Role of the Veterinary Surgical Scrub Technician
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Often described as the surgeon’s primary assistant, veterinary surgical scrub technicians (VSST) play an important role as part of the surgical team. Notable features of a great scrub technician include familiarity with the surgical procedure, surgeon’s preferences and needs, as well as the ability to anticipate, even when things go wrong. VSSTs can augment the veterinarian’s recommendations to the client surrounding their pet’s surgical procedure as well as assist with client education during all phases of care (pre-, intra- and post-operative.)

History

The value of obtaining an in depth and accurate history cannot be overemphasized. In addition to the presenting complaint, essential components of a thorough history include the patient’s name, species and breed, age, sex (unaltered or intact) and breeding/estrus status, current diet and housing conditions (indoors versus outdoors), prior adverse reactions to anesthetic agents or drugs as well as the patient’s prior medical history, preventative health status (e.g., date of last vaccine and fecal exam, etc.), and current drug therapy. Additionally, a brief summary of the status of major organs and systems can be obtained from the client utilizing specific (and non-leading) lines of questioning. For example, questions that provide pertinent information regarding the cardiovascular system would establish if the patient has exhibited recent coughing, difficulty breathing or exercise intolerance. Similarly, the state of the gastrointestinal tract (e.g., presence of vomiting, diarrhea, or altered water consumption), the neurological status (e.g., existence of seizure activity or history of collapse), and a dermatological (e.g., presence of rapidly enlarging masses, erythema, dermatitis or pruritis) as well as general history (e.g., identifying behavior changes or decreased activity) can be obtained. All abnormalities should be further investigated with particular emphasis provided to geriatric patients with cardiovascular anomalies.

Physical Exam

A good physical exam is an imperative element of the pre-anesthetic assessment. Physical exams should be performed using a routine and systematic method. In addition to documenting the patients overall demeanor, hydration status, weight and body condition (e.g., obese, emaciated), the patient’s temperature, pulse, respiratory rate, mentation, mucous membrane color and capillary refill time (CRT) should be obtained. Hence, astute veterinary nurses can support the veterinarian by assisting in the detection of the presence of anemia, dehydration or hypovolemia. Assessment of the reproductive, cardiovascular and respiratory systems, evaluation of the skin, oral cavity and lymph nodes as well as abdominal palpation should also be performed. Again, all abnormalities should be further investigated. Preoperative work-up may consist of blood work, radiographs, or other diagnostic testing (e.g., blood pressure measurement, ECG rhythm strip, echocardiogram and/or abdominal ultrasound), which will be dependent on the abnormalities uncovered.

Surgical Checklists

Preflight safety checklists have been used by the aviation industry since World War II, where they were considered a critical tool for helping pilots fly complex airplanes such as the Boeing B-17. The value of checklists in the human healthcare industry was popularized by Atul Gawande’s The Checklist Manifesto – How to Get Things Right, with inroads slowly creeping into the veterinary milieu.

Checklists have been used for a variety of clinical applications including anesthesia, dentistry, emergency medicine, and routine health care. Surgical checklists can be used to track all aspects of perioperative care, such as diagnostics, procedures and anesthetic requests, sample collection, and outline postoperative requirements so that critical tests, treatments and participant team roles are clear. Since communication issues play a factor in 80% of surgical errors, surgical checklists can prove pivotal in preventing medical errors while improving outcomes by increasing patient safety, reducing patient
morbidity, and improving perioperative teamwork. In fact, dramatic decreases in post-operative morbidity (36%) and mortality (48%) were noted after implementing checklists.

**Peri-Operative Client Communications**

Veterinary nurses must counsel clients as to perioperative expectations surrounding scheduled surgical procedures, such as answering questions about admission guidelines, hospitalization policies, and postoperative care and expectations. Obtain authorized signatures: Ensure that the treatment plan (estimate) is signed and dated, and that resuscitation orders are clearly documented. A consent form outlines the surgical procedure(s) to be performed and details anticipated or potential complications associated with the procedure. Although all team members should be updated on the daily surgical schedule, veterinary technicians can help clarify medical jargon for pet owners and ensure the consent form lists the correct procedure and side (left vs right) and is appropriately signed.

Fasting instructions: Current pre-operative fasting instructions include withholding food for 3-6 hours prior to surgery, while offering water until the patient is pre-medicated. One study demonstrated that dogs fed a canned food meal equivalent to ½ daily ration three hours prior to anesthesia had gastric volumes similar to dogs fasted for 10 hours. In fact, gastroesophageal reflux (GER) was noted in 15% of dogs fasted for 12- to 18 hours, yet none of the dogs fed two- to four hours prior to anesthesia developed GER.

Medications: Approved medications and timing of administration are also necessary pre-surgical discussions. Non-steroidal anti-inflammatory drugs (NSAIDs) may be discontinued at the discretion of the surgeon. Preoperative administration of maropitant (Cerenia® Zoetis) can help prevent peri-operative emesis and encourage a quicker return to spontaneous eating post-operatively. Careful assessment of nutritional supplements is also advised.

**Pre-Operative Preparations**

Preoperative planning and preparation are imperative for assuring successful surgical outcomes. Customized procedure and doctor specific checklists can be utilized to ensure that all necessary instrumentation, equipment and supplies are sterile, set up and readyed in advance, which can help to expedite the surgical procedure. One study demonstrated that the risk of skin infection increased by 0.5% for each additional minute of anesthesia time. This equates to a 30% increase in skin infections for each additional hour of anesthesia time! Therefore, once the patient is anesthetized all efforts should be concentrated on getting that patient off the table and into recovery as soon as possible.

The VSST may organize the surgical case load for the day, as well as ensuring the operating room (OR) is clean and disinfected prior to beginning surgery. One study indicated that up to 20% of hospital acquired infections were caused by contaminated surfaces. Routine OR cleaning (including walls, floors, counters, OR tables, mayo stands, and patient tables, OR lights, and other equipment present in the room) should be performed routinely, as well as between cases. All organic material (blood, pus, fecal material, etc) must be completely removed from surfaces prior to disinfection.

Accelerated hydrogen peroxide disinfectants have gained popularity over quaternary ammoniums due to their efficacy and low odor properties. Regardless of the disinfectant used, always follow manufacturer’s guidelines regarding proper dilution and surface contact time. Agent specific dip stick tests can be used to verify the strength of diluted disinfectants. It is important to remember that all surfaces should remain wet throughout the entire contact time frame. HaloFogger™, an EPA-approved hydrogen peroxide dry mist, is effective against 99.999% of *Clostridium difficile* (C diff) spores. Change mop heads daily, and store empty mop buckets in a manner that allows them to completely dry between uses.

Prior to the procedure the VSST assembles all surgical supplies and equipment in a chronological use organization, while carefully assessing packaging integrity and inspecting external chemical indicators. The VSST oversees surgical patient preparations, ensuring trauma-free hair removal, and the application of appropriate topical antisepsics. A preliminary ‘dirty’ patient scrub may consist of a 2-minute (minimum) application of 2% or 4% chlorhexidine gluconate scrub (at least 3 consecutive scrubs) followed by a
similar application process utilizing 70% alcohol. It is important to note that use of friction while prepping skin is the key to preventing infection. ChloraPrep® is a one-step final prep, consisting of 2% chlorhexidine gluconate and 70% isopropyl alcohol. ChloraPrep® is effective against a broad spectrum of microorganisms, including methicillin resistant staphylococcus aureus (MRSA), vancomycin-resistant Enterococcus (VRE), C diff, coagulase-negative staphylococci and most viruses and fungi. Chloraprep® becomes fully effective after 2-3 minutes, with 48+ hours of long term efficacy. Other important roles of the VSST include the timely administration of perioperative antibiotics, and assisting with proper patient positioning once inside the OR.

Central suction canisters should be clean and hooked up to prevent leaks. Nitrogen- or battery-powered orthopedic equipment should be checked to ensure there are adequate gas or charge levels available to complete the surgical procedure. Electrocautery units must be adjusted to the correct setting, and the grounding plate adequately prepared. Radiosurgery units utilize 4 MHz radiowaves (e.g., Ellman Surgitron) that pass from the active electrode (cauterity pencil) to the passive electrode (grounding plate). This type of cautery unit has a plastic coated grounding plate that acts similar to an antenna, and should be located adjacent to the surgical site. Bovie Medical developed electrosurgery units in the 1920’s. The metal grounding plate should be located as close to the surgical site as possible, using appropriate amounts of conduction gels to contact patient skin, thereby decreasing cutting power and minimizing lateral thermal damage. Patient burns may be associated with high currents, long activation times, and use of conductive fluids. (3MBulletin 2007)

During electrosurgery, aerosolized blood droplets can be propelled a distance of up to 30 cm. Surgery smoke can contain viable viruses, bacteria, hazardous chemicals and carcinogens. Viable human papilloma virus (HPV) has been identified in vapor of genital warts treated with electrocoagulation. Use face masks, eyewear, surgery gloves, and smoke evacuation systems to minimize exposure to OR personnel. Disposable or sterilized electrodes should be used.

The VSST may facilitate gowning and gloving of the surgical team, while surveying for breaks in sterile technique. Intra-operatively, the VSST should ensure the instrument table is kept organized and clean, track sponge counts and sharps in addition to assisting with hemorrhage control, retracting or moistening tissues and cutting sutures. Memorization of the surgical procedure allows the VSST to anticipate the surgeon’s next move, and recognizing complications can improve response time. As such, it is beneficial if team members are cross-trained with anesthesia technicians for this role.

Postoperative Considerations

“The postoperative period was the most common time for dogs, cats and rabbits to die usually within 3 hours of surgery...greater patient monitoring and management during this time period is recommended.”

The care of the surgical patient does not end once the surgical procedure is finished; yet many anesthetists often neglect this crucial time period. It is imperative to understand that surgical patients can be faced with life-threatening situations during the postoperative period. These patients may already have or develop hypoxia, hypothermia, hypotension, hemorrhage leading to anemia, emergence delirium, vomiting, or cardiac arrhythmias (possibly leading cardiopulmonary arrest), in the minutes and hours following surgery. Furthermore, post-operative patients should be frequently assessed for pain, and additional analgesic medications administered as needed.

It is best to designate one person specifically to care for patients in the recovery ward. If this is not possible, then surgical patients should be recovered in a busy area of the hospital. This area should also be stocked with drugs and supplies necessary to address the most common post-surgical complications.

Aesthetically pleasing post-operative text images, phone updates (immediate and 24-hour post-operative calls) and Get Well cards are gestures sincerely appreciated by most pet owners. Scheduled discharge appointments allows pet owners to be counseled on expected at home care such as medication
administration tips, dosages and frequency, wound or bandage care, rehabilitation and other pertinent aftercare. Verbally reinforcing all written information helps increase compliance, and should be organized in a discharge folder containing other applicable information (e.g., drug inserts, doctor’s business card and hospital contact information, rehabilitation brochures, incision care or activity toy handouts).

References
Browning, D., and Tobias, K., Preoperative Roles and Responsibilities of the Veterinary Surgical Nurse, Today’s Veterinary Technician, Vol. 1, No. 4, 2016, pp7-15
Welsh, E. Anaesthesia for Veterinary Nurses Blackwell Science, Ltd. Malden, Massachusetts, 2003; 34-54.
Frankel, C., Veterinary Medicine Needs Checklists, Cliniciansbrief.com, pp. 60-62, February 2017
Haynes, AB, et.al., A surgical safety checklist to reduce morbidity and mortality in a global population, New England Journal of Medicine, 2009; 360; 491-499.
Liska, Wm D., Technician Utilization in a Surgery, Proceedings American College of Veterinary Surgeon’s Symposium, Nashville, TN, pp 745-748
Zeltzman P., Hypothermia is Surgical Patients, Proceedings American College of Veterinary Surgeons Symposium, 2009; 980-982.
American Association of Feline Practitioners 2018 Feline Anesthesia Guidelines
Veterinary Nursing in Action 2016 Jun/Jul pp47 (pdf)
Medscape Dec 14, 2017
Adams, D et al, J Hosp Infection 2005 61:287-90,
Crosby, CT Mares, AK, J Vasc Access Devises, 2001: Spring 26-31