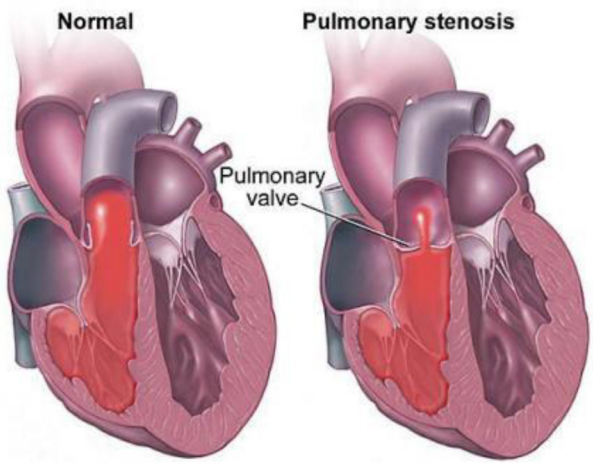
Pulmonic Stenosis

What is a pulmonic stenosis?

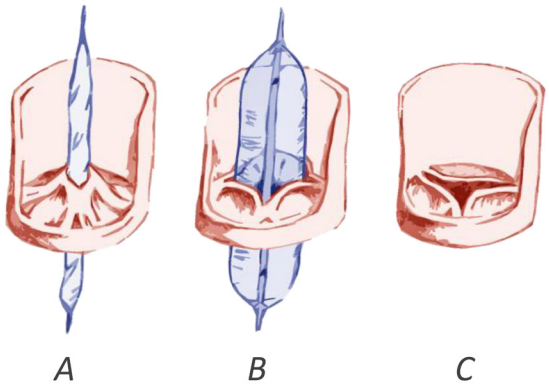
Pulmonic stenosis is a birth defect characterized by stenosis, or narrowing, of the outflow tract that allows blood to flow from the heart to the lungs. Most commonly, this is caused by a malformation of the valve with some fusion of the pulmonic valve leaflets. The severity of pulmonic stenosis is determined by the pressure gradient across the valve. Mild, moderate, and severe disease are characterized by a pressure gradient between 30 and 50 mmHg, between 50 and 80 mmHg, and above 80 mmHg, respectively. Dogs with mild pulmonic stenosis may live a normal life. Whereas dogs with severe pulmonic stenosis develop clinical signs of exercise intolerance, fainting, right sided congestive heart failure, abnormal heart rhythms, and rarely sudden death.



Pulmonic stenosis is a narrowing of the outflow tract that carries blood from heart to the lungs.

What is a balloon valvuloplasty procedure?

A balloon valvuloplasty is a minimally invasive procedure and is the preferred treatment method for dogs with moderate to severe pulmonic stenosis. To perform the procedure, a small incision will be made on your dog's neck or groin and a catheter will be placed through the vein and into your dog's heart. The specialized balloon catheter will then be placed across the stenotic pulmonic valve and the balloon will be inflated to tear apart the valve leaflets, creating a larger opening and allowing blood to flow more easily from the heart to the lungs.



A catheter is placed across the narrowed valve opening (A) and inflation of the balloon tears apart the valve leaflets (B), creating a larger opening for blood to flow from the heart to the lungs (C).

What are the benefits of the procedure?

The goal of a balloon valvuloplasty is to provide your pet with an improved quality and quantity of life. However, a balloon valvuloplasty is not a curative procedure. A successful procedure is defined by a 50% reduction in the pressure gradient across the valve. This pressure reduction will reduce the work required by the heart and prevent or delay the onset of clinical signs. Many dogs with moderate to severe disease will still have some degree of pulmonic stenosis following the procedure. Some dogs may still require daily medications for the rest of their lives.

What are the risks of the procedure?

While every precaution is taken to avoid complications and to address them readily if they do occur, it is important that you understand the potential for complications.

Balloon valvuloplasty procedures are performed under general anesthesia, which carries risks including airway irritation, drug reactions, and rarely death. Another intraoperative complication which may be associated with the procedure is bleeding (hemorrhage). The bleeding may be mild requiring no treatment, moderate requiring a blood transfusion, or severe which may result in death. Abnormal heart rhythms may occur

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while we are positioning the balloon catheter. Typically, arrhythmias can be corrected with medications. However, severe arrhythmias or those that do not respond to medications may result in death. Finally, if the narrowing is severe, we may not be able to position the catheter appropriately and the procedure will need to be aborted.

Complications which may be associated with the postoperative recovery period include incisional complications such as infection, dehiscence (opening of the incision), and seroma (fluid pocket) formation. More minor incisional complications including mild discomfort or bruising may also be observed. An uncommon complication is scarring that fuses the leaflets together resulting in re-stenosis. This may occur weeks, months, or even years after the procedure. If this does occur, the balloon valvuloplasty may need to be repeated.

Rare complications include the formation of blood clots that can block vessels or travel to the lungs resulting in mild to severe breathing difficulties.

What are the alternatives to this procedure?

Alternative management includes medical management with daily oral medications. While this can slow the onset of clinical signs, many dogs with severe pulmonic stenosis will eventually develop clinical signs over time. As these signs develop, additional medications may be required. However, even with treatment many dogs' quality and quantity of life may be affected.

Will I be updated during my dog's hospital stay?

You will receive twice daily calls from the student working with your dog. Additionally, you will receive a call from the doctor following the procedure when your dog is recovering. It is important that your dog rest following the procedure; therefore, we prefer that you do not visit on the day of the procedure. Most dogs will go home from the hospital the day after their procedure.

How do I care for my dog after the procedure?

Your dog will have a small incision on the neck which will require twice daily evaluation for signs of infection. To prevent irritation of the incision, collars and neck leads will need to be avoided for two weeks following the procedure. Your pet should be rested during this time period to reduce the risk of incisional complications.

When will my dog need to be reevaluated?

If external sutures are placed, they will be removed in two weeks. Suture removal may be performed with your pet's primary care veterinarian. Your pet's pulmonic stenosis should be reevaluated in 1-3 months following the procedure to determine the success of the procedure as your dog heals from the surgery. Long term reevaluation is typically every 6 to 12 months, depending on the disease severity. Individual recommendations for reevaluation will be provided when your dog is discharged from the hospital.

Further information

We would be more than happy to discuss any additional questions or concerns regarding this procedure or specific questions regarding your dog. If you have any questions or concerns about the procedure, the after care, or your dog's candidacy you may contact the ISU Cardiology Service at 515-294-4900.

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