

## Case Report



## Salivary Mucocele Treatment in a Local Dog in Bali, Indonesia

NI PUTU VIDIA TIARA TIMUR<sup>1\*</sup>, MARIA MALIGA VERNANDES SASADARA<sup>2</sup>, PURWANTA<sup>1</sup>, ANAK AGUNG JAYAWARDHITA<sup>3</sup>

<sup>1</sup>Polytechnic Agriculture Development Manokwari, West Papua, 98312, Indonesia; <sup>2</sup>Student of Veterinary Profession Education Study Program (Program Profesi Dokter Hewan) Udayana University, Jl. Sudirman, Sanglah, Denpasar, Bali, 80227, Indonesia; <sup>3</sup>Laboratory of Veterinary Surgery, Faculty of Veterinary Medicine, Udayana University, Jl. Sudirman, Sanglah, Denpasar, Bali, 80234, Indonesia.

**Abstract** | A 2-year old female local Bali dog weighing 13 kg presented to Udayana University Veterinary Hospital with swelling in the mandibular region and was reported that the swelling has been observed and was getting bigger since the dog was 8-month old. An initial examination identified a large volume of fluid. In 3 month period, the aspiration was performed twice, collecting a 8 cc and 5 cc clear yellowish fluid for each aspiration. The surgical treatment was decided as the best treatment to be performed to avoid repeated aspiration. Surgery was performed to remove the mandibular and sublingual glands under general anesthesia using a combination of Ketamin and Xylacine as the sedative agent. The dog was prescribed five days post-surgery medication using an antibiotic, an anti-inflammatory agent and supportive therapy. Regular monitoring was conducted for two months before it was confirmed that no saliva was re-accumulated.

**Keywords** | Salivary mucocele, Surgery, Treatment, Local dog, Bali

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**\*Correspondence** | Ni Putu Vidia Tiara Timur, Polytechnic Agriculture Development Manokwari, West Papua, 98312, Indonesia; **Email:** vidiatiaratimur@gmail.com

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## INTRODUCTION

Salivary mucocele is defined as an accumulation of saliva in the tissue that caused by the damage of salivary gland or salivary duct. Mucocele is a pseudocyst and can be found in several animals like dog, cat and cattle (Smith, 2005). Salivary mucocele was susceptible in all dog breeds and has been reported in Poodle (Ploypetch et al., 2016), Labrador (Shivaraju, 2018), German shepherd (Saifzadeh, 2004), and Crossbreed dog (Gahlot et al., 2013), as well as in wild cat (Sheila et al., 2003), and in bullock (Patel and Bharti, 2014). It can be occurred at any stage of age (Shivaraju et al., 2018). Generally, the cause of the salivary mucocele is not identified, however blunt trauma, foreign body and sialolith

are the strong suspect behind the salivary mucocele in dog (Yasonu et al., 2011). Salivary mucocele can be observed by the abnormal swelling containing saliva in intermandibular, sublingual or pharyngeal tissues (Gokulakrishnan et al., 2020) and can be diagnosed by physical examination, fine-needle aspiration, and sialography of the salivary glands (Guthrie and Hardie, 2014). Salivary mucocele can be painful due to an inflammatory response. The definitive treatment for salivary mucocele is the surgical procedure to remove the affected salivary glands (Smith, 2005). This is first written case report of salivary mucocele in local dog in Bali, Indonesia, the report can be used as a future references in treating a salivary mucocele to avoid worse condition that can occur due to delayed treatment.

## CASE HISTORY AND CLINICAL EXAMINATION

A two-year-old local Bali dog was presented at Udayana University Veterinary Hospital with a history of progressive submandibular swelling since the dog was eight months old. The swelling was getting bigger but, no abnormality symptom was observed. The dog was then examined physically (Guthrie and Hardie, 2014), an approximately 5 cm palpable soft fluctuating, cold, painless, soft contoured mass was present, even though the dog still has a good appetite. A basic physical examination and palpation were performed to see the possibility of an unseen abnormality that the owner previously observed. Initial palpation indicated the accumulation of fluid in submandibular and it confirmed as *salivary mucocele*. Fine needle aspiration was performed, resulting in 8 cc clear yellowish fluid.



Two months after the first treatment, the dog came to the hospital again with the same condition, and another aspiration was performed. In the second aspiration 5 cc fluid was collected. Unfortunately, the owner reported re-accumulation 2 weeks after the second treatment.

## TREATMENT

The dog received twice aspiration within 2 months, thus the re-accumulation was still occurred 2 weeks after the last treatment. To avoid repeated aspiration, it was decided to perform the surgical treatment to remove the mandibular and sublingual gland. In this case, continued aspiration to drain the sialoceles will not permanently eliminate the problem can only be a temporary resolve. It requires resection of the affected gland as a definitive treatment. Repeated drainage or injection of cauterizing or anti-inflammatory agents will not eliminate the mucocele but will also complicate the surgical procedure because of subsequent abscessation or fibrosis (Smith, 2005), and increase the risk of infection. Pre surgical examination and blood test were performed prior the surgery. Visual examination by inspection, palpation and auscultation did not show any abnormalities and the present status showed a normal result (temperature: 38.4°C, heart rate 82 beats/minute, respiration rate 24 breaths/minutes, capillary refill time: < 2 seconds, normal mucous membrane), as well as the blood test. Pre-anesthetic screening is important to improving anesthetic safety and determining anesthetic risk as well as to avoid the risk of anesthesia administration (Joubert, 2007).

The dog was fasted for 10-12 hours before surgical treatment to decrease the negative effect of the anesthesia (Fossum, 2013). Since there is no urgency status observed, the fasting

was possible to do. The surgery equipment and supplies were cleaned and sterilized before the surgery. Absorbable sutures using vicryl 3-0 and non-absorbable sutures using silk 3-0 were prepared as well as the premedication and medication agent. Atropine sulphate as a premedication agent was administered intramuscularly using a 3cc syringe with the given dose of 0.02-0.04 mg/kg BW. Xylazine was used as a sedative agent given at the dose of 1-3 mg/BW combined by an anesthesia agent using Ketamine with given dose 10-15 mg/kg BW by intramuscular administration 15 minutes following the sedative agent injection.

Antiseptic agent using 70% alcohol and povidone-iodine, an emergency hemostatic agent using epinephrine and vitamin K, antibiotic injection agent using amoxicillin clavulanate as well as the NaCl physiological solution (saline) were prepared before the surgery was performed. Infusion with Ringer Lactate was placed intravenous through the Cephalic vein in the front leg of the dog. The surgery site was shaved and disinfected with alcohol 70% and povidone-iodine. The dog was positioned dorsally recumbence with a drape cloth covering the area around the surgery site. Patient status or presence of concurrent were recorded before and during the surgery.

After the dog was totally under anaesthetic, an incision over the mandibular gland region was made by pulling the skin in the swelling area. The incision was made through the skin, subcutaneous tissue, platysma muscle until the mandibular and sublingual gland were identified. Dissection then proceeded to remove the mandibular gland and its capsule. The gland, gland duct, blood vessel and mucocele capsule were then ligated using absorbable vicryl 3/0. After it was well ligated, resection was performed toward ligated gland, gland duct, mucocele and blood vessel. The extra skin in mandibular region was removed to avoid space and possible repeated fluid accumulation. The skin dissection was made by following the neck shape of the dog then sutured using absorbable vicryl 3/0 for subcutan with subcuticular technique, and silk 3/0 for outer skin with simple interrupted technique. The sutured incision was then disinfected using povidone-iodine and covered with antibiotic powder before being covered with a sterilized bandage.

Post surgical operation, the dog was injected with 1.3 cc antibiotic agent Amoxicilin intramuscularly to avoid bacterial infection. The owner were directed to feed the dogs with soft food for 2 weeks. The dog was also prescribed antibiotic agent using Amoxicilin with given dose of 250 mg 3 times a day combined with mefenamic acid with given dose of 250 mg twice a day as anti-inflammatory agent and vitamin B complex for supportive therapy to improve dog's condition and support the healing process after the surgery. The medication was prescript for 5 days and continuation observation was performed and recorded

regularly. Beside of the oral medication, owner were advised to give an antibiotic cream in post-surgical site and change the bandage 5 times a day considering that the exudate will be produced more in the first 3 days postsurgery, in the fourth day and so on the bandage can be changed once a day for the next seventh days. After 2 months monitoring, re-examination was performed and there was no indication in saliva re-accumulation. It confirmed that the salivary mucocoele was properly treated.

is no report about the prevalence of salivary mucocoele in stray dogs in Bali. Yet, the assumption of trauma-caused salivary mucocoele could not be confirmed but strongly considered in this case.



**Figure 1:** (a) expose the *mucocoele* by make an incision over the mandibular region. (b) the ligation was made for the gland, gland duct, mucocoele and blood vessel. (c) surgically excised mandibular mucocoele. (d) surgical site after suture.

## RESULTS AND DISCUSSION

Salivary mucocoele is one possible causes of submandibular swelling in dogs (Torad and Hasan, 2013). In this case, the swelling did not affect the dog's behavior but the owner observed that this swelling was getting bigger since the first observed when the dog was 8 months old. In some case, the swelling condition can get worsen and resulting to dyspnea as a result of airway occlusion (Watanabe et al., 2012). Salivary mucocoele can be occurred in every dog at any age (Shivaraju et al., 2018) and caused by many possible reasons. In this present dog, trauma is considered as a strong cause of the salivary mucocoele, considering that the dog was let roam freely around the owner's house living area and reported fighting with other dogs. Most local Bali dog were roamed freely and are known for being skillful in guarding (Corrieri et al., 2018). Therefore, a free-roam dog management care system is common in Bali, and stray dogs can be found easily almost everywhere in Bali. There



**Figure 2:** Dog after surgical treatment.

A 5 cm mucocoele was removed through the surgery in cervicalis region. The removal was performed to bring back the normal condition of dogs considering that the further aspiration was no longer recommended to be performed while leaving the mucocoele without further treatment will made it bigger due to the saliva secretion. If the swelling became too big for the dog, it can interfere the eating and swallowing and in the worsen condition will interfere dog breathing if the swelling pressure pharyngeal region. The animal can experience dysphagia, ptyalism, or dyspnea (Benjamino et al., 2012). Breathing with snoring sound might be observed in the salivary mucocoele case with a risk to airway occlusion (Watanabe et al., 2012)

For this observed case, surgery to remove leaky ducts or glands is the best treatment option because aspiration can only lead to another saliva accumulation as experienced before and it can higher the risk of worsen case. The immediate treatment and the absence of another disease or abnormality made the fausta prognosis. Surgery can be considered as the best way in treating salivary mucocoele especially when re-accumulations were reported occurred. However, radiation therapy was reported useful for the treatment of recurrent sialocoele refractory to surgical



management (Poirier et al., 2018). This is the first reported salivary mucocele in local Bali dog to our knowledge, hence by considering the common management treatment, the characteristic of Bali dog, and treatment option for salivary mucocele case in dog, it is preferable to perform immediate surgical treatment as a definitive treatment for salivary mucocele in local Bali dog. Aspiration can only resolve the problem temporarily and do not eliminate the main problem. Delayed treatment may result in a worse condition. Post-surgery monitoring need to be performed within first 14 day to observe the recovery progress of surgery site and the possibility of recurrent (Gokulakrishnan et al., 2020; Watanabe et al., 2012). In this case, dog received intensive monitoring within 14 days and the wound was completely closed within these days.

Breed predisposition have been reported in poodles, German shepherd, greyhounds, Australian silky terriers and dachshunds (Guthrie and Hardie, 2014). However, these breeds have no related genetic to Kintamani Bali dog (Puja et al., 2005) which was relative to local Bali dog. This eliminated breed predisposition factor of salivary mucocele case in local Bali dog, even though prevalence of the case need to be studied further to see every possibility contributing to the case.

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## NOVELTY STATEMENT

This is the first reported case of salivary mucocele treatment in a local dog in Bali, Indonesia

## AUTHOR'S CONTRIBUTION

All authors share in the work design, practical section as well as, analysis of the results, writing and revising of the manuscript.

## CONFLICT OF INTEREST

The authors have declared no conflict of interest

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