

Informed Consent

Thoracic (Chest) Surgery for Patent Ductus Arteriosus (PDA)

You have elected to have your pet undergo a surgical procedure called thoracotomy. This is a procedure where the chest is opened surgically to address a problem in the thoracic (chest) cavity. In this case, the surgical goal is to address a persistent ductus arteriosus (PDA) where an aberrant vessel remains near the heart, allowing communication between two major vessels, disrupting normal flow of blood around the heart. Generally prognosis with surgery is very good, but there are inherent risks with both the thoracotomy and the ligation of the PDA. Both will be discussed here. If you have any questions or concerns, please let us know.

Thoracotomy

Generally the prognosis with surgery is excellent, complications are rare (10% of cases, or less) but when complications occur, they can be life-threatening. There are many important structures in the chest that require manipulation, treatment of, or dissection near that have the potential to cause complications in chest surgery.

Pneumothorax (air in the chest)- the lungs are built for gas exchange, to get oxygen in to the blood, but air in the chest, outside of the lungs, does not allow that gas exchange due to pressure changes. As soon as the chest is opened to room air during surgery, your pet loses the negative pressure the diaphragm obtains in the chest used to pull air into the lungs. This is ok when it is planned, as in during surgery, because we can provide pressure by ventilating your pet during the procedure. If there is a leakage of air into the chest (from the environment or from a defect or damage in a lung or airway) after surgery, this can be life threatening. Most often, we recommend a chest tube be placed after surgery to be sure “negative pressure” is obtained for a few days to ensure the gas spaces are appropriately sealed.

Hemothorax (blood in the chest)- if there is continued hemorrhage after surgery, it collects in the chest, outside of the lungs. If there is sufficient volume of blood, it may not only raise concerns about low blood volume, but also the lungs may not have room to expand to allow breathing. This could be life-threatening.

Pyothorax (pus in the chest)- this could be due to the underlying process or could be secondary to surgery. Additional treatments (chest tube) or procedure may be recommended.

Nerve damage- specifically the phrenic nerve could be injured during surgery or dissection. The phrenic nerve is in the chest and runs along the heart. There are two (right and left) and they are responsible for helping the diaphragm function (contract to allow breathing). Damage to this structure could make it harder (permanently or temporarily, depending on the amount of damage) for your pet to breathe after surgery.

Cardiac arrhythmias- these are disturbances in the heart rhythm, and may be due to irritation of the heart or damage to heart muscle. Usually they are temporary and may or may not need medication.

Complications with chest tubes- the purpose is to monitor and evacuate the thoracic space. However, they have their own set of issues: their presence or placement can damage structures in the chest, leading to bleeding or pneumothorax (see above), heart muscle damage, heart rhythm disturbances (arrhythmias), or nerve damage, they could become displaced or leak (and lead to pneumothorax), or they could block or plug. Proper care, monitoring, and maintenance are key.

More minor complications of thoracic surgery include wound infection, wound dehiscence (opening), seroma (collection of fluid under the skin), subcutaneous emphysema (collection of air under the skin).

Rare complications include infection of the bone or ribs (osteomyelitis, a serious infection), fractured or displaced ribs/sternum, and lameness in the front limb(s) due to stretching of nerves in the armpits during surgery (usually temporary).

PDA

Ligation of a patent ductus arteriosus is a procedure on one of the main vessels around the heart. Serious complications are rare, but when they occur, they could be life-threatening. Complications occur in 10% of patients or less and may include:

Hemorrhage- this could be life threatening hemorrhage. If hemorrhage is controlled in surgery, a blood transfusion may be indicated.

Ductus recanalization- the ligated duct could eventually recover, heal, and allow blood flow

Nerve damage- this could lead to laryngeal paralysis (a failure of the larynx to function) though additional surgery is not usually needed

Herniation of the left atrium- if the pericardium suture line fails-additional therapy may be needed

Rarely the ductus (the vessel meant to be ligated) may rupture and this could be life threatening.