

## Managed Care Clinical Corner: Abdominal Aortic Aneurysm

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### *A Word from the Editor*

*Algorithms for care can be useful as guides for physicians. This case illustrates the importance of examining every clinical situation individually, determining which diagnostic tests are optimal, and identifying appropriate treatment modalities.*

*Dr. Velanovich, a staff general surgeon with Henry Ford Hospital, in Detroit, presents clinically focused commentary about this case. Dr. Creaghe, a member of the Colorado Kaiser Permanente Group, in Denver, contributes a managed care perspective. I provide a final commentary.*

*Robin Smith, MD*

### CASE

**History:** You are a general surgeon who has been called to the emergency department (ED) to examine a 63-year-old man with new-onset back pain of 3 hours' duration. The patient smokes two packs of cigarettes per day, has a history of high blood pressure, and had an inferior wall myocardial infarction (MI) 4.5 months previously. He has been without angina and has a left ventricular ejection fraction of 50%.

**Physical examination:** The patient has a palpable abdominal aortic aneurysm (AAA). His blood pressure in each arm is 160/90 and his heart rate is 88 bpm. With the exception of an open cholecystectomy scar, all other findings from the examination are unremarkable. Because the ED had not yet ordered tests, you order a chest roentgenogram, complete blood cell count, prothrombin time, partial thromboplastin time, sequential multiple analyzer-7 tests, and a blood type and screen.

The roentgenogram shows a calcified aorta. The results of the blood urea nitrogen and coagulation studies are normal, the creatinine level is 0.6  $\mu\text{mol/L}$ , and the hemoglobin level is 14.0  $\text{g/dL}$ .

The patient's vital signs continue to remain stable. You wish to continue the work up by performing a computerized tomography (CT) scan but, when calling the patient's health maintenance organization (HMO) for a precertification number, are denied permission to do so. Instead, you are directed to order a B-mode ultrasound. You ask to speak to a medical director, to whom you successfully plead your case for the CT scan by arguing that you must ascertain whether there is suprarenal extension of the aneurysm or any other abdominal abnormality. You proceed with the CT scan, which reveals the existence of a 3.9-cm AAA without suprarenal extension. At this point, the patient's symptoms have resolved. He remains stable.

You discuss the findings with the patient, who elects to have the AAA repaired immediately. You call the HMO to precertify the admission and procedure, but your request is denied. You are told that, according to the Subcommittee to the Joint Council, a recent MI is a relative contraindication for surgical repair of an AAA that is less than 5 cm in diameter.

### Clinician's Observations

In this case, it is particularly difficult to determine the best approach to treating this patient, as two questions must be answered. First, what is the radiologic test of choice in a patient believed to have a ruptured or leaking AAA? Second, what is the appropriate timing of the operative repair?

Resolution of the issue of radiologic imaging depends on the clinical presentation. This patient has several risk factors for atherosclerotic vascular disease. Furthermore, his recent MI clearly demonstrates the presence of coronary atherosclerosis. Therefore, coexisting peripheral atherosclerosis is highly likely. In such a patient, who also complains of new-onset back pain, a ruptured, leaking, or expanding AAA should be high on the differential diagnosis list.

If the patient were in extremis (eg, hypotensive or tachycardiac), and the physical examination demonstrated the existence of a pulsatile abdominal mass, an emergent operation then would be indicated. That is, the patient would be transferred from the ED to the operating room without further testing. If the physical examination was unable to identify a pulsatile mass, then a quick ultrasound examination in the ED (many EDs have readily available ultrasound equipment) could easily show whether the patient had an aneurysm and required an emergent operation.

In this case, with the exception of his back pain, the patient was stable. Therefore, one can safely rule out free intraperitoneal rupture. However, a leaking aneurysm (ie, a rupture contained within the retroperitoneum) remains a possibility. A CT scan would be the most sensitive test for determining the existence of a leak. If a leak or blood in the retroperitoneum is present, then an emergent operation is indicated. Additionally an expanding aneurysm could be the cause of the patient's symptoms, and catastrophic outcome might—or might not—be imminent. Again, the CT scan can accurately determine the size of the aneurysm, thereby modulating our degree of concern. For this patient, therefore, a CT scan would be the appropriate diagnostic examination.

The second issue is the timing of the procedure. A case of free or contained rupture offers no choice—the patient must go immediately to the operating room for rupture repair, and the concomitant cardiac risks simply must be accepted. Obviously, the patient would require aggressive monitoring (eg, with a Swan-Ganz catheter). This patient, who has a recent history of MI, is shown to

have a relatively small aneurysm and no evidence of rupture. Small aneurysms (those with diameters of less than 4 cm) have a 8% rupture rate. Consequently, in the case of a small, asymptomatic aneurysm, aggressive cardiac evaluation and postponement of repair for at least 6 months from the time of the infarction are indicated.

The timing of the procedure in this case is more uncertain, as the patient's back pain may be a heralding sign of rupture. That is, an aneurysm that rapidly has expanded from 3.0 to 3.9 cm is at a much higher risk of rupturing than is one that has remained stable at 3.9 cm. Unfortunately, there is no way to sort this out. Therefore, the clinician must make a judgment by answering the following question: Given this patient's presenting symptoms (and current lack thereof) and aneurysm size, is his risk of dying from a rupture greater than that of dying from a postoperative MI? I believe that a reasonable approach would be immediate cardiac evaluation with possibly a catheterization, while remaining vigilant for recurrent symptoms. If symptoms recur or if the results of the cardiac evaluation are favorable, then aneurysm repair would be the appropriate next step. If symptoms do not recur or if the cardiac evaluation shows that repair would be accompanied by a significant level of risk, then postponement would be appropriate.

In this case, the decision on whether to operate depends on a complex constellation of factors that cannot easily be categorized in an algorithm.

### Managed Care Discussion

The patient presents several interesting points for discussion. Before moving on discussion, however, I must make three assumptions: (1) the operating surgeon believes that this relatively small aneurysm is symptomatic; (2) the MI that occurred roughly 4 months before was uncomplicated and no invasive tests, such as angiography, were undertaken at that time; and (3) the CT scan performed in the ED did not demonstrate evidence of rupture or extravasation. I would like to further preface my remarks by stating that a symptomatic AAA is a significant event and that, like most vascular surgeons, my overall approach is aggressive.

With respect to the initial work-up, I certainly would argue for a CT scan as the initial diagnostic step. Clinically, we already know that an aneurysm is present, and that the ultrasound will not give us the detail necessary to help plan our next step. Preoperative knowledge of suprarenal extension is desirable, but, more important, we want to know

whether the aneurysm actually is leaking retroperitoneally or, less likely, intraperitoneally. Although a CT scan is not perfect for determining small amounts of extravasation of blood, it is far better than ultrasound.

Given that we are confronted with a small, recently symptomatic AAA in a middle-aged patient with a recent MI but a reasonably functioning left ventricle, the issue is what to do next. The confounding factor is the MI and its implications. Were it not in the equation, I would admit the patient, perform a bowel preparation, and operate the next day. However, there is no question that a recent MI increases the risk of perioperative MI and death. The classic teaching dictates a profound risk during the immediate post-MI period. The risk falls significantly at 3 months and tapers to normal by 6 months. In the past, therefore, surgical procedures have been delayed for 6 months whenever possible.

With the implementation of new diagnostic and interventional cardiology techniques, this thinking has gone by the wayside, and patients now are assessed on an individual basis. Consequently, I would proceed by immediately consulting a cardiologist in order to promptly establish the level of risk and, if necessary and possible, modifying it.

For this patient, the consultant might perform an adenosine-thallium myocardial perfusion scan. If the scan reveals the existence of only a stable, inferior lesion, then the risk may be considered minimal, and we could proceed with preoperative preparation and surgery during this admission.

If the adenosine-thallium study demonstrates more worrisome findings, then coronary angiography would be undertaken to identify a lesion amenable to angioplasty. Another option in this somewhat urgent situation would be to proceed directly to angiography without the noninvasive evaluation. It is my belief that repair of a symptomatic aneurysm during an admission should be considered a significant resection.

In a closed staff-model HMO, such as Kaiser Permanente, preauthorization for AAA surgery is not necessary. However, if it were necessary, my first point of discussion with the precertification staff would be that this aneurysm is not asymptomatic. After an AAA has become symptomatic, even if only briefly, it takes on a higher level of urgency, and certain risks must be accepted. In my opinion, one trip to the ED because of a symptomatic AAA is as risky as surgery for the AAA. I would argue further that the older teaching about cardiac risk and AAA surgery is outmoded. The problem must be dealt with promptly, and the cardiologist can evaluate and

modify risk factors on a patient-by-patient basis. If my arguments failed to convince, I then would enlist the cardiologist in the effort. In my previous practice, where preauthorization was necessary, common sense and fact-based logic almost always prevailed.

### Afterword

This case has universal implications extending beyond AAA management. Both clinicians stress the need for a careful review of past and current clinical information, the somewhat-rare ability to pinpoint symptom status, and the difficulty in placing care of an individual patient into an algorithm. Diagnostic testing, risk stratification, and timing of surgery all fall along a wide spectrum of indications, depending on the characteristics of the presentation.

It is crucial that clinicians and managed care decision makers understand these complexities. Moreover, both groups must be committed to creating and maintaining a barrier-free forum permitting information exchange and sound medical decision making.

### ... ADDITIONAL READING ...

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To Our Readers

If you would like to submit a case or if there is a condition you would like to see covered in a future column, please send your suggestions to:

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