Publication Brief

Surgeon Judgment and Utility of Transit Time Flow Probes in Coronary Artery Bypass Grafting Surgery

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OBJECTIVE
To examine 1-year graft patency and intraoperative revision rates in patients undergoing CABG based on intraoperative TTF assessment (2738 grafts) from retrospective analysis of a multicenter randomized clinical trial conducted at 18 Veterans Affairs hospitals using the Randomized On/Off Bypass (ROOBY) Trial data set.

STUDY
TTF probe data were analyzed of 1 or more grafts (total 2738 grafts) from 1607 patients of the original 2203 patients undergoing CABG surgery (with or without CPB) from 2/01/2002 to 5/31/2008. Examined were:
- Frequency of Flowprobe Use: 12 centers, most cases; 3 centers 1/3 of cases; 3 centers, sparingly or not at all.
- Intraoperative Flow and Pulsatility Index (PI) values;
- Intraoperative revision rates with prerevision and postrevision flow and PI values;
- 1-year graft patency rates for the 1710 (62.5%) grafts that underwent cardiac catheterization assessment.
- Sensitivity, specificity and positive and negative predictive values of using the transit time Flowprobe to predict graft patency.

CRITERIA & THRESHOLDS
- Single outlet grafts, sequential and T-grafts were excluded.
- Intraoperative flow values: <20 mL/min = low flow graft; ≥ 20 mL/min = normal flow graft.
- PI values: ≤3, 3-5, >5 compared due to literature ambiguity as to whether PI ≥3 or ≥5 is abnormal.
- Graft patency scored at 1 year by FitzGibbon classification system (Grade A: excellent; Grade O: occluded).
- The decision to revise a graft was left to the judgment of the attending surgeon.

RESULTS

<table>
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<tr>
<th>Results Criteria</th>
<th>FitzGibbon Grade A Score</th>
<th>Intraoperative Graft Revision</th>
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<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
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<tr>
<td>Normal Flow: ≥ 20 mL/min</td>
<td>1174 of 1347</td>
<td>87.2%</td>
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<tr>
<td>Low Flow: &lt; 20 mL/min</td>
<td>259 of 363</td>
<td>71.3%</td>
</tr>
<tr>
<td>PI: &gt; 3</td>
<td>936 of 1093</td>
<td>85.6%</td>
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<tr>
<td>PI: 3 - 5</td>
<td>136 of 182</td>
<td>74.7%</td>
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<tr>
<td>PI: &gt; 5</td>
<td>91 of 134</td>
<td>67.9%</td>
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CONCLUSIONS
Intraoperative TTF probe data may be helpful in predicting long-term patency and in the decision of whether to revise a questionable graft for patients undergoing CABG surgery.

TRANSONIC OBSERVATIONS
- PI, a questionable indicator at best of graft patency, was an unfortunate criterion of the study.
- The authors hesitated to recommend that transit time flow measurement be adopted as a standard of practice, but they do conclude that it may be helpful in deciding to revise a questionable graft. This is noteworthy given the number of authors and VA centers represented in the study.

REFERENCE