# ROLE OF MULTIPHASE CT IN DIFFERENTIATING PLEOMORPHIC ADENOMA FROM OTHER PAROTID NEOPLASMS

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## ABSTRACT

### BACKGROUND

Pleomorphic adenoma of parotid gland shows mild enhancement immediately after IV contrast injection. This property can be used in differentiating it from other parotid neoplasms. The aim of this study was to register the delayed CT enhancement characteristics of pleomorphic adenoma and to compare these results with the enhancement characteristics of other parotid gland tumors.

### MATERIALS AND METHODS

Twenty pathologically proven parotid gland neoplasms were reviewed on preoperative CT scans. Lesions included two cases of Warthin's tumors, two cases of squamous cell carcinomas, ten cases of pleomorphic adenomas, two cases of acinic cell carcinoma, three cases of mucoepidermoid cancers and one case of metastasis. CT scans were performed after administration of 140 mL of IV contrast at three serial intervals -first immediately after contrast injection, second after 8 minutes & the last one after 24 minutes. The mean normalized Hounsfield unit (HU) attenuation of these lesions was calculated by drawing ROI around the entire mass. This CT HU was divided by that of the contralateral uninvolved parotid gland without changing the location within parotid gland and size of ROI.

### RESULTS

Progressive homogeneous contrast enhancement was detected with time in all pleomorphic adenomas. Mean enhancement within the lesion was 1.25±0.30 at 8 minutes and 2.33±0.60 at 24 minutes. For non-pleomorphic adenomas, degree and pattern of contrast enhancement between the immediate and delayed CT scans remained same. In our study, A multiphasic CT for pleomorphic adenoma and non-pleomorphic adenoma had high sensitivity, specificity, positive and negative predictive values (98.5% vs. 82.5%, 94.5% vs. 97.5%, 90.7% vs. 94.5%, 100% vs. 91.7% respectively).

### CONCLUSION

Pleomorphic adenomas show delayed CT contrast enhancement with an increase in homogeneity with time. This feature is useful in differentiating it from other parotid neoplasms.

### KEYWORDS

Parotid Neoplasms, Pleomorphic Adenoma, Multiphase CT Scan.

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### BACKGROUND

Pleomorphic adenoma (PA), also known as a benign mixed tumor, is the most common salivary tumor, establishing up to two-thirds of all salivary gland neoplasms.[1] Mostly, PA is sited in the parotid glands (85%), minor salivary glands (10%), and the submandibular glands (5%).[2] In the majority of cases, tumours arise from the superficial lobe of the parotid gland. However, infrequent cases may involve the deep lobe of the parotid gland and the para-pharyngeal space. PA is usually apparent as a slow succeeding asymptomatic, parotid gland swelling without facial nerve involvement.[3]

Parotid masses are evaluated preoperatively by both CT and MR imaging. MR imaging may be more consistent in the detection of malignant and benign parotid lesions. However, some literature has addressed delayed post-contrast augmentation pattern of pleomorphic adenomas, this feature can be utilized for differentiation of pleomorphic adenoma from other parotid neoplasms.[4] The aim of the study is to determine CT protocol using this delayed post contrast enhancement pattern of pleomorphic adenoma which might improve the lesion detection and distinguish parotid adenomas from surrounding normal parotid tissue.

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# DISTINGUISHING BENIGN LESION FROM MALIGNANT ADRENAL MASSES BY CT SCAN WITH 15 MINUTES DELAYED PROTOCOL

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## ABSTRACT

### BACKGROUND

Adrenal masses are benign, non-hyper functioning adenoma in most of the cases and classified in lipid-rich or lipid-poor adenomas. After injection of contrast with adrenal protocol and delayed washout CT study can differentiate adenomas from other adrenal neoplastic lesions. The aim of this study was to evaluate the effectiveness of MDCT parameters in distinguishing benign from malignant adrenal masses in cancer patients.

### MATERIALS AND METHODS

This study included 64 patients with adrenal masses and was carried out in the period from January 2017 to November 2017. MDCT protocol included pre-contrast scan, dynamic and delayed contrast-enhanced scans assessing the mass size, pre-contrast CT density, histogram, delayed post contrast scan apart from 15-min delayed washout rate, relative percentage washout (RPW) and absolute percentage washout (APW) value. Sensitivities, specificities, accuracies & p-values were calculated for individual and combined parameters.

### RESULTS

Total 64 adrenal masses were evaluated by using CT attenuation values in pre-contrast, venous and 15 min delayed scans, which showed that 15 min delayed images along with APW/RPW can become useful diagnostic tool in differentiating benign adenomas from malignant adrenal neoplastic adenomas with an accuracy of 98.43%.

### CONCLUSION

In adrenal incidentalomas, 15 minutes delayed washout MDCT is mandatory for final diagnosis. Significant accuracy in differentiating adrenal adenomas at APW P60% AND RPW P40%.

### KEYWORDS

Relative Percentage Wash Out (RPW), Absolute Percentage Wash Out (APW), Multidetector- CT (MDCT).

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### BACKGROUND

The detection of adrenal masses both suspected and incidental examined at routine computed tomography (CT) in approximately 5% of cases.[1] The adrenal gland is a common site for metastatic disease. Adrenal masses are common, estimated to occur in approximately 3–7% of the adult population.[2] Although most of the adrenal masses turn out to be adenomas, in a patient with a known history of major extra-adrenal neoplasm especially lung carcinoma that requires either follow-up imaging for adenoma or appropriate therapy of the primary tumor.[3] The presence of metastases may contraindicate curative surgery or radiotherapy. For accurate diagnosis of the masses, CT is important for the staging of primary malignancies and for the reduction of the need for both percutaneous biopsy and follow-up imaging in patients with adrenal masses.[4] Incidental adrenal masses are 3 to 7 % common in general population. 80% of all adrenal neoplasms are benign non-hyper functioning adenomas.[2] Benign and malignant adrenal lesions are well differentiated with accurate radiological evaluation. Adenomas appear hypodense on plane CT scan and classified as lipid-rich (70%) or lipid-poor (30%) depending on intracytoplasmic fat content.[5,6] Plain CT scan is sensitive in detecting lipid-rich adenomas, while CT washout study can differentiate adenomas from other adrenal neoplasms in indeterminate case.[6,7] After injection of contrast material at variable period of time, regression in CT HU density in adrenal lesions refers

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