

Turning the tables and more:

What surgeons and anesthesiologists need in surgical tables

by Susan Cantrell, ELS

Technological advancements have moved the surgical table way beyond glorified gurney into a cross between the space shuttle and a carnival ride. The need for versatility, articulation, safety, efficiency, flexibility, and reliability are reflected in models that can literally move up, down, and all round, take pictures in the process, and all the while support the considerable weight of our "expanding" population.

Surgeons and anesthesiologists look for certain qualities in surgical tables. They need comfortable access to the incision site; accessibility to monitors; the capability of taking images of the patient during surgery without transporting him or her elsewhere; safe articulation (positioning) of the patient relevant; and accessories that make the table adaptable to different types of surgeries. Coincidentally, some of these qualities work toward cost saving as well as efficient turnover time, which can contribute to high output in the operating room. Everyone wants that.

"There is no one perfect table on the market. Different surgeries require different needs," said Kevin Gilroy, national sales director of Maquet Surgical Workplaces, [Getinge USA](#), Rochester, NY. In general, he said, surgical tables need to be reliable and durable long-term. "One of the best things to look for is a completely sealed column. That means no fluid, such as blood, water, saline, or Betadine, is allowed into the base of the table, which could cause damage that can affect reliability."

"Trends have been for greater weight capacity and modularity," said Gilroy. "Surgeons have specific needs according to their specialty. The type of surgery dictates which options and accessories are needed. One thing all surgeons look for is accessibility to their patient, through proper patient positioning."

Technology runs rampant these days, and the temptation may be to "trick out" the table with every conceivable whistle and bell. At [Skytron](#), Grand Rapids, MI, they like to keep the focus on patient care as well as technology. Steve Sterkenburg, new business development manager, told *Healthcare Purchasing News*: "Listening to users has given us the understanding that there is the risk of creating tables that are too complex. We believe very strongly that surgeons need to be able to practice medicine and take care of patients without having to be thrust in the role of engineer just to be able to use our product."

Randy Tomaszewski, vice president marketing, Skytron, added: "We focus on a small group of tables that do the very best job, rather than have one table that attempts to supply all needs but doesn't do any of them well. Imaging capability, simplicity of function, reliability, weight capacity, and the lack of need for many accessories are what we're all about. Want to keep it simple with a safe, strong, reliable, durable product that's also very flexible."

[STERIS Corporation](#) (Mentor, OH) also believes easy-to-use products are in demand in this era of complex technology. "Easy access and ease of use are key drivers we focus on," said Eric Wittine, senior product manager, general surgical tables. "The features of our CMAX table translate into an intuitive functionality that enables our customers optimal posturing and pressure-management capabilities, so that they can focus on achieving the best results for the patient."

Dick Betz, senior product manager, specialty surgical tables, STERIS, added: "We see a continued and increasing emphasis on patient and hospital personnel safety, enhanced versatility, and cost-effectiveness. Our focus is on the value, functionality, and performance that enable surgeons and case managers to achieve the best possible outcome for the patient. Technical support, service, and ongoing staff training are key elements in our business



TITAN surgical table by TRUMPF



ORBIT surgical table by TRUMPF

model. These are the building blocks of product integrity and add to the value of our products."

Wittine continued: "Key trends in the industry today are clinical effectiveness, patient safety, and enhanced productivity. Clearly, improved pressure management for the patient is an integral part of maximizing patient safety. Clinical effectiveness encompasses image guidance systems, minimally invasive surgery techniques, fluoroscopy, and surgeon access. Additionally, we see the emergence of integrated communications, control, and data management being more important in the near future."



Skytron Hercules 6700B with carbon fiber leg extension (top) and back extension (bottom)

Accessibility, safety, and comfort

John Moore, manager, professional services and business development, [TRUMPF Medical Systems](#), Charleston, SC, thinks that "Seamless functionality, comfort, access, and safety are the first needs that come to mind. Surgical tables should provide all of this regardless of patient weight. If an extreme angle or position is called for, or if there's a need to capture an intraoperative image, it needs to happen smoothly, safely, and efficiently, so the entire surgical team's attention can stay focused on the patient. The table needs to have a full range of components to meet the needs of any procedure with minimal or no interruption."

"Comfort, access, and safety are closely related concepts," explained Moore. "An extreme high or low table-height adjustment or angle adjustment accommodates the surgeon's physical comfort but also affords access to the surgical site. Access is also important to the

anesthesiologist. Correct patient positioning, stability, and easy access contribute to patient and staff safety alike. All of these can contribute to better patient outcomes."

Working with the big and tall

Surgical tables have grown, in a sense, with patients, because as the weight and height of America's population rises, so has the need for surgical tables that can support and articulate the big and tall patient. Articulation is always an important feature, but, with the very heavy or tall patient, it's a matter of safety as well as better access to incision site. Extreme angles combined with extreme patient weight or height unsupported well could be disastrous.

In times past, said Skytron's Tomaszewski, "Some hospitals have had to strap together two tables for use with larger patients. Skytron's Hercules 6700B is a general purpose table that meets bariatric-surgery needs but also is suitable for use with pediatric patients. It can lift 1,200 lbs. and articulate 1,000 lbs. It used to be that 300 lbs. was the top patient-weight hospitals saw; these days, hospitals of all sizes have to deal with patients of all sizes. Five hundred pounds is the minimum weight-performance level a table needs to meet in today's market."

Bariatric patients have a higher profile when supine. Adjustable table height helps to address that issue. Tomaszewski explained: "Many surgeons have had to stand on a stool or platform to work on the bariatric patient. It's not very comfortable." Low table height also works well for the surgeon who wants to be seated during the procedure. Skytron's Hercules table adjusts to as low as 23 inches off the ground, and the UltraSlide 3600B table adjusts to as low as 24 inches. TRUMPF's TITAN and MARS tables also adjust to as low as 24 inches.

Moore noted: "The latest version of the MARS tables has an increased patient-weight capacity of 790 pounds and maintains stability at full capacity regardless of angle or positioning. Similarly, the TRUMPF TITAN is capable of achieving 40° reverse Trendelenburg, with 1,000 lbs. This positioning can be used to sink excess body tissue away from the surgical site and improve access. The TITAN's 25° of 'lateral tilt' also provides precise access to the surgical site and with larger patients can be used to counterbalance girth. The increased weight capacities of the TITAN AND MARS, even at extreme angles, and their high level of modularity, eliminate the need for separate bariatric, specialty, and universal surgical tables. This saves costs, better manages valuable space in hospitals, and saves time in not changing tables from procedure to procedure."



ALPHAMAQUET Surgical Table and transporter from Getinge

"The TRUMPF TITAN is a mobile, modular, split-leg, fully articulating surgical table with an unrestricted 1,000-pound weight capacity. 'Unrestricted' 1,000-pound weight capacity is an important distinction, because many tables cannot safely handle their advertised weight capacity when positioned at extreme angles. The TITAN maintains stability even at extreme angles and with full weight capacity."

Intraoperative imaging

Quick turnover is vital to a productive operating room. Surgical tables with imaging capability can enhance efficiency, saving valuable time. Gilroy noted: "You want a table that lends itself to working with all types of C-arms, so that X-rays, MRIs, and CTs can be done right in the operating room. Getinge offers a table top that has a unique material compatible with MRI." This table also increases efficiency and reduces turnover time, Gilroy averred, because it allows the patient to be transported virtually anywhere in the hospital on the OR tabletop. "It's more efficient to move the patient to the recovery room for transfer to a bed rather than tying up the OR while waiting for help to come. While the patient is transferred to a bed in another environment, the OR nurse can clean and get ready for the next patient to come in. Turnover time is reduced, allowing more cases to be done in same amount of time."

The ability to create an imaging window is important in today's market, agreed Tomaszewski. Skytron's answer is a top-slide table. "A top-slide table is a little more expensive than a general purpose table, but the advantage is that you can create a flexible imaging window on the fly during a surgical procedure, sliding head or foot, creating better access for a C-arm or for staff to access the patient. We're definitely seeing a trend in that direction." Sterkenburg added: "Being able to articulate the table by means of a touch of a button to create that window is a huge advantage over having to hunt down extensions to create that window. Benefits include better turnaround time and safety."

"TRUMPF TITAN, MARS and JUPITER SYSTEM surgical tables' features have intraoperative imaging capabilities, including optional radio-trans-lucent carbon components, C-Arm access, and head-to-toe X-ray channels for unrestricted imaging," said Moore. "TRUMPF currently offers the lowest height-positioned tables on the market that have a built-in X-ray channel that goes over the column, allowing for easier, more complete imaging."



*STERIS SurgiGraphic 6000
Image Guided Table*

Moore continued: "Intraoperative imaging and integration are strong trends. The BrainLAB BrainSUITE iCT, an integrated, state-of-the-art intraoperative 3D imaging solution combining technologies from TRUMPF Medical Systems, integrates BrainLAB's VectorVision sky navigation system, the radiolucent TRUMPF JUPITER surgical table, and Siemens SOMATOM CT scanning system. The carbon fiber components of the JUPITER provide imaging capabilities, while its modular articulating capability optimizes patient-positioning options. BrainLAB technology makes it possible to automatically register images taken intraoperatively. With excellent bone to soft-tissue contrast, versatile patient positioning, and Siemens' extra large scanner gantry bore, the BrainSUITE iCT is ideal for a wide variety of surgical disciplines."

"STERIS's SurgiGraphic 6000 Image Guided Table offers the highest level of versatility and imaging capability for minimally invasive orthopedic, endovascular, and other procedures with fluoroscopy," said Betz. "The cantilevered

carbon-fiber tabletop glides 16 inches longitudinally and eight inches laterally, using a four-way float mechanism that is easily controlled with one hand. Several accessories and table features offer additional flexibility. The SurgiGraphic 6000 is an excellent platform for image-guided procedures. Using the four-way float mechanism on the SurgiGraphic 6000 table, surgeons can easily and smoothly move the patient rather than the fluoroscopic C-arm, which can make the scanning process faster and more accurate, and can reduce overall radiation exposure in the OR."

STERIS's Wittine also highlighted the Cmax General Surgical Table: "An 18-inch powered longitudinal slide provides full-body C-arm access without having to reverse patient orientation on the table. Features include an 1,100-pound patient-weight capacity; auto limit sensors that prevent accidental collisions and articulation conflicts; a state-of-the-art hand control that displays specific table-positioning and status information; the IntelliPower system, which provides dual power capability without manual switching; and a radiolucent powered kidney elevator that doesn't obstruct fluoroscopy scans."

Modularity

The trend today is modular tables, with components that make a single table adaptable to different kinds of surgeries. Flexibility and adaptability provided by modular tables can save valuable space and dollars. "Multipurpose tables are money savers," noted Tomaszewski.

Getinge has a new table coming out that combines "greater weight capacity, full articulation, and, with the appropriate modules, there is the ability to have all types of surgery performed on the one table. For instance," said Gilroy, "instead of buying a new table dedicated for orthopedic procedures that just sits in the hallway when not in use, we simply add an extension to the table. This surgical table can save money, because several types of tables don't have to be purchased. It's more universally adaptable, with extensions that afford more flexibility."

"We are the largest manufacturer of tables worldwide, so we have a lot of engineering experience behind our product line," averred Gilroy. "We probably offer the greatest number of accessories for our tables in the market today. In addition to electro-hydraulic tables, which are what most companies offer today, we also offer electro-mechanical tables. Electro-mechanical tables offer more precise articulation, which is critical in neurological surgery, for example."

TRUMPF also champions modularity for enhanced functionality. "TRUMPF Modularity provides interchangeable table components to optimize them for virtually any procedure, providing functionality, a full range of positioning options, and improved safety," said Moore. "This modularity is enhanced by TRUMPF's Universal Coupling Point System, which facilitates interchangeability and insulates facilities from table obsolescence. New components can be added to meet the demands of future developments in surgery. Modularity and multifunctionality provide increased efficiency and represent a cost saving to the facility."

"We did a focus group recently," said Sterkenburg. "Some of the top 10 things noted as most important were not necessarily features but characteristics, such as reliability and safety. Having removable back and leg sections is a distinct advantage in being able to meet the characteristics of safety in patient positioning."

Tomaszewski added: "Hospitals are constantly looking for ways to be safe but also to be more efficient, so they can manage more cases in one day. In the old days, hospitals sometimes had to set up the patient in a reverse position, with the patient's head at the foot-end of the table, to be able to use certain articulating functions or for certain accessories to be added to the table. When you do that, the safe capacity of weight in which the patient can be articulated can be compromised, plus the anesthesiologist has to remember to operate the table in reverse. Our tabletop is fully rotatable from head to foot; it rotates 210° and will not compromise weight capacity because it's not set up in reverse.

"Traditionally, accessories are added to the foot of the table. Skytron's accessories can be added directly to the back of the table. It's a huge advantage because the table base is not in the way; it creates better imaging



STERIS CMAX surgical table

capability for a C-arm; and the anesthesiologist doesn't have to operate the table in reverse, because the patient has not been set up in reverse. It's more intuitive in thought and simpler in operation. This consistency contributes to patient safety and prevents mistakes from happening."

Everyone wants that. **HPN**