Recent Advances in In-Office and Intraoperative ENT Imaging

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The introduction of low dosage radiation CT, both in the office and in the operating room, has opened up new opportunities in patient management. The availability of a limited footprint in-office CT enables point of contact imaging without problems associated with complex scheduling across different departments, thus reducing waiting time and improving patient satisfaction.

More recently, a portable low dose intraoperative CT has demonstrated the advantages of an intraoperative CT in evaluating the completeness of surgery while the patient is still under anaesthesia. Data derived from intraoperative CT can be uploaded into image guidance systems providing real time images for additional intraoperative guidance. These types of point of service imaging will likely revolutionize radiographic imaging for sinus disease in the coming years and demonstrate significant patient care and patient satisfaction benefit.

At the same time, significant advances have occurred in image quality with conventional imaging. Computed tomography (CT) and magnetic resonance (MR) imaging play complimentary roles in the assessment of sinonasal pathology. Computed tomography is more sensitive and accurate in assessing the osseous margins of the sinonasal cavity, floor of the anterior cranial fossa, as well as the walls of the orbit.

In the setting of neoplastic disease, MR allows accurate distinction between neoplasm and sinonasal inspissated secretions, mucosal disease and inflammation. The exquisite soft tissue resolution and multiplanar capabilities of MR make it invaluable in assessing for extension of disease outside of the sinonasal cavity into important anatomic locations including the infratemporal fossa, the orbit, as well as intracranial compartment.

Magnetic resonance imaging also provides more detailed and accurate information compared to CT in assessing for dural invasion, pial and parenchymal brain invasion, and cavernous sinus involvement. Important cases that illustrate the complimentary roles of CT and MR imaging in evaluating sinonasal pathology will be reviewed.