

Dentigerous Cyst Removal and Bone Graft - Offering an alternative to extracting teeth.

AAPS is proud to announce that we are now offering more advanced dental procedures to help with the rise in dental conditions and abnormalities.

An example of a successful advanced procedure is described below.

Case Study - Sandy- 8yr old Cavalier X diagnosed with a dentigerous cyst associated with unerupted 305

History

Sandy came through our shelter as an adult and during her admission check the shelter vets noted significant periodontal disease graded at Dental Grade 3, as well as a few missing teeth. She was then booked in for a COHAT (Complete Oral Health Assessment and Treatment) under general anaesthetic to provide periodontal treatment as well as further investigation of missing teeth.

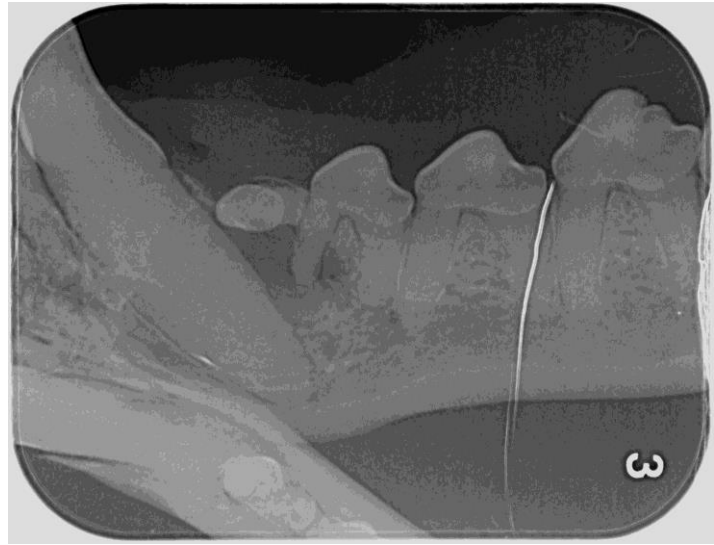
Clinical Examination

On dental examination, Sandy was noted to have moderate to severe generalised periodontal disease. Every dog at AAPS that is consciously graded at Dental Grade 2 and above automatically gets full mouth intra-oral radiographs as part of their dental procedure. This is based on a study that revealed ~30% of clinically relevant



Pre-Operative Radiograph -
DV view, note unerupted 305,
but also retained tooth roots
403, 403, >50% bone loss on
303, 302

pathology is missed without screening dental radiography¹. On Sandy's intra-oral radiographs, it was noted that she had an unerupted 305, with a significant increase



Pre-Operative Radiograph - Lateral View, please note, large radiopaque line extending vertically from distal edge of 307 is artefact from a damage on plate.

in radiolucency extending from 303 through to 306.

Assessment

Based on radiographic findings, Sandy was suspected to have a dentigerous cyst, secondary to an unerupted tooth. Dentigerous cysts are most commonly diagnosed in the area of an unerupted mandibular first premolar in brachycephalic dogs. Patients with this condition have the cystic lining develop around the crown of the unerupted tooth, but with time, will encompass the entire tooth and continuously expand leading to bone resorption and severe jaw weakening. In untreated cases, dentigerous cysts have been known to cause pathological jaw fractures².

Treatment

Sandy underwent a Complete Oral Health Assessment and Treatment (COHAT) under general anaesthetic, where she had all her teeth assessed for developing

¹ Verstraete FJ, Kass PH, Terpak CH. Diagnostic value of full-mouth radiography in dogs. *Am J Vet Res.* 1998 Jun;59(6):686-91. PMID: 9622735

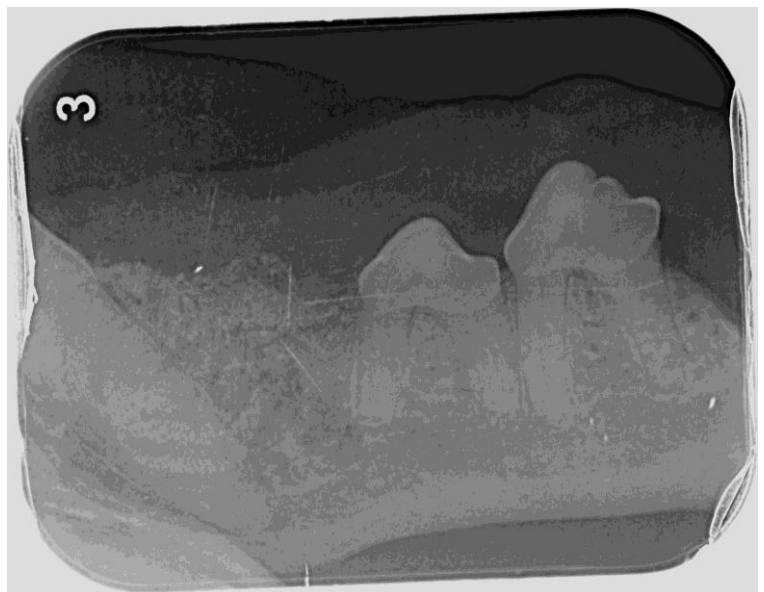
² Baxter CJ. Bilateral mandibular dentigerous cysts in a dog. *J Small Anim Pract.* 2004;45:210–212. [PubMed] [Google Scholar]

periodontal and endodontic disease via dental probing and full mouth intra-oral radiographs. Given Sandy's extensive periodontal disease, as well as the presence of the suspected dentigerous cyst, her dental procedure was staged to minimize anaesthetic related risks and side effects.

- First anaesthetic was used to remove existing periodontal disease and perform closed and surgical extraction of periodontally diseased teeth.
- Second anaesthetic was performed 2 weeks after the first anaesthetic, allowing the gingiva to heal, and have a significantly reduced plaque burden to then perform treatment for the suspected dentigerous cyst.

Treatment of the dentigerous cyst^{3,4}

- Mouth lavage with 0.12% chlorhexidine
- Mucogingival incision over area of unerupted 305, extraction of 305 and 306
- Curetting of cystic lining, complete removal with cystic lining sent for histopathology to allow confirmation of diagnosis
- Placement of autologous fibrin rich blood clot, mixed with synthetic bone graft material ('Synergy') into defect
- Routine tension free closure of the mucogingival flap



Immediate Post Operative Radiograph - 305, 306 has been extracted, and defect filled with mixture of fibrin rich autologous blood clot mixed with synthetic bone grafting material

Post Operative

³ Thatcher G. Oral Surgery: Treatment of a dentigerous cyst in a dog. *Can Vet J.* 2017 Feb;58(2):195-199. PMID: 28216693; PMCID: PMC5234324.

⁴ Tambella, A.M.; Bartocetti, F.; Rossi, G.; Galosi, L.; Catone, G.; Falcone, A.; Vullo, C. Effects of Autologous Platelet-Rich Fibrin in Post- Extraction Alveolar Sockets: A Randomized, Controlled Split-Mouth Trial in Dogs with Spontaneous Periodontal Disease. *Animals* **2020**, *10*, 1343.

Sandy's new owners were advised to feed soft food for 14 days post treatment to allow her mucogingival flap to heal fully. She re-presented to the shelter 7 days post treatment to ensure there was no post operative infection or flap failure. Sandy's oral surgery site had healed well and 14 days post operatively she was started on an oral hygiene program.



6 months post operative radiograph - There has been remodeling of bone with development of the radiolucent line around 304 suggesting

As per our recommendations, Sandy then re-presented to our shelter for repeat radiographs 6 months post operatively to ensure the bone grafting was successful.

Indications for the Procedure

In small breed dogs such as Cavalier crosses, the mandibular canines contribute a significant amount of strength and stability to the rostral mandible, and due to this procedure, AAPS was able to save the 304 and significantly reduce risk of pathological fractures. Due to this, AAPS was also able to avoid any iatrogenic fractures that may have resulted from extraction of the 304.

Discussion

The most frequent unerupted tooth was the first premolar tooth (78%) followed by canine and third molar tooth. In this specific study, 44.4% of unerupted teeth were associated with dentigerous cysts, with brachycephalic breeds being over-represented.

Cystic structures associated with unerupted teeth were predominantly benign, however 3 cases of neoplasia (2 ameloblastoma and 1 osteosarcoma) was also diagnosed associated with unerupted teeth.⁵

⁵ Bellei E, Ferro S, Zini E, Gracis M. A Clinical, Radiographic and Histological Study of Unerupted Teeth in Dogs and Cats: 73 Cases (2001-2018). *Front Vet Sci.* 2019 Nov 8;6:357. doi: 10.3389/fvets.2019.00357.

This is the reason we recommend a dental check when patient is 6-7 months of age, and if noted on examination, recommendation made to radiograph missing teeth and extract reducing the risk of cyst formation.

Advanced procedures currently performed

ENDODONTIC TREATMENT

- Evaluation and Treatment for uncomplicated crown fractures with restorations
- Full mouth restorations
- Crown Reduction and Vital Pulp Therapy

PERIODONTAL TREATMENT

- Complicated extractions such as toy breeds with risk of jaw fracture
- Feline Chronic Gingivostomatitis
- Furcation treatment and bone grafts
- Dentigerous Cyst removal

ONCOLOGICAL TREATMENT

- Oral soft tissue mass removal
- Segmental maxillectomy
- Rostral Mandibulectomy

ORTHODONTIC TREATMENT

- Juvenile interceptive orthodontics
- Crown Height Extensions

Services soon to be offered

- Root Canal Therapy
- Jaw Fracture Repair

Dr. Suruchi Perera, graduated in 2015, and has a MANCVS in Small Animal Dentistry and Oral Surgery and is keen to help you and your clients out by spreading knowledge regarding dentistry in our veterinary patients, enabling your clients to have pets with pain free functional mouths.

****Disclaimer - Dr. Suruchi Perera is NOT a dental specialist, and if you are considering referring any dentistry cases to AAPS, please ensure your clients are aware of this. There are only two board certified dental specialists in Victoria, Dr David Clarke and Dr Robert Menzies.**