Updated GRSK e.V. Guideline for Quality Assurance in Computed Tomography of Canine Elbow Dysplasia

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CT Acquisition

- Continuous helical acquisition is preferred over axial/sequential acquisition.
- Single-slice scanners may represent an exception where helical acquisition is not available.

Patient Positioning

- Prone/sternal position with both elbows scanned at a time (or alternatively lateral recumbent with the elbows scanned separately).
- The elbow joints should be fully extended to minimize beam-hardening and photon starvation artefacts caused by superimposition of the humerus.
- Ensure that the head and neck are not positioned within the gantry (may not be achievable in lateral recumbent position).

Anatomic Coverage

- The scan volume should extend from the tip of the olecranon to approximately 3 cm distal to the radial head.

Acquisition Parameters

- Tube voltage: 120–140 kVp
- Tube current: approximately 200–250 mA (or equivalent automatic exposure control)
- Rotation time: preferably 0.5–1.0 s (maximum 2.0 s)
- Acquisition collimation: ≤ 0.625 mm
- Reconstructed slice thickness: 0.6–0.65 mm (maximum 1.0 mm)
- Pitch: preferably ≤ 1.0

Image Reconstruction

- Bone algorithm / high-frequency reconstruction kernel.
- Overlapping reconstructions are recommended.
- Reconstruction interval should be ≤ 0.3 mm and smaller than the reconstructed slice thickness.
- Small display field of view (DFOV), typically up to 16 cm, encompassing the elbow joints only.

Documentation and Interpretation

- Images must be provided in DICOM format.
- The entire set of images must be submitted as DICOM files, including the scout/localizer views.
- The image series of each elbow must be clearly marked with Right or Left.
- Institution and date of acquisition must be documented.

Minimum patient identification (DICOM Metadata) should include:

- Patient name
- Date of birth
- Microchip/transponder number

These parameters are intended to ensure adequate spatial resolution and image quality for reliable assessment of medial coronoid disease, humeral trochlear pathology, incongruity, and other manifestations of canine elbow dysplasia.