

## ADAPTATION OF TITANIUM MAXILLOFACIAL PLATE FOR PREVENTED NARROWING LUMEN IN PERMANENT TRACHEOSTOMY IN A DOG WITH LARYNGEAL PARALYSIS

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### ABSTRACT

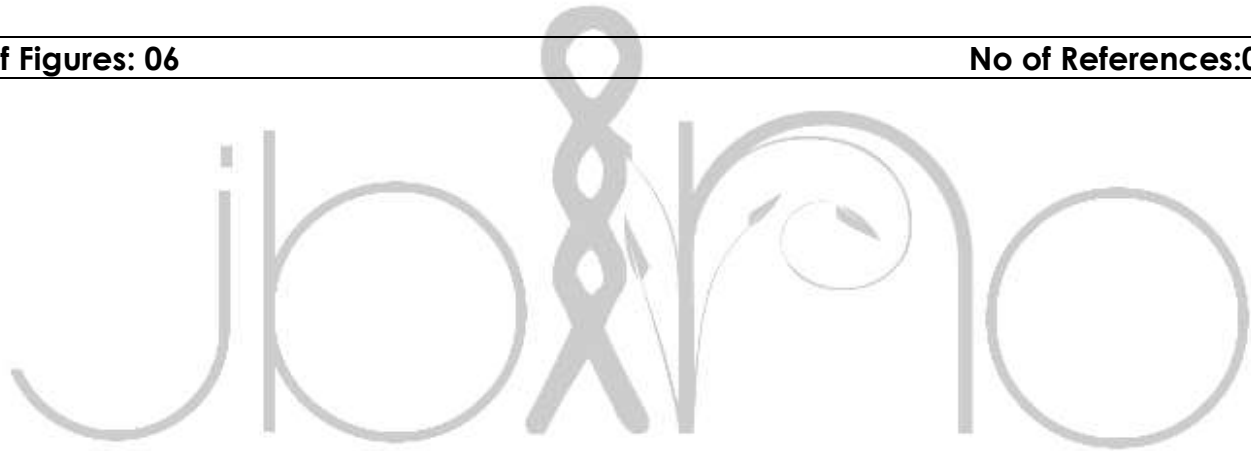
A dog was diagnosed laryngeal paralysis and led to permanent tracheostomy after ten-day s of surgery, a dog was brought to revision of surgery. Titanium maxillofacial plate was invented for prevented skin fold redundant. Results for this prosthetic implanted surgery to the lumen of permanent tracheostomy was showed that this prosthetic could prevent narrowing lumen of permanent tracheostomy more than 60 days, and a dog did not show the other's complication problems.

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## INTRODUCTION

Permanent tracheostomy on the dogs was used in the severe cases of upper airway obstruction such as laryngeal , laryngeal paralysis. It is a lifesaving surgical procedure in the cases that cannot use other surgical procedures for solving cause of breathing problems. Temporary tracheostomy is most commonly performed to provide an alternate airflow route in emergency cases due to irritate of tracheal mucosa from tracheostomy tube (3). The biggest problem of permanent tracheostomy is the skin fold redundant to tracheostomy lumen that bring to revision surgery. In 2018, Gobbetti M., et al. reported that permanent tracheostomy was associated with a high risk of complications and postoperative death in long term survival (2,4). Davis A.M.et al. reported that dogs were required in 30.8% for revision surgery due to skin occlusion and 17.9% of dogs could be an aspiration pneumonia (1).

The objective of this treatment to find the prosthetic that can prevent the narrowing lumen of tracheal from the skin fold around the tracheostomy lumen. In this study, the prosthetic was invented from titanium maxillofacial plate

### Case history and clinical observation

A geriatric female dog (17 years old) was bring to Linthong Veterinary Clinic. She showed signs of dyspnea, panting, stridor, hyperthermia(107F), and cyanosis. A dog was not response by oxygen mask and oxygen cage. The dog had cardiac arrest and stop breathing after corrected

cardiac arrest by cardiopulmonary resuscitation process, the dog had conscious again. Examination by laryngoscope showed the arytenoid cartilages of the larynx ceased to function, it's did not abduct during inspiration.

Radiography and CT-scans showed bronchiectasis and pneumonia (Fig.1-3). A dog was anesthetized by isoflurane anesthetic machine and injected propofol about 17 hours continuously because waiting for decision making of the owner. Finally, the owner decided request for permanent tracheostomy. Permanent tracheostomy was performed but after seven days of surgery, the wound dehiscence and inflammation had occurred due to a dog went to play the water every day. the titanium maxillofacial plate was placed into the luminal of skin and tracheal cartilage for second correction surgery.

Surgical correction with titanium maxillofacial plate ring and preparing of the ring

The 2.0 mm titanium plate was blended into the circle shape then 0.5 orthopedic stainless-steel wire was used for maintained the circle shape.

Fig1-2. Radiography showed tracheal dorsal deviation and pneumonia.

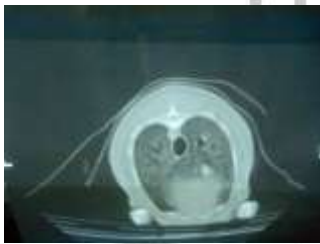


Figure.3. Computed tomography showed thickening of bronchial wall, bronchiectasis, and pneumonia



Figure.4. The titanium maxillofacial plate was bended into circle shape.

Figure.5-6. The titanium ring was placed into tracheostomy lumen.



The ring was placed into the tracheostomy lumen. Nylon 2/0 and wire were sutured to the skin, ring, and tracheal cartilage (Fig.4-6).

### Result and discussion

In this case, a dog had not shown wound dehiscence and narrowing of the lumen after 60 days of second surgery and now a dog still survive. Long term for permanent tracheostomy can lead to many complication problems such as stoma occlusion, wound dehiscence, tracheal stenosis, skin fold covers the lumen of tracheostomy (2,3,4)). Stilwell.N. studies record of brachycephalic dogs undergoing permanent tracheostomy between 2004 and 2015 and concluded that permanent tracheostomy should be considered in the dogs that unresponsive to other treatments due to many complication problems. This maxillofacial ring may be prevented skin fold cover the lumen of tracheostomy. Silicone tracheostomy tube was used in temporary tracheostomy could lead to tracheal mucosa damage if it were used in long- term (5). Result from this case, may be showed that maxillofacial ring can prevent skin fold cover the lumen on tracheostomy site. Long term use of its must be beyond studies.

### Reference

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