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In This Issue:

When Two Coronary Procedures Are Better Than One

Most patients with cardiac blockages can be treated with angioplasty and stenting. Many of those with more severe occlusions are candidates for open-heart bypass surgery. But what about those patients whose blockages are too severe for stenting alone, and whose comorbid conditions—such as weakened lungs, atherosclerotic aorta, or advanced age—render them too sick to tolerate a traditional bypass?

John R. Garrett, MD, Chief of Cardiovascular & Thoracic Surgery and Chairman of the Board of Directors

"Off-pump" bypass, also known as beating heart surgery, is one option, but experience has shown that off-pump surgery may not get optimum bypass grafts to the arteries at the back of the heart, and revascularization may be incomplete. Enter a hybrid form of coronary revascularization, which combines the benefits of off-pump bypass with those of the drug-eluting stent.

"We know that bypass on the left anterior descending artery, using the internal mammary artery, is an extremely effective way of revascularizing the heart. Being able to do this without using the heart-lung machine can reduce the risk of strokes," explains Hospital interventional cardiologist Charanjit Khurana, MD. "In the hybrid procedure, the patient is taken back to the cath lab three to five days after the bypass, at which point we open up the rest of the arteries using drug-coated stents." Before the patients are discharged, they've achieved complete revascularization. This obviously requires constant communication with the surgeon as to what can and cannot be achieved percutaneously.

(Continued on page 2)

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(Continued from page 1)

Although the hybrid revascularization was first developed in 2001, few hospitals in northern Virginia provide this surgical option. Last year, Dr. Khurana and John R. Garrett, MD, Chief of Cardiovascular & Thoracic Surgery and Chairman of the Board of Directors, performed this surgery on four very high-risk patients. "These people were extubated very quickly, went home, and had no complications. Had they gone through a traditional bypass procedure, they would have been at risk for significant adverse events," says Dr. Khurana.

"In these cases, placing the stent was safer after the patient had already been partially revascularized," explains Dr. Garrett. "Approaching the stenting first would be too risky."

Some patients who are candidates for hybrid revascularization have what cardiac surgeons call a "porcelain aorta"—an aorta that is totally calcified. "For us to perform standard bypass on these patients, we would essentially have to punch a hole in the aorta to hook up the graft. That can lead to strokes," says Dr. Garrett. "Those patients are particularly good candidates for bypass surgery using arterial grafts, such as the mammary, which doesn't have to be connected to the aorta, in combination with a stent." Other patients, he explains, have hearts too weak to tolerate a series of off-pump grafts; they can receive one or two beating-heart grafts, then eliminate the rest of the blockages with the stent.

Charanjit Khurana, MD, Interventional Cardiologist

"The whole point of this approach is that by combining the two procedures, there is overall less risk than by doing either one alone," Dr. Garrett says. "If you can do one operation, or one trip to the cath lab, successfully and take care of everything, then that's the way to go. But, there are some patients for whom the risk is lower if both procedures are done." ◆

New Surgical Solution for Painful Spinal Fractures

One of the most painful consequences of osteoporosis is the compression fracture of the spine. These fractures can also occur as a result of tumors on the spine, particularly multiple myeloma. When untreated, these fractures lead to more fractures, more pain, and often a condition called kyphosis, or "dowager's hump."

"As the vertebral body crunches, there are a lot of little fractures within fractures," says Hospital radiologist Murat Sor, MD. "There is a constant process of fracture and healing until the vertebral body compresses all the way down."

Now, a new minimally invasive procedure, called balloon kyphoplasty, offers patients the hope of both stabilizing their fractures and helping to alleviate their pain. Similar to vertebroplasty, kyphoplasty uses the same type of needles but adds a step: the insertion and inflation of a balloon. The inflated balloon expands the vertebral body and raises the end plate, creating a cavity into which the surgeon drips the cement, stabilizing the fracture.

"This is believed to have several advantages," says interventional radiologist, Stanley Washington, MD. "It reduces the amount of kyphosis, which in addition to pain and discomfort, can lead to a loss of lung capability over time. It's also possible that by restoring height, we may be reducing the risk of another compression fracture at an adjacent level by maintaining the pressure dynamics of the spine." Kyphoplasty takes about one hour per fracture, under general or local anesthesia, and can sometimes be done on an outpatient basis.

"We've done about 20 kyphoplasties so far, with impressive results," Dr. Sor says. "Patients should see improvement in their pain as early as a couple of hours after surgery." ◆

Stanley Washington, MD, Interventional Radiologist