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## BALLOON VALVULOPLASTY FOR PULMONIC VALVE STENOSIS

Balloon valvuloplasty is the preferred treatment method for moderate to severe pulmonic valve stenosis. It is a minimally invasive procedure that involves making a small incision in the animal's neck or groin to obtain vascular access to the heart. Through this route, a balloon catheter is advanced into the area of the narrowed valve. Once inflated to high pressure, the balloon dilates the stenosis, thereby facilitating easier blood flow from the right ventricle to the lungs.

The goal of the procedure is to improve both the quality and length of the animal's life.  
This procedure does not cure the heart defect, and its outcome is considered successful if the pressure gradient (the severity of the defect) is reduced by 50%; the likelihood of success depends on the type of stenosis and is discussed prior to the procedure. Lowering the pressure reduces the workload required of the right ventricle to pump blood into the lungs. Despite undergoing the procedure, some patients must remain on cardiac medication (a beta-blocker) for the rest of their lives. The final outcome of the procedure can be evaluated approximately one month post-op, once the dilated valve has fully healed.

The procedure is performed under general anesthesia, which carries a higher-than-standard risk in patients with severe heart disease. Throughout the entire procedure, the patient is continuously monitored by an anesthesiologist highly experienced in cardiac cases. Intraoperative complications may occur during the vascular access phase and can result in bleeding—ranging from mild to significant, potentially requiring a blood transfusion or resulting in the death of the animal (very rare). During the placement of the catheter within the heart, cardiac arrhythmias may occur. These are usually mild and responsive to treatment; however, the occurrence of a severe arrhythmia leading to sudden death cannot be ruled out. Furthermore, the valve stenosis may be so severe that it prevents proper placement of the balloon catheter—in such cases, aborting the procedure may be necessary.

Postoperative complications include infection, bleeding, or hematoma formation at the vascular access site. Even after a successful procedure, approximately 10% of patients may

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develop restenosis (re-narrowing of the valve) after a few weeks, months, or even years—in which case a repeat balloon valvuloplasty may be considered.

The alternative to balloon valvuloplasty is medical management, which delays the onset of signs of right-sided congestive heart failure, such as exercise intolerance, ascites, arrhythmias, and sudden cardiac death. Despite medical management, most dogs develop these symptoms within the first years of life. The purpose of balloon valvuloplasty is to delay the onset of these clinical signs even further, or potentially avoid them altogether.

Before the procedure, the dog must fast for 12 hours (no food), and water should be withheld approximately 2 hours before arriving at the clinic. The morning dose of the beta-blocker, if previously prescribed, should be administered as usual.

Following the procedure, the dog is discharged home the same day. After approximately two days, you should visit your primary care veterinarian for a dressing change and a wound inspection. Sutures, if present, should be removed from the wound after about 10–14 days, though they are not always required for this procedure. An echocardiographic recheck will be required approximately 2–4 weeks after the procedure, followed by routine check-ups every 6–12 months. Detailed discharge instructions will be provided after the procedure.