Abstract
Solitary fibrous tumors are mesenchymal tumors rarely found in the nasal cavity or paranasal sinuses. We report a case of an eighty-nine year old woman with a locally destructive frontal sinus mass. Open resection was undertaken demonstrating a histologically malignant solitary fibrous tumor. We present detailed imaging and histologic findings as well as a literature review of these unusual tumors. Recent advances in the molecular mechanism of transformation is also discussed.

Introduction
Solitary fibrous tumors (SFT) are a rare spindle cell neoplasm most commonly reported in the pleura. They have been described in many extra pleural sites including many head and neck subsites. In the sinonasal tract, these are expansile, locally destructive tumors that can present a unique challenge due to orbital and intracranial involvement. Rarely, there is malignant transformation with aggressive local and metastatic behavior. Only two prior cases of malignant SFT in the sinonasal tract have been reported.

We report a case of malignant solitary fibrous tumor in the naso-orbital-ethmoid complex with intracranial extension in an eighty-nine year old woman. A literature review was performed using the key words hemangiopericytoma, solitary fibrous tumor, and sinus with 27 cases found.

Case History
An eighty-nine year old woman presented with several months of progressive right supraorbital swelling with associated epiphora, headache, and diplopia. Imaging was obtained (Figures 1 and 2). Initial biopsy demonstrated a low-grade spindle cell tumor. Open excision was undertaken through a direct gullwing incision. The tumor was easily separated from the remaining anterior table, peri-orbita, and anterior ethmoid. However, it was intimately associated with the dura. A small cuff of tumor was left on the dura to minimize the risk of a post operative CSF leak. The anterior table was reconstructed with titanium mesh and a pericranial flap utilized to bolster the posterior table. She did well and a 3 month follow up MRI showed no evidence of disease.

Literature Review
Malignant Solitary Fibrous Tumors have been described in pleural and extrathoracic sites with a growing set of data about head and neck involvement [1-4]. There are 27 reported cases of sinonasal SFTs in the literature with 2 prior cases of malignant tumors in the sinonasal tract [5, 6]. SFTs present with symptoms of nasal obstruction, headache, proptosis, epiphora, and diplopia. Therapy for head and neck malignant SFTs has been complete surgical resection with adjuvant radiation. Endoscopic and open approaches have successfully been utilized for resection of sinonasal SFTs [1, 4-10]. While no standardized chemotherapeutic regimes are established, a recent series for all sites showed some success with a combination of temozolomide and bevacizumab in combination of temozolomide and bevacizumab in patients with recurrent or metastatic disease [11].

Histologically, malignant SFT can be difficult to distinguish from other soft tissue sarcomas. CD34 is the most commonly reported marker for SFT, however it lacks specificity because it stains other soft tissue tumors [4, 12]. Similarly bcl-2 has been utilized as a marker for malignant SFT, but is not specific. Recently the NAB2-STAT6 gene fusion was demonstrated in a malignant SFT and has been confirmed by multiple groups to be specific and sensitive marker for SFTs [13-16]. The gene fusion product drives early growth response genes with nuclear localization of STAT6. This now provides a specific and sensitive immunohistochemical marker for these tumors.

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