Revascularization in Ischemic Heart Failure

Understand the Current Guidelines

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Disclosures

**Grant Support/Drugs**
- Daiichi-Sankyo
- Astra-Zeneca
- Eli Lilly

**Grant Support/Devices**
- Edwards Lifesciences
- Medtronic
- Cordis
- Abbott Vascular
- Boston Scientific

**Consulting/Advisory Boards**
- Medtronic
- Abbott Vascular
- Boehringer-Ingelheim

DJC: 4/12
Background

• With improved management of valve disease and HTN, as well as improved short-term survival after AMI, CAD has become the most common cause of chronic heart failure

• Classically, myocardial ischemia (and more specifically hibernating myocardium) has been considered one of the few reversible causes of chronic heart failure

• Until recently, however, this issue has not been examined in rigorous, well-designed clinical trials
Historically, what is the evidence of benefit for revascularization in ischemic HF?
Evidence for Revascularization in Ischemic HF

- Cross sectional data
- Observational studies
- RCT subgroup analyses
Evidence for Revascularization in Ischemic Heart Failure

- Cross sectional data
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## Impact of Coronary Anatomy and LV Function on Survival in CHD

5-year survival in medically managed patients with CHD

<table>
<thead>
<tr>
<th></th>
<th>Left Ventricular Ejection Fraction</th>
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<tbody>
<tr>
<td></td>
<td>&gt;50%</td>
</tr>
<tr>
<td>1Vdz</td>
<td>95</td>
</tr>
<tr>
<td>2Vdz</td>
<td>93</td>
</tr>
<tr>
<td>3Vdz</td>
<td>82</td>
</tr>
</tbody>
</table>

Evidence for Revascularization in Ischemic Heart Failure

- Cross sectional data
- Observational studies
- RCT subgroup analyses
CABG in Severe LV Dysfunction

CASS Registry Substudy

- 651 pts with CAD and EF<35%
- Overall, risk adjusted mortality strongly favors CABG (68% vs. 54%, p=0.007)
- Benefits of CABG mainly in patients with angina as principal symptom (vs. CHF)
- Absolute benefits greatest in patients with most severe LV dysfunction

Mock et al, Circulation 1982;66:562-8
CABG in Ischemic Cardiomyopathy

Risk-Adjusted Survival

Duke Databank

- 1391 pts with HF, EF <40%, and 1-3 vessel CAD who underwent initial cath between 1969 and 1994
- Both unadjusted and risk-adjusted analyses demonstrated significant survival advantage with revascularization
- Survival advantage consistent regardless of extent of CAD and sx severity

O'Connor CM, et al. Am J Cardiol 2002;90:101-
Evidence for Revascularization in Ischemic Heart Failure

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## CASS Trial: 10-Yr Survival

<table>
<thead>
<tr>
<th></th>
<th>Med Rx</th>
<th>CABG</th>
<th>P-Value</th>
</tr>
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<tbody>
<tr>
<td><strong>LVEF &gt;50%</strong></td>
<td>84%</td>
<td>83</td>
<td>NS</td>
</tr>
<tr>
<td>1-vdz</td>
<td>85%</td>
<td>87</td>
<td>NS</td>
</tr>
<tr>
<td>2-vdz</td>
<td>84%</td>
<td>84</td>
<td>NS</td>
</tr>
<tr>
<td>3-vdz</td>
<td>84%</td>
<td>78</td>
<td>NS</td>
</tr>
</tbody>
</table>

|                  |       |      |         |
| **LVEF 35-50%**  | 61    | 79   | 0.01    |
| 1-vdz            | 56    | 88   | NS      |
| 2-vdz            | 65    | 92   | NS      |
| 3-vdz            | 58    | 75   | 0.08    |

**Note:** Significant survival advantage in 3-vdz + reduced LVEF group at 5 and 7-year follow-up
HF Practice Guidelines

- Initially published in 2006 → updated in 2010 (prior to STICH trial)
- 17 sections
- 195 pages
- >1000 references
**HFSA Guidelines: Strength of Recommendation**

| “Is recommended” | • Part of routine care  
|                  | • Exceptions to therapy should be minimized |
### HFSA Guidelines: Strength of Recommendation

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### HFSA Guidelines: Strength of Recommendation

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| “May be considered” | • Individualization of therapy is indicated |
| “Is not recommended” | • Intervention should not be used |
Evaluation for CAD

It *is recommended* that patients with HF and symptoms suggestive of angina undergo cardiac catheterization with coronary angiography to assess for potential revascularization.

*Strength of Evidence = B*

Evaluation for CAD

Any of the following imaging tests should be considered to identify inducible ischemia or viable myocardium:

- Exercise or pharmacologic stress MPI
- Exercise or pharmacologic stress echocardiography
- Cardiac MRI
- Positron emission tomography (PET) scanning

Strength of Evidence = B
Revascularization

It *is recommended* that coronary revascularization be performed in patients with HF and suitable coronary anatomy for relief of refractory angina or acute coronary syndrome.

*Strength of Evidence = B*

Revascularization

- Coronary revascularization with CABG or PCI as appropriate should be considered in patients with HF and suitable coronary anatomy who have
  - demonstrable evidence of myocardial viability in areas of significant obstructive coronary disease
  - or the presence of inducible ischemia

Strength of Evidence = C

Current guidelines for management of HF strongly recommend evaluation for underlying ischemic etiology and aggressive use of coronary revascularization—particularly in the setting of angina, progressive HF symptoms, or evidence of viable/hibernating myocardium.

Whether we should modify these recommendations on the basis of the STICH trial results seems like a good topic for a debate!

And they do not reflect contemporary care for HF (ACE-I, B-blockers, ICDs, etc.) or for CAD (antiplatelet rx, statins)