

## EDITOR'S PAGE

# A Case for the Diagnostic Angiogram

The diagnostic coronary angiogram is an endangered species and we, the interventional cardiologists, have presided over its demise. Coronary arteriography is now viewed by many cardiologists, primary care physicians, and patients as a preamble to an intervention, rather than a diagnostic test.

When I returned to Atlanta in 1972, there were only 3 to 4 cath labs performing coronary angiograms in the state of Georgia. Patients with coronary symptoms were being worked up for gastrointestinal and other conditions because of lack of availability of catheterization. I encouraged the development of cath labs in hospitals without surgery to facilitate accurate diagnosis of treatable cardiac conditions. Before angioplasty this worked well in many communities, and appropriate candidates were subsequently referred for surgery. Coronary angiography was viewed as a diagnostic and therapy-planning procedure. What has changed? With the advent of percutaneous coronary intervention (PCI), the referring physicians and patients have become convinced that “you want to have the coronary angiogram where the problem, if there is one, can be addressed at the same time.” Catheterization-only facilities began to fade away or convert to cath/therapeutic centers. The argument for cath/therapeutic procedures went even further: “You can have everything done during one procedure.” This approach seemed attractive to patients who assumed that if “something is blocked, it needs to be fixed.” Our critics in medicine felt we had invented the “occulo-stenotic-stent” syndrome.

Most good cardiologists performing “cath possible” procedures have compiled a good database on the patients they are studying, and when in doubt as to the best approach, they terminate the procedure after the catheterization. So, what is the problem with all PCIs being done ad hoc during the first procedure?

First, consent is rarely informed. How can a patient decide on the desired therapy prior to knowing, or the physician knowing, the options based on the diagnostic information? Second, there are time pressures on the operator to decide to stent or not to stent. Sometimes subsequent review of the images reveals things not first appreciated. Sometimes review with colleagues provides further insight, and one should not miss the chance to carefully weigh specific periprocedural issues, such as the need for future surgeries in the decisions for bare-metal stents versus drug-eluting stents, and so on. Third, the reimbursement for combined cath/PCI procedures usually is only for the more costly component, so there is no reimbursement for the diagnostic part of the procedure. Finally, the perception that all angiograms are preambles to PCI has colored the thinking of referring physicians and is being reflected in guidelines. If the angiogram is the beginning of a “slippery-slope” to an intervention, then many believe the avoidance of an angiogram is a virtue. Some of us have been challenged to produce evidence that risk stratification from extensive noninvasive information will be enhanced by the findings on coronary arteriography. Some cases, such as left main stenosis with balanced ischemia and, therefore, false-negative studies that could be clarified by angiography, are the rare examples. However, one must admit that much risk stratification can be done noninvasively. On the other hand, can therapeutic options be defined noninvasively? The current answer is “no” without the coronary arteriogram. Should risk be the sole judge of which therapy can be used? A patient with ischemic heart disease may not be at high risk from noninvasive evaluation but may have more than one therapeutic option. The diagnostic angiogram can define whether a PCI procedure can be an effective treatment of the ischemia or not. With the angiogram and all of the noninvasive data, an informed decision of medical therapy only or revascularization



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added to medical therapy can be made. Without the angiogram, only medical therapy is an option. Should patients and their physicians have the information to help make an informed decision?

I would suggest the following approach. For ST-segment elevation myocardial infarction and acute coronary syndromes patients, perform angiograms with the decision for therapy to follow immediately in most cases. For stable ischemic heart disease, return to the diagnostic angiogram with elective revascularization if indicated. Hospitals that have dedicated diagnostic-only laboratories can achieve high throughput, convenient block scheduling, and reflective, consultative, and informed decisions on which elective approaches to pursue. With more emphasis on appropriateness of revascularization (1), this approach provides the best chance of achieving quality metrics. By the way, if an interventional procedure is chosen and done at a later time, there is reimbursement for both the diagnostic and therapeutic efforts. Will all of this be solved with computed tomography angiography and

the demise of coronary arteriography? Perhaps in the future, but for now, as pointed out by Miller et al. (2), we are not there yet. The information obtained from diagnostic coronary arteriography has provided much of what we know about the proper selection of therapeutic approaches. Let us not throw it out prematurely.

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