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## Surgical treatment of sinus mucocele in miniature horse breeds: long-term follow-up of 7 cases

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### Introduction

Diagnostic procedures, treatment options and long-term follow-up of different sinonasal pathology in horses such as primary and secondary sinusitis<sup>1-3</sup>, sinonasaal cysts<sup>4</sup>, progressive ethmoid haematoma<sup>5-6</sup> and sinus neoplasia<sup>7-8</sup> have been described in veterinary literature. Equine reports focused on sinus mucocele are rare. Mucoceles are believed to develop following obstruction of the aperture between sinus and the nasal cavity. Progressive deformation of the surrounding structures is the result of continuous mucus production and accumulation in the isolated sinus compartments. The most common causes of occlusion of the drainage towards the nose in humans are chronic infection, allergic sinonasaal disease, trauma, previous surgery<sup>9-10</sup>. In equine literature this pathology has not been reported in some larger cohort retrospective studies<sup>1,11</sup>. An older case-report briefly discusses mucocele sinusitis in a thoroughbred filly resolved by simple trephination, flushing and antimicrobial treatment<sup>12</sup>. A more recent case-report describes the use of a caudally based frontonasal bone flap to successfully resolve bilateral sinus mucocele in an American Miniature Horse<sup>13</sup>. We describe the long-term follow-up of 7 cases of sinus mucocele treated by bone flap surgery and re-establishing drainage towards the nasal cavity.

### Material and methods

A retrospective study was conducted of all sinus pathology cases referred to the equine services of the Faculty of Veterinary Medicine at Ghent University between January 2015 and January 2018. Inclusion criterion was uni/bilateral accumulation of fluid within the different sinus compartments in the absence of other sinus pathology such as sinusitis, sinus cyst, PEH or neoplasia. In January 2018, a call was distributed to EVDC Eq specialists to contribute comparable cases from their case load.

## Results

Diagnosis of bilateral (n=6) or unilateral (n=1) sinus mucocele in young miniature pony breeds ( $2,3 \pm 0,7$  y) was based on clinical symptoms, endoscopy, radiography and/or CT scan of the head. Commonly encountered symptoms included progressive facial deformation, chronic nasal discharge and progressive respiratory distress caused by obstruction of the nasal passages. Standard and oblique radiographic projections were characterised by homogenous attenuation of different paranasal sinus cavities in the absence of any other pathology. CT scan analysis further confirmed the presence of fluid occupying the sinus cavities. A single caudally based frontonasal flap as described by Easley et al. (2012) was used in 6/7 cases to simultaneously access the sinuses on both sides of the head. Perforation of the floor of the dorsal concha allowed for introduction and fixation of nasal tubes to ensure development of a permanent large communication between sinuses and nasal passages. Complications included intraoperative haemorrhage, postoperative incisional drainage, premature nasal tube dislocation and persistent nasal discharge. Long-term outcome following a median period of 19 months was very good in all cases with no recurrence of nasal discharge, normal patent nasal passages and excellent cosmetic results.

## Conclusion

Long-term outcome following a frontonasal sinusotomy approach and nasomaxillary drainage repair for treatment of sinus mucocele in miniature pony breeds can be considered positive. Especially young miniature pony breeds seem to be susceptible to the development of this rarely encountered sinus pathology. This should be considered in the differential diagnosis of progressive facial deformation and associated respiratory noises in these breeds.

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