

High-Performing Labs Are Utilizing Radial Access and Same-Day Discharge Successfully

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We are joined this month by Deepak Kapoor, MD, Medical College of Georgia, Augusta University. Dr. Kapoor and his lab are another growing example of how radial use and the concomitant approach to discharge the same day in over half of their outpatient percutaneous coronary intervention (PCI) population is not only driving a high degree of patient satisfaction, but lower costs and complications, and has therefore become a mainstay of their program. — Gary Clifton, Vice President, Terumo Business Edge



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Dr. Kapoor, can you describe your cath lab program?

Ours is an academic program with the participation and training of cardiology fellows. We perform approximately 1500 cases yearly, and of these, around 600 are coronary interventions. ST-elevation myocardial infarction (STEMI) interventions average around 100 yearly. Our program has a strong focus on complex higher-risk (and indicated) patients (CHIP), coronary artery bypass graft (CABG) turn downs, and chronic total occlusion (CTO) PCI, and is a regional referral center for patients requiring these interventions. Our labs perform approximately 90 atherectomies and 70 CTO PCI in a year. A unique facet of our interventional practice is the very high use of fractional flow reserve/instantaneous wave-free ratio (FFR/iFR) to identify target lesions and image guidance for optimized therapy. Almost all our coronary interventions are optimized with intravascular ultrasound (IVUS).

Can you tell us about the procedures you are conducting utilizing the radial approach?

All diagnostic catheterizations are first evaluated for radial approach and most are done radially. Around one-third of coronary interventions are done by radial access, a number which varies by operator; however, proportions of these are steadily growing every year. Radially performed PCI procedures include CTOs, CHIP, STEMI, unprotected left mains,

and interventions involving atherectomy, including large burr sizes.

Building upon our radial competence, our interventional group has acquired a skill set over the years to use the arm venous access extensively to perform right heart catheterizations, temporary cardiac pacing, placement of inferior vena cava (IVC) filters, pulmonary embolism therapy, and removal of intra-cardiac foreign bodies.¹

Do you see specific benefits from transradial intervention?

By now, we have ample evidence in the literature regarding the positive impact of transradial access on mortality, morbidity, cost, and hospital stay, in addition to the benefits of being patient and family friendly. Recent communication from CENTURY II investigators has further cemented this reputation.²

In our practice, I have observed particular benefit in patient and lesional subsets who are more prone to vascular complications, need for transfusion, and prolonged hospital stay. These include patients with obesity, peripheral vascular disease, anemia, blood dyscrasias, need for chronic anticoagulants or intense procedural anticoagulation, and those who do not wish to receive blood products.

What do you believe are the barriers to the adoption of transradial intervention?

Habituation to tools and techniques learnt during our training years and comfort in not changing the way we work create inertia. Once this inertia is shaken off, the next impediment is a lack of live education, particularly a mentor who can provide tips and tricks, and help with technical nuances. Fear of failure creates a powerful hindrance to adoption for a seasoned and respected interventionist. However, the learning curve to become a competent transradial interventionist is neither steep nor arduous.

It is not uncommon to limit transradial PCI to simple, straightforward coronary lesions; however, that approach limits the beneficial effects, which are more apparent in higher risk patients and lesions. With currently available equipment and skill sets, it is feasible to safely perform interventions involving CTOs, CHIP, aggressive atherectomy, bypass grafts, thrombotic lesions, and many left main interventions. Radial access allows the operator to use aggressive procedural

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anticoagulation, avoid vascular morbidity, and permits early ambulation and discharge. However, I cannot emphasize enough the role image guidance (IVUS) plays in our practice. It is utilized pre PCI to plan the intervention, and post PCI for optimization and to rule out imperfections that are not visible on angiography.

Recently, the Society for Cardiovascular Angiography and Interventions (SCAI) published an influential expert consensus document on same-day discharge.³ What is your lab's position on same-day discharge and where do you see it positioned for the future?

By virtue of being an early, albeit cautious, adopter, our group started this practice in selected patients many years ago. Seeing the merit of this approach, with its profoundly positive impact on the patient and family experience, and more important, its impact on safety, our practice has evolved such that during the past year, approximately 56% of outpatient PCIs done radially went home the same day. Based on our experience, I foresee continued progress in the future and advocate same-day discharge adoption by the interventional community as the safety of this practice is established.

We must have confidence to safely discharge our patients the same day after PCI, even in "complex cases". This confidence stems from two factors:

- First is an absolute assurance that the patient will not have any significant bleeding issues (with exception of coronary perforation). The radial approach eliminates dreaded complications like retroperitoneal bleeds, even in the face of robust procedural anticoagulation.

- Second is the compulsive use of IVUS or optical coherence tomography (OCT) to ensure that the PCI was optimized and the operator left no angiographically invisible concerns, which can potentially result in flow limitation later.

With the growing emphasis on consumerism, do you feel that radial and/or same-day discharge has had an impact on patient satisfaction?

I have witnessed and continue to see a very positive impact on patients and their families. In particular, radial patients with prior non-radial PCI are pleasantly surprised. Hospitals are not a pleasant place to spend a night and/or visit. Things like sleeping at home on your own bed, and families not having to make multiple trips or rent hotel rooms can put a smile on many faces.

Medicare data on length of stay for an inpatient PCI exceeds three days. Has radial access impacted your length of stay?

Yes. With the radial approach, groin vascular, femoral deep vein thrombosis (DVT), and intra-abdominal hemorrhagic complications are eliminated—and these are not infrequent contributors to prolonged hospitalizations. Radial access has also helped with our STEMI length of stay.

Many physicians are still limiting radial access to the elective PCI population. How have you utilized the radial artery in your approach to treating STEMI?

Some of my interventional colleagues took the lead in this regard, and demonstrated that it is effective and safe. Being

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a cautious adopter, I followed in their footsteps. However, I still prefer the femoral approach for unstable patients with anterior STEMI, as it permits rapid access to pacing and mechanical circulatory support. Radial access adoption has improved our performance regarding STEMI length of stay and bleeding rates.

How would you characterize what you see happening in the field of invasive cardiology?

The field of coronary intervention is undergoing a paradigm shift. As someone trained during the classical era, I see this transformation happening particularly in three areas:

1. Transfemoral to transradial access.
2. Revascularization that is precisely directed (FFR/iFR) and performed with image-guided optimization (IVUS/OCT).
3. Transition from freewheeling interventional practice

to scrutiny and regulation by peers, employers, payers, rating agencies, and credentialing bodies.

This transformation has created a quandary for the majority of current interventional operators, who were trained in the transfemoral era and are used to angiogram-based decision making. Many of us are often dogmatic about what we learned during our fellowship or what our mentors taught us. Our ingrained habits make it comfortable to resist changing practice. This predicament is particularly felt in the nonacademic practice environments.

Any final thoughts?

The era of laissez faire interventional practice is over for good. It is no longer, "what an operator can fix," but "what is appropriate, safe, economical, and effective for this patient." Scrutiny, regulation, financial disincentive, and credentialing around these issues does create stress for

an interventional operator and practice.

Appropriateness of PCI, procedural costs, bleeding complications, target lesion revascularization (TLR) rate, mortality, and length of stay are among the factors on which an interventional practice or an individual operator are being increasingly judged and sometimes reprimanded. While adoption of transradial PCI will not deliver a panacea or make the procedure automatically appropriate, it will certainly help. Our experience has demonstrated progress in avoidance of bleeding complications, cost reductions, and reducing length of stay. These factors have significant implications with the employer, payers, credentialing, and public ratings.

Same-day discharge after PCI does not only bring smiles to patients and families. It also results in very tangible cost savings for the hospital, which makes the hospital administrators very pleased. An additional

benefit is that it confers a competitive edge and contributes to a positive community perception of the hospital. ■

References

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There is tremendous cost pressures on hospitals. With SCAI having announced new guidelines around same-day discharge, now is the time to consider having our team assess your program. There are tremendous operational and costs savings to be realized.

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