Cath Lab Digest

A product, news & clinical update for the cardiac catheterization laboratory specialist

Cath Lab Spotlight

MetroWest Medical Center

Ashley Margossian, NP, Jean Decourcey, RN, James Alderman, MD, Christopher Gange, MD, Kimberly Kelley, DNP, Framingham, Massachusetts

Tell us about your hospital and cath lab.

We are a community hospital located in Framingham, Massachusetts, a small city located in the Boston suburbs. Our lab performs cardiac catheterization, elective and primary percutaneous coronary interventions (PCIs), as well as a full array of electrophysiology (EP) procedures. Being located in the suburbs, just outside of Boston's major academic medical centers, has created a unique niche for us to deliver high quality, personalized interventional cardiovascular care. We have received the American Heart Association Mission: Lifeline STEMI Gold award and the American Heart Association Mission: NSTEMI Silver award.

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In This Issue

HAPPY CARDIOVASCULAR PROFESSIONALS WEEK (FEB 9-15)!

Case Report

Management of an Ascending Aortic Aneurysm Diagnosed in an Outpatient Setting

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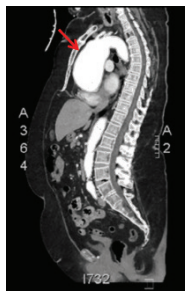

An ascending aortic aneurysm is an uncommon, incidental finding for patients undergoing transthoracic echocardiography (TTE) during an outpatient visit.[1] An aortic aneurysm is defined as an abnormal enlargement of the walls of the aorta that is variable to the size and gender of a patient.[1] The official measure of an aortic aneurysm has not been defined due to inter-patient variability, but it is generally agreed upon that the aortic index should factor in body surface area.[1]

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Radiation Safety

For the Cath Lab Team, Up to a >90% Reduction in Scatter Radiation With Use of the EggNest

CLD talks with M. Nicholas Burke, MD, The Minneapolis Heart Institute at Abbott Northwestern Hospital, Minneapolis, Minnesota.

Can you tell us about the cath lab at The Minneapolis Heart Institute at Abbott Northwestern Hospital?

We are a combined lab and including peripheral vascular, we have 6 labs total. We are a fairly high volume lab, doing about 2000 percutaneous coronary interventions (PCIs) a year, including complex chronic total occlusion (CTO) PCI. We are one of the leading centers nationally, both in terms of CTO and intravascular brachytherapy (VBT). Our structural program is also quite large and we are easily one of the leading structural groups in the country. I do not do structural work, but some of my partners are national principal investigators on TRILUMINATE and other structural studies.

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For the Cath Lab Team, Up to a >90% Reduction in Scatter Radiation With Use of the EggNest

CLD talks with M. Nicholas Burke, MD, The Minneapolis Heart Institute at Abbott Northwestern Hospital, Minneapolis, Minnesota.

For peripheral vascular procedures, we have partnered with our vascular surgeons and they as a group do the peripheral work. It is a really fun place to work. I do complex coronary procedures and have been doing CTOs for about 15 years.

What have been some of the strategies utilized in your lab to decrease radiation exposure?

The bottom line is that we try to decrease the amount of radiation we use. We decrease the x-ray by spending as little time on x-ray as possible, lowering the frame rate on both fluoroscopy as well as cine to decrease the dose, and by using a larger imaging field in appropriate patients, unless the patient is extremely obese. You can also decrease the amount

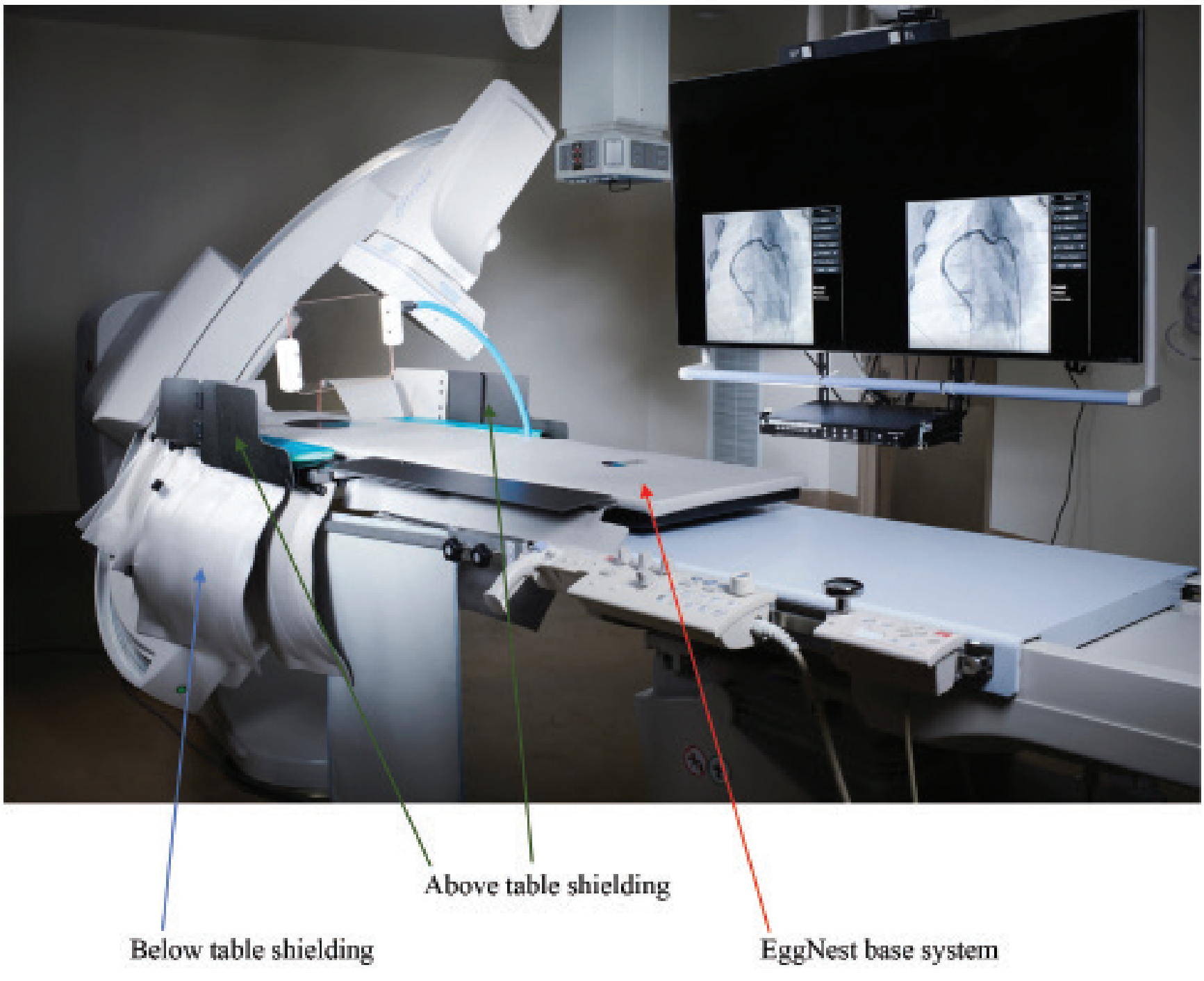

Figure 1. The EggNest (Egg Medical) has a uniquely designed and patented shielding system for under the table that moves, bends, and flexes to avoid interference with the x-ray gantry motion. Without this unique design, it would not be possible to provide increased protection without interfering with the movement of the c-arm. This is important, as Egg Medical learned from our clinical data that >70% of scatter radiation is below the table. Having a system designed to provide ongoing protection from scatter radiation below the table and not interfere with the x-ray c-arm is critical in order to provide maximum protection for everyone around the table. *Courtesy Egg Medical.*

of radiation used by employing fluoro save, where your image is saved into the permanent record, rather than using cineangiography, when possible. It also helps to use different angles as much as possible, so that not all of the radiation is dosed to one particular spot on the patient. Many operators have decreased their frame rates beyond a 50% slower frame rate. Standard frame rate used to be about 15 per second and I routinely use 6 frames per second. These are all things that advanced operators do as a matter of course in all of their angiography and PCI work, regardless of if it is a CTO or a complex case, or just a simple diagnostic case. It is important not only for patients, but also for the operator and cath lab team. Attention to radiation dosing is of particular importance given the increasingly complex interventions that are being undertaken. These CHIP cases (complex, high risk indicated procedures) tend to be much longer than standard cases, particularly CTOs. The longer the case, the greater the radiation dose to both the patient as well as to the staff in the room.

How has the EggNest been a part of your radiation safety strategy?

The EggNest (Egg Medical) is a table-based x-ray shielding that protects the workers in the room. It does not protect the patient. The protection offered by the EggNest is particularly important for the operators close to the table, because as you move away from the table, your x-ray dose goes down exponentially. The physician, whether a cardiologist, interventional radiologist, or a vascular surgeon, and the technologists that are at the table, are subjected to a lot of radiation. The radiation that the staff gets is scatter from the patient. It bounces off the patient and it goes out into the environment, so the entire room has to be protected. Using the EggNest drops the amount of scatter radiation to the people working in the room by up to 90%, making for a much safer environment. There are all sorts of concerns associated with long-term radiation exposure: incidents of malignancy, brain cancer, cataracts at the very least, and damage to the thyroid. Thyroid cancers are particularly worrisome. I am responsible for myself and for the patient, but I am also responsible for my staff. We can drop the scatter radiation dose by using the EggNest. If I can decrease the radiation dose that the staff is exposed to, even if it's not the full 90%, even if it is cut by 75%, that is a dramatic change to the amount of radiation that I and my coworkers receive. Radial operators in particular are another radiation safety concern. Radial access is becoming the standard in the U.S., because it is safer and often preferable to the patient. Radial operators stand closer to the imaging gantry and so can receive a higher level of radiation exposure. We do have shielding for radial procedures, but it only works partially and of course, works best for those people who are directly behind the shielding. The EggNest blocks 90% of the scatter radiation so that we don't necessarily need that additional shielding, but I will use everything at my disposal to decrease the rate of exposure. The EggNest is designed to be utilized with things like shielding as well. Ultimately, I'd like to have an environment where there is zero scatter radiation, but at this point in our technology, it's not possible. If I can decrease scatter radiation by 90%, that's just remarkable.

How is the EggNest set up?

It is installed on the cath lab table. Once it is set up, the EggNest is extremely easy to use and is fairly easy to set up as well initially. You don't have to redo it for every patient; it stays in place.It clamps on to the table, so it moves with it. In my lab, we are installing it one room at a time, and the first room where we tried the EggNest was our complex PCI room, where we do our CTO procedures. We are planning on adding the EggNest to more rooms over time. It is easy to add on to any room. Our six labs have imaging systems from various purveyors, and the EggNest is able to be modified or adjusted to go on any system.

You mentioned the value of the EggNest particularly for complex PCIs such as CTOs and radial procedures. Are there other procedures where it is of particular interest to have this kind of protection?

Yes. While I don't do them, I can speak to the value of the EggNest for complex peripheral vascular procedures, particularly extremely complex aortic stent graft procedures. We now have aortic stent grafts that are actually custom-made for the patient, with different segments that have different branch points to take care of different parts of the vessels flowing off of the aorta. These really complex abdominal aortic procedures have very high radiation use levels and are another place where the EggNest is potentially extremely useful.

Do you monitor your radiation exposure on a monthly basis?

Yes. I don't have our data broken down from room to room, so I can't give you specific data. I may do a case in the EggNest room and then I'll do a case in another room without the EggNest. We have standard radiation badges and I can't tell you how much our radiation dosing levels have fallen right now. Once we have the majority of our rooms with the EggNest, I would expect to see a significant drop.

What has been the reaction of your team members to the EggNest?

They mostly don't notice it. I think they are glad we are using it, because it shows that we are not just concerned about radiation for ourselves. We are trying to protect the whole cath lab staff. ■

Dr. Burke reports speaking for Opsens Medical and being a shareholder in MHI Ventures and Egg Medical.

Dr. Nicholas Burke can be contacted at nburke@mchsi.com.