Medical Therapy versus Revascularization in Stable CAD: Who Doesn’t Need an Intervention?

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Percutaneous Coronary Intervention: Evolution

Balloon angioplasty
Percutaneous Coronary Intervention: Evolution

Post balloon angioplasty coronary artery dissection
Percutaneous Coronary Intervention: Evolution

Coronary stents
Percutaneous Coronary Intervention: Evolution

In stent restenosis
Percutaneous Coronary Intervention: Evolution

Drug eluting stents
Coronary Atherosclerosis: Vascular Biology

- **Stable angina**
- **Unstable angina/NSTEMI**
- **STEMI**
Who Needs A Stent?

- Percutaneous Coronary Interventions have been shown to improve survival and reduce MI risk in the following settings:
  - STEMI
  - Non-STEMI
  - USA

- Some cases of stable, critical, multivessel CAD with impaired LV function
Survival Benefits: Coronary Revascularization

Acute Coronary Syndromes

Post MI – residual ischemia

Chronic Stable CAD

- LMCA disease
- MVD & LV dysfunction
- MVD & severe angina/ischemia
- Severe LV dysfunction & large viability?
- Severe anginal/ischemia & proximal LAD disease?
Who Doesn’t Need A Stent?
ACC/AHA 2002 Guidelines for Chronic Stable Angina

“Unless a patient is documented to have left main, three-vessel, or two-vessel coronary artery disease with significant stenosis of the proximal LAD….

“…There is no demonstrated survival advantage associated with revascularization in low-risk patients with chronic stable angina…

“….Thus medical therapy should be attempted before considering PCI or CABG.”
Patients with **asymptomatic ischemia or mild angina** who do not meet the criteria as listed under Class I or Class II and who have:

- Only a small area of myocardium at risk
- No objective evidence of ischemia
- Lesions with a low likelihood of successful PCI
- Mild Sx that are unlikely to be due to ischemia
- Factors associated with increased risk of M and M
- Left main disease and eligible for CABG

ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention
Patients with “low risk” UA/NSTEMI with single-vessel or multivessel CAD and *no trial of medical therapy* and:

- Only a small area of myocardium at risk
- Lesions with a low likelihood of successful PCI
- Mild Sx that are unlikely to be due to ischemia
- Factors associated with increased risk of M and M
- Insignificant disease (lesion <50%)
- Left main disease and eligible for CABG
Class III Indications for PCI in Stable Patients (PCI Should *Not* Be Done)

I. Patients with asymptomatic ischemia or mild angina with certain qualifications

II. Patients with “low risk” UA/NSTEMI with single-vessel or multivessel CAD and no trial of medical therapy

III. Patients with prior CABG and chronic total occlusion of SVGs
Stable plaque
Causes Stable clinical syndromes
Can be safely treated medically

Unstable or “Vulnerable” plaque
Causes Unstable clinical syndromes
Outcomes better with revascularization (PCI or CABG)
Courage Trial

- 2,287 patients with stable CAD and at least single vessel disease AND
  - Evidence of ischemia on functional testing

OR:

- Stenosis > 80% with classic angina

Boden, WM et al. NEJM.2007.356(15)
Courage Trial

- Randomized to Optimal Medical Therapy (OMT) alone or with PCI
- Mean follow up 4.6 years
- Primary Outcome: All cause death and MI
Courage Trial

Boden, WM et al. NEJM.2007.356(15)

p=NS for all
Courage Trial: Secondary Outcomes

- Both favored PCI:
  - Revascularization during 4.6 yrs of f/u
  - Freedom from angina
COURAGE Trial: Conclusion

“Although the addition of PCI to optimal medical therapy reduced the prevalence of angina, it did not reduce long-term rates of death, nonfatal myocardial infarction, and hospitalization for acute coronary syndromes”
Courage Trial: Important Limitations

- Only 10% of pts screened were randomized (90% of screened pts were excluded from the study)

- Lack of diversity
  - 85% of pts were male
  - 86% of pts were White

- <2% of pts received DES

- 2/3 of pts had single vessel PCI
Inappropriate Stent Placement: More Common Than You Think

Heart of the Matter
How angioplasty procedures in the U.S. rated, according to appropriateness guidelines, based on 500,000 cases:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Inappropriate</th>
<th>Benefit Uncertain</th>
<th>Appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Attack or High-Risk</td>
<td>11.6%</td>
<td></td>
<td>50.4%</td>
</tr>
<tr>
<td>Non-Acute Heart Disease</td>
<td></td>
<td></td>
<td>98.6%</td>
</tr>
</tbody>
</table>

Procedure deemed appropriate 98.6% of the time

Source: Journal of the American Medical Association
Found on the Web: “Three Questions to Ask if Your Cardiologist Recommends a Stent:”

1. Am I having a heart attack?
2. Am I having unstable angina?
3. Aren’t there medications I can take?
Summary

- PCI has evolved into a major therapy for heart disease.

- The major benefit of PCI (Survival and reduction of MACE) is reserved for pts with unstable clinical syndromes.

- Medical therapy has the ability to treat atherosclerosis systemically, and should be offered to all pts with CAD, regardless of whether PCI is performed.
Summary

- Patients with stable CAD, especially those with preserved LVEF can be safely treated with optimal medical therapy, though

- PCI may be needed to control angina

- Inappropriate coronary intervention is widespread and can be avoided by attention to guidelines