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Biograph mCT Flow
A Case Study

Answers for life.

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Thyroid Cancer

This illustrative case was provided by Dr. Kirk Frey, University of Michigan, Ann Arbor, Michigan, USA. The protocols are based on his previous experience and commonly used practices in nuclear medicine.

The final decision for procedure protocols must be made by the physician, who should consider experience, recommendations and regulations. Siemens and its representatives disclaim any liability for claims arising from the use of these protocols.

Thyroid Cancer

Clinical History

- Male patient, 163 cm (5’4”), 65 kg (144 lbs) presents one year following thyroidectomy and ^{131}I ablation post surgery
- Patient now shows rising serum Tg levels, however ^{131}I NaI scan shows no evidence of recurrence
- Patient was referred for an FDG PET/CT exam for further evaluation
- In this case, a head and neck protocol was used

Thyroid Cancer

Clinical Benefit of FlowMotion

- The flexible scan range of FlowMotion™ technology allowed slower table speed through the area of interest (head/neck), enabling acquisition with higher count statistics. As the patient moved through the second zone (thorax, abdomen and upper pelvis), the table speed increased, allowing the ability to look for lymph nodes and metastases critical for staging. The table accelerated once more through the third zone (lower pelvis, proximal and lower extremities)
- The parameters can be varied across multiple zones in a single pass
- FlowMotion technology allows the flexibility to choose reconstruction parameters during acquisition based on patient history

Thyroid Cancer
Protocol for glucose metabolism evaluation*

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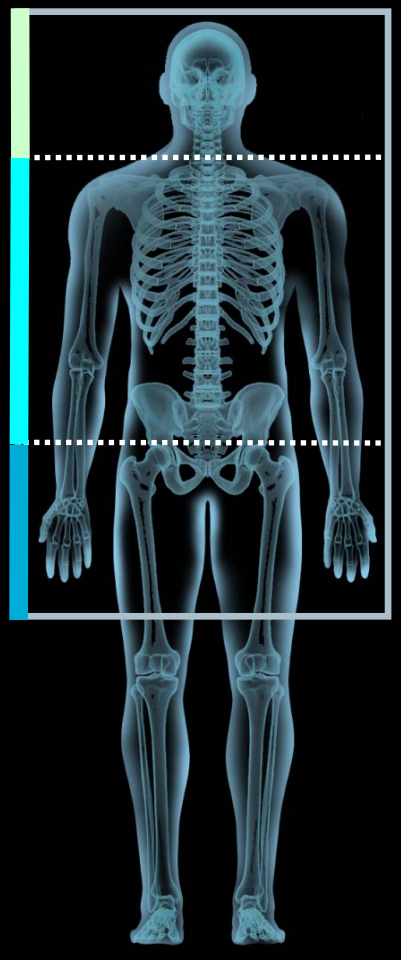
Zone 1
Head and neck
0.4 mm/s table speed
400 x 400 matrix reconstruction

Zone 2
Thorax, abdomen and upper pelvis
1.0 mm/s table speed
256 x 256 matrix reconstruction

Zone 3
Lower pelvis, proximal and lower extremities
2.0 mm/s table speed
256 x 256 matrix reconstruction



Examination Protocol
Scanner: Biograph mCT with FlowMotion technology
Injected dose: 8 mCi
CT: 70 mAs, kV 130
Slice thickness: 5.0mm

*Protocol courtesy of Dr. Kirk Frey, University of Michigan, Ann Arbor, Michigan, USA

Thyroid Cancer
256 x 256 reconstruction, zone 1-3

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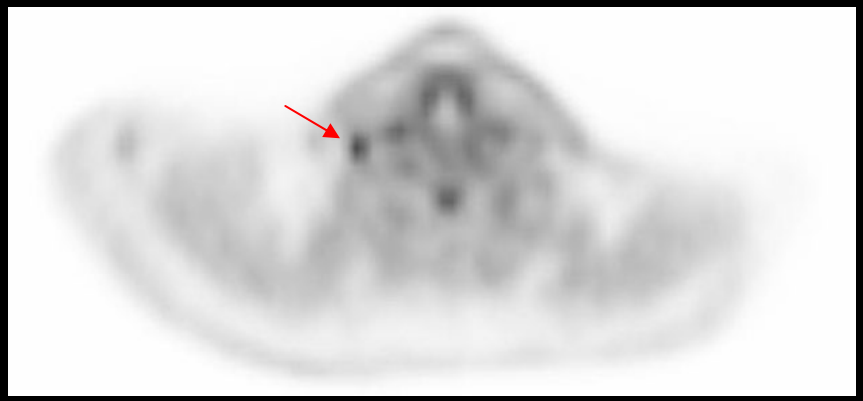

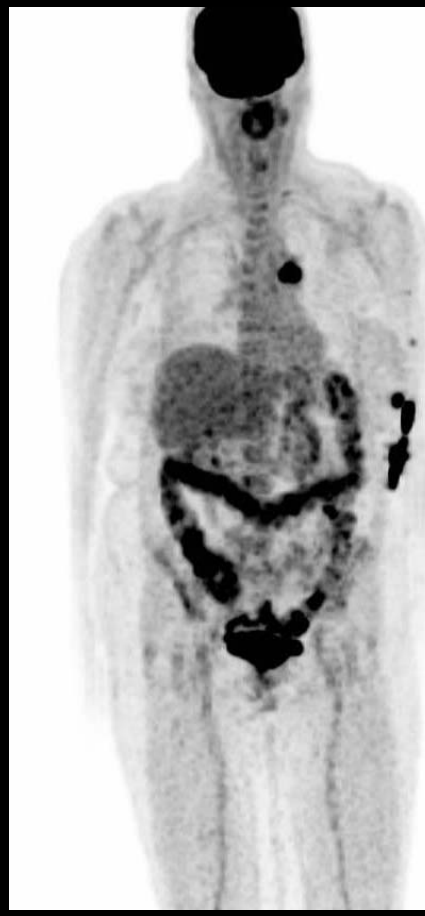

Images show metastatic lymph node

Data courtesy of Dr. Kirk Frey, University of Michigan, Ann Arbor, Michigan, USA

Thyroid Cancer
400 x 400 reconstruction, zone 1

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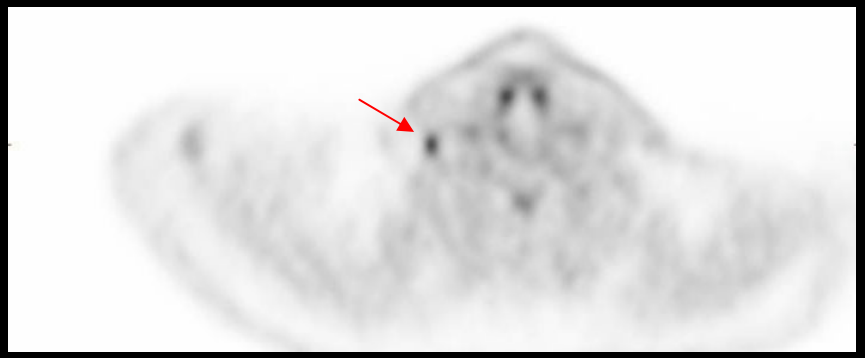

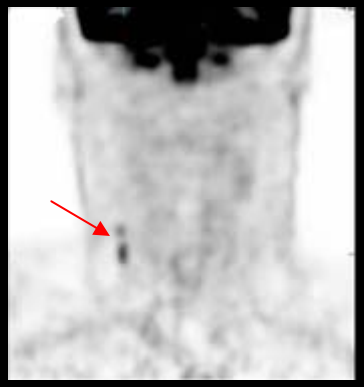

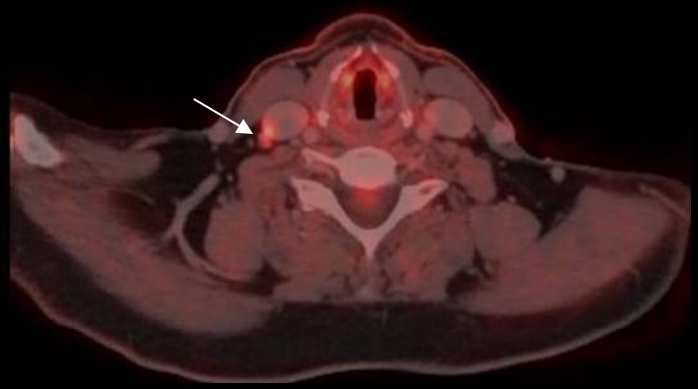

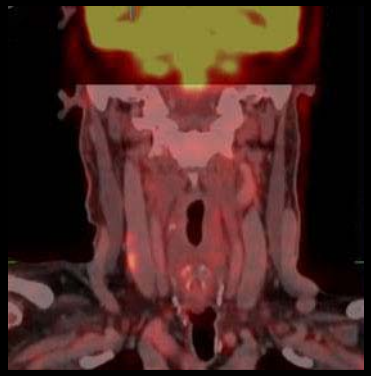

Images delineate additional metastatic lymph node superior to original

Data courtesy of Dr. Kirk Frey, University of Michigan, Ann Arbor, Michigan, USA

Thyroid Cancer
Additional metastatic lymph node discovered

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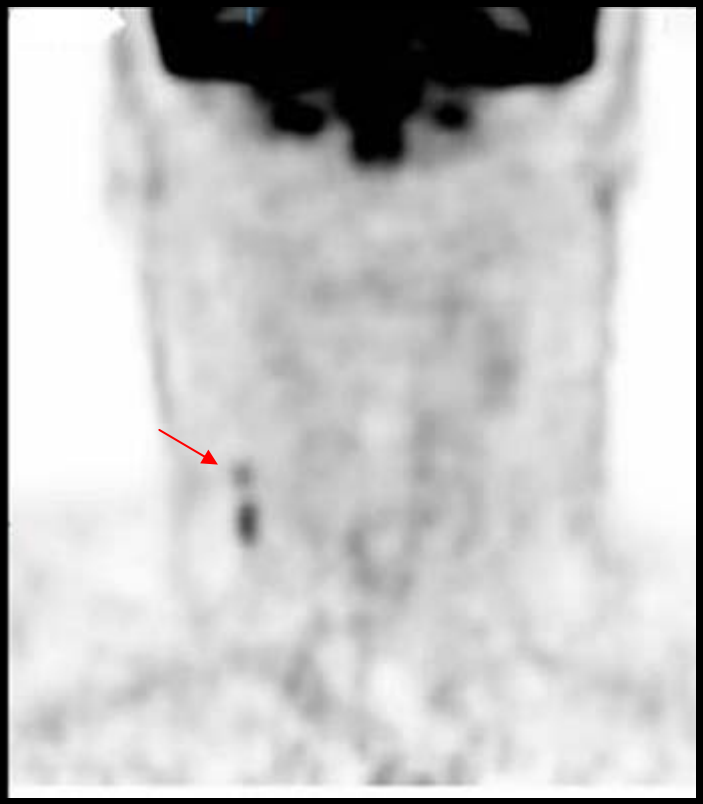

400 x 400 resolution image delineates additional metastatic lymph node superior to original

Data courtesy of Dr. Kirk Frey, University of Michigan, Ann Arbor, Michigan, USA

Thyroid Cancer

Conclusion

- By using the slower table speed with 400 x 400 reconstruction for the area of interest corresponding to the neck, Biograph™ mCT Flow identified an additional lymph node superior to the original
- Since the patient had a radioiodine negative metastasis, the recommended course of therapy was surgery to remove the malignant lymph nodes
- FlowMotion technology aided the surgeon in precisely locating the nodes for excision

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