Diseases afflicting the paranasal sinuses were recognised by veterinary authors in the nineteenth century and many of the treatments applied today were considered and applied in some cases as far back as these times. Those authors did not have the luxury of general anaesthesia and consequently all procedures were performed standing. Currently history has come full circle and many intra-sinus treatments are performed standing in the present day. Progress has been made to improve the outcomes with reduced morbidity largely due to advances in sedative analgesic techniques, diagnostic imaging and endoscopically guided instrumentation. This has enabled great improvements in treatment planning, precision and thence prediction of a favourable outcome, with a greater understanding of the reasons for failure of previously attempted treatments.

Paranasal sinus disease is usually the consequence of obstruction of drainage ostia as a consequence of inflammatory processes initiated by primary bacterial infections, bacterial or fungal infection secondary to other disease processes, space-occupying expansile lesions or as a consequence of trauma. Historically treatment of sinus disease has a high recurrence following medical or open surgical approaches. Therefore a thorough appraisal and imaging before planning treatments is never wasted. Most cases are chronic and therefore treatments are rarely urgent even if it is convenient to treat them as so. A detailed history should be taken before starting any examinations and should include the possibility of transmissibility, recurrence, progression, previous treatments and responses (with details of medications including doses and frequency). The clinical appraisal should include a careful clinical examination with percussion, and a detailed examination of the oral cavity and dentition, preferably with an oroscopic examination. Dental lesions should be noted for further imaging investigation. Nasal endoscopy will confirm the source of any discharges, and can discount pharyngeal or lower respiratory tract differential diagnoses.

A radiographic examination should include lateral projections and lateral 30°dorsal oblique projections of the maxillary arcade and a dorsoventral projection with the mandible displaced to the unaffected side. Open mouth views with some protected screen placed inside the mouth can reduce the confusion caused by superimposition. Where possible a CT examination of the head should be performed (fig 1). CT is able to reveal the changes within the individual sinus compartments in transverse section which can be useful to optimise surgical approaches. In addition the impact of any lesions on adjacent structures such as dental apices, infraorbital nerve and the involvement of obscure compartments will be revealed. The anatomy of the paranasal sinuses varies with age, breed and between individuals and empirical estimates of landmarks are often incorrect. The diagnostic information obtained should be appraised thoroughly and where appropriate a surgical plan compiled with contingencies. The goals of sinus surgery are: firstly to remove obstructing lesions including inpissated material; secondly, to restore mucociliary drainage from the paranasal sinuses; thirdly, to minimise iatrogenic trauma and forth to obtain diagnostic biopsies of any expansile masses suspected to be neoplastic. In recent years the trend at our clinic has been to attempt this using a minimal invasive approach using endoscopic guidance (Fig 2). Open surgery is reverted to more rarely, and only when the minimally invasive approach fails to achieve the above goals, or when the work-up indicates a lesions which requires a large portal to achieve access or resection. The preference is to perform the procedure in the conscious horse, with a combination of alpha-2 agonist sedation, opiate analgesia, and regional nerve blocks in all cases. Desensitisation of the infraorbital nerve can be especially critical when treating sinus cysts which can cause lysis of the infraorbital canal.
exposing the nerve. The surgical approaches used are via the frontal or caudal maxillary sinus, after creation of a small bone osteotomy or by using both sites to facilitate triangulation of instrumentation. Communication with the rostral compartments is achieved by intrasinus bullotomy and direct rostral maxillary sinus osteotomy is performed rarely and in horses older that mid teens, where there is inspissated material that is inaccessible via the ventral conchal bullotomy is not possible. Additional nasomaxillary drainage is rarely required and enlargement to a osteoplastic bone flap and sinus surgery under general anaesthesia are increasingly infrequent. The precise surgical technique varies and is tailor made to the individual based on preoperative imaging. Post operative irrigation is beneficial and complications are minimal and usually result from temporary drainage obstruction. With careful pre-operative planning complications can usually be predicted and therefore avoided. Most sinus diseases including primary sinusitis with inspissated material, mycotic sinusitis, sinus cysts, Progressive ethmoidal haematomata, neoplastic biopsy can be treated effectively using this approach. The treatment of tumours, or extensive Progressive ethmoidal haematoma or in fractious or extremely sensitive animals are indications to select an approach via a bone flap or with the horse anaesthetised.

Fig 1. Transverse CT of horse with intranasal and intrasinus progressive ethmoidal haematoma.

Figure 2 Dissection of the ventral conchal bulla under endoscopic guidance.
References

