EP Lab Digest

20 YEARS

A product, news & clinical update for the electrophysiology professional

EP Lab Spotlight

Monument Health Rapid City Hospital

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Rapid City, South Dakota

When and by whom was the electrophysiology (EP) program started at your institution?

The EP program was started in 1993 by Jose Teixeira, MD. He started as a locums physician, but transitioned to a full-time electrophysiologist for this facility in 1995.

What is the size of your EP lab facility?

We currently have two EP labs, with room for growth in the near future. Our volumes have increased considerably within the last three years with the addition of two electrophysiologists from New York state: Ethan Levine, DO, FHRS, and Saverio Barbera, MD, FHRS, Director of the EP Lab.

continued on page 16

In This Issue

Podcast Interview

Same-Day Discharge After Atrial Fibrillation Ablation

The EP Edit
An EP Lab Digest Podcast

Podcast discussion hosted by Jodie Elrod

In the next episode of The EP Edit podcast, we're featuring a discussion on same-day discharge for atrial fibrillation (AF) ablation. Andre Gauri, MD, Chief of Electrophysiology at Spectrum Health in Grand Rapids, Michigan, is joined by Marc Deyell, MD, MSc(Epi), FHRS, FRCPC, EP Lab Director at St. Paul's Hospital in Vancouver, British Columbia, to discuss their approach to same-day discharge.

continued on page 8

Cover Story

Multidisciplinary Ventricular Arrhythmia Program: Novel Approach Combines Expert EP Care With Psychosocial Support

Interview by Jodie Elrod

In this article, we speak with Babak Nazer, MD, cardiac electrophysiologist and Director of the Ventricular Arrhythmia Program at the Oregon Health & Science University (OHSU) Knight Cardiovascular Institute in Portland, Oregon.

continued on page 12

HMP Global

continued from cover

Same-Day Discharge After Atrial Fibrillation Ablation

Podcast discussion hosted by Jodie Elrod

Andre Gauri, MD

Marc Deyell, MD, MSc(Epi), FHRS, FRCPC

Andre Gauri, MD: My name is Andre Gauri, and I am a cardiac electrophysiologist at Spectrum Health. I serve as the Chief of the Electrophysiology Section as well as the Medical Director of our AF program.

Marc Deyell, MD, MSc(Epi), FHRS, FRCPC: I'm Marc Deyell. I'm a electrophysiologist in Vancouver, Canada. I'm the Lab Director for the Electrophysiology Program at St. Paul's Hospital, which is one of the academic hospitals in downtown Vancouver.

Gauri: So Marc, tell me a little bit about your program in Vancouver in terms of how you started to even think about sending patients home same-day discharge for atrial fibrillation (AF). I'm sure in training, that was not something that you did — it definitely was not something we did back in Chicago. How did this even come about as an opportunity?

Deyell: It's a great question, and I can't take credit for it, because I inherited this situation. It basically came out of the fact that, in the early 2000s, and probably between 2005 and 2010, the AF ablation volumes were growing quite rapidly. Going along with that was the pressure on trying to keep people in beds overnight. I think almost every hospital deals with bed pressures from a variety of things, and keeping a bed open for a patient who may or may not use it for a procedure is very difficult, especially in the Canadian system. So it sort of evolved organically, but also on the backbone of pioneers in our interventional cardiology team who were sending patients home same day after simple, stable percutaneous coronary intervention (PCI) and device procedures, so it was fairly common at that point. When I was training in Canada, same-day discharge was relatively commonplace — not across Canada, but in a few centers in British Columbia. Then, when I did my training in the U.S., patients were staying (at that time before novel anticoagulants) for five to seven days on warfarin. So while it evolved organically, it was never rigorously evaluated until more recently in terms of how good it is or if it's a safe thing to do.

Gauri: Similarly, we were much later than you in adopting our program of same-day discharge, but our interventional colleagues had been doing same-day discharge for PCI. The pressures of the hospital bed crisis really made us look into whether we could safely send these patients home the same day. After a lot of the experience that we were seeing mainly overseas or across the border up north that you were doing, we started to dabble in it with some pretty low-hanging fruit — patients with simple paroxysmal AF and other short cases done early. We started doing that around 2016 with some one-offs, and began seeing some really good success. Around 2018, we agreed to make this a protocol. Initially, we just started doing it with patients who were getting cryo[ablation] for AF because they weren't getting a lot of fluid and they were simpler, shorter cases. We had great success with that, and by 2018, we were sending about 50% of patients home. Then the pandemic occurred, and the crisis for a bed and the pressure to not bring patients into the hospital was on all of us in the healthcare system. Currently, we're sending about 90% of the patients home same day, whether it's for cryo, RF, or anything. So in a short period of time, we've ramped up from 0% to almost 90%.

Deyell: I think that's an amazing accomplishment. It speaks to what you can do, because I know that in a lot of the published literature outside of our experience, when you look at how many people they're sending home or what percentage, it's pretty low. But I think if you develop a program, especially with contemporary AF ablation, I think it's gotten so slick, and the complication rate is low enough, that it's very feasible. We're certainly well over 90% now in terms of our same-day discharge for RF/cryo, and that includes cases starting well after noon. It is certainly possible and it's exciting to see that other centers are having the same experience.

Gauri: I agree. Let me ask you another question: what are you doing in Vancouver in terms of closure devices or figure-of-8 stitches or any of that on your vascular access sites post procedure?

Deyell: Mostly for financial reasons, but also just organically, we haven't been routinely doing that. Although I should say that my colleagues, located just across the pond in Victoria, who are also instrumental in developing these protocols, have adopted the figure-of-8 stitch and quite like it. Basically, at both St. Paul's and Vancouver General, which is the other academic hospital in downtown Vancouver, we pull the sheaths in the lab and give protamine at the same time. So, we pull them in the lab and achieve hemostasis, generally in the lab, although the occasional patient may need some extra pressure or clamp in the recovery area. We then keep them for about three hours in the recovery area, we don't check another ACT, but we give additional protamine if we need to, and we haven't used closure devices. Then, they ambulate at about three hours. The nurses give them a walk around the recovery area, and if there is no bleeding or concerns and they're feeling okay, then they can go. But I think the closure devices are certainly very interesting, because it may allow you to have less patients rebleed and need a longer stay, and it may shorten the amount of time that they need to spend in the recovery area and the time they need to spend recumbent. Because we all know that for patients who have just had a two- to three-hour procedure lying on their back, having to then lay on their back on a stretcher for three [more] hours is pretty uncomfortable. I think it's definitely worth exploring. What do you do in Michigan?

Gauri: We've kind of evolved. Prior to the same-day discharge pathway, we also pulled sheaths in the lab and gave protamine, but we had six hours of bedrest and then would ambulate. So, we were very conservative compared to you. Then, when we started doing the same-day discharge, we started using a

figure-of-8 stitch with a stopcock or a device called a Slip-Not (Merit Medical), which is essentially just a fastener device to hold the suture down, and we changed it to four to five hours. With COVID, when there was even a higher crunch of getting patients out for throughput and patients were blocking up our prep recovery area, we started using a closure collagen plug in 2020. That reduced our bedrest to two to three hours. These are great devices. Obviously, they're not inexpensive, so the economic impact of that needs to be taken into consideration. But when we looked at it closely, we're able to free up the prep recovery, get patients out quicker, use less resource internally from a nursing perspective, and have less bleeding.

I'm really surprised — you are much more liberal than we are. It's either a figure-of-8 or closure device, and we don't have much bleeding. So I'm curious, what percentage do you think rebleed and have to stay longer?

Deyell: We put together our initial experience in 2010-2015, and then we reviewed our 2018-2019 data, which is the most recent that we've yet to publish. It certainly looks like a proportion of people who have to stay, but it's probably only about 20% of people who are staying overnight because of access complications. What is not captured in that data, though, is who needs a really prolonged stay in the short-stay unit. So, even though they may not be admitted overnight, my gut feeling is there is probably about 30% of patients, maybe even 40%, that have to stay longer than the three hours, and that ties up nursing resources in the short-stay unit. We're certainly going to look at the closure devices, even though they may not dramatically affect same-day discharge rate, and whether they can minimize the impact on nursing resources. Patients get quite disturbed by rebleeding.

Gauri: That is where even just doing a figure-of-8 stitch is very cost effective and really does reduce bleeding. We used to put a stitch in, send patients home with the scalpel, and tell them to remove the stitch themselves the next day. Once we started using the stopcock or the Merit Slip-Not device, patients were easily able to remove the device the next day themselves. Some places that I've talked to don't send patients home with that stitch, but we have found it easier. It's very, very infrequent that someone has a rebleed and has to stay overnight. Sometimes it may extend the stay from instead of three hours, they may have another hour or two. But we've been very successful with this. It doesn't cause much discomfort and it's very short term, so we've found it to be very helpful. I'm encouraged by your data.

Deyell: I use a lot of Perclose (Abbott) for my arterial access for ventricular tachycardia (VT), and certainly I love it. So, I have used it for some higher risk patients, even though it's not a venous-specific device. I think there is probably going to be a happy medium in trying to figure out what the impact of a vascular closure would be. I think a figure-of-8 stitch is very appealing because it's so cheap. Although I get a little scared of when we release the fellows and have them do a figure-of-8 stitch. It's going to be a matter of time before somebody throws a stitch where they shouldn't, but we'll cross our fingers that doesn't happen. I know of some of my colleagues in British Columbia who have taken out the figure-of-8 stitch; they generally started removing it next day, and now they remove it at the three-hour mark. I haven't seen any formal results, but anecdotally, it seems to work reasonably well. But equally, I like your strategy of leaving it in and having the patient take it out.

Gauri: Have you done any of the economic analysis on what this type of same-day discharge pathway leads to for the hospital? You have been doing it for well over a decade now.

Deyell: We know basically the rough cost of staying overnight in Canada; it's obviously a little bit less than the U.S. We haven't done a formal economic analysis because now in British Columbia, we don't have a control group anymore — almost everybody gets discharged same day across the five major EP centers. It's about a decade old, but in many centers, about 56% of the costs of an actual ablation — and this is true whether it's Europe, Canada, or the U.S. — relates to the hospital costs of staying overnight for one or more days. That may be a little bit of a generous estimate of the portion of your costs, because a lot of those were three- or five-day visits, but I think even one day of admission is going to be in the realm of probably $5000. So, if you can knock that off the top of a fairly expensive procedure, especially because it's the most common procedure that most centers are doing, it has a big impact.

Gauri: We actually participated in a study with Marcin Kowalski's group in Staten Island, Arash Aryana's group in Sacramento, and our group. We combined all our data retrospectively and looked at same-day discharge versus pair-controlled matches for patients that were staying overnight, and there was really no difference in safety outcomes, as you would guess. But there was significant cost savings and it ranged from, depending on where you were in the country because it was more expensive for care on the West Coast versus East Coast versus Midwest and different regions, but anywhere from $50,000 to $80,000 a year were saved if you send home half your patients in our population. So, the fact that we're sending home almost 90%, you can almost double that. So, there is definite economic benefit. When I look at this and when I've talked to other groups about this, it's hard to come up with a reason not to send the patient home. I struggle with groups that say "No, we

always keep our patients and they need to stay." To me, it's a patient satisfier — no one wants to spend the night in the hospital, it's cost effective for the hospital system and healthcare system, and it frees up your resources. It's less work for the providers to send patients home the same day as well. I really struggle to see why some groups are really resistant to this process.

Deyell: Yes, I think that is a good point. I think the most common question I get when discussing same day with centers that keep patients at least overnight is that patients don't want to go home. I think it all boils down to your overall program. If you're trying to send someone home who has been told they're going to stay in hospital for a few days, then that is difficult. But if you set the stage early when they come for their clinic visit, and you say, "This is the routine. We do the procedure, and most people go home the same day. If there are any concerns, we will certainly keep you overnight." But also telling patients that they'll be followed closely after discharge is very key. We certainly have a system in place where they have access to people, and we also follow up with them to make sure that they feel comfortable at home. That being said, we still have work to do because our own data would suggest that there is not an insignificant amount of emergency visits and readmissions. Even though it's not sky high, it's still higher than we probably want it to be.

Gauri: That is an excellent point that you make, and it is about managing patient expectations and setting the stage early on. If they anticipate they're going to spend the night because their brother had an ablation 10 years ago and he spent two nights in the hospital, then they think "why am I not doing that?" So, if you discuss at the time of the office visit that it's different, I completely agree. The other point is that not everyone needs to go home the same day, right? For example, if it's a high-risk patient, they're going to get a lot of fluid, and they have a low ejection fraction (EF), by all means, those patients probably should stay. But the vast majority really can go home safely.

Deyell: We've found the same thing. Our managers and staff are not forcing us to send people home, so it's very much physician discretion. We all have a low threshold to keep people if they are not doing well, older, frail, or have heart failure, but even then we're still well over 90% in terms of same day. We also have a large congenital program with fairly complicated patients, and for many of them, we prophylactically keep overnight if we want to, but equally some of them are good enough to go home.

Gauri: I'm assuming the answer to this question is yes, but are you doing these cases all on uninterrupted anticoagulation, giving them anticoagulation right after their procedure as well?

Deyell: For the last six or seven years, we used to do it all on uninterrupted warfarin with therapeutic INRs. But now, almost all of it is done with a brief interruption of direct oral anticoagulants (DOAC). So usually [there is] a 24-hour interruption, and then a first dose of anticoagulation, usually a DOAC, would be at six hours post-sheath removal. So, take your first dose at six hours unless there is bleeding, and then we delay until the next morning sometimes. That is our standard procedure.

Gauri: We have a similar approach. We give them oral anticoagulation, almost all DOACs, the night before the procedure, so they're really just missing the morning dose — that is about a 12-hour hold. So, if it's a daily dose such as a Xarelto, there is no hold at all, but the BID ones are just missing the morning dose, and then we give them a dose at 5:00 PM.

Deyell: Yes, that seems to be the most common. You could do it completely uninterrupted, but when we analyzed our previous data, the risk of stroke and transient ischemic attack (TIA) after an ablation with good anticoagulation and good heparin targets is so vanishingly low, that we haven't been doing the fully uninterrupted DOAC.

We are quite fortunate that we've been successful in implementing the same-day discharge pathway protocol. We've been able to care for patients, get their AF taken care of, and get them out of the hospital.

Gauri: To just follow up on what you said, the key point is having a system in place where there is good follow-up. Our prep recovery team or nursing team will contact the patient the next day to make sure there are no issues, or again, to go over things such as, "you're having a little bit of bruising, that's normal," and just to make sure that there are no problems. If there are, just make sure that there is a pathway where they could come in to be seen in the office versus going to the emergency department (ED). When we look at our readmission rate post ablation with our current pathway, it's very low. Obviously it's not zero, because there is always going to be some people who have problems and need to come back in, but doing postoperative phone calls the next day and managing their expectations has really been fabulous in terms of maintaining a high percentage of patients that go home same day and low readmission rates.

Deyell: That's exciting to hear, because from our own data, we know that there is a proportion that will certainly present to the emergency room or get readmitted. Most of that seems to be less bleeding, which I was surprised at, and more commonly, pericarditis and recurrent AF in the early phase are the dominant drivers of those readmissions. Despite all the education we give to patients, they still run to the ED with some chest discomfort. So, we haven't been doing the next-day phone call, but that's obviously a low-hanging fruit, and so we're doing a pilot now just to look at the impact of that.

We give a phone call at five to seven days, which is mostly too late for those early readmissions. We also have, at least at St. Paul's, at least half of our patients coming from very remote areas well outside of town, so we can't easily get them into clinic the next day. Certainly, having a qualified person such as a nurse who is familiar with the AF clinic and ablation call [the patient] the next day, I think will — and we're hopefully going to show this — really drive down those early readmissions to the ED with chest pain and pericarditis. Hopefully we can intervene sooner.

Gauri: One more question for you, Marc, is around COVID. You already had this system in place, which was quite mature. Did you have to slow down your volume at all as a result of the COVID crisis?

Deyell: Yes, I think in the very first wave, we were shut down like everything else. The hospitals shut down completely for a month and a half, and we were only doing very urgent cases. Then, because of our same-day program, we really ramped up to full steam over the summer of 2020. To try and mop up the wait lists, we actually did extra procedures. In the second and third waves, it's really been a boon. So, the only thing that we changed is we cut out some of our later-day cases, because we certainly know from our data that if you're starting a case after 2:00 PM at least, and probably even after 1:00 PM, the chance of them going home decreases. It's not astronomically high, but it does decrease. The only thing we were doing is cutting out some of our fuller slates. So, we were booking slightly lighter, but because we had same-day discharge, we weren't really tying up hospital beds or a lot of nursing staff. It allowed us to keep the EP program running throughout most of the second and third waves as opposed to the transcatheter aortic valve implantation (TAVI) and interventional programs, which definitely had to shut down because they kept a lot of patients overnight. So, that has been a benefit in terms of trying to provide access to care during the pandemic. I'm not sure if you had the same experience.

Gauri: Once again, in the first wave when we were all just unclear on where it was going to go, we shut down, but we shut down very briefly. Once we realized that we had capacity and we weren't being overwhelmed with COVID cases in the ICU since we had same-day discharge pathways, we started ramping up pretty quickly. By June, we were full steam ahead again, if not mid-May. Right now, we're kind of in our fourth wave here in Michigan, and we're at hospital capacity and setting records for hospital capacity. Not all COVID, since there are patients being cared for other things, but a lot of COVID. At our system, every procedure needs to be graded as a Level 1, 2, 3, or 4. Level 1 meaning that if you don't do it within the next week or the next few days, the patient will potentially die or have serious morbidity, versus Level 4, where if you don't do the procedure at all, nothing bad will happen to the patient. So, every case we book has to be graded from 1 to 4. Right now, all threes and fours that require a hospitalization are being postponed. Therefore, an AF ablation would clearly not be a 1 or 2, it is typically a 3. We've been in this 3 to 4 postponement phase for probably two weeks, and unfortunately, I think we're going to stretch it out longer. If we did not have our same-day discharge pathway in place, I would not be working or providing care for AF patients for the last month. So, we are quite fortunate that we've been successful in implementing the same-day discharge pathway protocol. We've been able to care for patients, get their AF taken care of, and get them out of the hospital. Even for WATCHMAN (Boston Scientific) procedures, which used to be an overnight stay in our institution, we're now sending [those patients] home same day. I'm assuming you do the same? We've been sending device patients home the same day since 2009, so that wasn't new for us, but I'm just very grateful that we have these in place. During these very thin resource times, where the hospital is stretched thin from both a staffing perspective and bed capacity issues, we're running like nothing is really that different, at least from an EP standpoint.

Deyell: That's a great point. We seem to have the same success in sending people home, whether it's radiofrequency (RF) or cryo. That has also been helpful in terms of physicians being able to keep their preference for technology because we have a diverse operating group. I think it does help. I don't think there are going to be more hospital beds in the future, it's only going to get tighter. Certainly, that is what most hospital planners are trending towards — less inpatient beds for the same number of population as these trends towards same-day procedures keep continuing. So I don't think we're going to have more hospital beds in the future.

Gauri: I totally agree. Well Marc, I really appreciate this discussion we had today. I think for our audience, they're going to learn a lot about what can be done for AF ablation and same-day discharge, and how experienced centers like both of ours have had such great success with it over the last few years.

Deyell: Yeah, I think it's great. Certainly the pandemic has been the catalyst. I think it has been great that people don't look at you with weird looks when you talk about same-day discharge. Hopefully this will make for more meaningful discussion in the EP community and also generate much better safety data to support same-day discharge as more centers like yours and ours have success. It was great to hear your perspective. ■

Disclosures: Dr. Gauri and Dr. Deyell have no conflicts of interest to report regarding the content herein.

Editor's note: The transcripts have been edited for clarity.