



# LARYNGEAL HEMIPLEGIA FOLLOWING SURGICAL LIGATION OF A PATENT DUCTUS ARTERIOSUS IN 4 DOGS.

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ECVIM-CA  
31<sup>ST</sup> ANNUAL CONGRESS  
1-4 SEPTEMBER 2021  
ONLINE CONGRESS

## Introduction

Patent ductus arteriosus is one of the more common congenital cardiac anomalies in dogs. Currently its treatment modalities consist of surgical ligation by thoracotomy (/thoracoscopy) or interventional embolization by coils or Amplatz™ devices. When the ductus is fully closed, life expectancy and exercise tolerance is normal in nearly most cases. In children left vocal cord paralysis is a significant side-effect of PDA closure in preterm neonates and has been associated with low weight at time of surgery. Unilateral laryngeal paralysis post-surgical PDA closure has been described in the feline breed.

## Methodology

In our referral center where dogs are routinely followed up to several years after successful closure, we experienced permanent voice changes and reduced exercise tolerance associated with exertional stridor in 4 young dogs. All dogs underwent traditional surgical ligation of the ductus, via 4<sup>th</sup> intercostal left-sided thoracotomy. Their medical records were retrospectively evaluated and the owners were contacted by telephone for follow-up information if they had not been for a recheck in the last two years.

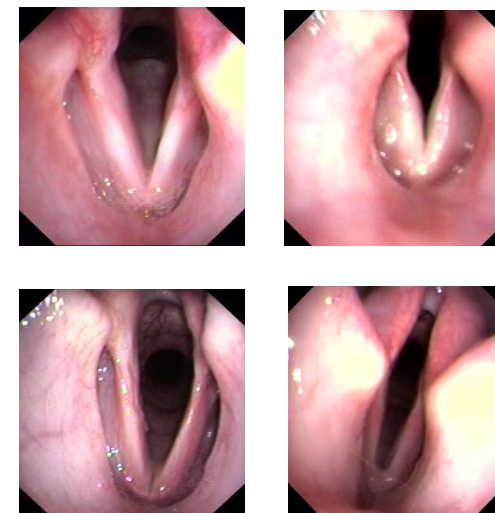
## Results

Four different breeds were represented with dogs weighing from 5-25 kg at the time of surgery. The first clinical signs were observed one month post-closure with voice changes occurring first, and panting and reduced exercise intolerance appearing later, but always within one year of closure. All dogs also had intermittent signs of mild dysphagia. Cough was present in none. Laryngeal auscultation revealed increased laryngeal sounds in all 4, however no stridor was observed at rest, only after exercise in all dogs. Thoracic radiographs were within normal limits for all dogs. Doppler echocardiography revealed full closure of the PDA in all dogs.

Endoscopy together with a doxapram challenge confirmed the stridor being secondary to left arytenoid immobility. The cause of the laryngeal hemiplegia is thought to be iatrogenic damage to the left recurrent nerve during surgery. In our center none of the embolized dogs have experienced left-sided hemiplegia, despite this also being described in children.

So far (4-8 y post) none of the dogs needed lateralization of their paralyzed left vocal cord. However, the warned owners are very careful with exercising the dog in hot weather. All dogs are still alive and none experienced aspiration pneumonia.

BREED	AGE AT SURGERY	GENDER	WEIGHT AT SURGERY	CLINICAL SIGNS	AGE LAST FOLLOW-UP
Border Collie	2m	M	5,0 kg	tracheitis like 10 d post-op, voice change, 1 y later stridor	4y
Mixed Border Collie	1y	Mn	14,6 kg	voice change, insp dyspnoea when warm and exercise	6y
Australian Shepherd	6m	M	19,0 kg	voice change, insp dyspnoea when warm and exercise	8y
Akita Inu	9m	F	24,7 kg	voice change 1 m post-op	4y



## Conclusion

In conclusion, the presence of vocal changes and exercise intolerance post-PDA closure should alarm the veterinary surgeon to perform respiratory endoscopy. Handling of the vagal nerve and its recurrent branch during surgery should be done very cautiously. Size and weight of the dogs do not seem to play a role.

## Questions ???

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