

“Dusty” Beman

An oral tumor/maxillectomy case report

“Dusty” is a 10 year old, male/neutered, 36kg Golden Retriever that presented at our clinic for a second opinion regarding an oral tumor near tooth #204. Five months prior, “Dusty” presented at his regular veterinarian with a 4cm x 3.5cm, firm growth protruding from the attached gingiva and alveolar mucosa near tooth #204. Dental radiographs were not available to be taken, however a biopsy of the mass was submitted. The histopathology report was inconclusive stating that the piece of gingiva and underlying tissue could be a part of an epulis, but the lesion is only present at the very deep margin and so a more definitive diagnosis is not possible. No further treatment was recommended. When “Dusty” presented at our clinic, the tumor was 4cmx 3.5cm with approximately 2cm of necrotic bone, osteomyelitis present and severe halitosis. The owner informed us that the site was not closed after his prior surgery. “Dusty” had been on 500mg of amoxicillin trihydrate/clavulanate potassium twice a day for 5 days prior to his visit at our clinic. Radical resectioning surgery of the maxilla to remove all necrotic bone was recommended with multiple deep bone and soft tissue samples taken to be sent off for a biopsy.

Epulides (epuli) arise from the epithelial rest cells of Malassez which are remnants of Herwig’s epithelial root sheath residing in the periodontal ligament.^I They are very common in dogs and have three classifications; fibromatous, ossifying and peripheral ameloblastoma (acanthomatous). Although they are benign tumors, the acanthomatous epulis can be very locally aggressive, requiring radical surgery of at least 1cm clean margins. Since these tumors arise from the periodontal ligament it is not enough to resect just the tumor. Removal of the tumor, tooth, and periodontal ligament is usually curative with the fibromatous epulis however; with the ossifying and acanthomatous epuli radical resectioning of the jaw bone is required. Radiation has also been successfully used with the acanthomatous epulis and has been shown to control well over 90% of these tumors; however there have been reports of malignant tumor formation in 20% of the cases.^{II} Osteomyelitis is a bone infection most commonly occurring from a tooth/jaw fracture and tooth infections.^{III} Surgical treatment involving removal of infected bone with a curette is required^{IV}. In “Dusty’s” case, the unsutured and

non-healing biopsy site, possible cancer, possible tooth infection and length of time between procedures were all possibilities of how this progressed to the level of disease present.

“Dusty” had a recent general health blood profile completed at his regular veterinarian that was within normal limits. His overall health was in good condition and his pre-surgical exam showed no abnormalities. “Dusty” was premedicated with a combined subcutaneous injection of 0.3mg/kg dose of butorphanol, 0.002mg/kg dose of acepromazine and 0.006mg/kg dose of glycopyrolate at 11:00am. He was given a combined intravenous injection of 2.1mg/kg dose of ketamine HCL and 0.1mg/kg dose of diazepam and masked down on 6% sevoflurane, 0.5L/min. oxygen and 1L/min. nitrous oxide. He was then intubated and maintained on 3% sevoflurane and 1L/min. oxygen. A 22g IV catheter was placed in his left saphenous vein and lactated ringer’s solution was started at a rate of 5mls/lb/hr. His heart rate, blood pressure, and pulse oximetry were monitored using a VetSpects VSM7. His body temperature was maintained using a circulating hot water blanket. “Dusty’s” intra-oral exam, excluding tooth #204, showed a gingival index I of III, showing mild gingivitis, calculus index I of III, less than half of the tooth covered with calculus^v, and he had attrition wear on tooth #104. Intra-oral radiographs were taken of tooth #204 revealing an area of abnormal bone loss at the distal aspect of tooth #203 and the mesial aspect of tooth #204. The treatment plan was to perform radical resectioning surgery of the maxilla to remove all necrotic bone and take multiple deep bone and soft tissue samples to be sent off for a biopsy.

Our clinic utilizes regional anesthesia that further assist in pain control for our patients that consist of a 50/50 mixture of 0.5% bupivacaine and 2% lidocaine. This provides the patient with pain relief for 6-8 hours post procedure.^{vi} “Dusty” was given 0.2mls of the regional anesthesia in the left infraorbital foramen, which affects the rostral maxilla.^{vii} He was also given 0.2mls of the regional anesthesia in the palatine foramen to affect the palatal structures. “Dusty” was given ampicillin at a dose of 10.8mg/kg subcutaneously for antibiotic therapy during his procedure.

A #11 blade was used to create a releasing incision on the distal aspect of tooth #202, incorporating the tumor and extending to the mesial aspect of #205 to create a full-thickness mucoperiosteal flap. The gingiva was elevated above the mucogingival line using a periosteal elevator to expose the buccal and labial cortical bone. Using a #701L bur, a groove was formed with a 1cm margin around the tumor into the incisive and maxillary bone. An osteotome was used to sever the bony attachment

and elevate the piece of maxilla. When the tumor and bone were excised, the tumor appeared to be large, encapsulated and calcified. The underlying alveolus and maxillary bone had a deep layer of abnormal tissue present that was cleaned using a bone curette. A #4 winged elevator was inserted to sever the periodontal ligament of teeth # 203 and #205 and elevate the tooth from the alveolar bone. Extraction forceps were used once the teeth were mobile to extract #203 and #205. Osteoplasty was performed on the entire area using a bone curette and a cylindrical diamond bur. A post-operative radiograph was taken to ensure a clean post-operative site. The periosteum was incised using a #11 blade to release the mucoperiosteal flap for a tension free closure^{viii}. The gingiva was sutured with 4-0 Monocryl Plus®. The entire mass and several, small surrounding pieces of bone and gingiva were submitted for biopsy.

“Dusty” did very well during his anesthetic procedure. I monitored his vital signs every 15 minutes. His body temperature was consistently between 96-99 degrees F. His blood pressure maintained stable, heart rate was consistently between 80-100 b/min, oxygen saturation was consistently between 89-99%, and his respiratory rate was consistently between 12-15 br/min. I also evaluated his jaw tone to ensure proper anesthetic depth. “Dusty” was recovered from anesthesia at 1:30pm. “Dusty” was prescribed 100mg of deracoxib daily for pain management and was to continue the previously prescribed amoxicillin trihydrate/clavulanate potassium for an additional 7 days for infection control. I advised his owners that he may have some bleeding from his left nostril since the tumor was close to (but not invading) the nasal canal. This should clear within a few days. His owners were advised to feed soft food and no chew toys or rough play for 14 days to allow the gum tissue to heal.

I made a follow-up call with “Dusty’s” owners the next day to see how he was doing. His owners said he was a little lethargic, but ate his soft food well. They were advised to call with any concerns.

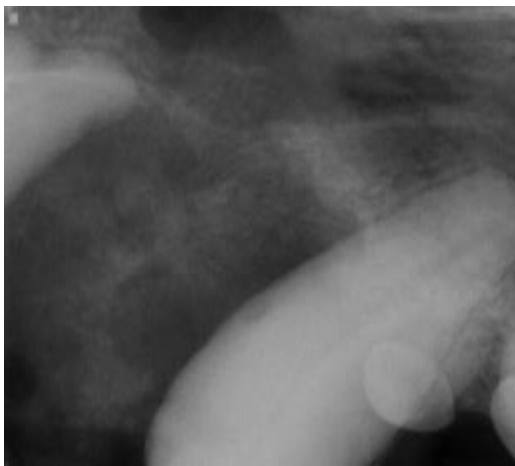
“Dusty’s” biopsy report indicated that the mass was an odontogenic cyst lined by a thickened wall of well-differentiated keratinizing stratified squamous epithelium and associated chronic-active gingivitis and osteomyelitis. Complete excision is generally curative. We informed the owner that we would like to recheck “Dusty” in a month to see how this area is healing and to call with any concerns or questions they may have prior to his recheck.



Tumor/osteomyelitis of tooth #204



Peri-operative picture of tumor/osteomyelitis of tooth #204



Pre-operative intra-oral radiograph, notice the bone loss between #203 and #204



Excised tumor/capsule/maxilla/gingiva



Post-surgical intra-oral radiograph



Post-surgical site

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- ^I Small Animal Dental Equipment, Materials and Tehniques A Primer, Bellows, Blackwell, 2004 pg 334
- ^{II} Veterinary Dentistry Principles & Practices, Wiggs, Loprise, Lippincott-Raven, 1997 pg 132
- ^{III} Veterinary Dentistry Principles & Practices, Wiggs, Loprise, Lippincott-Raven, 1997 pg 128
- ^{IV} Small Animal Dentistry, Harvey, Emily, Mosby, 1993, pg. 323
- ^V Veterinary Dentistry for the Small Animal Technician, Kesel, Iowa State Press, 2000 pg 126 & 129
- ^{VI} Small Animal Dental Equipment, Materials and Tehniques A Primer, Bellows, Blackwell, 2004 pg 106-109
- ^{VII} Regional nerve blocks key to delivering quality dental care
Beckman, DVM NEWSMAGAZINE, Sep 1, 2007
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- ^{VII} Small Animal Dentistry, Harvey, Emily, Mosby, 1993, pg. 354