

**DRAFT**  
**Circulatory System Devices Panel**  
**Questions for Discussion**  
**PAS-PORT® Proximal Anastomosis System**  
**K030434**

**April 22, 2005**

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**Study Design**

Impairment of myocardial perfusion due to CABG failure can result in incapacitating symptoms, myocardial infarction, cardiac failure, or sudden death. The FDA recommends that any clinical study of a device modifying the “gold standard” of hand-sutured creation of a CABG conduit provide objective angiographic evidence of patency at 6-months and 1 year.

The sponsor presented data derived from two studies performed outside the United States. Although a US Core Lab evaluated the imaging studies, there was no formal DSMB or CEC to interpret clinical events. Study 1 was a prospective recruitment of patients for study of the PAS-Port device. Cohort 2 was a subset of patients from a separate study (Study 2) for which the objective was to evaluate a different device, i.e., a distal coronary anastomotic system called the C-Port.

Cohort 2 was created retrospectively from a subset of patients in Study 2 who had a PAS-Port anastomosis performed based on surgeons’ discretion and influenced by aortic disease state and preferred sequence of graft anastomosis. Inclusion criteria were different for studies that provided the patients constituting Study 1 and Cohort 2.

1. The sponsor did not achieve the patency objective in pivotal Study I and is attempting to pool data from a subset of Study 2 to remedy this failure. Please comment on the acceptability of pooling data from Study 1 and Cohort 2, discussing any limitations of this approach.
2. Modifications were made to the PAS Port device between Study 1 and Cohort 2. These modifications were made to address failures in device deployment. Do you have any concerns with the use of the combined data set given the changes in device design?

**Device Effectiveness**

3. The primary effectiveness endpoint for the combined data was the proportion of patent grafts at 6 months. Definition of patency is less than 50% stenosis. FDA recommends that the lower confidence limit of the 95% confidence interval for the proportion of patent grafts be greater than 80%.

- a. In the per protocol analysis, patency for 20 of 97 (20%) device patients who failed to have an angiogram was imputed from MRI (5), CT (5), Stress ECG (4), and absence of symptoms (3). One patient lost to follow-up and 2 deaths were listed as occluded grafts. Please discuss whether this is a sufficiently robust assessment for this device.
- b. In the intent to treat analysis, 9 of the 12 patients who converted to hand-sewn anastomoses following failed deployment of the device, had “patency” imputed with data from stress-ECG in 7 cases and from absence of cardiac symptoms in 2 cases. Insufficient follow-up data were available for three patients and for that reason imputed as “occluded.” Please discuss whether this is an acceptable assessment of outcome for 12 of the 109 patients that constitutes the intent to treat cohort analyzed?
- c. Is device effectiveness adequately demonstrated by the multiple angiographic and clinical analyses?

### **Device Safety**

4. Please discuss whether you believe the data provides reasonable assurance of safety for the proposed indications. In your discussion consider the critical importance of the aortic anastomosis to the patency of the CABG conduit that requires careful scrutiny of adverse events as they relate to the anastomotic device. Do you concur with the sponsor’s assessment that the following adverse events were not device related:
  - a. ECG ischemia assessed as unrelated to the device solely based on interpretation that the index graft did not supply the region of myocardial ischemia;
  - b. Ischemia related to the index graft that resolved over the course of the study was not considered significant for conduit patency irrespective of coronary vessel bypassed;
  - c. Hypokinesia in one case and interior myocardial infarction in a second case were assessed as not device related although occurring in the region of index graft perfusion.
5. Taking into account all pertinent clinical information available as well as your responses to the above questions, please comment on whether you believe the data provides an overall risk/benefit ratio which supports marketing clearance of the device in the United States for the proposed indication.

## **Labeling**

One aspect of the 510(k) review of a new product is the review of its labeling. The labeling must indicate which patients are appropriate for treatment, identify potential adverse events with the use of the device, and explain how the product should be used to maximize benefits and minimize adverse effects. Please address the following questions regarding product labeling:

6. The Indications state that the PAS-Port System is intended to create an everting anastomosis between the aorta and an autologous vein graft. The PAS-Port System has only been studied in CABG procedures involving the unique coronary circulatory system. Please comment whether the indication should be restricted solely to this use which is consistent with their instructions for use (IFU)?
7. The anastomosis created with the PAS-Port device has many characteristics of endovascular stenting, i.e., circumferential splinting and exposure of subintimal tissue and of blood stream to bare metal. The report of adverse events noted two episodes of conduit thrombosis and the occurrence of distal anastomotic obstructions that could reflect embolic episodes. Should a regimen of antiplatelet coverage be advised with use of this device?
8. The IFU indicates that a mean arterial pressure of at least 50mmHg for deployment of the device. This suggests the use during beating heart or off pump CABG or the performance of all proximal anastomotic use before cross-clamping the aorta. This will require estimation of conduit lengths for multiple CABG procedures at an early stage of the operation, possibly compromising by-pass grafting performed. Should this potential problem be indicated with a warning in the labeling?
9. The stented circular anastomosis created with the device has an inherent propensity for kinking. This is addressed generically in the precaution section of labeling. This complication is particularly problematic with right coronary revascularization. Should use of the device be restricted for CABG procedures for the circumflex area of myocardial perfusion?
10. Please provide any other recommendations or comments regarding the labeling of this device.

## **Additional Information**

11. If the data provided are not adequate to support safety and/or effectiveness, what additional data, analyses, or study would you recommend?