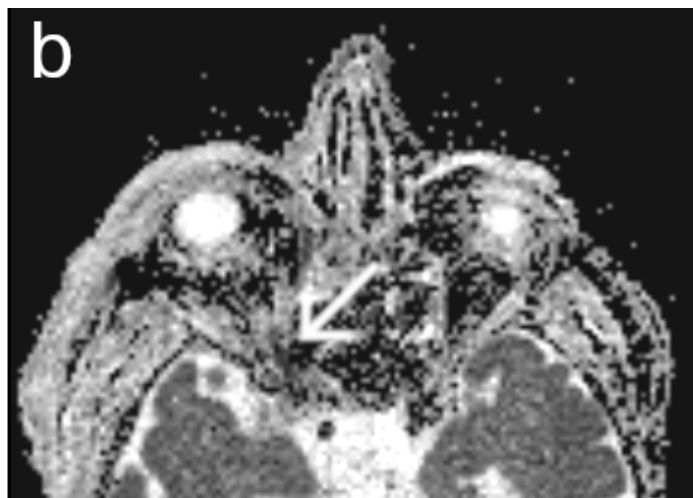


Imaging the tight orbit: radiologic manifestations of orbital compartment syndrome

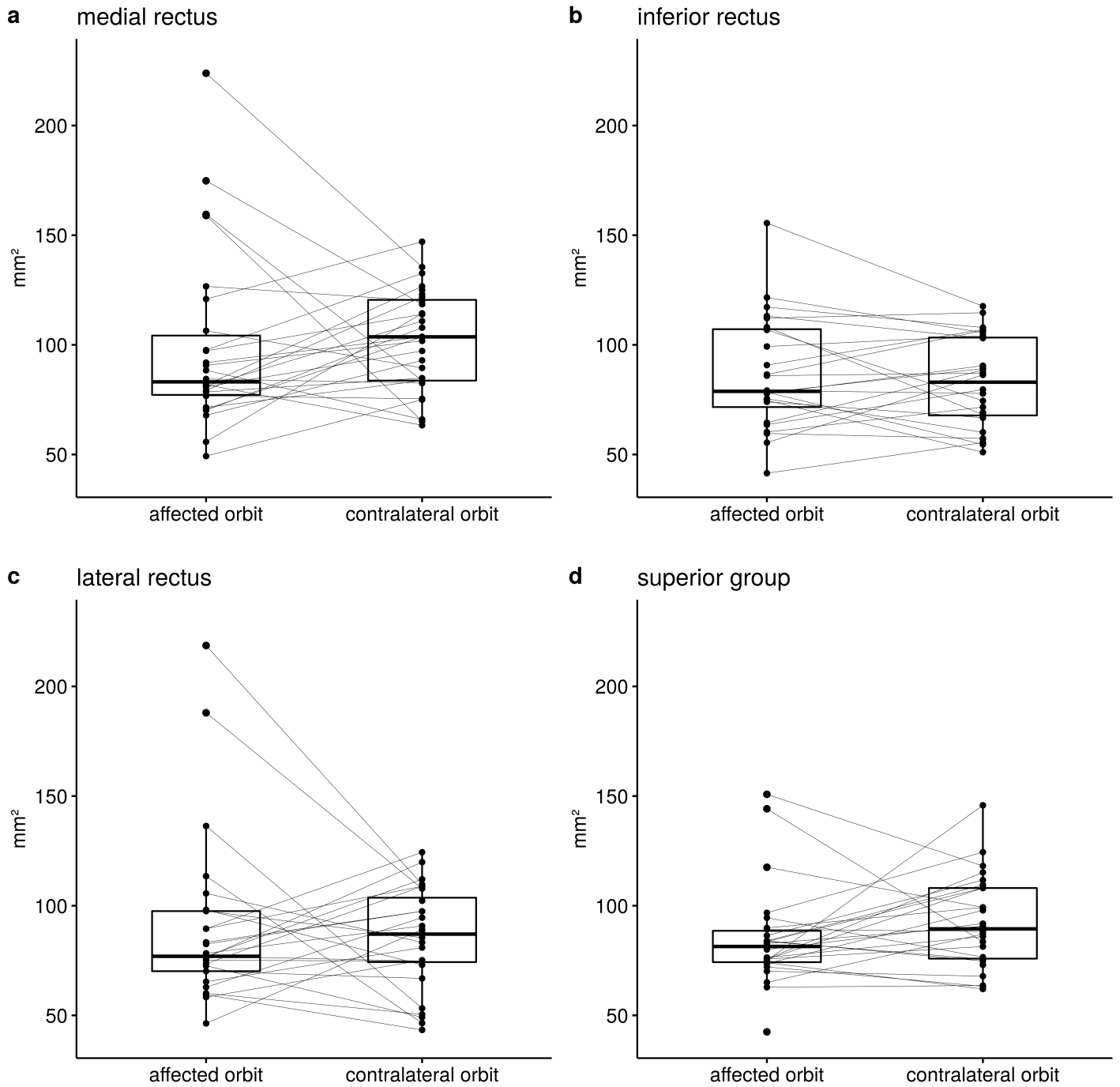
Supplemental Online Data



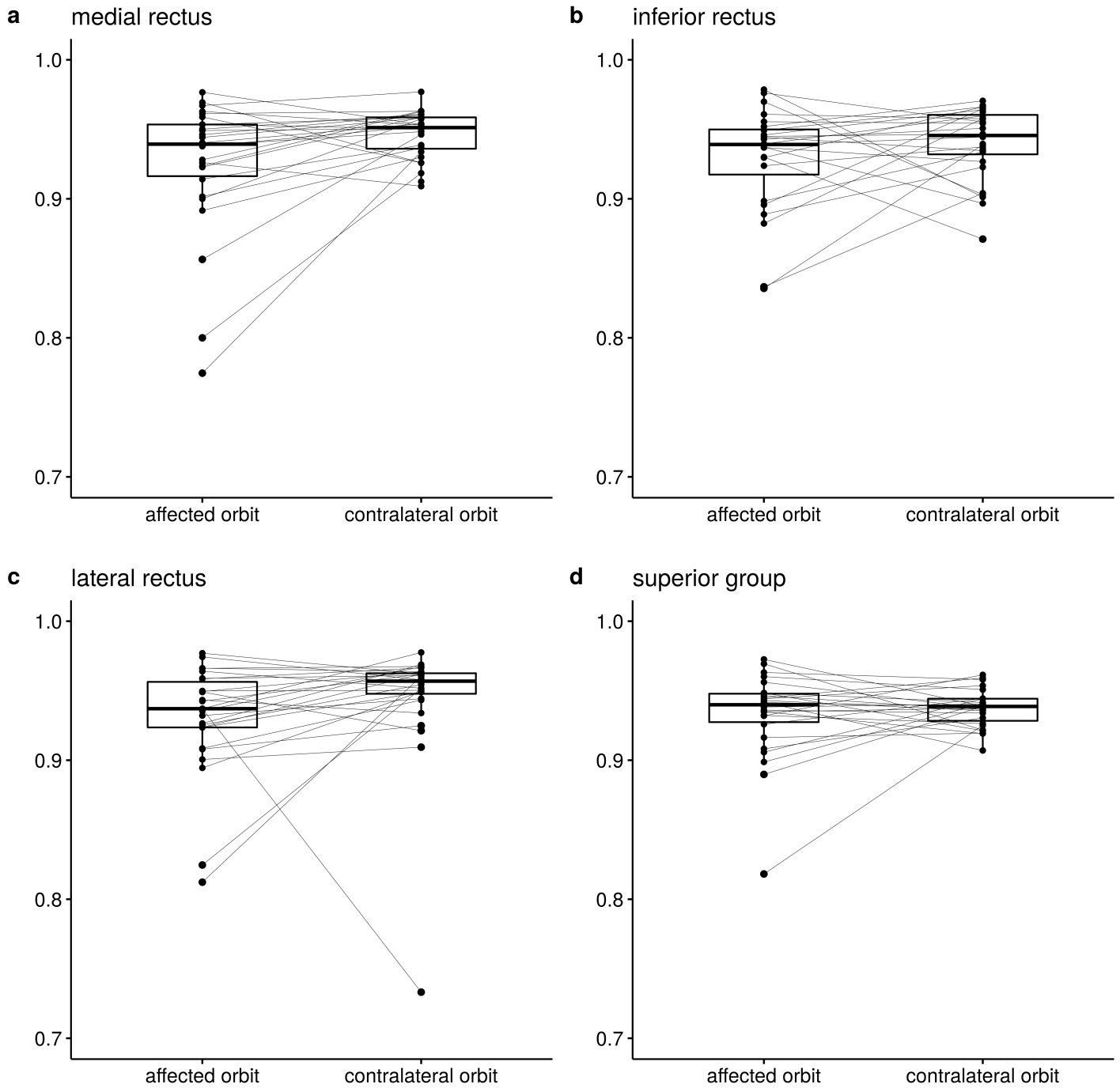
Online Figure I: Exemplary case of left-sided OCS. Axial non-enhanced CT in a 48-year old male patient who suffered from OCS due to traumatic intraorbital hematoma in the extraconal space (white arrow) and in the subperiosteal space (black arrow). Characteristic findings in OCS include proptosis as well as stretching and subtle thinning of the optic nerve (double arrow). Close inspection also reveals a tented deformity of the posterior globe, i.e. a decrease in the posterior globe angle (hooked arrow). On imaging, intraorbital space-occupying lesions (e.g., hematoma or emphysema) have to be differentiated from periorbital findings. In this case, extensive periorbital hematoma can also be seen (dashed arrow). By definition, periorbital lesions are located anterior to the orbital septum and thus do not contribute to the compartment mechanism. Normal findings in the unaffected right orbit are shown for comparison (b). Here, the contour of the posterior globe is round and the optic nerve is slightly undulated, indicating the absence of stretching. This patient also suffered from displaced orbital fractures, partially visualized here. Note that OCS can occur despite of displaced fractures that expand the bony orbit.



Online figure II: Optic nerve infarction. Post-operative MRI in a 64-year old male patient suffering from traumatic OCS who did not recover vision. Readout-segmented echoplanar diffusion-weighted imaging at 1.5T shows hyperintensity on diffusion-weighted image, $b=1000 \text{ s/mm}^2$ (a) and corresponding low ADC (b), consistent with infarction of the optic nerve. Patient had undergone MRI after treatment for OCS, for a clinical indication unrelated to OCS.



Online figure III: Extraocular muscle cross-sectional area. Superior group encompasses superior rectus muscle and levator palpebrae superioris muscle. No statistically significant differences were observed for any of the muscles.



Online figure IV: Extraocular muscle cross-sectional eccentricity. The extraocular muscle bellies are generally elliptical in cross-dsection and eccentricity is a measure of the “roundness” of such shapes. A value of 0 represents a perfect circle and higher values indicate more oblong shapes. Superior group encompasses superior rectus muscle and levator palpebrae superioris muscle. No statistically significant differences were observed for any of the muscles.