

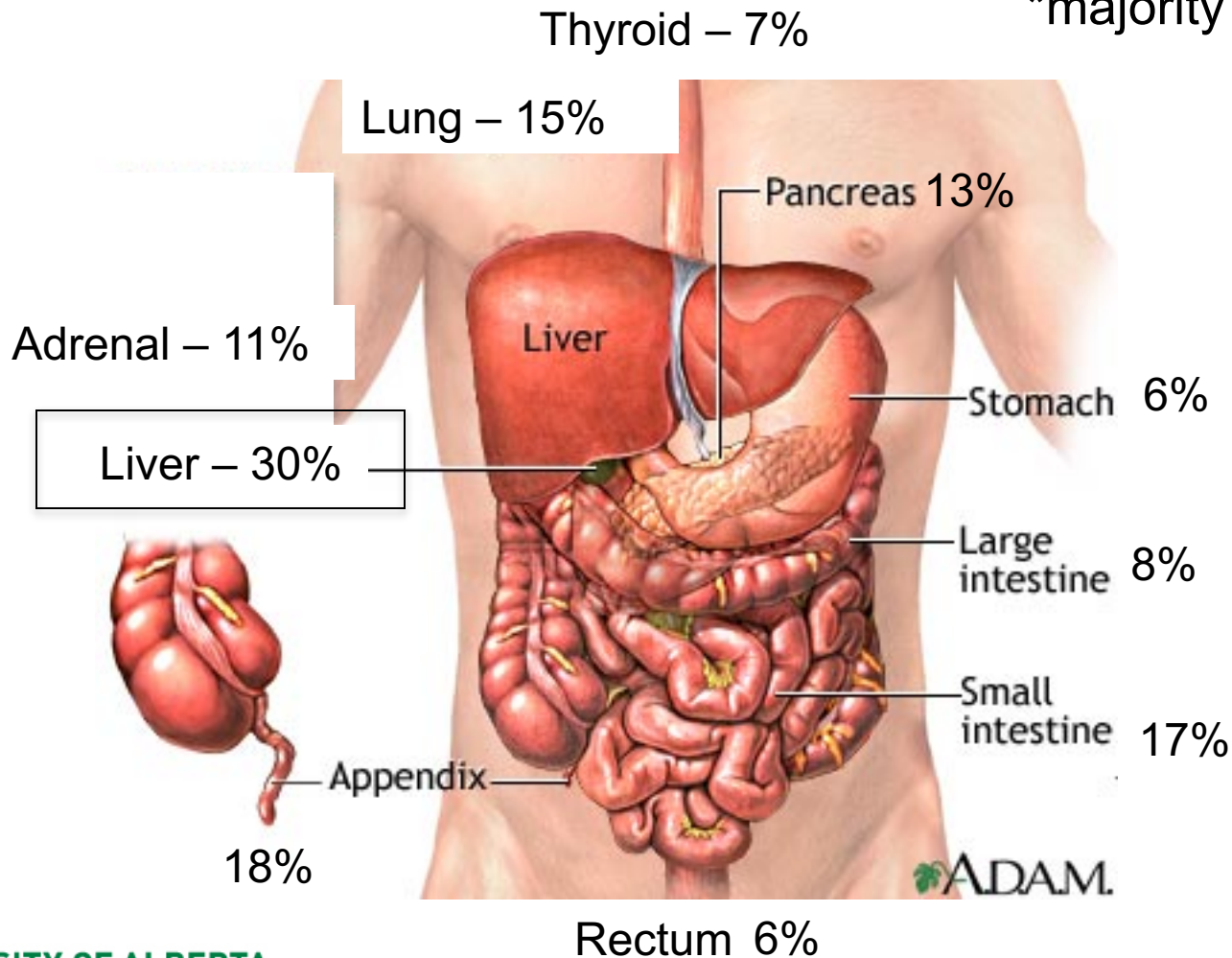
# Surgery for Neuroendocrine Tumours

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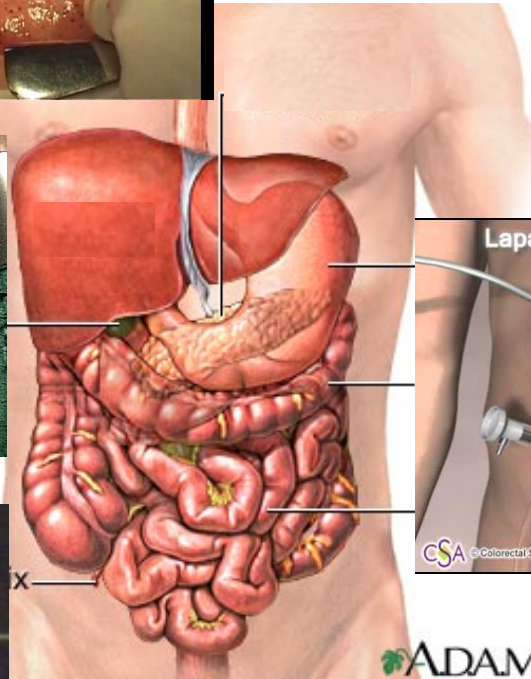
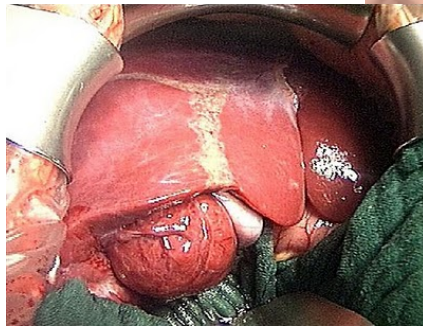
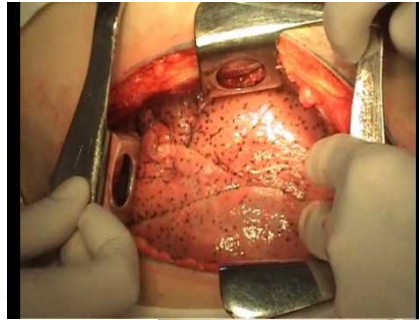


# Tumour Distribution

\*majority are sporadic



# Different Sites = Different Surgeon



# When Do We Operate and Why?

## i) For cure

	5 yr OS	5 yr DSS
<b>Surgery – Yes</b>	<b>73%</b>	<b>85%</b>
Surgery – No	61%	74%

Surgery presents the only option for cure BUT surgical risk and complications depend on the site and extent of disease

ALSO even the best surgeon is bested by biology\*:

Tumour of the pancreas 10 year survival: 58%

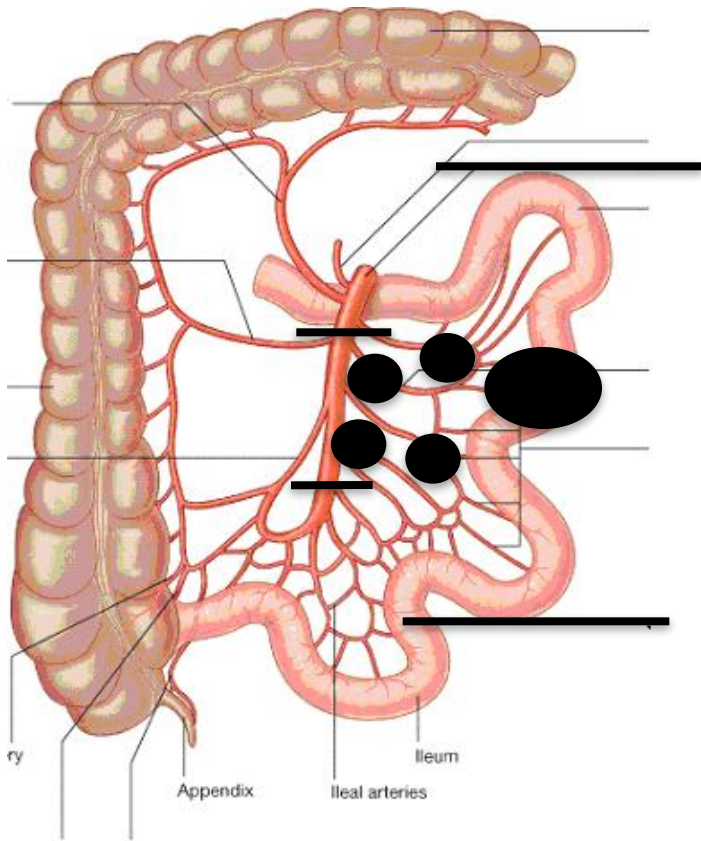
Tumour of the small bowel 10 year survival rate: 50%

Liver metastases 10 year survival: 20%



# When Do We Operate and Why?

## ii) For survival



Even if you cannot remove all of the tumour because it has metastasized, removing the primary tumour MAY prolong survival

75 -139 months (resected)\*  
VS  
50 - 88 months (no surgery)





# When Do We Operate and Why?

## iii) For symptoms



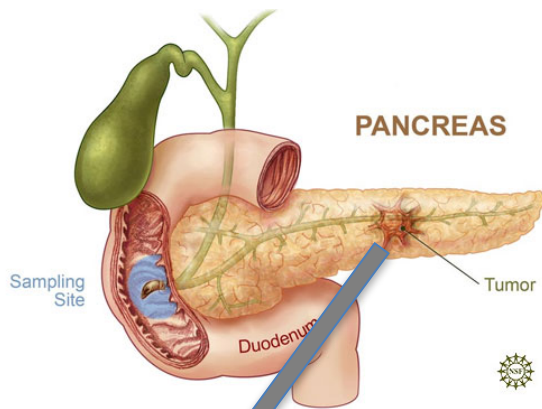
Symptoms for surgery depend on the site of the primary tumour and if there are metastases.

Obstruction of the bowel from a neuroendocrine tumour is a surgical emergency and should **ALWAYS** prompt a consult even if disease is metastatic.



# When Do We Operate and Why?

## iii) For symptoms



Gastrin  
Insulin  
Glucagon  
Somatostatin  
Vasoactive intestinal peptide

Pancreatic neuroendocrine tumours may secrete a number of substances.

Symptoms due to carcinoid syndrome may also prompt surgery in attempt to debulk disease in the form of a liver resection.\*



# What Should Happen Before Surgery?

U/S or CT-scan and Endoscopy – What stage and what site(s)



Functional Imaging (Octreotide, MIBG) - ?Radioisotope therapy



Biochemical testing for markers – use to gauge success of therapy



Multidisciplinary consult



**SURGERY**

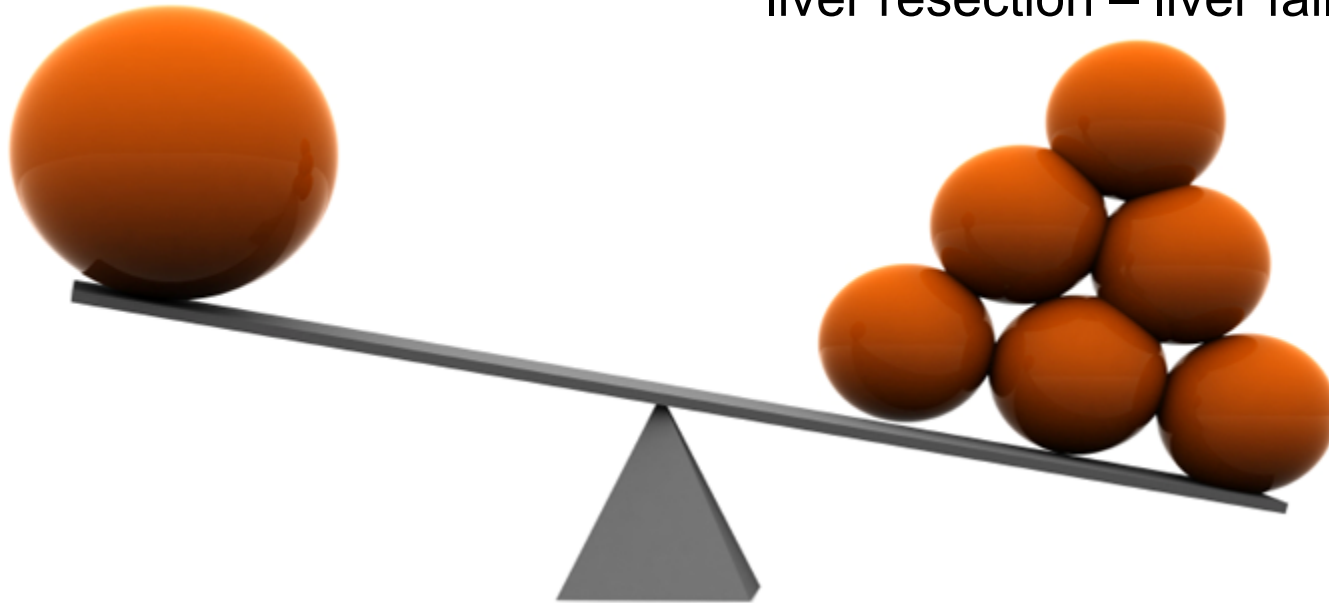




# What Should You Think About Before Surgery?

chance at cure  
symptom control

bowel resection – leak?  
bowel resection – ostomy?  
pancreatic resection – leak?  
liver resection – bleeding?  
liver resection – liver failure?



# Combinations of Therapy

Surgery is not (in most cases) good enough on its own  
If we take 100 patients only 50 present with “local” disease.  
Of these 50 patients, another 10 will have disease show up later.



Of our 100 patients, 60 will need to be assessed for radioisotope therapy and drug therapy as well as surgery.



# Principles in Practice: One Example

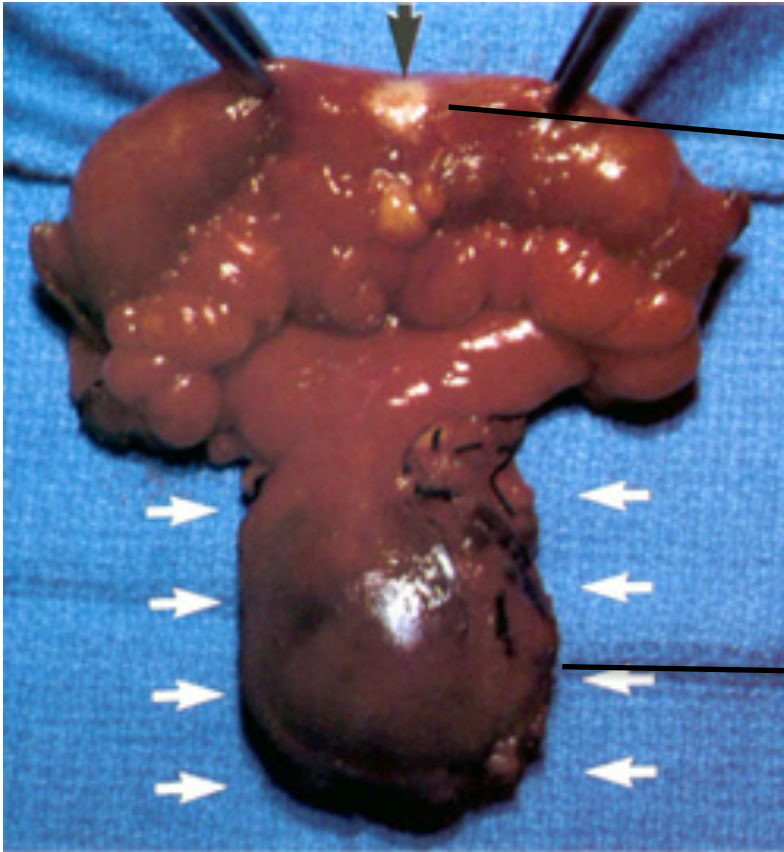
Patient presents with 1 year history of abdominal pain and colonoscopy does not show anything. CT-scan shows a 3 cm mass in the small bowel with lymph node involvement and liver metastases.

Investigations show that there is some dilation of the small bowel and that the primary tumour is resectable.

Radioisotope imaging demonstrates that the primary tumour and some of the liver metastases are avid for MIBG. No other disease and cardiac echo is normal.



# Principles in Practice: Remove Primary Tumour



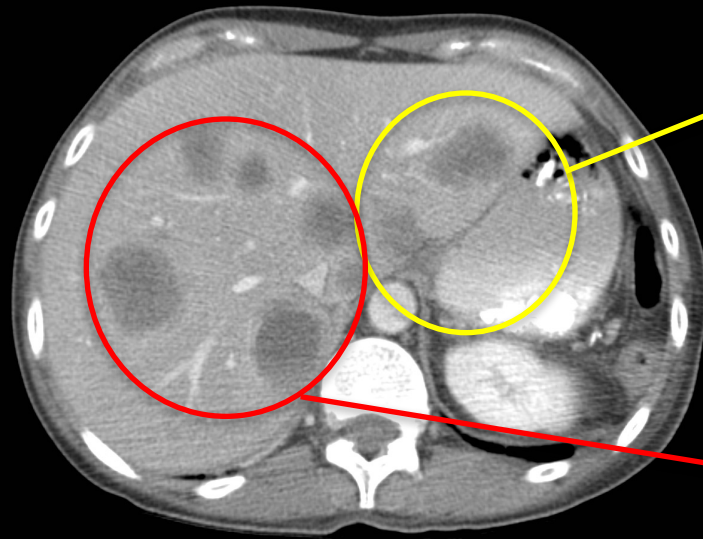
Removal of primary tumour

Removal of lymph nodes



# Principles in Practice: Address Metastases

17



Not radioisotope avid:  
SURGICAL RESECTION

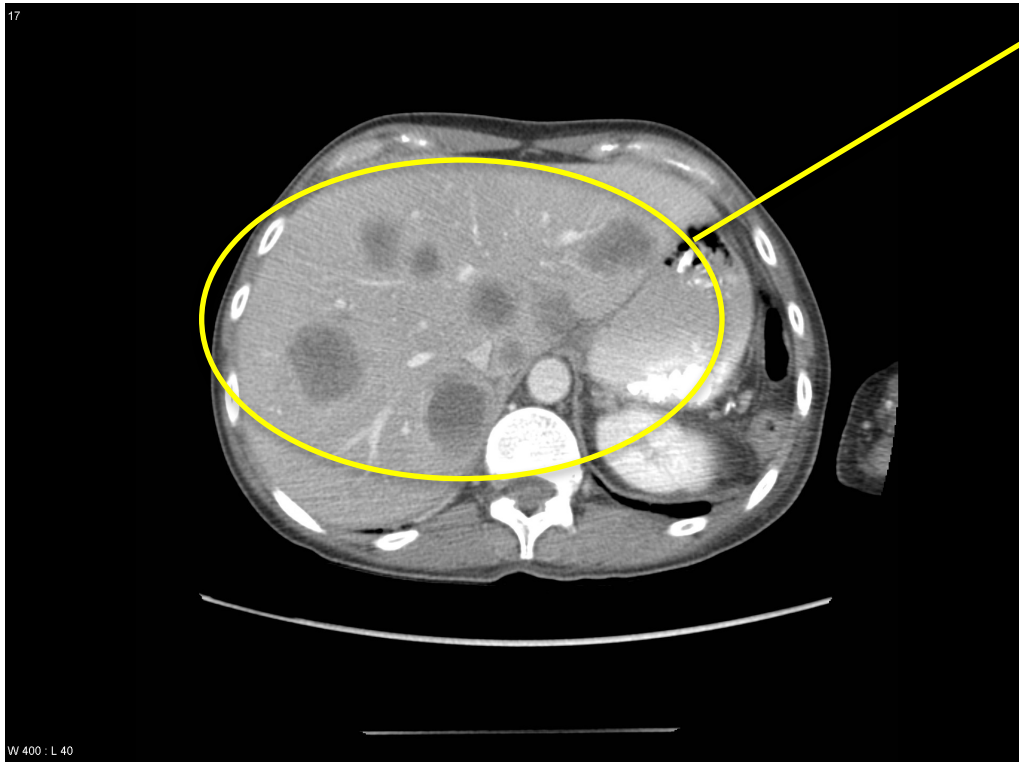
Radioisotope avid:  
MIBG TREATMENT

W 400 : L 40





# Principles in Practice: Address Metastases



Does not uptake radioisotope:

## Surgery?

Simple (focal) – resect\*?

Complex (one major) – debulk?

Diffuse – no OR or transplant?

## Other options?

Radiofrequency ablation

Chemoembolization

## All of the above?



# Principles in Practice: Minimize Symptoms



Surgery to remove >80-90% of disease; debulking

Radioisotope therapy

Drug therapy

Surrogates of “success”

CT scans

radioisotope scans

blood levels of chromogranin A

blood levels of 5 HIAA

Follow-up extends over many years



# Principles in Practice: Summary

Many options and everyone needs to make their own decision based on their experience and expectations.

There are many considerations for surgery.

The surgeon is one member of the team.

For more information see the [American Association of Endocrine Surgeons](#) website.

