F. Summary

Surgical procedures at the maxillary sinuses and upper cheek teeth controlled by the c-arch technique

Dental diseases present a frequently appearing problem in equine medicine. The appearing changes at the molar and premolar teeth are normally irreversible. Often the molars are so massively damaged, that an extraction is unavoidable. Infections lead frequently to the encroachment of the existing infection to the alveolar bone, which will be destroyed and an encroachment of the inflammation on the maxillary sinus becomes possible.

Must a molar finally be removed, different techniques are known: the oral extraction, the lateral buccotomy as well as the Repulsion. Each of these techniques owns their before- and disadvantages and therefore not each technology is applicable in each case. For the choice of the surgical technique an exact diagnostic is necessary.

While the lateral buccotomy is suitable as latest method, mainly for the premolar teeth, oral extraction, as oldest and simplest method, applies only at old horses with short roots and/or greatly damaged teeth, as well as at the removal of persistent temporary teeth of young horses. Long roots firmly with the alveolus connected in combination with the limited oral access of the equine mouth makes an oral extraction of premolar and molar teeth often impossible.

The repulsion through the opened maxillary sinus is likewise a very old method. The opening of the maxillary sinus can happen either by means of trepanation or bone-flap. The difficulty of this technology is situated in the determination the root of the tooth, which should be extracted, because the position of the root must be seted from external face of the equine head on a remembered line after Guenther, et al. (1967). Because above the certain position of the root the maxillary sinus is opened and the punch is put on it blindly. This only inaccurate determination can lead to fatal consequences for the patient, because a damage or maybe a removal of the adjacent tooth is possible. Likewise, through the excessive force which is influencing on the dental punch, the alveolus or the palatine bone might be destructed.

The case is different by tooth extraction with application of the intraoperative illumination with the C-arch. This offers the surgeon during the whole surgical

procedure the possibility to controll all his operative acts. So among others an exact identification of the tooth which should be removed is possible, as well as the permanent control of the placement of the instrumentarium.

By the intraoperative fluoroscopy controll the alveolus can be checked immediately following the tooth extraction on complete removal. If still fragments are found in the tooth socket, these could be removed immediately, without, a renewed general anesthetic. Retained tooth fragments disturb the granulation in the dental socket massively. The remaining dental rests appear fistulation, which make a renewed surgical removal in anaesthesia necessary.

The evaluation of the stationary patients confirm, that an improved surgical technique results in avoiding of the above-mentioned intraoperative complications, thus guaranteed a better recovery for the patient.

To be able to judge the roots of the molars exactly, the superimpositon of the contralateral dental arcades must be prevented. To reach this the C-arch must be driven in an angle of 115 degree for the right and 245 degree for the left dental arcade at the equine head. A serie of x-rays was made during a tooth extraction, to demonstrate the very good representation which would reached with the help of the C-arch-technology.

The aim of this theses is, to demonstrate the operative handling and precision of the C-arch navigation by surgery at the maxillary sinuses and premolar and molar teeth at the horse and to illustrate the possibilities of using from this method in the area of the equine upper jaw. Moreover becomes clear, that the frequently appearing of intraoprative complications, which appear by the accomplishment of retrograde repulsion could be avoided and thus this process can be improved. This was tested with heads of slaughterhorses and poved with an evaluation of the stationary patients.