Gender Does Not Influence Outcomes after Iliac Angioplasty

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The current study was undertaken to evaluate the potential influence of gender on iliac angioplasty outcomes. All iliac angioplasty procedures performed at a tertiary care center from 1994 to 1999 were reviewed. One hundred four angioplasties with or without stenting were performed in 44 women (56 limbs) and 40 men (48 limbs). Age and atherosclerotic risk factors were similar in men and women. Iliac angioplasty was performed for limb salvage in 41% of patients (39% female vs. 44% male; p = 0.65). There were no differences in degree of stenosis, lesion length, or initial angioplasty site. Female iliac arteries were more likely to be occluded (21% vs. 6%; p = 0.03); mean iliac artery luminal diameter was smaller in women than in men (6.5 ± 0.5 mm vs. 8.2 ± 0.6 mm; p < 0.001). After a median follow-up of 13 months, there were no significant differences in 2-year primary patency, endovascular primary-assisted patency, or limb salvage rates between women and men. Despite having smaller iliac arteries and a higher incidence of arterial occlusion before treatment, women had outcomes similar to those of men after iliac angioplasty. The current results support the initial use of angioplasty to treat common and external iliac artery occlusive disease in both women and men.

INTRODUCTION

The procedure of iliac angioplasty and stenting has become a safe and effective minimally invasive alternative to open surgical reconstruction for selective cases. As the number of women who will be treated for peripheral vascular diseases continues to increase along with the increase in aging population in the United States, the role of gender in determining outcomes after these procedures becomes increasingly important. Whether gender affects vessel patency, limb salvage rates, and complication rates after iliac angioplasty is largely unknown.

Some previous studies have concluded that women have higher complication rates than men and inferior patency after angioplasty or operative reconstruction of the carotid, coronary, and infrainguinal vascular beds. It has been suggested that differences in vessel size may be one potential reason for these adverse outcomes. Although several studies have attempted to examine whether women have inferior patency after iliac angioplasty, the results are conflicting. This review was undertaken to determine whether technical success, complications, and long-term outcomes after iliac artery angioplasty were influenced by gender and whether a difference in vessel size could account for these potential differences.

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Table 1. Clinical characteristics of patients undergoing iliac angioplasty

<table>
<thead>
<tr>
<th>Risk factors(^a)</th>
<th>Men ((n = 40))</th>
<th>Women ((n = 44))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years; mean ± SE)</td>
<td>69.1 ± 1.4</td>
<td>66.2 ± 1.6</td>
</tr>
<tr>
<td>Smoking (%)</td>
<td>85</td>
<td>89</td>
</tr>
<tr>
<td>Hypertension (%)</td>
<td>85</td>
<td>86</td>
</tr>
<tr>
<td>Diabetes mellitus (%)</td>
<td>48</td>
<td>43</td>
</tr>
<tr>
<td>Coronary artery disease (%)</td>
<td>40</td>
<td>32</td>
</tr>
<tr>
<td>Dialysis (ESRD) (%)</td>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>

ESRD, end-stage renal disease.
\(^a\)\(p>0.05\) for all risk factors.

METHODS

All iliac angioplasty procedures performed in the Sections of Vascular Surgery and Interventional Radiology at the University of Chicago Hospitals from 1993 to 1999 were reviewed. One hundred four angioplasties with or without stenting were performed in 44 women (56 limbs) and 40 men (48 limbs). All patients had evidence of peripheral vascular disease as evidenced by physical exam and/or duplex evaluation, and all patients had angiograms either prior to or at the time of the iliac angioplasty. Angioplasties were performed for indications of claudication, rest pain, ischemic ulceration or gangrene, and occasionally in an asymptomatic limb when “kissing stents” were required to reconstruct the aortoiliac segment for treatment of a symptomatic contralateral proximal common iliac stenosis.\(^6\) Patients with aortoiliac aneurysms or restenoses within previously placed bypass grafts were excluded from analysis. Redo angioplasties or angioplasties within previously placed stents were included and comprised 11% of cases (14% female vs. 6% male, \(p = 0.18\)).

All procedures were performed in the operating room or in the interventional radiology suite. Primary angioplasties were performed for all stenotic lesions with selective stent placement for suboptimal technical results after angioplasty (>30% residual stenosis or >10 mmHg gradient) or flow-limiting dissection. In the case of occlusions, iliac arteries were primarily stented.

Immediate technical success, procedural complication rates, and long-term outcomes were determined by a review of the patient record. Follow-up data were available for all patients; post-procedure duplex studies were available in 50 cases. An angiogram was performed in the follow-up period in 20 cases. The general protocol for follow-up included physical examination by a vascular surgeon every 3 months for the first year after the procedure and every 6 months for patients with no complications after the initial year. Postangioplasty patency was determined by physical exam (palpable femoral pulse or palpable distal graft pulse), duplex examination, and repeat angiography (<50% luminal reduction) when a duplex abnormality was noted. All angiograms were reviewed by two observers to determine artery luminal diameter (maximal diameter immediately above or below the lesion), lesion length, and degree of stenosis.

Statistical analysis was performed using SPSS 8.0 software (SPSS Inc., Chicago, IL). Continuous variables were compared using the Student’s t-test and categorical variables were compared using the \(\chi^2\) test. Patient survival, arterial patency, and limb