



# GET TO KNOW D. A. SURGICAL

Our founder, R. Dan Allen, has been passionate about patient positioning for over 37 years. He is the retired founder of Allen Medical Systems as well as the inventor of the Allen® Stirrup, TrenGuard™ Trendelenburg Patient Restraint, ArmGuard™ Patient Arm Protector and many other solutions to contemporary patient positioning problems.

Many of his devices are the standard of care in hospitals around the world. He is a published author on the topic of patient positioning and has been an invited speaker on the subject of patient positioning in the operating room at an AORN Congress and a number of local and regional AORN chapter meetings. His talk on Trendelenburg Positioning for Robotic Surgery was presented as a CE webinar and as a CE presentation at the O. R. Managers Conference in 2015 and 2016.

#### WHY DOES D. A. SURGICAL EXIST?

A number of years ago Dan was invited to attend several early robotic-assisted procedures. On several occasions, upon removal of the drapes he observed that the patient's position had changed, sliding towards the head of the table. That patient movement presented in the form of reduced leg flexion in the stirrups. When he asked how the robot compensated for the sliding he was surprised to learn that the robot was not programmed to detect patient sliding. It occurred to him that if the robot did not compensate for patient sliding, there must be a substantial risk for injury at the

laparoscopic entry sites. Further research into gynecology literature confirmed his concerns. Upon learning that there were no guidelines or standards of care for the unique patient positioning requirements of robotic surgery, he envisioned several devices that could solve unmet needs for Trendelenburg positioning in robotic surgery. Dan's passion for developing patient positioning solutions got the best of him and he came out of retirement "one last time." He spent the past five years focused on developing devices that solve the unique patient positioning requirements that have presented themselves with the introduction of robotic-assisted surgery.

His efforts led to the founding of D. A. Surgical and the sourcing and development of a comprehensive family of robotic surgery positioning devices that accommodate both high-BMI and smaller patients. Each device can be used separately or may be integrated into a complete robotic surgery positioning system. Components include: PatientGuard™ Robot Stirrups, TrenGuard™ Trendelenburg Patient Restraint, ArmGuard™ Arm Protector, FaceGuard™ Table Mounted Instrument Tray and face protector, PatientGuard™ High BMI table



R. Dan Allen  
D. A. Surgical Founder

surfaces and PatientGuard™ High BMI Stirrup Width Extensions.

The versatility of these devices also allow them to be used to enhance the positioning of patients undergoing contemporary minimally invasive surgical procedures.

#### HOW IS POSITIONING FOR ROBOTIC SURGERY DIFFERENT?

Creating a safe environment for patients in the Trendelenburg position has always been challenging. Robotic surgery technology created patient safety risks that never presented with conventional minimally invasive surgery. These risks are exclusive to robotic surgery and require complete patient immobility to avoid patient injury. Even minimal patient sliding can result in unnecessary patient injury. The literature makes clear that patient sliding on the table



D. A. Surgical's ArmGuard™ Patient Arm Protector secures and protects arms without hindering clinical access.

during robotic surgery should be considered a "never event." Dr. Ali Ghomi articulated this problem in his paper "Robotics in Practice: New angles on Safer Positioning" published in *Contemporary OBGYN* in October, 2012. There, he states "Patient slippage during the use of fixed robotic trocars creates a serious potential for patient risk." The surgical robot is not programmed to detect and then compensate for the change in patient position caused when the patient slides on the table during surgery, often resulting in the patient hanging on the trocars. The risks of this positioning failure according to Dr. Ghomi are "incisional tear, post-operative hernia formation, and increased postoperative pain secondary to overstretching of the anterior abdominal wall."

#### WHAT GUIDELINES CAN PEOPLE USE FOR ROBOTIC PATIENT POSITIONING?

Clinicians have expressed frustration at the lack of formal guidelines in this area. There is little information beyond

what not to do, and some descriptions from robotics early-adopters describe how off-label use of miscellaneous materials helped them restrain patients. To that end we offer a one-hour CE webinar on safe Trendelenburg positioning for presentation at local and regional AORN chapter meetings. More information on our CE program as well as a positioning webinar will soon be available on our website.

#### WHAT ARE THE DANGERS OF USING MISCELLANEOUS MATERIALS TO POSITION PATIENTS IN TRENDELENBURG?

When creating "homemade" restraint devices, like the use of tape and foam or tape and a gel pad, clinicians attempt to stabilize patients to the table without interacting with the brachial plexus. In doing so, they are, in fact, using products in an "off label" manner and the literature actually describes patient sliding as the result of using miscellaneous materials. The off-label use of these materials for Trendelenburg positioning supersedes the most basic

FDA guidelines: there is no testing, no analysis, no methodology and certainly no quality control. If, in an attempt to keep a patient from sliding on an OR table, clinicians utilize materials in an unintended manner, each member of the surgical team and the institution are fully liable for any post-operative positioning related patient discomfort or injury. One robotic coordinator recently summed it up best, "We spent over a million dollars on a robot and now tape our patients to the table. ...it's ridiculous to do this when we could have a device specifically designed for our needs in robotic surgery."

#### WHY DO CLINICIANS PREFER YOUR DEVICES FOR ROBOTIC SURGERY?

TrenGuard™ Trendelenburg Patient Restraint developed a stellar reputation for product efficacy, patient safety and stability, proved efficiencies, and ease of use. Clinicians are often introduced to our devices by our network of representatives, at clinical congresses, and by way of personal references from respected

colleagues. New customers contact us out of a need to solve robotic positioning issues and find our product range to be the right answer. To that end, our products are being recognized on a global basis as meeting the otherwise-unfilled clinical requirements for positioning patients during robotic and conventional minimally invasive surgery.

In 2015, our Trendelenburg Positioning System for Robotic Surgery earned the first place award for Excellence in *Surgical Products* and was presented to us by *Surgical Products* magazine in the category of Surgical Tables, Positioning and Accessories.

**ARE THERE ANY CLINICAL ARTICLES OR CE PRESENTATIONS THAT DESCRIBE THE EFFICACY OF YOUR TRENGUARD TRENDELENBURG PATIENT RESTRAINT TECHNOLOGY?**

The presentation "Preventing Patient Sliding in Steep Trendelenburg" by Jan Barber, BSN, RN, may be the most recent published presentation describing the efficacy of a contemporary Trendelenburg restraint for robotic surgery. The poster was introduced in September, 2016 at the 29th Annual O. R. Managers Conference. The author describes the "speed bump" design of the TrenGuard™ Trendelenburg Patient Restraint and provides irrefutable evidence of its success using a sample of "503 laparoscopic and robotic gynecological cases performed over 10 months." She describes that a rigid patient support frame that accommodates a bolster designed to fit into the body concavity (curve of the neck) is connected directly to the table with clamps. "Patients were supported with 'speed bump' bolster positioners that engage a large muscle mass such as the trapezius muscle." In conjunction with the "speed bump bolster" there are non-load bearing lateral stabilizing pillows to control body mass shift during the transition between supine and Trendelenburg. "This security al-

lows patients to avoid injuries to skin, joints and nerves that are associated with sliding. Patients were inclined in steep Trendelenburg at a 30-40 degree angle. No patients slid on the OR bed. There have been no skin shearing or brachial plexus injuries."

**BESIDES TRENDELENBURG POSITIONING, WHAT'S ANOTHER CHALLENGE YOUR CUSTOMERS FACE?**

It seems that as early as 2009, the AORN felt that there were enough upper extremity injuries caused by tucking patient arms with the draw sheet that they published patient positioning guidelines that recommended that "patient arms should not be tucked in the supine position." unless absolutely necessary due to increased risk of injury to the patient. Very few nurses are aware of this guideline and even fewer follow it. There simply wasn't a viable alternative offered by the medical device industry until we developed and introduced our ArmGuard™ Patient Arm Protector. We are told that clinicians appreciate how ArmGuard™ provides safer arm restraint, allows immediate unobstructed access to ports and lines in an emergency, and has a low profile that is comfortable for the assistant and eliminates clashing with the robot arms.

In 2016 our ArmGuard™ Positioning System earned the first place award for Excellence in *Surgical Products* and was presented to us by *Surgical Products* magazine in the category of Surgical Tables, Positioning and Accessories.

**WHAT ADVANTAGES DO YOU OFFER IN COMPARISON WITH YOUR COMPETITION?**

As a small company we are able to respond quickly to the continuously changing surgical environment. A good example is how we quickly met the needs of a major university hospital in Michigan that requested that we create a specialized positioning system for infants and adolescents. Further, our products also translate well

**"This security allows patients to avoid injuries to skin, joints and nerves that are associated with sliding. Patients were inclined in steep Trendelenburg at a 30-40 degree angle. No patients slid on the OR bed. There have been no skin shearing or brachial plexus injuries."**

for use in the broader surgical arena, outside our area of focus in robotics and gyn, without any adjustments in the products or their uses.

**WHAT IS NEW AT D. A. SURGICAL?**

The most recent addition to our positioning accessory offering is an innovative booted surgical stirrup designed specifically for robotic surgery. The PatientGuard™ Robot Stirrup allows lower leg positioning which results in faster and easier docking and improved bedside access. Our stirrup is familiar to use and provides previously unavailable positional and ergonomic benefits for surgeons and clinicians when contrasted with their existing surgical leg holders.

**D. A. SURGICAL GOES GLOBAL!**

The company has developed relationships with OR table manufacturers of robot-specific surgical tables, and our growth into the global market includes the addition of experienced distributors throughout North America, Asia, the EU, Australia, the Pacific Rim, India and the Persian Gulf. **ORT**

Visit our website at [www.da-surgical.com](http://www.da-surgical.com) and watch us grow!

## Patient positioning solutions for MIS & robotic surgery.



### PatientGuard™ Robotic Positioning System

FEATURING

## TrenGuard™

Trendelenburg Patient Restraint



- **No shoulder braces.**  
Non-structural lateral stabilizing pillows control body mass shift.
- **No patient sliding.**  
Patented "Speed Bump" bolster is clinically proven to stop patient sliding.
- **Versatile.**  
System easily accommodates patients of all sizes, including high-BMI patients up to 550 lbs.
- **Designed for Quality Improvement.**  
TrenGuard™ Trendelenburg Restraint was developed to improve patient safety while increasing efficiency in the OR.

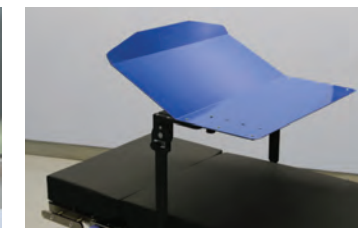
Visit our website for a link to the latest evidence based nursing practice and research poster: "Preventing Patient Sliding in Steep Trendelenburg"



**TrenGuard™**  
Trendelenburg Restraint



**ArmGuard™**  
Arm Protector



**FaceGuard™**  
Face Protector/ Tray



**PatientGuard™**  
Lateral Positioner