

# Surgical Management of Dogs’ “CorkScrew Tail” (caudectomy) & Tail Fold Pyoderma

**Keywords:** *Ingrown tail, screw tail, tail deviation, tail fold, pyoderma, brachycephalic breed.*

**ABSTRACT.** Screw tail is an abnormal deviation of the terminal coccygeal vertebrae resulting in tail fold pyoderma. This condition is common in brachycephalic breeds, especially English bulldogs. Tail fold pyoderma, the result of skin maceration & bacterial colonization, may create pain & discomfort in these dogs. Local antibacterial combined w/ systemic antibiotic therapy is aiming at decreasing the number of surface bacteria of the skin & alleviate clinical signs before surgery. Complete caudectomy will lead in permanent resolution of clinical signs w/ minimal complications.



**Figure 1.** Tail deviation in an English bulldog. The dorsal tail fold is evident.



**Figure 2.** Screw tail with severe ventral deviation and pyoderma in an English bulldog

**Figure 2.** Screw tail with severe ventral deviation and pyoderma in an English bulldog



**Figure 3.** Pathophysiological mechanisms involved in screw tail and tail fold pyoderma.

## EPIDEMIOLOGY & PATHOPHYSIOLOGY

Screw tail (Ingrown tail or corkscrew tail) is a condition characterized by deviation & inward growth of the tail due to ventral & cranial diversion of the terminal coccygeal vertebrae. This condition often creates redundant & deep skin folds around the base of the tail (Fig.1). Screw tail is encountered in English bulldogs; other brachycephalic breeds including French bulldogs, pugs, Boston terriers, & Schipperke dogs also, may be affected. The size of the dog, the amount of loose skin & fat accumulation around the tail base & the degree of the coccygeal vertebrae deviation determines the depth of skin folds. The loose skin around the tail base leads to chronic apposition & overlap that results in fold formation. Obesity plays a role in exacerbating the condition. Chronic friction b/t these folds results in microtraumatization & irritation leading to secondary maceration & inflammation. Inadequate fold ventilation & poor drainage may create a moist & worm environment allowing accumulation of surface debris including sebum, urine & feces resulting in surface bacterial overgrowth to occur. This bacterial infection is called surface pyoderma of the tail folds (Fig.2). Licking, self-mutilation & perineal scooting exacerbates the condition. The pressure of the deformed tail creates pain. Microorganisms isolated from tail fold pyoderma include coagulase-positive Staphylococci, Staphylococcus intermedius, Streptococcus, Escherichia coli, Pseudomonas, Proteus Malassezia Pachydermatis & Candida. As more irritants are produced a vicious cycle is created. Impairment of immune response, coexisting disease, other inflammation, severe pruritus, scar tissue formation & unwarranted initial therapy are all negative prognostic factors making the disease more difficult to manage. The main pathophysiological mechanisms that involved in screw tail & tail fold pyoderma are shown in figure 3.



**Figure 4.** The dog is placed in dorsal recumbency with a towel roll under its hind limbs.



**Figure 5.** An elliptical skin incision is made to include the whole tail base distal to the caudectomy region. The skin dorsal to the tail base is preserved for a tension free closure.

## CLINICAL SIGNS

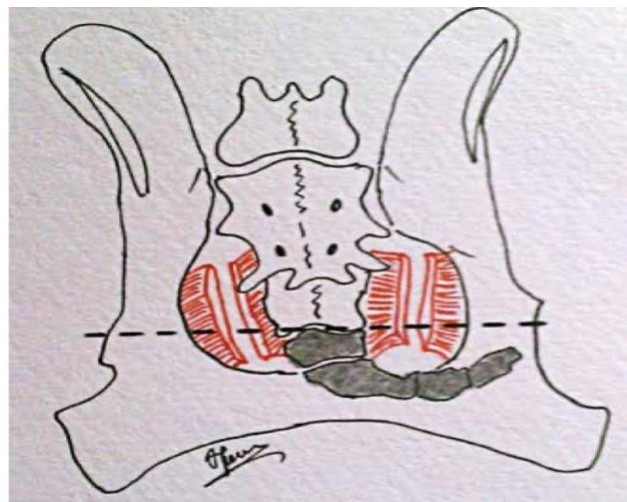
Initial clinical signs of tail fold pyoderma include erythema & slight exudation. Gradually the skin lesions extend affecting all fold surface & the exudation increases in time. Pain, pruritus, rubbing & scooting are some common clinical signs & in more severely affected dogs erosions ulcers & sinus tracts may be seen, while foul odor from the affected area may also be noticed.

## PRE-OPERATIVE MEDICAL MANAGEMENT / Diagnostics

Medical treatment of tail fold pyoderma is usually palliative. Recurrence is highly likely because infection in these cases is secondary to a tail deformity. A one-week medical treatment is necessary before surgery to decrease the bacterial numbers & the amount of skin inflammation at the time of surgery since infection rates before surgery account for 40% of the dogs of a study. Medical therapy includes local & systemic antibiotic administration & application of scrubs & antiseborrheic shampoos aiming at removing the surface organisms & entrapped debris before surgical intervention. Antibiotics can be selected empirically & they must have a broad spectrum of activity mainly against *S.intermedius*, which is the most commonly associated pathogen in canine tail fold pyoderma. Culture (aerobic & anaerobic) & sensitivity are helpful in selecting the appropriate antibiotic treatment in some dogs. Based culture, your surgeon may elect to use local KERRIER antibiotic beads to treat & prevent further post-surgical infection.

## SURGICAL MANAGEMENT

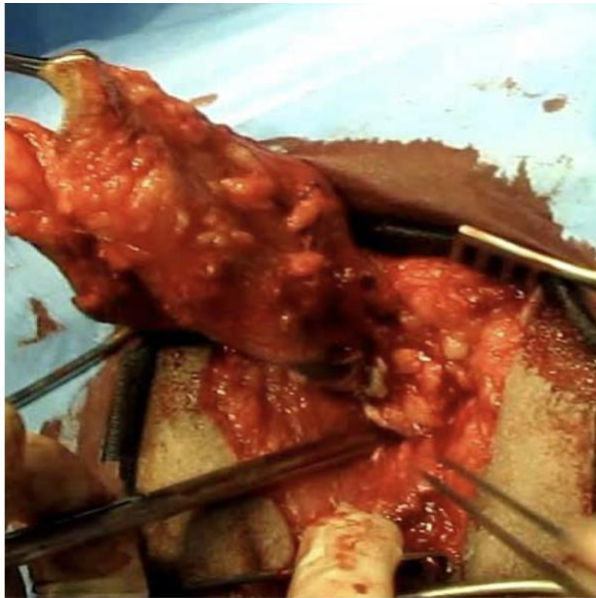
The goal of surgery is to remove the skin folds & to amputate the screw tail (caudectomy) in the majority of the dogs. Preoperative or perioperative antibiotics including cephalosporins, amoxicillin-clavulanate acid should be given & continued after surgery since most surgeries are classified as contaminated or dirty. The hair is amply clipped from the perineal area, tail base, tail folds & a purse string suture is placed around the anus. The dog is placed in sternal recumbency w/ a towel roll under the hindlimbs, which are flexed over the end of the surgical table (Fig.4). In the presence of skin fold pyoderma incisions should include the whole diseased & redundant tissue taking care to avoid spreading the bacteria along the surgical field.



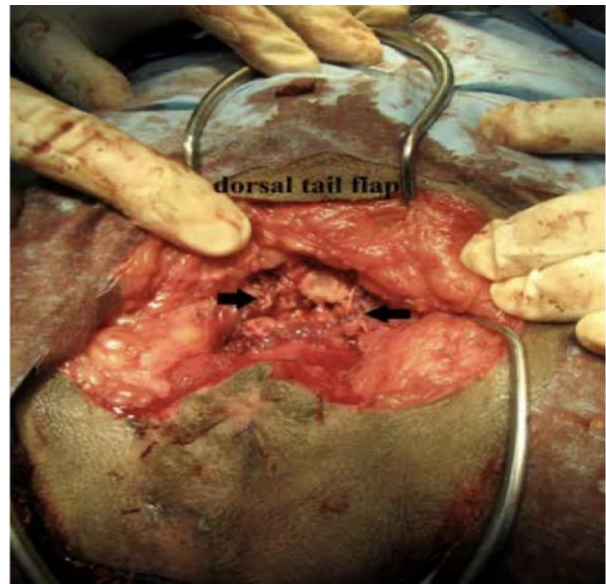
**Figure 6.** The muscular attachments are divided (red color) and the terminal coccygeal vertebrae are transected (dashed line)

## CAUDECTOMY: Surgical Approach

A wide horizontal elliptical incision is performed around the whole tail base distal to the caudectomy site after the tail was grasped & elevated w/ towel forceps. The skin dorsal to the tail base is preserved to allow a tension free closure (fig.5). The coccygeal, rectococcygeal & levator ani muscles are divided at their attachments to the coccygeal vertebrae (figs.6 & 7). Care was taken to avoid dissection ventral to the coccygeal vertebrae to preserve the pelvic diaphragm & rectum. The caudal arteries were isolated & cauterized or ligated. Caudectomy is done by disarticulation or transection w/ bone cutters (figs. 8 & 9). Bone hemorrhage is controlled by bone wax application. The wound is closed by careful apposition of transected muscles followed by a routine closure of SC tissue & skin (figs. 10 & 11).



**Figure 7.** Tail has been freed from its muscular and fascial attachments.



**Figure 8.** Tail was amputated. Muscular attachments are marked with arrows. A skin flap has been created from the dorsal tail fold to allow a tension free closure.



**Figure 9.** Amputated tail.



**Figure 10.** Subcutaneous tissue is closed in a simple interrupted fashion.



**Figure 11.** An English bulldog following reconstruction of caudectomy region.

## **VERTEBRECTOMY & TAIL FOLD DERMATITIS**

Some owners are unwilling to proceed in caudectomy since tail fold preservation is important conformation feature of show animals. Tail fold maintenance in these dogs, however, may result in a continuous inflammatory process, which needs long term medical management & will not lead to definite resolution of the pyoderma. A curved incision (tail flap) is made dorsal to the tail that permits coccygeal vertebrectomy rostral to the deviated vertebrae following transection of their muscular attachments. Wound is routinely closed.

## **ANALGESIA (PAIN MANAGEMENT)**

- Local regional nerve block or epidural.
- Nocita: 3-day local pain block.
- Simini: anti-bacterial lavage.

## **COMPLICATIONS**

Post-operative complications in dogs undergoing partial caudectomies performed for reasons unrelated to screw tail & tail fold pyoderma include incisional crusting, delayed wound healing associated w/ dehiscence, self mutilation & severe inflammation required revision of the tail stump. Complications following caudectomy in brachycephalic dogs for the management of screw tail & tail fold pyoderma are considered of minimal significance. Complications soon after surgery including decreases rectal sensation, failure to posture to defecate & draining tracts. Long term complications including prolonged wound healing & inflammation, tail chasing & temporary changes in defecation habits. Most complications resolve following appropriate medical or surgical treatment.



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Most of the Information above is found here below: <https://pdfs.semanticscholar.org/a298/f917b7ea01fb9b394c55592d77edbecbd2a85.pdf>

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