Three Dimensional Corrective Osteotomy for an Antebrachial Deformity in a Dog Using a Subject Specific Surgical Guide

Penelas A, DVM; Gutbrod A, DVM, DECVS; Pozzi, DVM, DACVS/DECVS, DACVSMR, Clinic for Small Animal Surgery, Vetsuisse Faculty University of Zurich, Switzerland

Introduction
A subject specific 3D printed surgical guide was designed for correction of a multiplanar right front limb deformity in a 7 year old, 19.1 kg, castrated cross-breed dog.

Materials and Methods
After determining the CORA and the closing wedge osteotomy, a 3D bone model of the entire antebrachium was created from CT-data. A Polyamid 12 guide was designed based on the bone model and calculation of the closing wedge. The guide included 4 holes for Kirschner wires used for temporary fixation on the radial bone and two osteotomy slits. The angle of intersection of the two osteotomy slits was equivalent to the magnitude of the CORA. Plates were contoured on the 3D printed bone model after removal of the wedge.

Results
The guide closely fitted the radial bone intraoperatively although small amount of material had to be removed because of soft tissue impingement. The post operative x-rays showed accurate correction of the deformity and the control x-rays showed adequate bone healing beside loosening of implants.

Discussion
Subject specific osteotomy guides may allow precise execution of the preoperative planned osteotomy to accurately correct a multiplanar limb deformity.

Acknowledgement:
We thank OPtealis AG for their support during planning and for printing the guide.

References

Contact Information
A. Penelas, Dr. med. vet.
Vetsuisse Faculty, University of Zurich
Departement of Small Animal Surgery
Winterthurerstrasse 260
CH-8057 Zurich
Switzerland
apenelas@vetclinics.uzh.ch