comparison of relative reduction in 1-year TVR provided by coronary stenting among patients with complex and simple coronary lesions.

**Figure 5.** Comparison of relative reduction in 1-year death or MI provided by coronary stenting among patients with complex and simple coronary lesions.
These convincing data have affected a substantial change in practice and led to rapid, nearly exponential growth in the use of stents in most patients undergoing percutaneous coronary interventions. However, most of these trials have restricted entry criteria to patients with discrete, focal, single lesions in large native coronary arteries. In contrast, this study included a broad spectrum of coronary morphologies, focusing our analysis on those patients who would not fit angiographic entry criteria in the classic balloon-stent trials because of the presence of a complex coronary lesion. We demonstrated that the relative reduction of TVR with stenting is similar in patients with simple and complex lesions. Remarkably, even after stenting, the incidence of repeated interventions within the first year is 70% higher among complex compared with simple lesions (Figure 4).

Moreover, urgent TVR by coronary bypass surgery or percutaneous interventions among patients with complex coronary anatomy was similarly reduced by abciximab, coronary stents, or their combination. However, after the early period, the incidence of repeated revascularization procedures was not affected by the use of abciximab. This phenomenon is due to the prevention of abrupt or threatened closure by both stents or abciximab.

Seven randomized trials of platelet IIb/IIIa inhibitors during percutaneous coronary interventions have been performed. Five of the tests tried abciximab and showed significant reduction in all ischemic events at 30 days, whereas the other trials tested eptifibatide and tirofiban and showed positive but nonsignificant trends in lowering the ischemic end points. All of these studies showed decreases primarily in the incidence of MI. Our study showed a 50% reduction in ischemic events among patients undergoing complex lesion intervention treated with abciximab regardless of the mechanical strategy used. Several mechanisms may explain the risk in stenting without platelet IIb/IIIa inhibition in this subgroup of patients. Besides the fact that stent implantation stimulates expression of platelet IIb/IIIa receptors predisposing to coronary thrombosis, this particular subset of patients with complex coronary lesions tends to have larger burdens of atherosclerotic plaque, larger lipid cores, preexisting thrombus, more calcium, and longer lesions. The embedded metal in the diseased arterial wall may lead to plaque or thrombus embolization, side-branch closure, and arterial wall trauma with consequent platelet activation.

Remarkably, our study shows that patients with complex lesion intervention treated with the combination of coronary stents and abciximab experienced a significant reduction in mortality compared with the other strategies ($P=0.01$). This 80% mortality reduction with stents and abciximab might be explained by the combined impact of reducing not only ischemic events but also the additional ischemic complications associated with potential subsequent reinterventions.

Despite the widespread belief that elective coronary stenting improves the safety of percutaneous revascularization, the incidence of acute ischemic complications has not been reduced in previous studies. This study shows a higher incidence of peri-procedural MI with coronary stenting compared with balloon angioplasty when abciximab was not used. The incidence of these events is reduced by the use of GP IIb/IIIa platelet inhibitors. This finding is consistent with other stent-balloo trials showing small, nonsignificant increases in adverse events with stenting. Previous studies correlated the incidence of myocardial necrosis manifested by enzymatic release after interventions with a higher incidence of long-term mortality.

### Study Limitations

There are several limitations to this study. First, 2 different randomized studies were pooled for this analysis to permit comparison of coronary stenting, balloon angioplasty, and the adjunctive use of GP IIb/IIIa inhibitors. However, these trials are contemporary and have had similar angiographic and clinical entry criteria. Second, the complex lesion population was not prespecified in the trials. Third, lesion characteristics considered to be complex were selected and derived from previous balloon-stent studies. Fourth, it has to be understood that the interobserver variability for the lesion morphological characteristics is considerable, and this analysis was based on the assessment of the enrolling investigator. However, this process reflects the “real world” assessment of lesion morphology. Finally, and importantly, despite its size, this study lacks the statistical power to assess the interaction between simple and complex lesions and the relative benefit of coronary stents and abciximab in reducing death or MI and TVR, respectively.

### Conclusions

Our study provides strong evidence that for patients with complex coronary anatomy, stents and abciximab confer additive long-term benefit with respect to death, MI, and TVR. Although coronary stenting reduces the incidence of reinterventions, adjunctive use of GP IIb/IIIa platelet inhibition offers an additional benefit by reducing long-term major ischemic events in this high-risk group defined by angiography. Furthermore, the relative benefit of adjunctive GP IIb/IIIa inhibitors in reducing ischemic events appears to be more pronounced among patients with complex compared with simple lesions, although the impact of stents in reducing repeated revascularizations seems to be similar for both angiographic categories of coronary disease.

### References

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