Host: Welcome to the SEE podcast, presented by the American Society of Anesthesiologists. SEE: translating emerging anesthesia knowledge for your daily practice.

Robert L. Hsiung, MD: Hi. My name is Robert Hsiung. I’m an editor for the SEE program and also an anesthesiologist at Virginia Mason Medical Center in Seattle, Washington. I will be providing the voice for some of the upcoming podcasts, and hope this can be of benefit to those listening. And of course, if the content sounds interesting, I do recommend that you go ahead and purchase the SEE product on the ASA website. I truly believe it is one of the best values in continuing education for the cost, time and content. It is the best journal club out there for anesthesiologists, because there is no way we can cover so many journals in our busy lives.

I know that most podcasts are pretty boring, so I’ll try to make it somewhat entertaining with perhaps a personal opinion here or there, which may not be representative of the entire editorial board at SEE, nor of the ASA.

The format will be as follows. I will read off actual questions from our SEE booklet. I’ll read the question twice and go over the four choices. I’ll pause for a few seconds and then go over the correct answer, followed by the discussion. Next, I will summarize the written discussion and go over what
made this particular article unique. And finally, I will conclude with an interesting factoid about SEE.

Today’s question comes from SEE 2017, Volume 33A, question number 25. The question reads, “Based on a review of medical records at a large academic hospital, which of the following best describes the risk of a major vascular or neurological complications arising from perioperative arterial cannulation?”

I’ll repeat. “Based on a review of medical records at a large academic hospital, which of the following best describes the risk of major neurovascular or neurological complications arising from perioperative arterial cannulation?”

So, the choices are, “A,” one in 100 patients; “B,” one in 500 patients; “C,” one in 1,000 patients; or “D,” one in 3,000 patients. I’ll give you a few seconds to think about this.

The correct answer is “D,” one in 3,000 patients where the perioperative arterial line would be at risk of a major vascular or neurologic complication.

The question comes from a published article from ANESTHESIOLOGY in 2016 titled “Surgical and Patient Risk Factors for Severe Arterial Line Complications in Adults.” We as anesthesiologists place the most amount of arterial lines in the hospital, and we know that there are complications when we place them. We know why we place them. We just don’t know how often these complications occur, whether they’re embolic, ischemic, permanent, transient or line infections.

So, here we have a retrospective review of the medical records from the Mayo Clinic from 2006 to 2012, where they looked at all these thousands and
thousands of arterial line placements and looked at all the complications that have happened with these patients. After removing all the arterial cannulations in pediatric patients, those arterial lines placed not in the operating rooms, and those patients who didn’t want their records to be included in the analysis, the authors screened over 62,000 arterial lines and looked for subsequent evidence of vascular or neurosurgical consultation, documented infection or unplanned return to surgery.

After shifting through all the data, they found 2,609 medical records that were then reviewed by a research team, confirming only 21 major vascular or neurologic complications that is to – roughly attributable to arterial cannulation, meaning a rate of 3.4 per 10,000 lines, or 3.6 per 10,000 patients. So, this comes out to about one in 3,000 lines or patients.

As you would expect, the majority of catheters were placed at the radial site, 8% at the femoral site, and the rest were at the brachial, ulnar or other sites. Some patients had multiple arterial lines. The risk of complications was lower at the radial site with a 20-gauge catheter, which is our most common catheter in our radial arterial line kits, versus those of the larger-gauge 18-gauge or 5-French catheters often used at the femoral sites. In this large review, the numbers were insufficient to identify many patient risk factors. Complications were about twice as frequent in women, with a p-value of 0.046, something that has been previously reported. Also surprising a little bit more is the use of clopidogrel, a.k.a. Plavix, which had a p-value of 0.033, and we don’t know why that is at this current time.

Now, I know that we are very interested in the best evidence or evidence-based medicine, but perhaps an anecdotal finding of this review is that many of the identified issues resolved with the simple removal of the catheter and watchful waiting. Only 11 of the 21 patients required active treatment. This
is consistent with a 2006 study in the ICU that showed radial arterial flow was routinely compromised for a few days immediately after cannulation but was completely restored 30 days later. The authors of the study basically suggested that arterial line cannulation is pretty safe.

I did a quick search on the Internet to find out what this one in 3,000 really means to the everyday person, and from the *National Geographic* website when they published the article on the odds of winning the Mega Millions, they claimed that the odds of getting struck by lightning in your lifetime is about one in 3,000. They also said that the odds of being injured by a toilet this year is one in 10,000.

Today’s interesting factoid about SEE is that anyone can be a writer for SEE. We have both academic as well as private practice anesthesiologists who contribute to the SEE program as a writer or editor. Our editors screen articles and then send them out. You read them, double-check if it’s worthy, and then create a question with a summary discussion. You have an editor assigned to you as a mentor to help with this process, and after a while you do get better at reading journal articles.

After writing a set number of questions, you have a complimentary subscription to SEE as well as other CME credits. Also, you are invited to our editorial meetings where you can witness first-hand the process of how SEE is created. If you’re interested, please email see@asahq.org.

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Host: Thank you for listening to the SEE podcast, presented by the American Society of Anesthesiologists. For more information on SEE and other educational products, please visit Shop ASA.
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