Clinical Area: **FDG PET for Esophageal Cancer**
Keywords: **Cancer esophagus, FDG PET, lymph node, staging.**
Reference: **Flamen P, Lerut A, Van Cutsem E, Cambier JP, et al. The Utility of Positron Emission Tomography for the Diagnosis and Staging of Recurrent Esophageal Cancer. J Thorac Cardiovasc Surg 2000; 120:1085-92**.

Study Type: Comparison of diagnostic tests.
Study Aim: To investigate the utility of FDG-PET for the diagnosis and staging of disease in patients in whom recurrent esophageal cancer was suspected.

Outcomes

- *Primary:* Sensitivity and specificity.
  Change in patient management.

Design

- *Number of subjects:* N=41.
- *Description of study population:* Mean age: 62. Gender: 36 men, 5 women. Patients were selected from, the database of the PET department. These were in-house patients who underwent a whole body PET for suspicion of recurrent esophageal cancer. (January 1998-June1999).
- *Inclusion and exclusion criteria:* Only patients who had undergone an esophagectomy with curative intent were included. Exclusion criteria were not discussed.

Validity

- *Independent blind comparison with a gold standard or follow-up of those not receiving the gold standard test?* The observers were blinded to the results of follow up data, but were fully aware of the patients' history, the type of surgery performed, and their symptoms. The gold standard was either the histologic findings or clinical and radiologic follow-up. Patients were followed up for at least 6 months before a definite negative diagnosis was made.
- *Was "normal" defined?* No.
- *Appropriate spectrum of disease?* Yes.
- *Consecutive patients?* Not specified.
- *Methods described in enough detail to enable you to replicate the test?* Yes.
- *Reproducible results?* Yes.

Conclusions regarding validity of methods:
A limitation to the study was that patients might have not been consecutive which leads to a selection bias. Another limitation is using more than one gold standard, histology in 23 (58%) patients, and clinical and radiological follow-up in 17 (42%) patients, which may affect the accuracy of staging.

Results:
The gold standard showed cancer recurrence in 33 of the 41 (80%) patients. These 33 patients had 40 recurrences. 23 (58%) were established by histologic findings, and 17 (42%) by follow up. The lesions were perianastomotic (n=9), regional (n=12) and at distant sites (n=19).

Regional Based Analysis

Region of recurrence	***Gold Standard***		***CDW****		***FDG-PET***	
	+ve	***-ve***	***Sensitivity***	***Specificity***	***Sensitivity***	***Specificity***
Anastomosis	9	14	100%	93%	100%	57%
Regional	12	12	83%	92%	92%	83%
Distant	19	10	79 %	70%	95%	80%
All	40	36	85%	86%	95%	72%

*Conventional diagnostic work-up (including endoscopy, EUS, and CT)

Overall, the sensitivity of FDG-PET (95%) was higher than CDW (85%) and the specificity lower (72% compared to 86%). However, the difference was statistically insignificant for both.

On a patient basis, the PET and CDW were completely concordant in 25 of 41 (61%) patients. For the rest, PET falsely under or over staged the disease in five (12%) patients, and improved the diagnosis i.e. had an added value over CDW in 11(27%) patients. In five (12%) of these patients there was a major impact on their management course, where treatment was installed, withheld, or changed.

Authors' Conclusions:
FDG-PET allows a highly sensitive diagnosis, and accurate whole body staging of symptomatic recurrent esophageal cancer. The specificity of PET was low, particularly at the anastomotic sites (57%), and its results should be carefully correlated with the clinical data before a positive diagnosis is made. Further research is needed to study the benefit of earlier diagnosis of recurrences on the patient survival, and quality of life.

Reviewer's Conclusions
Agrees with the author's conclusion that FDG PET has an overall high sensitivity, however FDG uptake and accumulation at inflammatory lesions is a major problem, leading to frequent false positive findings. PET had a major impact on patient management in 12% of cases, but its effect on survival and quality of life was not studied.