SHORT PAPER SESSION B2

B2.1 Phantom-Based Optimisation of Parathyroid PET/CT Reconstruction Using 3D-Printed Ellipsoidal Inserts: Effects of Matrix Sizes, TOF and PSF Modelling

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Background
Radiolabelled choline positron emission tomography/computed tomography (PET/CT) has recently emerged as a powerful scan to localise parathyroid adenomas. Owing to their small size, localisation is influenced by spatial resolution and partial-volume effects. This study developed task-representative 3D-printed ellipsoidal inserts to assess reconstruction effects relative to the local standard protocol on a digital PET/CT system.
Methods
An anthropomorphic neck phantom with a thyroid insert was fitted with ellipsoidal inserts in three volumes (0.1, 0.2, and 0.3 mL). The inserts were filled with ^{18}F-fluorodeoxyglucose, a surrogate for ^{18}F-fluorocholine, at 10.6 kBq/mL for PET acquisition. The thyroid insert served as the background compartment (target-to-background ratio 5:1). Data were acquired on a Siemens Biograph Vision 600 PET/CT scanner. Reconstructions used the local protocol (matrix size 220×220) and higher matrices (440×440 and 880×880). Standard ordered-subsets expectation maximisation (OSEM) and point spread function (PSF)–based resolution modelling were evaluated, each with and without time-of-flight (TOF). Recovery coefficient (RC) was defined as the mean target region of interest (ROI) activity concentration divided by the true insert activity concentration.
Results
RC showed expected under-recovery in the smallest insert. Increasing reconstruction matrix size increased RC, with the largest relative gain for the smallest target. PSF modelling added further apparent recovery, and TOF provided modest incremental improvement.
Conclusion
The 3D-printed ellipsoidal inserts provide a practical, reproducible phantom platform to optimise parathyroid-specific PET/CT reconstruction settings, demonstrating added value of PSF modelling and TOF.

Limitations: Quantitative assessment in sub-centimetre inserts is limited by partial-volume effects. Validation in a clinical cohort is needed.

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B2.2 Assessment of the impact of time to treatment initiation on overall survival in metastatic pancreatic adenocarcinoma treated with triplet palliative chemotherapy

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Background
Metastatic pancreatic adenocarcinoma (MPA) carries a poor prognosis. FOLFIRINOX improves survival in fit patients. However, delays between initial oncological assessment and treatment initiation may lead to clinical deterioration, treatment omissions, and inferior outcomes. The impact of time to treatment initiation (TTI) remains incompletely defined.
Methods
We performed a retrospective service evaluation of patients with MPA deemed fit for the first-line FOLFIRINOX across oncology clinics between June 2019 and June 2024. Patients were stratified by TTI of within 14 days versus over 14 days from first consultation to cycle one chemotherapy. Overall survival (OS) was estimated using Kaplan-Meier methodology with subgroup analysis by ECOG performance status.
Results
Among 133 patients for whom FOLFIRINOX was requested, 113 commenced treatment. The median OS for the overall cohort was 8.4 months. Fifteen patients (11%) never received chemotherapy due to clinical deterioration while awaiting treatment, and had a median OS of 2.6 months. Earlier treatment initiation demonstrated numerically improved survival compared with delayed initiation (10.6 vs 8.4 months; p=0.64). In ECOG 1-2 subgroup, earlier initiation was associated with a clinically meaningful but not statistically significant survival difference (10.6 vs 6.2 months; p=0.15), whereas no consistent timing-related survival advantage was observed in ECOG 0 patients.

Conclusion

Delayed initiation of FOLFIRINOX beyond 2 weeks is associated with poor outcomes in symptomatic patients and contributes to a proportion of patients never receiving systemic therapy. These findings support implementation of prioritised fast-track pathways to achieve treatment commencement within 14 days for eligible patients with MPA.

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B2.3 Evaluation of factors affecting gaps in head and neck cancer radiotherapy

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Background

Radiotherapy (RT) for Head and Neck Squamous Cell Cancers (HNSCC) is delivered Monday-Friday. RCR guidance categorises HNSCC as Category 1. Missed RT days reduce local control and outcomes. We examined factors linked to RT gaps for HNSCC sub-groups.

Methods

Retrospective analysis of HNSCC (larynx, hypopharynx, oropharynx) patients treated with primary or adjuvant RT (2011–2024). RT gaps were defined as ≥1 missed days. Data was extracted from the oncology management system and patient records. The Scottish Index of Multiple Deprivation (SIMD) was used to assess area-based deprivation quintile. Statistical analysis was performed in R-Studio.

Results

1118 cases were analysed: 610-oropharynx, 111-hypopharynx and 397-larynx. Patient, disease and treatment characteristics are shown in table-1. Seventeen percent (186/1118) of patients had a RT gap; highest rates in the hypopharynx sub-group (24/111, 21.6%). Staging, treatment type, SIMD, smoking and alcohol history had a significant association on univariate analysis with RT gaps ($p \leq 0.05$). Multivariate analysis showed advanced stage was significantly linked to RT gaps (OR 0.63, 95% CI 0.48–0.82, $p \leq 0.001$). Table-3 highlights incomplete treatment rates and the proportion of patients living in SIMD 1–2 areas. Median OS with a RT gap was 60 months, versus 77 months without ($p \leq 0.0001$). Median DSS was 95 months with a RT gap and not reached without ($p \leq 0.0001$).

Conclusion

All sub-sites experienced RT gaps, particularly the hypopharyngeal sub-group. Gaps were independently associated with advanced-stage. A small proportion of patients did not complete RT, disproportionately from the most socioeconomically deprived areas. RT gaps were linked to poorer survival.

Table 1 – Patient disease and treatment characteristics

Characteristic		Whole cohort		Oropharynx		Hypopharynx		Larynx	
		n	%	n	%	n	%	n	%
		1118	100	610	54	111	11	397	35
Gaps in RT		186	17	101	16.6	24	21.6	61	15.4
Mean age (range, years)		61 (22 – 86)							
		n	%						
Sex	Female	107	10.0						
	Male	1011	90.0						
Staging	Advanced	497	44.4						
	Early	620	55.5						
	Unknown	1	0.1						
Treatment type	Primary Radiotherapy	544	49.0						
	Primary Chemoradiotherapy	448	40.0						
	Adjuvant RT	102	9.0						
	Adjuvant CRT	24	2.0						
Smoking history	Current	533	47.7						
	Former	333	29.8						
	Never	243	21.7						
	Unknown	9	0.8						
Alcohol	Excess	351	31.4						
	Previous excess	114	10.2						
	Within limits	396	35.4						
	None	207	18.5						
	Unknown	50	4.5						

Table 2 - Multivariate analysis of factors affecting gaps in RT for each sub-site

HNSCC Sub-Site (n)	Significance levels			Findings
	OR	95% CI	p value	
Oropharynx (610)	0.58	0.42, 0.81	0.001	Only advanced staging, was found to have a statistically significant association with gaps in RT
Hypopharynx (111)				No variables found to have a significant association with gaps in treatment.
Larynx (397)	0.26	0.10, 0.59	0.003	Ex-smoking status found to have statistically significant association with gaps in RT

Table 3 – Patients with an incomplete RT treatment course and living in the most deprived SIMD 1-2 post-code areas

HNSCC Sub-Site (n)	Patients with incomplete RT treatment	Proportion with incomplete RT residing in most deprived areas, SIMD 1-2	p-value (Cochran-Armitage test)
	n (%)	n (%)	
Oropharynx (610)	14 (2.3)	6 (43)	0.097
Hypopharynx (111)	5 (4.5)	4 (80)	0.28
Larynx (397)	12 (3.0)	12 (100)	0.056
Whole cohort total (1118)	31 (22)	22 (71)	0.097

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B2.4 Diagnostic Yield of CT urography in Adults Aged 50–59 with Visible Haematuria: A Four-Year Review

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Background
CT urography (CTU) is routinely performed for visible haematuria (VH), although its diagnostic yield for upper tract malignancy in adults aged 50–59 is unclear. Evaluating whether unenhanced CT alone is sufficient in this age group is important.
Method
We retrospectively reviewed 1,525 consecutive CTU examinations performed between February 2020 and December 2024 in patients aged 50–59 years. We studied 949 patients that were referred for assessment of VH who had no prior urological disease. CTU findings were categorised as normal, clinically significant benign or malignant. All malignant cases were reviewed to determine whether abnormalities were visible on the unenhanced phase.
Result
21 upper tract malignancies were identified (2.2%), comprising 16 renal cell carcinomas (RCC), two of which were incidental, and 5 transitional cell carcinomas (TCC). 18 of 21 malignancies (86%) were visible on unenhanced CT. Of the remaining three cases, one TCC was only imaged with a post contrast phase with no unenhanced phase. One small incidental RCC and one TCC were not visible on unenhanced CT. The latter TCC demonstrated only subtle ureteric calibre change on CTU and was ultimately diagnosed by retrograde urethroscopy and biopsy. Most CTUs were normal or demonstrated benign findings, including calculi, cysts and infections. Only one case (0.1%) derived additional diagnostic benefit from CTU.
Conclusion
Upper tract malignancy in adults aged 50–59 with VH is uncommon. Most tumours are detectable on unenhanced CT. Replacing CTU with unenhanced CT in this age group would be safe and would reduce radiation exposure, cost and workload.

B2.5 Iatrogenic cystic pulmonary changes post-fetoscopic laser ablation (FLA) for twin-twin-transfusion syndrome (TTTS): Challenging the diagnosis of congenital cystic adenomatoid malformation (CCAM)

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Whilst brain haemorrhages/infarcts are known complications of fetoscopic laser ablation of placental anastomoses, extra-cerebral complications are under-reported. We have identified eight cases with incidental lung cysts in the surviving twins following FLA.
These lung cysts are assumed to be CCAM, a rare dysplastic congenital malformation, requiring surgical intervention to avoid the risk of malignant transformation[1]. However, new evidence suggests these post-FLA cystic lung changes could be treatment-induced infarcts from vasculopathy or emboli, mirroring patterns seen in a fetus with unexplained ascites.
We analysed the available imaging pre- and post-FLA to identify pulmonary cystic lesions. Next, we looked at cyst morphology, including size, distribution, and volume. Where secondary images were available, growth patterns were analysed in comparison with normal lung tissue.
The cysts showcased a peripheral distribution with varying morphology, including single, multiple, and wedge-shaped lesions. The volume ranged between 0.175 and 6 millilitres. Although histological confirmation is unavailable, post-embolic cysts would characteristically show localised cysts with an old haemorrhage and lack of epithelial lining. Follow-up of the fetus with unexplained ascites showed normal postnatal development and respiratory function.
There are some limitations to this study; however, if these cysts are the result of an embolic event, surgical removal of these cysts is no longer required; rather, a watch-and-wait approach could be utilised. Post-treatment imaging should assess all the fetal organs and not just the fetal brain, and postnatal imaging should be offered to those with identified cysts to assess neurological and lung-development.

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B2.6 Understanding Causes of Anxiety in Head and Neck Cancer Patients having Radiotherapy: A Literature Review

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Background

Anxiety is a common and clinically significant issue for head and neck cancer (HNC) patients undergoing radiotherapy treatment, with established associations with reduced treatment adherence, poor outcomes, and reduced quality of life. HNC patients are particularly vulnerable due to the restrictive immobilisation, treatment-related side effects, functional impairment, and complex psychological stressors. Despite increasing recognition for radiotherapy-associated anxiety, assessment and support within routine clinical practice remain inconsistent, highlighting a gap in structured approaches to identification and intervention.

Method

This study aimed to synthesis existing evidence to identify and evaluate the key contributor's complexity and trajectory of anxiety in HNC patients during radiotherapy. A critical integrative literature review was conducted, following established integrated review methodology and informed by PRISMA guidance. Searches of PubMed, Web of Science, and Ovid/MEDLINE identified quantitative, qualitative and mixed-method peer reviewed studies from 2015 onwards. Included studies were critically appraised, using appropriate CASP tools, with findings synthesised using narrative and thematic approaches.

Results

Twenty-three studies were included. Anxiety was found to be multifactorial, dynamic and persistent across the radiotherapy pathway. Key contributors include immobilisation mask use, physical side effects, anticipatory and situational anxiety, communication and information gaps, and psychological vulnerabilities. Evidence also highlighted limitations in healthcare professionals' ability to consistently identify and support anxious patients, emphasising the need for improved screening and intervention.

Conclusion

This critical review highlights the need for a structured, evidence-based approach to anxiety assessment in HNC patients having radiotherapy to support timely, person-centred interventions and improve patient experience and outcomes.