

Booms Done Right

Plenty of OR managers have gone bust with their booms. Don't you be next. Here's advice for a successful installation.

Dan O'Connor, Editor-in-Chief



Booms can be a wonderful help or a horrible hindrance. Done right, they are marvels of modern efficiency, gleaming pendants of gas, power and data that stow surgical equipment on shelves and suspend lights and flat-panel monitors on arms that are easy to spin no matter the patient's position. Done wrong, they are bulky, obtrusive impediments to surgical efficiency, permanent reminders of poor planning dangling from the ceiling, their criss-crossed arms crashing into one another, hard to maneuver and lacking in

reach, failing on their promise to deliver what you need when you need it.

Wonderful help or a horrible hindrance? A fine line separates the two. We went searching for practical tips to ensure success with your next boom project. Here's what we found out.

1 See the boom in action. Surgeons and staff at Jewish Hospital in Cincinnati, Ohio, spent years stumbling and bumbling around two retrofitted booms that were all wrong. The arm reach was too short and the two large and cumbersome booms were installed on either side of the patient, making it difficult to get other equipment in and out of the rooms.

"They seemed to always be in the way, so we removed them after five years," says Andrea Halkiotis, BS, CNOR, the clinical nurse manager.

In 2004, Ms. Halkiotis presided over the installation of eight booms in four new ORs - an equipment and anesthesia boom in each OR; total tab: \$234,000 - used primarily for laparoscopic surgery. "The biggest issue for us was the proper placement of the boom," she says. "Once you make that decision, it's a done deal. Remember that [a boom] is a permanent installation, not a movable piece of equipment. Get it right the first time."

Vital to the successful install: The vendor paid to fly Ms. Halkiotis and three other key members of the surgical unit to its showroom. "We were able to look at the boom placed in different locations in the room," she says. "I don't know how you would 'trial' a system with the difficulty of installation."

Yes, booms are notoriously difficult to trial (you could argue that you really can't trial a boom) and even the most careful planning doesn't always spell success. Nancy Gondringer, CRNA, MA, the director of surgical services at St.

Elizabeth Regional Medical Center in Lincoln, Neb., thought she'd pinpointed the perfect spot for her booms after using Lego bricks to simulate the rotation and table movement in a mock OR she built to scale.

"We thought we had it until we started doing more shoulder cases," she says. "We also tried to get [the booms] to work for upper- and lower-type procedures with center pivot placement, but again we fell short. If not installed correctly, they hit the lights and nothing can be properly positioned."

If you visit an OR with booms, says Ms. Gondringer, go on a day when you can observe the booms in use and talk to the people who use them every day. At the very least, you might save your surgeons and staff some bumps and bruises by going on a site visit or two. Only after she visited a facility with booms did Teresa Lute, RN, the perioperative clinical educator at Southern Ohio Medical Center in Portsmouth, Ohio, realize how careful you have to be when walking around the room because you're always in danger of striking your head against an arm or a shelf. "We decided to get bumpers on the side of the boom so we didn't knock ourselves out," she says.

Another hazard: booms that hang too close to the ground. Russell Irish, BSN, perioperative nurse educator at VAMC Gainesville in Gainesville, Fla., says his booms were mounted too low and created a striking hazard. Booms are likely to drift if the weight hanging off the booms either far exceeds or falls well short of the boom's counterbalance spring adjustments.

The occasional noggin knock notwithstanding, booms eliminate a tripping hazard. Say you're doing video cases and your surgeon prefers to have the room lights either dim or off. Moving within the OR suite in the dark and with high fluid volume such as knee arthroscopy can be very hazardous. The safety of having the electrical cables off the wet floor is also an advantage.

2 Hang with care. OK, so how do you locate the optimal place on the ceiling to hang your booms? Unless the boom is a pedestal-mounted system, it will have to be supported from above before it can suspend surgical equipment around the OR. Several readers suggest that you do every kind of procedure in the room before you pick the final placement. There's no right or wrong answer, but here's some guidance, courtesy of Kelly C. Spivey, managing director of consulting firm Equipment Collaborative's new Dallas office.

Let's assume that the patient's head is at 12 o'clock, his feet are at 6 o'clock, his left side's at 3 o'clock and his right side's at 9 o'clock. The anesthesia boom should be at 12 o'clock, offset slightly to the patient's right, says Ms. Spivey. Putting the surgical support boom at 6 o'clock, the foot of the patient, will give you the most flexibility, letting you swing it to the left or right of the patient and also letting you flip the patient 90 degrees, all the while staying within the sterile field, she says. Placing the surgical support boom at 3 o'clock is also an option, says Ms. Spivey. This lets you park the boom out of the way when it's not in use.

"Everybody's house has a kitchen, but everybody's refrigerator isn't white and in the same place in the room," says Ms. Spivey. "And there's nothing wrong about that. Adding infrastructure in all positions allows the owner to change

positions of the booms and allows for maximum flexibility."

A visual model is helpful, as booms cannot be considered without also considering lights, flat panel monitors and the integration of audio-visual components, says Lynne Ingle, RN, MHA, CNOR, a medical equipment planner for Gene Burton & Associates' Ontario, Calif., office.

Don't forget such details as the depth of the boom's shelves. "Initially our shelves weren't deep enough for our equipment," says Ms. Halkiotis. "The boom company worked with us, though, at no cost to redesign our shelves and make them deeper." One thing more on shelves, she says: Be sure the top shelf isn't so high that no one can reach it.

If there are monitors on the equipment booms, determine what image sources will be viewed on those monitor screens, such as PACS, microscope and video endoscope, says Ms. Ingle.

3 Start at the top. Look up at your OR's ceiling. The space behind the ceiling is the key to a successful boom installation, for it will house the boom's infrastructure: the iron bracing and bridgework from which the boom will hang and through which med gases will be piped and data lines will be fed.

"We call that the superstructure," says Ms. Spivey. "Everything happens up there where you can't see."

When booms are installed during the original construction process, ceilings are built high to account for the equipment. Given the need for an above-ceiling superstructure, ductwork and space for cables, retrofits for older ORs may not be possible due to lower deck-to-deck ceiling heights. If the clear space is not adequate, booms may hang too low and render themselves useless. You'll need lots of space, a minimum of 14 feet between your ceiling and the floor of the structure above you, says Ms. Spivey. Be sure to give your contractor vendor-specific, site-specific drawings for the infrastructure, she says.

"Above-ceiling metalwork can be a very expensive and challenging project in a retrofit," says Bruce Duncan, BSc, PEng, MPA, the biomedical engineering coordinator at Victoria General Hospital in Victoria, British Columbia. "We had to close an OR for four days while we upgraded the superstructure and installed the boom. ... In a retrofit, you may find that more than half the cost of your project is above the ceiling."

4 Less is more. While some say you're better off with a tower if you can't afford two booms per room, others warn that you shouldn't hang more booms than you need. "It looked like spaghetti hanging from the ceiling," says Ms. Spivey of an OR that had six booms. "They were so massive and there was so much on them. There was no way to use the articulation without crashing into them."

Ms. Gondringer recalls a room with a misplaced boom that she had to shove up against the wall - and even then it crowded anesthesia. "You really need to think about how your room's going to be set up so you can determine how many booms you're going to need," she says.

Ms. Halkiotis decided not to install booms in her remodeled ortho rooms, opting instead to hang flat-panel monitors on the walls.

Donna F. Holt, RN, administrator of the Strand GI Endoscopy Center in Myrtle Beach, S.C., says her facility purchased booms for its GI suites when what it really needed were endoscopy carts. "While booms may be more efficient and space-saving for operating rooms, they are worthless in endoscopy procedure rooms," she says. "We had to spend \$1,000 extra to retrofit ours in order to accommodate our needs. Endoscopy carts are designed specifically for the needs of an ASC such as ours."

Speaking of carts, Ms. Halkiotis attaches a cart that contains supplies for different specialties to her laparoscopic surgery boom. "The cart actually attaches under the boom so we can switch it out depending on the case we're doing," she says. "It also worked out really well when we mounted anesthesia carts to the anesthesia booms."

Less is not more when it comes to tubing for the arms. Mr. Duncan says the narrow structural tubing of the arms made it nearly impossible to pull in the number of cables he required. "I hope to retire before they need to be replaced," he says, "but it is inevitable that there will be cable failures at some time in the elbows and wrists where the cables flex repeatedly. Don't opt for thin, elegant-looking tubing for the arms. Check to see how accessible and maintainable the cables and hoses are."

5 Go easy on anesthesia. As a rule, the greater the number of utilities and med gases, the bigger the boom gets, says Ms. Spivey. So it goes that your anesthesia boom can be a very simple and relatively small boom compared to your surgical support boom, she says. "If you're looking to save dollars, here is where you can do it." And you'll still enjoy the benefit of having the medical gas delivery system coming straight from the gas room and through the boom.

6 Think flexibility. "You don't want the booms in any way to obstruct you from doing any cases in that room," says Ms. Halkiotis.

Booms Gone Bad

Too hard to trial. Too expensive. Too heavy. Too hard to move. We heard those complaints and plenty more when we surveyed our readers on the subject.

- "Doesn't reach far enough, so we have to manipulate placement of the patient's bed after the patient is anesthetized."
- "Insufficient arm reach."
- "One boom will not meet the needs of GYN, general and ortho cases - it just needs to be in too many places for this mix of cases."
- "Insufficient support and service program."
- "Decreases flexibility of room use with boom set up. Make sure room size is appropriate and equipment can easily move out of the way if not in use."
- "Be sure you understand all the costs to install, repair and maintain the booms. Get input from your nurses and staff. I thought we did a good job, but would do things differently if we had it to do over."
- "Our boom is powered and operated with the use of nitrogen-compressed gas. I was

surprised at the volume of nitrogen used."

Ideally, your booms should accommodate every surgeon's preferences and every surgical specialty. They should increase a room's flexibility by letting you position a patient however the surgeon wants. You should be able to reorient the room in seconds. And they should shorten turnover times because the items you use all the time will always be in the room. The efficiency of moving the boom out of the way when you're not using it, but the availability of immediately having it ready is a definite plus with room turnover time. Never having to plug in or unplug the equipment and moving slave monitor cables from one side of the room to another is another time saver. "In the main OR, we have moveable towers, not booms," says one hospital OR manager. "We are always having to move them from room to room, which is time consuming. In the rooms where we have booms, there is never a question."

When you're planning a boom installation, resist the temptation to recreate a boomless room, says Ms. Spivey. Start fresh and ask yourself: In an ideal world, what would I do?

"Booms came on the market to create flexibility," says Ms. Spivey, "but a poorly designed boom creates a very given set of relationships as to how a room will function. They're a lot bigger than many people think. And if you're not able to move it out of the way, you can't flip the room."

Plan for more data cables than you currently need for the boom, says Ms. Ingle. New technology has increased the need for data ports, she says. This may include such items as some tourniquet applications that allow data port plug-in for transfer to electronic medical records.

7 Keep prepared and plan ahead. Think of yourself as a general contractor when overseeing a boom installation. You'll have to work closely with your boom vendor as well as your video equipment vendor to stay on a deadline and keep downtime to a minimum. Work around scheduled cases and get the work completed when the room is finished for the day, at the end of a week, even on Saturdays. Many people will be involved in the installation, including electricians, medical gas installers, someone to certify your medical gases, and contractors to repair and repaint as needed. There's also the timing of deliveries of the large pieces of equipment such as the booms, monitor arms, video equipment and communication systems. Keep your materials manager informed of the process and the expected arrival times of the many deliveries. Also keep housekeeping in the loop. Hold meetings with multiple vendors to make them accountable to the others for the timeliness of their applications. Finally, so you don't lose scheduled cases, keep a system on a portable tower until the boom installation is complete and systems are checked out and ready.