

ABDOMINAL CLOSURE PROBLEMS: FROM SUTURE TO TECHNIQUE

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Creation of a complication-free abdominal closure involves: creating an abdominal exposure on midline with minimal trauma; eliminating as much contamination to the exposed abdominal wound as possible in contaminated and dirty abdominal procedures; maintaining hemostasis of incised tissues throughout the procedure; keeping tissue moist and using atraumatic retraction during the procedure; avoiding undermining of subcutaneous tissues off the abdominal fascia; avoiding removal of or blunt dissection of subcutaneous tissues; closure of the strength holding layer of the abdominal wall with appropriate sutures and knots; eliminating tension and deadspace during wound closure; consistent atraumatic skin wound closure.

ABDOMINAL WOUND COMPLICATIONS

DEHISCENCE

This complication can be avoided by observing the ends of the abdominal wall incision (do not continue your wall incision past the ends of the skin incision); placing sutures at the end of the abdominal incision first and palpating under the wall ends to be sure sutures are located at the end of the incision); identifying and suturing the external rectus fascia (including the the internal rectus fascia is not necessary) with healthy bites (at least 0.5 cm) without incorporating any subcutaneous tissue within these bites; suture size and knot technique must be correct; and closure pattern can be both simple interrupted or continuous (I prefer continuous in most cases with the exception if the wall edges are not healthy it is better to place interrupted sutures).

INFECTION

Avoid this complication by making sure you use aseptic technique throughout the procedure; prepping a large portion of skin outside your proposed incision site; packing off the exposed wound edges with sterile laparotomy pads (especially in contaminated or dirty abdominal procedures); maintaining healthy wound edges (minimizing tissue trauma, and thermal injury from electrocoagulation); irrigating the wound after surgery thoroughly.

SEROMA

Sterile fluid accumulation under an abdominal incision can be avoided by eliminating excessive tissue handling, drying, or trauma (do not undermine the wound edges if possible); reducing dead space with appropriate subcutaneous sutures.

SUBCUTANEOUS WOUND REACTIONS IN CATS

This problem, in my experience, is caused not by the type of suture used in the abdominal wall and subcutaneous tissues in cats, but by the technique of closing these tissues. Avoid handling, undermining, or excising subcutaneous tissues in cats. Close the abdominal wall with sutures no larger than 3-0 and avoid crushing the abdominal wall by placing too much tension on the sutures while knot tying; avoid closing the subcutaneous tissues all together in most cases; if tension relief is needed, pick up only the hypodermis during subcutaneous closure (the reaction is most likely caused by tissue devitalization when taking large subcutaneous tissue bites and pulling sutures tight which rips the tissue from its blood supply). The subcutaneous reaction that is observed is due to the body's response in removing the devitalized fatty tissue during the debridement phase.

SELF-TRAUMA OF THE WOUND

Avoid this problem by eliminating skin tension with an appropriate subcutaneous closure, and by loosely apposing skin sutures.

KNOT REACTIONS AT THE ENDS OF THE WOUND

Small sinuses or thickenings that develop under the ends of the abdominal skin incision most often are caused by excessively large suture knot ends in the abdominal wall closure. The constant motion over the knot ends causes chronic inflammation and eventual suture sinus formation. Avoid using excessively large suture when closing the abdomen and use carefully placed knots with no more than 5 throws. Remember, when using monofilament suture in the abdominal wall, make sure you use equal tension on both strands when knot tying, and deform the suture adequately with each throw (meaning that there should be NO gap between throws and sutures have undergone plastic deformation to create a secure knot). If a sinus is caused by a big knot end, treat the wound open until the abdominal wound has developed enough tissue strength to remove the knot- I usually wait at least 4 weeks after surgery in most healthy animals, even more in sick or cachectic patients).