AN INTERVIEW WITH...

Tiago Bilhim, MD, PhD, EBIR, FCIRSE, FSIR

Dr. Bilhim shares about his journey in prostatic artery embolization work, tips for quality medical writing, raising awareness for interventional radiology, and more.

Please tell us about your own journey in researching prostatic artery embolization (PAE). What interested you most about this procedure?

My PAE journey started in 2008 when my mentor Professor João Pisco challenged me to pursue my PhD thesis on a new interventional radiology (IR) procedure for patients with benign prostatic hyperplasia (BPH). I designed the study protocol and had to decide which outcome measures to assess and when to assess them postintervention. I never thought the PAE technique itself would be so challenging. The first 10 procedures each lasted > 3 hours, and Prof. Pisco kept asking: "Is this the prostatic artery? Can we embolize this safely?" At the time, I was already teaching anatomy at NOVA Medical School, so anatomy was "part of my business." I was surprised to find out that after so many centuries of great anatomy studies and books, the knowledge on anatomy of the prostatic arteries was so scarce. Wow! For me it was mind-blowing to have the feeling that we were looking at things never seen before.

At that time, Saint Louis Hospital had a very old angiography machine unit that could not perform cone-beam CT. We only had two-dimensional digital subtraction angiography (DSA) to rely on! So, it was quite obvious that we needed something else to guide us during PAE and make sure we were embolizing the right arteries. I still remember when I showed Prof. Pisco my first CTA from a patient before PAE. He said to me, "You have your PhD thesis here." He was right! We published several studies on the anatomy of the prostatic arteries based on CTA and DSA.

This feeling of exploring new boundaries and excitement with the adventure was rather unique for me. One of my major concerns when we were still in the early years of PAE was that no one would be able to replicate our methods and results and that PAE would be considered "bogus," but one of our major accomplishments was seeing other groups replicate our findings and having amazing interventional radiologists from all over the globe acknowledging our work.

Last August, you and colleagues published a study on repeat PAE for BPH, concluding a limited impact in patients who didn't show a response to the initial PAE.[1] How do you address these nonresponders?

I was really enthusiastic about this study, which followed our publication in *Radiology* in 2016 focusing on understanding clinical outcomes after PAE.[2] Trying to identify baseline predictors of clinical outcomes is important because it can help optimize results through better patient selection. This *Journal of Vascular and Interventional Radiology* (*JVIR*) study from August 2020 expanded on the concept that not all BPH patients respond to PAE the same way. Even if you perform a successful bilateral embolization, you may have a minority of patients that do not improve after PAE (roughly 10%-20%). These patients, whom we labeled in 2016 as "nonresponders" because they didn't improve post-PAE, are quite different from patients who improve the first 6 months after PAE but have relapsing symptoms after. We called those patients "relapsers." With the August 2020 *JVIR* study, we were able to show that clinical outcomes differ when you repeat PAE for these two types of patients. With relapsers, you may still have good clinical outcomes after PAE. However, PAE does not work for most nonresponders, and other options are better suited.

These two studies suggest that patient selection rather than technique is essential to enhancing clinical outcomes after PAE. Choosing the right patients is key because PAE is not a perfect fit for all BPH patients. Nowadays, and after learning from these studies, we don't offer repeat PAE to nonresponders, just for relapsers. With nonresponders, we usually try medical therapy for a few months. If residual symptoms are very bothersome, we counsel patients for other minimally invasive treatments, transurethral resection of the prostate, or laser prostatectomy.

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What do you see as the remaining hurdles to PAE's acceptance?

From my point of view, the process is quite different when comparing the United States with Europe and the rest of the world, and these differences are reflected in the urology and national guidelines. For example, in the urology guidelines of United Kingdom, Brazil, and Europe, PAE is already an accepted treatment option for patients with BPH. However, it is still considered experimental in the United States and is only recommended under clinical trials. The reasons for this are political and economic rather than scientific. The data are already there and are robust enough to allow for PAE to be compared with all existing minimally invasive treatment options for BPH patients, and PAE has the most robust supportive data of all those options.

What tips do you have for working with those who remain skeptical?

You must understand the pros and cons of minimally invasive treatment options for patients with BPH and team up with open-minded urologists who will accept PAE. As with uterine artery embolization for fibroids/adenomyosis, the challenge is more about who treats the patient than the treatment itself. To convince urologists to explore a PAE practice, you can propose a clinical research study or simply provide an additional treatment option for a dedicated BPH clinic. If you are a urologist with a strong BPH clinical practice, you will want the practice to be able to offer PAE as an option, irrespective of who is performing it. At the end of the day, this team strategy will give you more options for your patients.

How would you summarize your recent publication[3] of results from the BestFLR trial for patients with liver cancer?

In one sentence: Glue is better and faster than particles plus coils for liver hypertrophy after portal vein embolization. I was really happy with this study. It is the main study from Dr. José Hugo Luz, a PhD student who worked with us for 5 years. This study reflected a huge effort from him but also from everyone on the team involved and is a good example of how we should strive to collect and report data from IR. Prospective randomized controlled trials are always better than retrospective case series without controls. We should make all efforts to improve the quality of data from IR studies. We already knew from retrospective studies that glue was better. However, we had no randomized trials proving this. Like Norah Jones says in the song "One Flight Down," "Now you know."

What were some of the important insights gleaned on a well-run, effective morbidity and mortality meeting from the "CIRSE Standards of Practice on Conducting Meetings on Morbidity and Mortality" document[4] you and colleagues published in May 2021?

This team effort was led by Dr. Joo-Young Chun from St George's Hospital in the United Kingdom. It was a commendable initiative from the Cardiovascular and Interventional Radiological Society of Europe focusing on a rarely reported but immensely important aspect of IR: assessing and learning from errors in order to improve patient safety. The publication provides all the key aspects relevant for interventional radiologists on how to implement and organize morbidity and mortality meetings at IR units. IR procedures are less invasive than conventional surgical procedures, but you will always run into complications along the way. The only way to monitor and correct any possible mistakes is through morbidity and mortality meetings, which are already mandatory for most surgical departments. However, many IR departments still need to understand the true value of the meetings and implement them recurrently. Where I work, I was fortunate enough to help implement these recurrent meetings for the past 3 years. This allowed us to correct practices that were not optimized and improve patient safety. We were able to minimize errors in a departmental culture that values shared learning in a blame-free environment.

As Section Editor for embolization at *CardioVascular and Interventional Radiology* (*CVIR*), Associate Editor for *Acta Radiológica Portuguesa*, previous Associate Editor for *JVIR*, and the recipient of several *JVIR* Top Reviewer awards, what advice can you share about medical writing and producing a quality manuscript?

My first piece of advice is that you should like doing it. I am passionate about medical writing, though I should also say that it might be a bit easier for me as my wife deals with science and scientific writing on a daily basis. When I see a poorly written paper that might otherwise be of interest, I appreciate the opportunity to help the authors improve their manuscript quality, and it is rewarding to see the publication of a paper you helped improve. My second piece of advice is to learn how to write scientifically, including rigorous reporting of data and adhering to established standards. There are numerous guidelines and checklists online for authors to use in reporting data, and *CVIR* has valuable tips on its website. There are also scientific publications available on how to

review papers.[5] When reviewing papers, you also learn a lot from authors and from other reviewers' and editors' comments.

One final tip: Make sure your research topic is novel and relevant. You do not want to waste time and energy reinventing the wheel or finding something that has no implications for patient care.

On your website (tiagobilhim.pt), you've provided informative patient resources on embolization treatments, including Q&As, blogs, and videos. What advice do you have for colleagues who might want to start their own site?

We need to raise community awareness about IR. Some interventional radiologists still believe that we should only work for other physicians and should not have direct patient referrals, but I learned from my first few years with Prof. Pisco that angio room work is only a small fraction of all IR work. Our practices should be centered on patient care before, during, and after the procedures. However, direct patient referral to IR is almost impossible because the general community and even most medical doctors do not know about IR, and awareness initiatives teach patients and doctors about IR and the minimally invasive treatment options we can provide.

For patients, I like to compare this to a holiday stay at a fancy hotel. Most people take virtual tours of the hotel website, watch videos, and view photos and comments from other clients. Patients appreciate knowing exactly what to expect before their intervention.

If you are starting your own site, you should be very specific about your goals. In my experience, the primary focus should be on the patients and diseases rather than the treatments. Seeking professional expertise is also paramount—do not try to do everything yourself. ■

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