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## Scirrhous breast carcinoma metastatic to the orbit: Imaging findings and volumetric analysis of the shrinking orbit

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Metastatic scirrhous breast carcinoma to the orbit is a rare condition. It can cause a paradoxical decrease in the volume of the orbit causing secondary enophthalmos of the affected orbit. Other presenting signs include ptosis, superior sulcus deformity and diplopia. In some cases, the amount of tumor visible on CT or MRI can be much less than the actual degree of involvement. In order to better understand this rare and unusual condition, we performed a volumetric analysis of the various soft tissue components of the orbit using CT and MRI imaging. Imaging software associated with our hospital imaging interface (Synapse, FujiFilm, Tokyo, Japan) was utilized to outline the perimeter and calculate volume of the following structures on each slice of the image: orbit, globe, optic nerve, extraocular muscles, lacrimal gland, fat and visible tumor. Four cases of unilateral metastatic scirrhous breast carcinoma were identified. Imaging demonstrates the tumors as homogenous moderate density masses with indistinct borders. The mean volumes of the optic nerve, muscle and lacrimal glands were not statistically significant ( $p=0.36$ ,  $0.10$ ,  $0.15$ , respectively). The difference in orbital fat was nearly significant (10.43 normal vs. 9.00 diseased,  $p=0.06$ ). Mean tumor volume was 0.29 cc. Although the tumor volume remains small, there can be a disproportionate degree of enophthalmos. In patients with a history of breast carcinoma who develop enophthalmos, even small areas of abnormality on imaging can denote more widespread tumor and should be biopsied.

### Biography

Michael K Yoon is a full time Faculty Clinician and Scientist at Massachusetts Eye and Ear Infirmary/Schepens Eye Research Institute, teaching institutions of Harvard Medical School. His clinical expertise is in orbital diseases including tumors, thyroid eye disease and trauma. His research has focused on orbital anatomy and computer analysis of various structures. He has published over 55 peer-reviewed articles.

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