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THICKNESS OF MEMBRANOUS WALL OF TRACHEA MEASUREMENT ON MAGNETIC RESONANCE IMAGING-A STRUCTURAL CONSIDERATION IN EXCESSIVE DYNAMIC AIRWAY COLLAPSE INTERVENTION

Sahar FNJ¹, Hashim H¹, Razalli MM¹, Peter AB¹, Daud NAM², Mansor M³

1 Department of Radiology, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Selangor

2 Department of Radiology, Hospital Sungai Buloh, Selangor

3 Department of Otorhinolaryngology Head & Neck Surgery, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Selangor

ABSTRACT

Background:

To establish membranous tracheal wall measurement on Magnetic Resonance Imaging (MRI) and evaluate association with demographic factors and risk factors for excessive dynamic airway collapse (EDAC), including smoking, asthma, and long-term steroid use. This study provides the first MRI-based measurement of tracheal membranous wall, and links these quantification to emerging EDAC interventions.

Materials And Method:

A retrospective cross-sectional study of 265 MRI examinations from three tertiary centres (January 2024–June 2026). T2-weighted MRI neck and cervical spine sequences were analysed, and measurements at upper third of trachea included membranous wall thickness (MM), trachealis muscle thickness (TM), and combined total thickness (TT), obtained by two readers. Statistical analysis was performed using one-way ANOVA, independent t-tests, and multiple linear regression.

Results:

Mean TM, MM, and TT were 0.951 ± 0.171 mm, 1.276 ± 0.362 mm, and 2.227 ± 0.458 mm, respectively (95% CI: 2.171–2.282 mm). Males demonstrated significantly greater TT than females (2.418 ± 0.605 mm vs 2.152 ± 0.361 mm; $p = 0.001$), while age and ethnicity were not significant. Smoking was positively associated with TM and MM ($B = 0.219$, 95% CI: 0.120–0.319, $p = 0.001$); asthma and steroid use showed no significant association

Conclusion:

MRI provides reproducible quantification of the membranous tracheal wall and reveals gender-related variation and measurable effect of smoking. These novel study delivers the first imaging-based measurement of the tracheal membranous wall and support safety optimisation of emerging EDAC interventions.

Keyword: Trachea MRI, membranous tracheal wall, trachealis muscle, EDAC

COMPARISON OF INTERFRACTIONAL SHOULDER SETUP VARIATION WITH AND WITHOUT SHOULDER RETRACTORS IN HEAD AND NECK RADIOTHERAPY: SINGLE CENTER STUDY

Hui Sin N¹, Noor Hisham NU¹

1 Radiotherapy Department, Cancer Centre, Sunway Medical Centre, 5, Jalan Lagoon Selatan, Bandar Sunway, 47500 Subang Jaya, Selangor

ABSTRACT

Background:

Shoulder positioning may contribute to interfractional setup uncertainties in head and neck radiotherapy, particularly for treatments involving lower neck targets. This study evaluated interfractional setup variations in patients treated with and without shoulder retractors.

Methodology:

Ten head and neck cancer patients treated with VMAT were included. All patients were immobilized using an S-type thermoplastic mask, with five patients using shoulder retractors as additional immobilisation device. Offline CBCT images from the first five fractions were analysed. Translational and rotational setup variations were assessed using humeral head and clavicle alignment as surrogate anatomical landmarks. Systematic (Σ) and random (σ) errors were calculated, and differences between groups were compared.

Results:

Small translational setup deviations were observed in both groups, whereas greater variations occurred in the rotational directions, particularly pitch. Patients treated without shoulder retractors demonstrated a smaller mean pitch deviation than those treated with shoulder retractors (0.302° vs. 1.299°), indicating closer agreement with the planned treatment position. However, the non-shoulder retractor group exhibited a larger systematic error in pitch ($\Sigma = 1.156$ vs. 0.630), suggesting reduced setup reproducibility across treatment fractions. A significant difference in pitch was identified between groups ($p = 0.001$), while no significant differences were observed in the remaining translational or rotational directions.

Conclusion:

Although treatment without shoulder retractors achieved greater positional accuracy relative to the simulation setup, it was associated with increased interfractional variability. Shoulder retractors may improve setup reproducibility despite introducing a consistent pitch offset. Optimising patient positioning remains essential to ensure accurate and precise delivery of head and neck radiotherapy.

Keywords: Shoulder retractor, Head and Neck Radiotherapy, Setup Variation, VMAT

PRIMARY THYROID LYMPHOMA MASQUERADING AS TERMINAL THYROID CARCINOMA: THE CRUCIAL ROLE OF CORE BIOPSY

Ong Gisyn¹, Siti Nur Atiqah Alwi¹

1 Radiology Department, Hospital Banting, Jalan Sultan Alam Shah, Banting, Selangor, Malaysia

ABSTRACT

Background:

Rapidly enlarging thyroid masses presenting with severe compressive symptoms typically raise strong suspicion for aggressive primary thyroid malignancies, such as anaplastic or advanced medullary carcinomas. However, primary thyroid lymphoma remains a rare but critical differential diagnosis given its vastly different clinical management.

Methodology:

This report details the complex diagnostic trajectory of a highly infiltrative anterior neck tumor initially managed as a terminal carcinoma before being definitively identified as a high-grade lymphoma. A 43-year-old female with a recent diagnosis of heart failure (HFrEF 36%) and a history of bilateral vocal cord palsy presented with exacerbating dyspnea, fever, and cough. She required continuous high-flow nasal cannula oxygenation due to severe upper airway obstruction. Computed tomography revealed a massive, aggressive thyroid tumor causing complete tracheal encasement alongside extensive vascular invasion of the aortic arch and its major branches. Because the local invasion precluded a safe palliative tracheostomy without prior tumor debulking, the patient's airway management remained highly challenging.

Results:

Initial fine-needle aspiration cytology (FNAC) suggested a suspicious papillary or medullary carcinoma. Given the apparent advanced stage of a presumed aggressive carcinoma and her rapid clinical deterioration, a "Do Not Resuscitate" order was established, and palliative care with systemic opioids was initiated. However, a subsequent core needle biopsy—performed following her transfer to the intensive care unit—completely altered the clinical picture. Histopathology confirmed Diffuse Large B-Cell Lymphoma (DLBCL), germinal center B-cell-like (GCB) subtype, featuring a high Ki-67 proliferation index. Distinguishing between primary thyroid lymphoma and highly invasive thyroid carcinoma presents a significant clinical hurdle, particularly when complicated by life-threatening airway compromise.

Conclusion:

This report underscores the diagnostic limitations of FNAC in evaluating extensive infiltrative thyroid lesions. It reinforces the indispensable role of core tissue biopsies in securing an accurate diagnosis, directly preventing inappropriate palliation and opening avenues for systemic hematological therapies.

Keywords: Primary thyroid lymphoma, Diffuse Large B-Cell Lymphoma, core biopsy, thyroid carcinoma, airway obstruction

SINONASAL EXTRAMEDULLARY HEMATOPOIESIS IN B-THALASSEMIA MAJOR: A RARE AND UNDER-RECOGNIZED DIAGNOSTIC PITFALL

Siti Nurhamimah Y¹, Kew TY¹, Zubair A¹

1 Department of Radiology, Hospital Canselor Tuanku Muhriz (HCTM), Cheras, Kuala Lumpur, Malaysia.

ABSTRACT

Background:

Sinonasal extramedullary hematopoiesis (EMH) is an exceptionally rare manifestation of chronic hemolytic anemia and remains under-recognized due to its nonspecific imaging appearance, often mimicking neoplastic or inflammatory sinonasal disease.

Methodology:

We report a 31-year-old woman with β -thalassemia major who presented with lower limb numbness. Imaging performed for unrelated neurological symptoms incidentally demonstrated expansile soft tissue opacification of the ethmoid and sphenoid sinuses with smooth bony remodeling and associated calvarial marrow expansion.

Results:

Interval imaging showed stability without aggressive features. Given diagnostic uncertainty, transnasal biopsy confirmed EMH.

Conclusion:

This case highlights a critical diagnostic pitfall in which a benign hematologic process may closely simulate malignancy. Recognition of key imaging features, particularly well-defined expansile lesions with bone remodelling rather than destruction in patients with underlying haematological disorders, is essential to avoid misdiagnosis and unnecessary invasive intervention. Early and accurate identification directly impacts clinical decision-making and patient management.

Keywords: Extramedullary haematopoiesis, β -thalassemia major, sinonasal mass, bone remodelling

LATE OSTEORADIONECROSIS MIMICKING RECURRENT TONGUE SQUAMOUS CELL CARCINOMA: A DIAGNOSTIC PITFALL

Sumbal M¹, Aruba NK¹, Muhammad A¹, Mehria A¹, Kashif S¹, Syed SH¹

1 Radiology Department, Shaukat Khanum Memorial Cancer Hospital and Research Center, Phase V, Hayatabad, Peshawar, KPK, Pakistan

ABSTRACT

Background:

Late osteoradionecrosis can mimic recurrent oral cavity squamous cell carcinoma (SCC) on imaging, particularly in patients who have undergone radiotherapy. Distinguishing between recurrence and radiation-related tissue injury is important for appropriate management.

Method/Case Presentation:

A 69-year-old male, known case of well-differentiated squamous cell carcinoma (SCC) of the right lateral tongue (pT1N0M0), underwent right partial glossectomy with right selective neck dissection followed by adjuvant radiotherapy (60 Gy in 30 fractions) completed in 2007. The patient remained disease-free for 18 years before re-presenting with recurrent oral ulceration and discomfort, raising concern for delayed disease recurrence.

Results:

MRI face and neck showed expected postoperative changes without a definite recurrent mass at the primary site. However, focal soft tissue thickening with subtle diffusion restriction was noted in the left buccogingival region. Clinical examination demonstrated a small ulcerative lesion along the left lower alveolus without palpable cervical lymphadenopathy. Biopsy revealed atypical squamous proliferation in a background of inflammation, with no definite evidence of malignancy. Subsequent contrast-enhanced CT demonstrated an ill-defined enhancing soft tissue lesion centred within the left buccogingival sulcus with adjacent extensive permeative/erosive mandibular changes and extension into the floor of mouth.

Conclusion:

Although the imaging appearance raised concern for recurrent SCC, the prolonged disease-free interval following radiotherapy, inflammatory histopathology, absence of cervical lymphadenopathy, and prominent mandibular osseous destruction favoured osteoradionecrosis. This case highlights the imaging overlap between recurrent oral cavity SCC and late osteoradionecrosis in long-term post-radiotherapy survivors and emphasizes the importance of clinicoradiological and histopathological correlation when interpreting aggressive post-treatment changes.

Keywords: Radiation induced changes, osteoradionecrosis, buccogingival space, CT, MRI

A STUDY ON LENGTH OF NORMAL ADULT VOCAL CORD ON CT SCAN IN SERDANG

Suraini MS¹, Siti Nabilah Ramli MM^{2,3}, Mohammad SI², Babar J²

1 Centre for Diagnostic Nuclear Imaging, UPM, Malaysia

2 Department Radiology, Faculty of Medicine and Health Science, UPM, Malaysia

3 Department Radiology, Hospital Sultan Idris Shah, Serdang, Malaysia

ABSTRACT

Background:

Various diseases affect the vocal cords, namely benign and malignant soft tissue lesions, infectious or inflammatory conditions, vocal cord motion abnormalities, and trauma. Understanding the morphometrics of the human vocal cords is vital for diagnosing and treating laryngeal disorders. While many studies have investigated laryngeal morphometry, research specific to Malaysia is limited. Additionally, there is a lack of literature detailing vocal cord length on CT scans. This knowledge is essential for various phono-surgical procedures, like thyroplasty, laryngoplasty, and anterior commissure advancement. The purpose of this study was to collect data on the length of vocal cord on CT scan in adult Malaysian population, specifically in Serdang, as well as its relation to height, age, gender, and race.

Methodology:

Our study was a retrospective study utilising the CT Neck images of 112 adult patients. This study was conducted in Radiology Department, Hospital Serdang and Hospital Sultan Abdul Aziz Shah (HSAAS). Length of the true vocal folds was measured between the anterior commissure and the most posterior boundary of vocal folds (vocal process of the arytenoid cartilage). The simple comparison between men and women vocal fold length was performed using student t-test. Pearson correlation was used to see the effect of height and age. Regression analysis and scatter plots were used to explore the interaction of gender and race.

Results:

Mean vocal cord length for male is 2.10 ± 0.34 cm, while for female is 1.72 ± 0.30 cm. Mean vocal cord length increases with height and decreases with age within this study. Gender has a significant impact on mean vocal cord length, as it is longer in males compared to females in all ages, height, or ethnicity groups. However, in the female group, age and height give substantial difference to mean vocal cord length compared to the male group. Statistically significant mean vocal cord length measurement difference is also found between ethnicity, with Indians have the longest vocal cord compared to other races.

Conclusion:

Our study serves as a pilot study of adult vocal cord length in Serdang population. The results provide a greater understanding of the vocal cord length and the influence of gender, height, age, and ethnicity. However, further investigation and confirmation through larger studies are necessary to verify the findings as well as solidify the understanding of vocal cord morphology beyond just its length.

Keywords: Adult, CT scan, Length, Vocal cord

PERCUTANEOUS IMAGE-GUIDED THYROID NODULE ABLATION: EXPERIENCE FROM A SINGLE CENTRE IN HONG KONG, CHINA

Tak Mong T¹, Kiujing F¹, Yiu Shiobhon L¹

1 Department of Radiology, Pamela Youde Nethersole Eastern Hospital, 3 Lot Man Road, Chai Wan, Hong Kong, China.

ABSTRACT

Background:

Percutaneous image-guided ablation of thyroid nodules is a minimally invasive technique for the treatment of benign symptomatic thyroid nodules and recurrent thyroid cancers. Previous studies have shown that thyroid volume reduction is most prominent at 9–12 months post-operatively. Its adoption in our institution was recent, and this study therefore aims to investigate the efficacy and safety of thyroid nodule ablation.

Methodology:

We retrospectively reviewed records of all patients who underwent thyroid nodule ablation between 11 November 2022 and 31 December 2025. Only patients with available postoperative follow-up ultrasound at 9 months or more were included. We evaluated indications, ablation mode, volume reduction rate (VRR), and any major complication requiring hospitalisation.

Results:

During the study period, a total of 16 patients with 20 thyroid nodules underwent percutaneous image-guided ablation. Indications include pressure symptoms, cosmetic concerns, and papillary thyroid carcinoma with high surgical risk. Nine ablated nodules had available follow-up ultrasound at 9 months or more (range, 9–18 months). Seven nodules were treated with radiofrequency ablation (RFA); the mean VRR for RFA was 48.5% (range, –68.3% to 88.0%), with 6 nodules shrank and 1 nodule enlarged. Two nodules were treated with alcohol injection, both demonstrating interval shrinkage; the mean VRR was 76.5% (range, 54.2%–98.7%). One patient treated with RFA developed temporary hoarseness of voice that required hospitalisation; otherwise, no major complications occurred.

Conclusion:

In this small cohort, percutaneous image-guided thyroid nodule ablation achieved volume reduction in most nodules with an acceptable safety profile. Larger prospective studies are warranted.

Keywords: ablation, thyroid nodules, radiofrequency ablation, alcohol ablation

NEONATAL SINONASAL MENINGIOMA: A RARE ENTITY WITH INTRACRANIAL EXTENSION

Athirah Azhar^{1,2}, Fatimah Kamila Abu Bakar², Mazuin Mohd Razalli¹

1 Department of Radiology, Faculty of Medicine, Universiti Teknologi Mara, 47000, Sungai Buloh, Selangor, Malaysia

2 Department of Radiology, Hospital Tengku Ampuan Rahimah, 41200, Klang, Selangor

ABSTRACT

Background:

Primary sinonasal meningiomas are rare, particularly in neonates, thus making diagnosis is challenging due to their nonspecific clinical presentation.

Methodology/ Case Presentation:

This case report describes a neonate born at 37 weeks via emergency cesarean section, presenting with left mid-nasal stenosis and a right nasal cavity mass.

Results:

Imaging (CT and MRI) revealed a large, expansile right nasal mass with intracranial extension. Histopathological examination confirmed the diagnosis of a WHO Grade 1 meningioma.

Conclusion:

Given its rarity, sinonasal meningiomas are often misdiagnosed, highlighting the importance of imaging and immunohistochemical studies for accurate diagnosis and appropriate management.

Keywords: Sinonasal meningioma, Neonatal tumor

INTERPRETATIVE PERFORMANCE OF ARTIFICIAL INTELLIGENCE-ASSISTED MAMMOGRAPHY IN SCREENING AND DIAGNOSTIC BREAST IMAGING

Cherish KTF¹, Kartini R¹, Faizatul IR¹, Nazimah M², Tan LK¹

1 Department of Biomedical Imaging, University Malaya Research Imaging Centre, Kuala Lumpur, Malaysia

2 Department of Radiology, Faculty of Medicine University Teknologi MARA, Sungai Buloh, Selangor, Malaysia

ABSTRACT

Background:

Artificial intelligence-assisted mammography has shown promising potential in improving breast cancer detection and diagnostic accuracy. This study evaluates the performance of an updated artificial intelligence mammography detection system in identifying breast malignancy in a Malaysian population.

Methodology:

A retrospective pilot study was conducted on 175 mammograms. Image analysis was performed using an updated artificial intelligence-based mammography detection system. A malignancy probability threshold of 10% was considered positive. Histopathological examination and/or imaging follow-up served as the reference standard. Diagnostic performance was assessed using sensitivity, specificity, receiver operating characteristic (ROC) analysis, area under the curve (AUC), and p-values.

Results:

A total of 175 mammograms were included, comprising 102 malignant and 73 benign cases. Overall, the AI system demonstrated a sensitivity of 97.1% and specificity of 58.9% for breast cancer detection, with excellent diagnostic performance on receiver operating characteristic analysis (AUC 0.962, 95% CI: 0.935–0.990, $p < 0.001$). Subgroup analysis according to lesion type demonstrated consistently high diagnostic performance across lesion subtypes, with mass lesions showing the highest discrimination (AUC 0.957), followed by calcification lesions (AUC 0.947) and combined mass and calcification lesions (AUC 0.927). ROC coordinate analysis for mass, calcification and combined lesions identified optimal clinical cutoff values of 41.5, 36.5, and 62.5 respectively.

Conclusion:

The artificial intelligence-assisted mammography detection system demonstrated excellent diagnostic performance with high sensitivity and moderate specificity for breast cancer detection, supporting its potential role as an adjunct tool in breast imaging practice.

Keywords: Artificial Intelligence, Mammography, Breast cancer, C-View, Accuracy

LEFT VENTRICULAR PSEUDOANEURYSM MASQUERADING AS A MEDIASTINAL MASS/ PERICARDIAL EFFUSION: MULTIMODALITY IMAGING DIAGNOSIS OF A DELAYED POST-MYOCARDIAL INFARCTION MECHANICAL COMPLICATION

Mohd Khairil Anwar R¹, Norliza O¹; Adelyn Nisha NH²

1 Radiology Department, Hospital Sultanah Aminah Johor Bahru, Malaysia.

2 Cardiology Department, Hospital Sultanah Aminah Johor Bahru, Malaysia.

ABSTRACT

Background:

Left ventricular pseudoaneurysm is an uncommon but life-threatening post-infarction mechanical complication caused by contained myocardial free-wall rupture.

Methodology/ Case Presentation:

We present a 66-year-old woman with underlying diabetes, hypertension and dyslipidemia, who was referred for global pericardial effusion following ECHO assessment. Pericardiocentesis, done due to cardiac tamponade, was technically difficult.

Results:

Later chest radiograph demonstrates a focal bulging along the left cardiac border, initially concerned for mediastinal mass. A suspicion of ventricular pseudo-aneurysm was raised. ECG-gated CT angiography confirmed a focal basal-to-mid anterolateral left ventricular outpouching with intraluminal thrombus. Cardiac MRI further characterized a narrow-necked saccular pseudoaneurysm involving the basal-to-mid anterior/anterolateral segments, with clot, myocardial enhancement and reduced longitudinal systolic function. COROS demonstrated triple-vessel disease, supporting a post-ischemic etiology. The patient underwent surgery but succumbed to postoperative complications.

Conclusion:

This case highlights the value of multimodality imaging in recognizing cardiac mimics of mediastinal/pericardial pathology and guiding prompt risk stratification, multidisciplinary decision-making, and operative planning processes.

Keywords: Left ventricular pseudoaneurysm; myocardial infarction; mediastinal mass mimic; cardiac CT; cardiac MRI; multimodality imaging