AN INTERVIEW WITH…
Maureen P. Kohi, MD, FSIR

Dr. Kohi shares her insights on patient selection and informed consent practices for uterine fibroid embolization, improvements in care for postpartum hemorrhage, and more.

How does working within the University of California (UC) system allow for unique study opportunities such as system-wide registries? What are some examples of ongoing registries and the questions they aim to address?

The UC system allows for collaborative research opportunities throughout its campuses. I have had the privilege of creating the retrospective UC MAP registry with the five UC hospitals (UCSF, UCI, UCSD, UCLA, and UCD) to evaluate the outcomes of morbidly adherent placenta treated with various adjunctive therapies. Other collaborations exist, such as the UC Fetal Consortium, which has produced excellent research regarding different fetal anomalies and therapies.

The system allows for a simplified and more efficient institutional review board process, where the remaining UC hospitals rely on the principal site's institutional review board. Data sharing and monitoring are also more efficient than working with other individual centers. In addition, it is a great opportunity to collaborate with colleagues who practice interventional radiology (IR) in close proximity, allowing for in-person meetings.

What are the most important questions you ask in determining candidacy for uterine fibroid embolization?

One of the most important components of our practice at UC San Francisco is our robust ambulatory clinic. Every patient who is referred for treatment of symptomatic uterine fibroids starts with a clinic visit. During the visit, I ask about the patient's symptoms, specifically targeting menstrual bleeding (duration, frequency, amount, changes in recent years), pain/pressure, pelvic bulk, urinary or bowel symptoms, infertility, and other symptoms that may be attributed to uterine fibroids. I then evaluate the imaging (contrast-enhanced MRI) and confirm the presence of uterine fibroids, as opposed to other disease processes that may present with similar symptoms, and I then make sure that the fibroid location explains the patient's symptoms.

At this point, I will question the patient about her desire for future fertility. I also ask about her support system and make sure someone will be with her to help during the recovery period immediately after hospital discharge. I review the risks and benefits of the procedure and also discuss the alternatives, which include surgery or pharmacologic treatment for the most part. Once I have thoroughly reviewed the risks, benefits, alternatives, outcomes, expected complications, and adverse events of the procedure, I then ask if she would like to pursue embolization. In some cases, patients want to think more about the procedure and consult their friends and families, in which case they can contact me once they have decided to move forward with embolization.

What advice would you give for optimizing the patient consent process and helping patients fully understand their condition, therapeutic options, and risks involved?

Performing proper informed consent is one of the most important parts of our job. I prefer to consent patients in a private area to respect their privacy. It's important for the informed consent to be performed in the language that the patient is most comfortable with. There are very efficient web-based language platforms that allow for remote access to multiple translators. Some patients may want their family or loved ones to be present. I always confirm that the patient wishes for the friends and family to be there before I start the consent process. Some of the interventional

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procedures are extremely complicated and cannot be explained to patients using medical jargon. As a result, I find myself drawing figures or explaining the steps in layman's terms. Every consent process must outline the risks, benefits, and alternatives to the procedure. I then ask if the patient and the family/friends have any questions and make sure I answer them. Once the consent is signed, I let patients know that they can ask additional questions during the procedure and that we can stop at any time if they are unwilling to continue.

Over the past few years, you have presented various data showing that women are underrepresented in peripheral artery disease (PAD) trials. How would you briefly summarize the degree to which women are represented in current data sets?

The incidence of PAD is similar in men and women—some would argue that it's higher in men and others will state that it's higher in women. But, as women outlive men, the burden of PAD is higher in the aging female population. Unfortunately, PAD is underdiagnosed in women, and women make up a small percentage of the cohort in PAD trials. Most PAD trials are composed of approximately 25% to 30% women. Multiple reasons exist to explain this gap, such as lack of awareness of the prevalence of PAD in women, the risk factors and presentation of PAD can differ in women compared with men, and the outcomes of interventions performed for PAD can differ between men and women.

How have trialists and industry responded to the calls to action that conclude your talks and published articles?

I believe that industry is more aware of the lack of women in their clinical trials. However, industry is our partner, and as such, we have to help recruit more women in these clinical trials. So, the "call to action" is not only directed to industry; it also targets the principal investigators, research coordinators, and clinicians involved in the trials, as well as the government bodies approving funding and/or the trials. We have to collaborate with each other to advocate for women. There are many women out there with PAD, and they need to be diagnosed, enrolled in clinical trials, and followed for long-term outcomes. However, we also need to invest in having more women serve as principal investigators and recruit more women into such trials.

With the staggering statistics of maternal morbidity in the United States, how can we increase awareness among the obstetrics (OB) community in terms of the options that IR can provide in treating postpartum hemorrhage (PPH)? What would an optimal call scenario look like to be prepared to handle complex cases?

I view PPH in a similar fashion to trauma. These healthy women can maintain their hemodynamics for a long time despite massive amounts of blood loss, but then they crash and it's a rapid demise. The most important component of improving outcomes is efficient communication. I favor early communication with the OB team. There is evidence that the failure rate of embolization that leads to hysterectomy in the setting of PPH is in patients who have lost extensive blood and required a lot of transfusions. One thing that happens routinely is the delay in calling IR, particularly during off hours when a team composed of a nurse, IR tech, and physician must be mobilized. So, I advocate for early communication. As soon as the OBs realize that their routine steps in minimizing blood loss are failing, they need to call IR. If we can get to the patient in time, we have an extremely high rate of clinical success and preventing a hysterectomy. Just like most things in life, timing is everything!

What are your tips for expeditious but effective imaging in the emergent setting of PPH?

I don't think preprocedural imaging is necessary for PPH because it's diagnosed clinically. In terms of the actual IR procedure, I always begin with an aortogram. This tells me so much about what is going on in the patient—from vascular spasm at the access site, to extravasation, to involvement of the ovarian arteries. If I see active extravasation, I quickly move to selectively catheterize the culprit vessel and embolize it. If I don't see extravasation (which is the most likely case), then I perform bilateral uterine embolization with gelatin sponge to the point of stasis. I ensure that any form of uterine packing or balloon is removed before angiography, as these materials can tamponade the bleeding source, resulting in a false-negative angiogram.

In secondary PPH, imaging is even more important. I routinely begin with a pelvic ultrasound and also recommend an MRI of the pelvis to determine the cause of the bleeding, such as pseudoaneurysm or uterine arteriovenous fistula. Less likely other causes, such as retained products of conception, may mimic similar

clinical scenarios, but the laboratory values and imaging will differ.

What is your favorite book of all time and why?

Hands down: Jane Austen's *Pride and Prejudice*! I love this book. It's witty and at times hilarious. It demonstrates how our initial perception of each other can be so wrong and how life manages to educate us through our different journeys. I love Elizabeth's character. I admire her strong will, her sarcasm, and her love for her family. She teaches us to be careful of prejudice and harsh judgment and also that not everything you hear about someone may be true! And how can anyone not adore Darcy? He's the tall, dark, handsome, wealthy gentleman who saves the day and apologizes for being a proud and mistaken man! But what I love most about the book is its opening line: "It's a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of a wife." I feel we have come a long way since those times, but perhaps some things never change! ■

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