



American Society of
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Central Line

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VOICE OVER:

Welcome to ASA's Central Line, the official podcast series of the American Society of Anesthesiologists, edited by Dr. Adam Striker.

DR. ADAM STRIKER (HOST):

Welcome back to Central Line. I'm Dr. Adam Striker, your host and editor. Our guest today is Dr. Girish Joshi, Professor of Anesthesiology and Pain Management at University of Texas Southwestern Medical Center and guest editor for June's ASA Monitor. Dr. Joshi is here to talk to us about ambulatory anesthesia and non-operating room anesthesia, or NORA for short, which is expanding quickly and it's a timely and important topic. Dr. Joshi, we're glad you joined us.

DR. GIRISH JOSHI:

Thank you for having me. It's an honor.

DR. STRIKER:

Absolutely. Well, before we jump into the topic, if you don't mind just telling our listeners a little bit about yourself and how you're connected to the topic.

DR. JOSHI:

I am the past present of the Society for Ambulatory Anesthesia, which is SAMBA, and the past present of the Society of Anesthesia and Sleep Medicine, SASN, as well as past president of the Texas Society of and. I'm also the chair of SAMBA's guidelines committee and actively involved with ASA's committee related to ambulatory anesthesia. And I'm currently the Vice Chair of ASA's Committee on Practice Parameters.

Well, with regards to ambulatory anesthesia, when it was in its infancy in the early 1990s, I decided to take interest in ambulatory anesthesia because it was a raw area of

anesthesia, and I believed that it would facilitate my interest of becoming a perioperative physician. Also, around that time, numerous new drugs and devices were being introduced. For example, drugs such as chromium, fentanyl and devices such as BIS monitoring. And the ambulatory population was the best population to study these drugs and devices.

So those were the two factors that got me involved in ambulatory anesthesia.

DR. STRIKER:

Excellent. Well, let's start off the discussion by maybe explaining the differences between ambulatory anesthesia and non operating room anesthesia.

DR. JOSHI:

So the ambulatory setting typically includes several different places where the surgery can be done. For example, freestanding ambulatory surgery center, or ASCs, are typically centers which are independently owned, where the patient comes in on the day of surgery and is discharged the same day. There are short stay facilities that have the abilities to have the patient stay for 23 hours. Also, the hospital based ambulatory centers, which are affiliated with hospitals that either connected to the hospitals or in the premises of the hospitals, and they have ability to perform more extensive surgical procedures. And finally, office-based surgery. Typically, the surgical procedures are performed in surgeons' offices, and these are plastic surgery type of procedures.

In contrast, NORA, or non operating room anesthesia can be performed either in a hospital or in the ambulatory setting. Notably in the hospital setting, not all patients undergoing, nor are outpatients. Nevertheless, the overall approach to patient care and patient safety are similar for ambulatory surgery. And NORA. And therefore, these two types of settings are put together for patient care and patient safety.

DR. STRIKER:

I think most of our listeners probably know that ambulatory anesthesia is expanding and certainly surgical procedures are migrating from the inpatient to the outpatient settings. Why don't we talk a little bit about what's contributing to this shift and then whether it's something that we need to be concerned with or something that we should be championing.

DR. JOSHI:

So there are several factors that have resulted in growth of ambulatory surgery. It starts with significant improvement in surgical techniques as well as anesthesia techniques. For example, for surgery, minimally invasive approaches like laparoscopy and other minimally invasive approaches have now become standard of care. And we know that with these minimally invasive approaches, there is less surgical stress response, less post-operative pain, early recovery. Similarly, with regards to anesthesia, we now have shorter acting anesthetic and analgesic drugs, which have also contributed to the expansion of ambulatory surgery. Furthermore, the migration to ambulatory surgery is facilitated by the implementation of these principles of enhanced recovery after surgery or ERAS, which are multidisciplinary multimodal interventions that have been shown to reduce postoperative complications and hospital interstate.

Just to give you an example, major joint surgery such as total knee replacement and hip replacement, which typically had the patients stay in the hospital for about four days. The US standard now is two days and in fact several ambulatory surgery centers are now performing these procedures on outpatient basis.

All of this has resulted because our analgesic techniques have improved. Pain management being now done with ultrasound guided blocks. Plus the approaches, surgical approaches have allowed the patient to ambulate early as well as be discharged on the same day.

The other factor that has caused the expansion of ambulatory surgery is the introduction of value-based payment programs such as bundled programs, bundled payments. And obviously we know that ambulatory setting, particularly surgical procedure in the ASC, provides greater value that is reduced cost with improved outcomes. Numerous studies have shown that surgical procedures performed in an ASC are associated not only with lower cost but also improved outcomes with respect to surgical procedures performed in a hospital setting.

In addition, there is an emphasis of patient centered care now which has contributed to ambulatory care. That is because ambulatory surgery centers are smaller that typically located closer to where the patients live. So they are more convenient, more efficient and more personable. So that has led to more patient satisfaction. And that is another reason why ambulatory surgery is expanding.

Also, COVI has made a huge change. Because of COVID, the hospital beds were limited and that resulted in surgical procedures being moved from the hospitals to the ASCs.

I believe actually the hospitals are intimidating for our patients. The hospital environment is associated with sleep disturbances, immobilization, more fasting, nosocomial infections, medication errors and therefore the ambulatory setting has now gained traction. And all these reasons are the factors that have contributed to expansion of ambulatory surgery and thus ambulatory anesthesia.

DR. STRIKER:

Well, there's certainly a lot to touch on with those factors, but let's focus in just a little bit on how it impacts the anesthesiologists. As you pointed out, especially over the last couple of years, even more medically complex patients are being shifted towards the outpatient setting for surgical procedures. And what do we as anesthesiologists need to be thinking about when it comes to safety with these patients?

DR. JOSHI:

So I want to address one of the questions you posed about how should we be concerned or celebrate? And that goes hand in hand with your current question. And I believe we should really celebrate this expansion of ambulatory surgery and thus ambulatory anesthesia, because it gives us as anesthesiologists a greater role in the perioperative care of ambulatory surgery patients. The expansion basically allows us to be the main so-called internists of the patients. We do the preoperative evaluation and optimization of these patients that are coming for ambulatory surgery, though it is also being done in a hospital setting. But in the ambulatory setting, there's a one on one discussion with the surgeons, the patients. So there's more multidisciplinary approach. And there the anesthesiologist can really show the abilities of being a periodic physician or the internist. Our knowledge about pre-op optimization can be really shown in this setting.

The other factor where we can really play a major role is patient selection. It is well known that patient selection is the most important aspect of safety for ambulatory surgery, and we are the ones who would basically look at patient optimization and select the right patient for the right setting. And what I mean by that is, as I mentioned, there are different settings within the ambulatory surgery setting. That means a freestanding ASC or the HOPD. Each of these settings has their benefits as well as limitations. If we have a patient who is more complex with regards to their comorbidities, is undergoing more invasive surgical procedure, an HOPD setting may be more safer for the patient because there are more hands available, there's more ancillary support available for HOPD in contrast [to freestanding ACS]. So we would be the ones who would be the gatekeepers, and we can play a major role with that regard.

I do want to emphasize, though, in recent days or recent years, freestanding ASCs have also the abilities and the equipment to perform extensive surgical procedures on complex patients. And I believe that has been because of anesthesiologists who have insisted on having appropriate personnel and equipment for the appropriate patients. And that is because, in the US, majority of the medical directors of ASC are anesthesiologists. So in the US there are approximately 5500 freestanding ASCs. And majority of these are basically run or the medical directors are anesthesiologists. So we take care of the patients pre-op evaluation, optimization, patient selection. The area where we need to expand and we can expand is the post-operative setting. Obviously we take care of our patients interoperatively such that our patients are awake and alert, ready to be discharged from in a very short period of time. So the efficiency of ASC is improved. The area which we are not as much involved and can be involved and that's why I think this is an opportunity is post-operative care. Since the introduction of enhanced recovery after surgery protocols or ARAS programs. It's a multidisciplinary approach where procedure specific and patient's specific protocols are developed. We can develop these protocols in collaboration with the surgeons and and nurses and post-op care facilities, and we can then take charge of post-op care of our patients as well. So I think we have enormous amount of opportunity to show that we are perioperative physicians and we are capable of taking patient care from the start of the surgery to the return to normal living function.

DR. STRIKER:

Well, certainly I totally agree with the concept of the anesthesiologist as the perioperative physician and demonstrating our expertise throughout that perioperative process. What is it about the hospital that you feel that the anesthesiologist does not get as much one on one time or doesn't have as much influence in the care of patients throughout their perioperative process? It seems like all those aspects to the care we deliver can be accomplished in the hospital setting as well. So I'm curious to just hear, why do you feel that it's it's less optimal there?

DR. JOSHI:

Yeah, that's a great question, in fact. So the reason I believe that the ambulatory setting is more amenable for anesthesiologists to look after pre-op, interop and post-op as well as post-discharge care with regards to ambulatory and in contrast in the hospital setting is not as much is because in the hospital setting, typically the post-op care, while the patient is being hospitalized, is under the surgeon and the surgeon is responsible for patient care, as well as if a patient wants to discharge from the hospital, the surgeons are the ones who are responsible. That would be the case for ASC as well. But I think unlike the hospital in the ambulatory surgery surgery setting, we can work with the

surgeons. Now there is bundled payments and so we can work with the surgeons and say, look, we are we can take that offload that responsibility from you and take care of the patients. All the surgeon needs to do is take care of the surgical aspect of the patient care and the rest, whether it be medical aspect, if a patient has some medical complication or post discharge complications such as pain, we are actually more capable of taking care of those aspects of the patient after discharge. And that's why I believe that it is more realistic in the ambulatory setting for anesthesiologists to take over those responsibilities as compared to the hospital setting.

DR. STRIKER:

You feel that the ambulatory surgery center offers the ability for the anesthesiologists to perform all those duties? Or do you feel that it just makes it easier for the anesthesiologist to perform all those duties as opposed to the regular hospital?

DR. JOSHI:

So it's not that the hospital anesthesiologists are not capable or are not able to do all the post-op care or perform the post-op care in hospitalized patients. It is that it's in the ambulatory setting. It's much more easier. Also, we must accept the fact that the patients undergoing ambulatory surgery are relatively easier to manage as compared to hospitalized patients. The fact that they need hospitalization, that means they have complex issues or can have complex issues after surgery. So it becomes a bit more challenging for anesthesiologists and probably even more expensive for us to manage or take over the care in the hospitalized patient as compared to taking over the care in ambulatory surgery setting.

DR. STRIKER:

Gotcha. Well, let's shift gears just a little bit and talk about how the patients recover afterward. You already talked about how anesthesiologists can influence post-operative care, especially in the ambulatory surgical setting. How does the shift present itself from the patient's perspective in that it's now no longer in the hospital but at the home? So some of the responsibilities that would be normally assigned to health care workers to help with recovery or post-op care are now delegated to family and friends. Just talk a little bit about that and how it changes how we as anesthesiologists think about post-operative care.

DR. JOSHI:

Yeah, so I agree. I mean, it's clear that ambulatory surgery puts burden on the patient and their family for their post-op care. And unfortunately, currently, that those responsibilities do take patients and their family and basically their time and effort. Therefore, I believe that we really need to educate the patients as well as their caregivers and clearly communicate with them regarding the post-op care, the responsibilities, the patient and the family members or the caregivers will have. This allows the patients to really develop realistic expectations, clarifies the patients and their family's responsibilities. So they certainly don't get into this area where they are not capable of managing post-op problems. Because if the patients are not expecting this, it could be a factor that would lead to more post discharge hospital admissions post-discharge ER visits. So the patient education allows the patient to distinguish between symptoms that are typical of recovery. For example, the patient would be educated that the pain levels would decrease over time. And we now have some idea as to the trajectory of pain after surgery, the procedure specific pain trajectories, so we can educate about them and then say that if the pain worsens, then obviously this is concerning. And those are the factors where you really should call somebody or visit the ER. This is just one example of many other factors. Same thing can be done with educating the patient about surgical recovery.

So there is no question that the burden for the patient and the family is increased, but the benefits are also good. As I mentioned, patients are recovering in their home setting, which is familiar for them. They can basically be with their friends and family and sleep well. In the hospital, sleep disturbances are well known. Nurses come at 6:00 in the morning or 5:00 sometimes in the morning to wake up to do these vital signs. There's noise which keeps the patient awake. So that is the give and take. The costs with ASCs are less, so the patient will benefit with lower cost. So there are these give and takes, but the patient really needs to understand this ahead of time and that patient education is critical and that patient education and engagement can be done at multiple stages, starting from the surgeon's office. When the surgeon tells the patient that need surgery, scheduling services, pre operating screening with anesthesiology, etc. So there are also these decision aids which can be developed, which are either printed brochures or videos which would again explain to patient as to what their responsibilities are and particularly postoperatively, what should they do at different time points or different factors that might occur. We as anesthesiologists, can play a major role in developing these decision making aids and as well as implementing them throughout the perioperative process.

DR. STRIKER:

Well, I want to continue talking about where this is all headed and some of the technological advances and changes we're going to see in upcoming years. Can you stay with me for just a short patient safety break?

DR. JOSHI:

Sure.

DR. KEITH RUSKIN:

Hi, this is Dr. Keith Ruskin with the ASA Patient Safety Editorial Board. Mistakes, calculating drug doses can be harmful. Smart intravenous infusion pumps reduce the risk of medical errors. But the technology hasn't eliminated medication errors. Unlabeled medications, unauthorized medications, incorrect rate or dose, and failure to use the Smart Pump library still occur. Prevent an incorrectly programmed pump or ventilator by evaluating multiple distinct data points to ensure that the programming is correct. When programming an infusion pump, check the weight based programmed infusion rate and compare that to the rate in milliliters per minute or hour. An infusion that will take significantly less or more time than expected to complete may be a warning that the pump has been incorrectly programmed. This extra step can prevent large errors and help keep your patients safe.

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For more information on patient safety visit asahq.org/patientsafety22.

DR. STRIKER:

Alright. We're back with Dr. Joshi talking about ambulatory anesthesia, non operating room anesthesia. Before I get into technological advances, I wanted to get your thoughts, Dr. Joshi, on this little excerpt from the there was an Office of Inspector General's report from 2019 about Medicare's oversight of ambulatory surgery centers. And it's a comprehensive report, but there is a statement, and I want to just get your thoughts on this. It says, "Although states receive complaints about relatively few ASCs each year, fewer than 4%, states categorized a rising proportion of those complaints is serious. In other words, immediate jeopardy or non immediate jeopardy high." Are there concerns we need to have from a safety standpoint with regard to ambulatory surgery centers as opposed to main hospitals and genuinely just curious to get your thoughts on that?

DR. JOSHI:

Yes, there are concerns and those concerns are the complications that are mentioned in that report and other reports are basically related to inappropriate patient selection for the ambulatory setting. And that's where I was alluding to earlier on, that patient selection is the most important aspect for safety in ambulatory settings and therefore we play a major role in that. So for example, if there is a patient with some significant co-morbidities, let's give example a patient with a complex ICD or complex cardiac implantable electronic device, and that patient is scheduled for some sort of major surgical procedure. When I say major, I mean total knee replacement or nowadays they're doing thyroidectomy in the ASCs or spine surgery in the ASCs. So thyroidectomy and spine surgeries, particularly if there are cervical spine, the surgical sites are closer to the cardiac implantable device or ICD. That patient may not be the right patient for the ASC, because if something goes wrong, and the chances are that things might go wrong because of the proximity of the device and the surgical procedure, that would cause problems. So that particular patient actually would be the right patient for HOPD, even if the plan is to send the patient home. That patient should have the surgical procedure done in a hospital setting and then sent home rather than the ASC setting. And why? Because in the hospital setting we have more experts. Things go wrong. We have ancillary support. So that's where things can go wrong. And if we are cognizant of this fact and we look at patient selection rather than just looking at doing the surgery because it's more cost effective or a lot of surgery centers are owned by surgeons, those can be a reason for conflict. So eliminating all those aspects, ambulatory surgeries, anesthesia is safe. I cannot emphasize enough, though, as I mentioned, patient selection is the key.

DR. STRIKER:

What kind of technological advances do you expect to have on ambulatory anesthesia moving forward?

DR. JOSHI:

The advances are both surgical related as well as post-op care related. As far as anesthesia is concerned, we currently have the right drugs and the devices that would allow us to have a patient awake and alert, breathing spontaneously, literally immediately at the end of surgical procedure. That means patients have a clear-headed recovery within minutes after turning off the anesthesia. So anesthesia per se wise I don't foresee many technological advances.

But what is going to facilitate the recovery and facilitate our ability to have the patient recover faster, are the technological advances within surgical arena, such as new

robotics, which have augmented reality, mixed reality, and the use of AI with novel imaging and the innovative navigation systems. All of these reduce the duration of the procedure as well as reduce surgical stress response. As we all know with regards to NORA, the technological advances, for, just to give an example, with vascular surgery, nobody does triplet repair open. It's all done through intravascular approach. And similarly, there are no neurosurgical procedures which are now done intravascular or in IR setting. So these are the technological advances that will facilitate a recovery.

What we as anesthesiologists should be cognizant of is how can we then work with these advances and then have the neural procedures done, say, in IR and then work with the procedurist to have the patient go through the procedure safely, whether it be triple A's repair, trans vascular, or whether it be some neurological procedure such as embolization of an aneurysm.

The other aspect of technological advance are the post-operative care of our patients, which I think is going to increase the safety of the patients as well as improve the patient satisfaction. And that is the digitally delivered surveys and care navigation tools that enhance patient reported outcomes, the wearable devices and sensors that allow us to assess patient's physical fitness, and now we have ability to measure patient's vital signs at home. And there are these smartphone based digital apps which basically would be combined together so you have an accelerometer which gives the patient's ambulation, GPS, the call text logs. All these dimensional digital aspects can be put together to create what I call as a phenotyping of the patient's recovery. And this can be done in real time. And there are these AI programs that have been looked at which would then trigger some sort of patient care necessity, and those will improve patient recovery, as well as if there are any concerns of complications occurring after discharge. They can be diagnosed fairly early because one of the factors of concern is the patient's discharged home in a setting where they cannot be monitored. And by the time a complication is is diagnosed, it could be too late, leading to all sorts of problems.

So I believe that these platforms are already being looked at. For example, there's digital platform, which is created by Sloan-Kettering Cancer Center in New York, and there's one created by Brigham and Women's Hospital in Boston, the College of Surgeons is in process of looking at this. So a lot of good things are happening which will improve patient safety and thus will allow us to expand ambulatory surgery as well as improve patient safety.

DR. STRIKER:

Human changes as well, as the proportion of anesthetic procedures goes up in freestanding centers. Do our communication processes and systems need to evolve to keep pace?

DR. JOSHI:

Absolutely, yes. So again, all these technological platforms not only allow us to communicate in real time with the patient, but also in real time with the caregivers, whether it be surgeons, nurses, physical therapists at home. So there'll be more human involvement, which I think obviously should still remain the basic of patient care. The technological aspects are just supportive of human interaction. I believe that this whole approach and it started with enhanced recovery after surgery protocols, which are standard of care. Now introduction of those protocols, and I've been involved with this for last 20 years now and I've been implementing them in my hospital, that it allows us to be discussing patient care with our surgeons, the nurses on the floor, multidisciplinary approach. The communication has increased, so it also improves human interaction.

DR. STRIKER:

Well, let's wrap up by talking about this, the current issue of the Monitor and what you're excited about. Let's if you don't mind, Dr. Joshi, give us your favorite takeaways.

DR. JOSHI:

So the June issue of the Monitor presents various topics that discuss the current controversies and concerns related to ambulatory anesthesia as well as NORA. What I discussed very briefly is discussed at great length in the various topics. We didn't even talk about the pediatric patient population, patient selection, pain management details, post-op complications. So the topics that we have selected for this June issue are all clinically relevant for practitioners, and our hope is to improve patient care and safety through expansion of knowledge and the latest information.

DR. STRIKER:

Thank you, Dr. Joshi, for joining us. I really appreciate all your time.

DR. JOSHI:

Thank you. It was a great chatting with you.

DR. STRIKER:

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Remember to visit asamonitor.org to read more about ambulatory anesthesia and to check out Dr. Joshi's guest editorial. And please join us again next time on Central Line. Until then.

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