

# A ticking bomb: Novel procedure treats high-risk aortic aneurysms

July 15 2009

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Patrick Lane, age 74, was plagued by recurring aortic aneurysms ten years ago that threatened his survival. His doctor at the time suggested he contact a leading vascular surgeon at UCLA who was pioneering a new treatment technique for high-risk patients who couldn't receive traditional surgery.

Patrick was the first patient at UCLA to receive the novel method in 1998 and is still doing well today. Dr. Quinones-Baldrich performed Patrick's procedure, which is a hybrid method called CESA (combined endovascular and surgical approach).

For years, traditional surgery was not an option for high-risk patients with dangerous aortic aneurysms. Unlike their less high-risk peers, these individuals were forced to live with the possibility that their aneurysm, like a ticking time bomb, could burst at any time, often causing instant death or impact major organs like the kidneys, liver and lungs.

Since 1998, the CESA procedure has been performed on 31 UCLA patients, and in a recent issue of the *Journal of Vascular Surgery*, Quinones-Baldrich and his colleagues reported excellent results in the first 20 high-risk patients with complex aortic pathology treated with CESA. The technique has been gaining popularity at centers throughout the world for high-risk cases.

"Due to the tricky position of some aortic aneurysms or the frailty of some patients, not everyone is a candidate for standard surgery to treat a

dangerous aneurysm," said Quinones-Baldrich, a professor of vascular surgery at the David Geffen School of Medicine at UCLA. "We hope this technique may offer patients with these complex aneurysms another option."

The aorta, the largest artery in the body, runs from the heart through the chest and abdomen. Arteries branching from the aorta feed all major organs in the body such as the kidneys, intestines, brain, pancreas, liver and the extremities. If the aortic artery wall weakens due to age and [arterial disease](#), the force of the blood flowing through the artery can cause part of the wall to stretch out like a water balloon. More than 10,000 Americans die each year from ruptured aortic aneurysms.

Many of the more serious cases involve aneurysms in a segment of the aorta where branches are supplying circulation to vital organs. These patients often have additional health conditions such as compromised cardiac, kidney and pulmonary function that make it too risky to perform traditional aortic surgery, in which the chest and abdomen are opened simultaneously and the patient is placed on assisted circulation while the aneurysm and associated branch arteries are repaired.

"Aortic aneurysm repair is one of the more complex and risky procedures in vascular surgery," he said. "New options for high-risk patients are greatly needed."

The 20 patients Quinones-Baldrich and his team treated between 1998 and 2008 were not candidates for traditional surgery and ranged in age from 51 to 89.

During the CESA procedure, the surgeons first make an incision in the abdomen to access vital arteries stemming from the aorta. During this surgical part of the technique, Quinones-Baldrich performs bypasses on these arteries in order to reroute blood flow; this allows for the eventual

exclusion of the segment of the aorta affected by the aneurysm through the placement of a tiny endovascular device during the second part of the procedure. Prosthetic grafts that look like high-tech tubing are used to provide circulation to the bypassed arteries during this first part.

"Rerouting blood flow to originate from an area of the [aorta](#) not affected by the aneurysm allows us to eventually exclude circulation to the aneurysm in the second procedure by employing a tiny device called an endograft," Quinones-Baldrich said.

The minimally invasive stage of the CESA procedure is often completed at a later date, allowing the body time to recover and adjust to the new blood-flow pattern. Working through a small incision in the groin, surgeons thread the tiny, tube-like endograft through the femoral artery and guide it towards the aortic aneurysm. Once in place and released, the endograft acts like a stent, relining the aortic artery wall, and becomes the new conduit for blood flow, closing off the aneurysm.

"The CESA technique avoids opening the chest, which is done during standard surgery," Quinones-Baldrich said. "After the endograft is placed, the patients usually can go home two to three days later, compared with longer stays that generally accompany traditional surgery."

UCLA's 10-year experience with the CESA technique demonstrates that the procedure appears to be safe and durable. There was no perioperative mortality and the cumulative survival rate at two years was 76 percent, which is comparable to the results after traditional surgical repair in acceptable-risk patients, according to researchers.

Quinones-Baldrich noted that there were major complications in six patients, including respiratory failure, deterioration of kidney function and minor heart attack, as well as paralysis in one patient. The

complication of paralysis has been reported in 8 to 20 percent of cases with traditional surgery; the one CESA patient represents 5 percent of total CESA patients at UCLA.

"Although the majority of patients did well, this is a patient population with many risk factors," Quinones-Baldrich said. "It's a tough and careful decision that must be made between the patient, family and surgeon in deciding to pursue a repair or leave the aneurysm intact, which also has risks."

According to Quinones-Baldrich, the CESA approach may have several advantages compared with traditional surgery. In addition to not having to open the chest and utilize extracorporeal circulation, there is less restriction of the blood supply to organs during the CESA procedures.

The standard of care is still traditional surgery, which Quinones-Baldrich recommends for acceptable-risk patients. More study and longer follow-up needs to be completed for the CESA technique, but he's hopeful that this method will prove a viable approach for most patients, particularly those who don't have the option of conventional [surgery](#).

Source: University of California - Los Angeles

Citation: A ticking bomb: Novel procedure treats high-risk aortic aneurysms (2009, July 15) retrieved 23 April 2024 from

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