

Why Transradial?

AN EXPERIENCED RADIALIST AND AN INTERVENTIONALIST ON THE RADIAL ACCESS LEARNING CURVE SHARE THEIR THOUGHTS.

An interview with David Mathias, MD, and William Witmer, MD, FACC, Aurora BayCare Medical Center, Green Bay, Wisconsin.

Can you tell us about the cath labs at Aurora Baycare Medical Center?

Dr. Mathias: Aurora Baycare Medical Center has two catheterization laboratories and one electrophysiology lab. We do about 1,000 catheterizations a year, about 400 interventions per year and about 500 EP procedures per year. We have three interventional cardiologists, two full-time and one on a part-time basis who has primary responsibilities elsewhere.

How long have you been doing transradial?

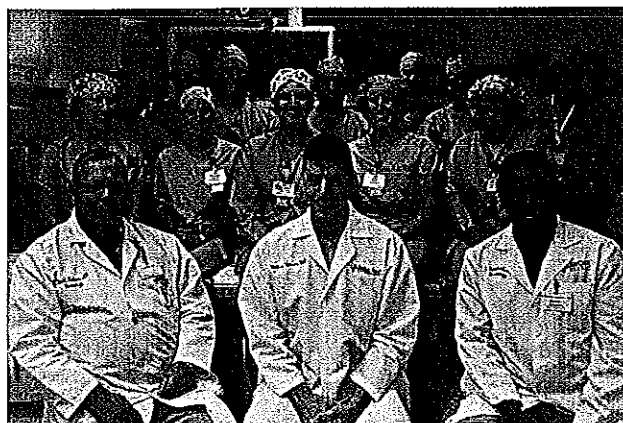
Dr. Mathias: I have been doing transradial cases for 17 years. Seventeen years ago, a company called Schneider (which doesn't exist anymore) sponsored radial training up in Québec City. Gerald Barbeau is a big transradial operator up there, and his colleagues taught me how to do radial access. I came back and started doing it in Milwaukee, then transferred to AuroraBayCare.

What have you seen in your 17 years of transradial experience?

Dr. Mathias: Radial access has been utilized in Europe for a long time. Anywhere between 70-80% of the cases to 15-20% of cases are done transradially in Europe. In Asia, it is also very big. In the U.S., usage has stayed in the 3-4% range for a long, long time. Interest has waxed and waned; and now, all of a sudden, transradial is an overnight sensation.

What would you say is the number-one reason for doing transradial today?

Dr. Mathias: Name it. The patients like it. The staff



Front row: Dr. David Mathias, Dr. William Witmer, Dr. Govindaraju Subramani. Second row: Amy Logan RT(R), Amanda Rusch RN, Amanda Plansky RN, ErinVanBeek RN, Sherry Solper NA. Back row: Art Breithaupt CVT, Jacob Warrens RT(R), Scott Wilsmann RN, Brian Thomson EMT-P, Tom Selissen RCIS, Michelle Warner RN, Eric Bowman RT(R), Supervisor.

likes it. The complication rates are less. The costs are less and there is a reduced need for skilled nursing care. Administrators like it. Insurance companies like it.

Has your percentage increased over the years?

Dr. Mathias: It has actually increased slightly. I am about 70-80% transradial, maybe more. One thing that has changed in my practice is that I now do more women radially. Recent studies have shown that bleeding and complication risks are far less in women when access is done via the radial artery. It used to be that I avoided doing transradial in patients with smaller arteries, but now I try to find a reason to do it. When I first started, standard stents would not fit through 6 French guides.

Supporting Transradial Access

An interview with Benjamin R. Goodstein, BS, RT(R)(CT), Manager of Heart, Lung, & Vascular Services, Operations and Market Growth & Development, Aurora BayCare Medical Center, Green Bay, Wisconsin.

What do you like about the use of radial access?

Patients have the opportunity to have some input into their care and decide which access method they wish to undergo. It gives patients options, and options are important in patient care. Benefits to staff have also been fairly significant. Patients recover in a very short period of time and in a comfortable state. They can be released instead of being recumbent for 6 to 8 hours, as patients are after a femoral cath.

Tell us about the data you have been collecting.

We began by looking at radial access on outpatients, not interventional procedures or complications, just a straight diagnostic cath. We pulled about 20 cases for radial and 20 cases for femoral. We did see a significant difference in the profitability for the hospital expenses and the net revenue as well. The supply expense for a radial artery procedure is significantly different than it was for the femoral approach.

What are you seeing in terms of staffing with the radial approach?

We're lucky enough to have a dedicated staff, so it doesn't make a difference whether we go femorally or radially. For staff, the biggest difference is the shorter recovery and prep time with radial access. For the post-anesthesia care unit (PACU) staff, radial access has decreased the number of cases they have to monitor long term.

It hasn't necessarily affected our staffing levels. Normally, when you have procedures that take less time, it takes less staff. But we had an increase in volume that accompanied the rise in radial access.

How has staff satisfaction been affected?

It's phenomenal. They feel like they are making a difference in patients' lives. Every time staff finishes with a radial artery, they are proud to have been a part of something that has made a significant difference to the patient. The reduction in the number of hematomas and post-procedure complications has just been off the charts. There is huge staff satisfaction, especially when it comes to retention of nurses. The more quality-driven a facility is, the more detail-oriented we are, the better opportunity we have to show our nurses that we are not just about the business of health care — we are also about patient care.

Any final thoughts?

Aurora BayCare Medical Center is a 167-bed, full-service hospital serving the Green Bay area and communities throughout northeastern Wisconsin and Michigan's Upper Peninsula. At Aurora BayCare Medical Center, patients will get the highest quality care in a healing environment that emphasizes their comfort and convenience.

Our hospital is focused on patient experience and patient loyalty. Radial access gives us a significant differentiator in the system, as well as in the country. We provide the service to the patient with every single physician that we have, not just 1 or 2 specialists. Every one of our interventionalists does radial access. It allows the patients to come in and go out in a comfortable atmosphere. It is also much easier to have someone typing on a computer and sipping on a cappuccino after a procedure versus having them lying recumbent watching television and unable to move.

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Dr. Mathias obtaining radial access.



Dr. Mathias viewing images.

Could you describe your technique?

Dr. Mathias: I use a 19-gauge needle and a very thin wire, do a Seldinger technique into the artery and then go right to a hydrophilic sheath. I tend to use 6 French sheaths in men and 5 French sheaths in women with palpably smaller arteries. I originally used diagnostic catheters when I first started, but now I use a single guiding catheter called a Mac catheter (Arrow International, Inc., Reading, PA). About 85% of the time, I can cannulate the left and the right, and do interventions, so I don't have to change catheters, except to do the ventriculogram at the end. Using a single guiding catheter eliminates the need for changing catheters, reduces spasm and makes it much faster to intervene on acute myocardial infarction patients.

What prompted you to learn the transradial technique?

Dr. Witmer: I have done interventions for a good 13-15 years. I am very comfortable with groin access and the occasional brachial case. I didn't have a lot of motivation to learn radial access until it became very clear to me that the patients, the cath lab staff and the hospital staff love it. Complications from bleeding are less. Radial access became something I wanted to learn for those reasons. Once I learned it, I found myself wanting to do transradial more and more, especially in obese patients or patients that have a high bleeding risk. It's a great skill that gives you more options for handling difficult patients. I had to push myself to get through that first block of

cases. The first day on my own, I obviously felt some trepidation, but once you get used to radial access, how to reduce spasm, and how the catheters feel, you learn fast. I feel very comfortable trying just about any patient right now.

How many cases have you done so far?

Dr. Witmer: Of my entire caseload, it is probably about 15% of my cases, but that has been increasing on a weekly basis, sometimes up to 30%.

What types of patients did you choose for your first cases?

Dr. Witmer: My first day alone, I chose males with large wrists, which is on the easier side. I was doing males or women with large wrists and big pulses, people who I thought would have large radial arteries and a reduced spasm risk. After about a month of doing that, I started trickling in more and smaller women.

Have staff been helpful?

Dr. Witmer: Dave had to teach the staff how to do transradial many years ago, but I had the opportunity of having an already trained team. So I had it easy, because my staff knows how to do it and wanted me to do it. They were very helpful in getting me through the cases and helping me with the procedure. The staff is a big motivator to get more cases done radially. The cath lab and recovery staff, and the PACU, ICU and the CCU, all love radial access. They push for more and more patients to have transradial.

Transradial is an Essential Option

An interview with Yasser S. Salem, MD, Aurora BayCare Medical Center, Green Bay, Wisconsin.

What has been your transradial experience?

I did my fellowship training in Chicago at Rosalind Franklin University and the University of Chicago. I learned how to do transradial during my fellowship. Since my graduation five years ago, I have been working at Aurora Baycare Medical Center.

I use radial access in patients where I might expect some complications from groin access. Usually these are patients with severe peripheral vascular disease and/or are very obese, particularly women, because the risk of bleeding complications is almost double compared to men. We successfully do transradial in almost in 99.5% of attempted cases. The good thing is that our two other interventionalists are doing transradial. We are complementary to each other, in the sense that if I get radial access for a diagnostic cath, there are no issues with our other interventionalists intervening on my patients using the same access. We usually do this without any change of the sheath. So far, even the complications with the radial approach are very manageable. I would say we have never had any major complications from radial access.

Most interventionalist come out of training having learned only femoral access. Your experience was different. Was it beneficial to you to have learned radial access so early in your career?

It is clearly much better if you have the ability to choose between two kinds of access for your patients. If you are trained and comfortable with the radial as well as the femoral approach, you will find that the radial approach will be preferred in some patients over femoral approach, and vice versa. Interventional patients usually have a lot of blood thinners on board, for example, which carries a higher risk for bleeding complications.

What was your experience like as you began to use the radial approach at Aurora?

Dr. David Mathias has been doing transradial for many years, so he is more experienced. He oversaw my first few cases and realized that my method and approach are very similar to his. Since then, I have been doing the radial approach without any problems. For me, it was easy to begin doing radial, because the necessary equipment was already in our lab, and cath lab and recovery staff already knew how to manage patients with the radial approach. That was very helpful for me as I pursued transradial.

How do your patients feel about the radial approach?

Those in whom it makes the most difference are the very busy and active people who have to be on their feet again in two or three days. The transradial approach can make that possible for these patients. With the groin approach, people have to take it easy for at least a week after the cath to make sure that everything looks fine, because of the greater risk of bleeding. Restrictions are fewer with the radial approach. Patients are upright and walking right after the cath, versus 4-6 hours of laying flat with femoral. A radial patient can drive safely the next day, while femoral access patients cannot drive for at least 3 days to allow healing to begin.

For most femoral approaches, we use an extra procedure to close the femoral artery. There is still a 1% chance of infection. The radial approach is basically holding pressure. We don't use any foreign material to close it down.

Any advice for potential transradialists?

Radial access requires experience and the patient has to be properly selected to have it done safely. A very thin person or patients on dialysis who have an arteriovenous fistula in their arm obviously might be a challenge for this kind of approach. I think that transradial is an upcoming approach. To get people comfortable, more training and more experience is important.

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Nurses figure out very quickly that radial access is something that not only makes the patient's life easier, but also makes their life easier.

Dr. Mathias: Early on, there is a little reluctance. People get comfortable and they are used to doing things the "normal" way. Nurses in particular were a real issue, because they had no idea how to use the TR Bands and found them a little intimidating. But within a week or two, all of a sudden everybody figures out what radial access offers. The patients love it because they can ambulate and the nurses absolutely love it. If your back hurts, you can move around or walk around — there's no Foleys. Nurses figure out very quickly that radial access is something that not only makes the patient's life easier, but also makes their life easier.

How do you manage patients post procedure?

Dr. Mathias: Cath patients go to a same-day area and are usually discharged in a couple of hours. We have a graded protocol for reducing the TR Band by three ccs every 15-30 minutes until it is loose. It is very easy. Interventional and/or stented patients go to an intermediate care unit. We have not yet gotten to the point of doing same-day discharge with these patients, though we certainly realize it is coming, very quickly. We have had a few interventional patients who, for one reason or another, had to be discharged the same day, but this is not being done on a regular basis yet. We are

looking at some of the things being done around the country, such as the radial lounge at St. Joseph's Hospital in Atlanta for same-day discharge of interventional patients. We are actually looking into the feasibility of creating a similar space.

What about room turnover?

Dr. Mathias: The room turnover rate for radials is much faster because there is no concern about the groin. In a femoral case, a closure device is used to apply pressure and the patient is transferred over to the cot. That all takes much longer than it does to just put the TR Band on and shift the patient over to the PACU. Groin complications, even with closure devices, are somewhere around 3-5% — mostly bleeding. For one blood transfusion, and again, multiple studies have shown this, the total cost is about \$2,000. A vascular complication costs about \$6,800. There is zero or very near zero access site bleeding rates with radial access versus 3-5% with closure devices and femoral access.

Does use of this access technique limit you in any way?

Dr. Witmer: Initially, that was certainly a concern of mine, but realistically, it does not. As long as you can get a 6 French sheath and a 6 French guide up, you can do any procedure. The only tricky thing is if you want to do kissing stents or bifurcating stents, but I would say 99% of cases can be done from the wrist.

Dr. Mathias: I would wholeheartedly agree. There are actually a lot of things that you can do that people say you can't. They say you can't do ultrasounds, but we can. We do acute myocardial infarctions and complex disease. Occasionally, we need to switch the site because we might need some additional sizing or much larger devices, but that's not common at all. If the worst thing that happens is that 5% of your cases convert to femoral access, the remaining 95% still get all the benefits of radial access. I have to say I don't understand that criticism.

What data are you reviewing?

Dr. Mathias: We are looking at cost per case and margins. On cost per case, we have already looked

into uncomplicated catheterizations. What is the difference in pure cost for the hospital? What we see already is about a \$300 per case cost reduction. Again, these are totally uncomplicated cases. It's very interesting, because Dr. Christopher Cooper at the University of Toledo Medical Center looked into this about 5-6 years ago and saw exactly the same number. We are now looking at another extreme, which is acute myocardial infarctions accessed both ways. We're going from the least sick to the most sick, and we don't have that data yet.

Medicare offers a fixed reimbursement schedule, meaning if you lower your costs, you can increase your margins, from a financial standpoint. Insurance works a little differently; it is more of an a la carte structure. If costs increase, hospitals get a percentage of that back, so in some ways, there is an economic disincentive by the commercial insurance companies with regard to implementing transradial. I'm not sure they realize the implications of this type of structure, especially since they are the ones who must absorb those costs.

Have you used the radial technique as a marketing tool?

Dr. Mathias: There are two answers to that: Yes and we haven't really had to. We get a lot of referrals from around the area, from relatively small towns surrounding the Green Bay area. The word has spread dramatically. We put out a few things, a few

pamphlets and brochures, but the biggest referral, by far, has been word of mouth. Another enormous referral base is staff. It is high praise when nurses or even just people who work at our hospital recommend us to a friend, relative or neighbor because the cath can be done transradially.

Any final thoughts?

Dr. Mathias: Same-day stenting is certainly coming. It is going to be mandated primarily by insurance companies. Reduction of bleeding and complications is a huge, important aspect of interventional cardiology right now, and that is what's driving the current interest in transradial. Then there is patient preference. The vast majority of people who have had femoral access, then radial access, want a radial again.

Terumo has led the way in this transradial resurgence by trying to educate physicians. I don't have any financial interest in the company, but I will say that they truly picked up the ball and have been running with it, hoping to push this procedure forward in the United States.

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