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# The Physician

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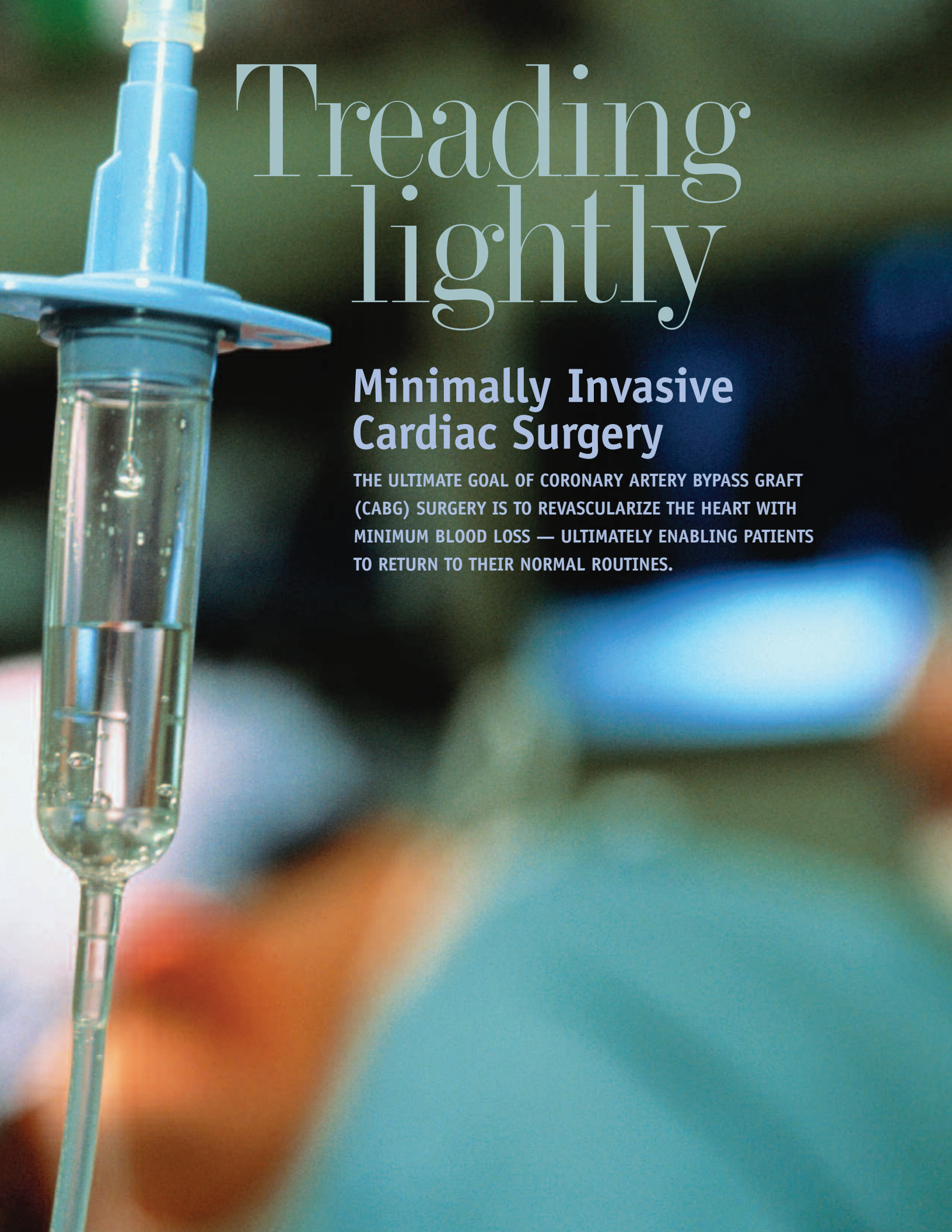
## A Focus on Cardiac Care



# Treading lightly

## Minimally Invasive Cardiac Surgery

THE ULTIMATE GOAL OF CORONARY ARTERY BYPASS GRAFT (CABG) SURGERY IS TO REVASCULARIZE THE HEART WITH MINIMUM BLOOD LOSS — ULTIMATELY ENABLING PATIENTS TO RETURN TO THEIR NORMAL ROUTINES.

Joseph McGinn, MD.

THAT GOAL IS BEING MET THANKS TO NEW BREAKTHROUGHS IN MINIMALLY INVASIVE SURGERY THAT USE PROCEDURES AND INNOVATIVE EQUIPMENT RECENTLY APPROVED BY THE US FOOD AND DRUG ADMINISTRATION. NOTABLY, JOSEPH MCGINN, MD, MEDICAL DIRECTOR OF THE HEART INSTITUTE OF STATEN ISLAND, NO LONGER NEEDS TO SPREAD A PATIENT'S STERNUM TO PERFORM CABG SURGERY.

THE CARDIOVASCULAR SURGICAL TEAMS AT NORTH SHORE UNIVERSITY HOSPITAL AND LIJ MEDICAL CENTER, IN CONJUNCTION WITH VASCULAR SURGERY AND INTERVENTIONAL RADIOLOGY, APPLY MINIMALLY INVASIVE THORACIC STENTING AND ENDOVASCULAR GRAFT PROCEDURES TO TREAT DESCENDING THORACIC ANEURYSMS AND TRAUMATIC TRANSECTED AORTAS. AT BOTH CAMPUSES, TEAMS OF CARDIAC SURGEONS, VASCULAR SURGEONS, INTERVENTIONAL RADIOLOGISTS, ANESTHESIOLOGISTS, NURSES AND CRITICAL-CARE SPECIALISTS OFFER SPECIALIZED CARE AVAILABLE AT FEW OTHER CENTERS ACROSS THE COUNTRY.

## Advances in CABG surgery

CABG surgery took a giant leap forward with the introduction of off-pump or "beating heart" surgery less than a decade ago. Developed to allow blood to circulate normally while surgeons operate on the heart, this technique obviates the need for the heart-lung machine and significantly shortens operating room time. It still requires a seven-inch incision along the sternum, and despite its many advantages, patients must undergo a lengthy recovery period.

One of the latest advances in CABG surgery is a minimally invasive technique currently in use at The Heart Institute of Staten Island. Dr. McGinn pioneered this procedure in 2004, which involves just three small incisions. "We make a main incision two to three inches long on the left side of the chest and gently spread the ribs below it without cracking any bones," explained Dr. McGinn. "We then make two one-inch incisions: one below the sternum; the other below the main incision. We place a 'starfish' apparatus through the main incision, using it to rotate the heart to bring the blocked coronary artery into view.

Alan Hartman, MD.

The artery is then stabilized by a device called 'the octopus' because of its multiple suction cups."

Using a head camera to project what he sees onto a video screen, Dr. McGinn and his team then performs CABG surgery on the patient. Targeted arteries on top of the heart can be rotated to be flush against the main incision where the bypass grafts can be sewn. Deeper arteries that cannot be accessed easily are affixed with eight U-clips, which replace stitches. The bypass is completed in 10 to 15 minutes.

Dr. McGinn has performed more than 290 minimally invasive heart bypass procedures. He is one of the top-rated cardiothoracic surgeons in New York State. "The procedure is safe. Our mortality rate is far lower than one percent, while the national average is more than two percent. Patients go home in a few days and resume their normal activity within a few weeks, instead of being laid up for two to three months," said Dr. McGinn. As the technology evolves, Dr. McGinn envisions the day when this type of coronary surgery will become completely endoscopic. "What we are doing now is a bridge to the time when we will be able to see the heart through an endoscope, stabilize the heart arteries using U-clips and make the anastomosis without using a single stitch. That's the ultimate goal."

## Aortic dissection

Aortic dissection is the most common catastrophic event to occur in the chest. In an aortic dissection, the inner layer of the aortic wall tears and blood surges through, separating (dissecting) the middle layer from the outer layer of the aorta and forming a new, false channel. Ultimately, this can trigger an aortic rupture. If not diagnosed and surgically treated immediately, aortic dissection kills 75 percent of its victims within two weeks.

"The large majority of patients with aortic dissections present spontaneously, with a past history of hypertension as the most common risk factor. This is not to be confused with traumatic injuries that are aortic transections, which usually occur in the setting of a deceleration injury like a motor vehicle accident. In this case, the aorta is separated and blood is usually held in place just by periaortic tissue," said Dr. Hartman. "We love doing these cases, and fortunately, emergency room doctors and paramedics in the surrounding area are good at recognizing them and sending them our way." The North Shore-LIJ cardiovascular surgical team treats about 150 aortic aneurysms, dissections and traumatic disruptions at both campuses per year, and performs life-saving repairs.

"If the dissection or aneurysm is in the ascending aorta, then the surgical team utilizes more traditional open-heart surgical technique, frequently combined with profound hypothermic circulatory arrest, to cool down the patient's body and stop circulation long enough to allow the surgical team to sew in a new synthetic aorta. For those aneurysms or dissections involving the descending aorta, the surgical team can frequently use a minimally invasive technique of endovascular repair. A flexible wire is introduced through a small incision in the groin and a synthetic endograft, secured to the tip, is worked into the affected area. The endograft is then expanded to exclude the damaged portion of the aorta. When the abnormal portion of the aorta is excluded, it frequently clots off, and the endograft becomes part of a new aortic circulatory route in this area.

"Taking on high-risk, complicated patients requires a lot of time and effort. We're organized to do that at both North Shore and LIJ. And we have the proven track record," said Dr. Hartman. £