Palliative Surgery in Cancer Care

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October 22, 2011

British Columbia Surgical Oncology Network Fall Update

Objectives

- To understand the role that surgeons play in the management of advanced cancer patients
- To review the indications for palliative cancer procedures

Introduction

- Modern medicine is gratifyingly successful
  - liver transplant 85% 1 yr survival (25% 30 years ago)
  - Surgery for most early solid tumors curative
  - Emphasis on CURE as the only worthwhile goal of therapy:
    - Survival, disease-free survival
- Language: Metaphor of War

Canadian Cancer Society | Société canadienne du cancer

Joining forces in the Fight Against Cancer

- **UHN NEWS**
  Inaugural Road Hockey to Conquer Cancer raises $2.4 million

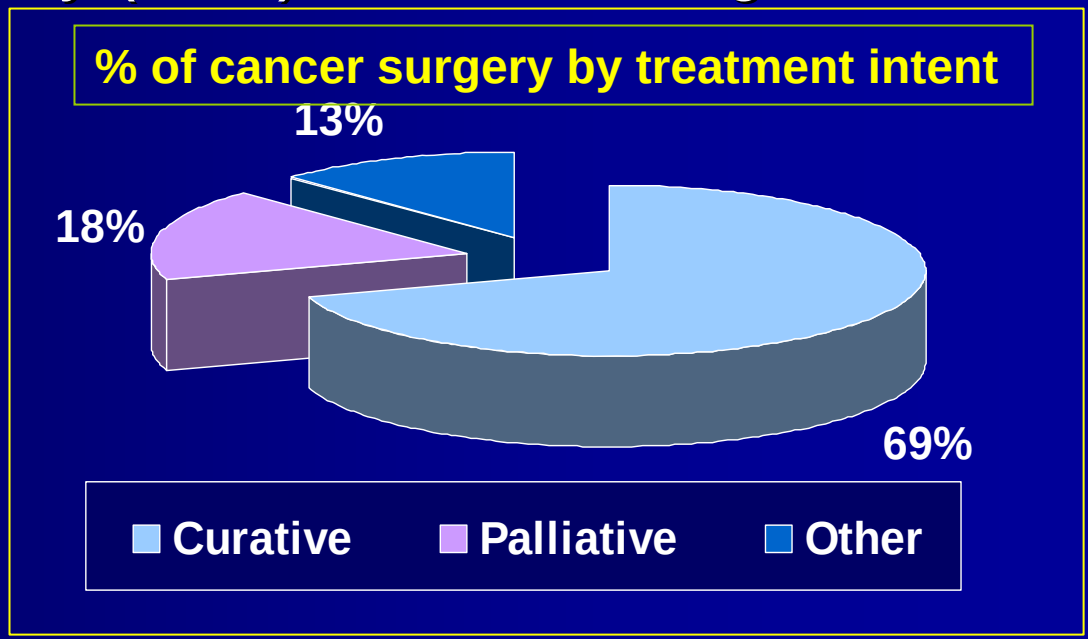
And yet…..

Current reality

- Death and dying common in surgical practice
  - Acute and chronic
  - Over 90% of Canadians die after a protracted illness
    - Many will require surgery in the course of their illness
  - Aging population
  - Modern cancer treatments prolong life BUT many cancer patients eventually go on to die from their disease

Palliative care and surgery: why?

- Palliative surgical procedures are common
  - Survey 2002: 419 surgical oncologists: 21% of cancer surgery was for palliation[1]
  - Canadian survey (2001): 98 cancer surgeons



[1] McCahill et al Ann Surg Oncol 2002

Palliative surgery

- Challenging personally
  - Surgery is intervention-based therapy "want to do something"
  - Surgeon-patient relationship
  - Feeling of impotence/failure
  - Importance of multi-disciplinary care
- Challenging clinically
  - Every patient unique, in a different place along disease continuum

Surgical palliation

- To palliate: *pallium (Latin)*
  - 'affording relief, not cure... to reduce the severity of'
- Palliative surgical procedures
  - Common
  - often useful
  - BUT little evidence in the literature
    - Benefit, timing, options
    - Starting to come

Definition of palliative surgery: What?

- Wide spread inconsistency in definition of the word “palliative” in surgical papers
- 2002 SSO survey surgical oncologists
  - 43% defined palliative surgery on the basis of pre-operative intent [Whose?]
  - 27% defined it on basis of post-operative findings
  - 30% defined it based on individual prognosis

McCahill et al Ann Surg Oncol 2002

Definition of palliative surgery: What?

- Literature case series often combine 3 types of patients[1]
  - Surgery to relieve symptoms, knowing in advance that all tumor could not be removed
  - Resection with residual tumor left at the end of the procedure
  - Resection for recurrent disease after primary treatment failure

Intent of treatment

[1] Palliative Pelvic Exenterations: Finlayson, Eisenberg, Oncology (Williston Park), 1996

Definition of palliative surgery: What?

- Any invasive procedure used for treatment
- Major goal of treatment is relief or prevention of symptoms and/or improvement in quality of life
- Context of a non-curable illness
- May or may not prolong life

American College of Surgeons Palliative Care Workgroup 2003

Palliative surgical procedures

- Drainage of effusions
- Relief of obstruction
- Palliative tumor resection
- Control of pain
- Fixation for bony metastases
- Metastases to spine and brain

Palliative surgical interventions in Stage IV lung and gastrointestinal cancer patients

Alexandra Easson[1] Andrew Walsh[2], Monica Ounjian[2], Gary Rodin[2]

[1]Departments of Surgical Oncology; [2]Psychosocial Oncology and Palliative Care, Princess Margaret Hospital, Toronto, Ontario

Patient population

- Drawn from an ongoing prospective longitudinal study of self-reported distress in stage IV lung and gastrointestinal (GI) cancer
  - treated at Princess Margaret Hospital, Toronto between Nov. 2002 and Feb. 2006
  - 544 pts interviewed and followed until death or withdrawal

Methods

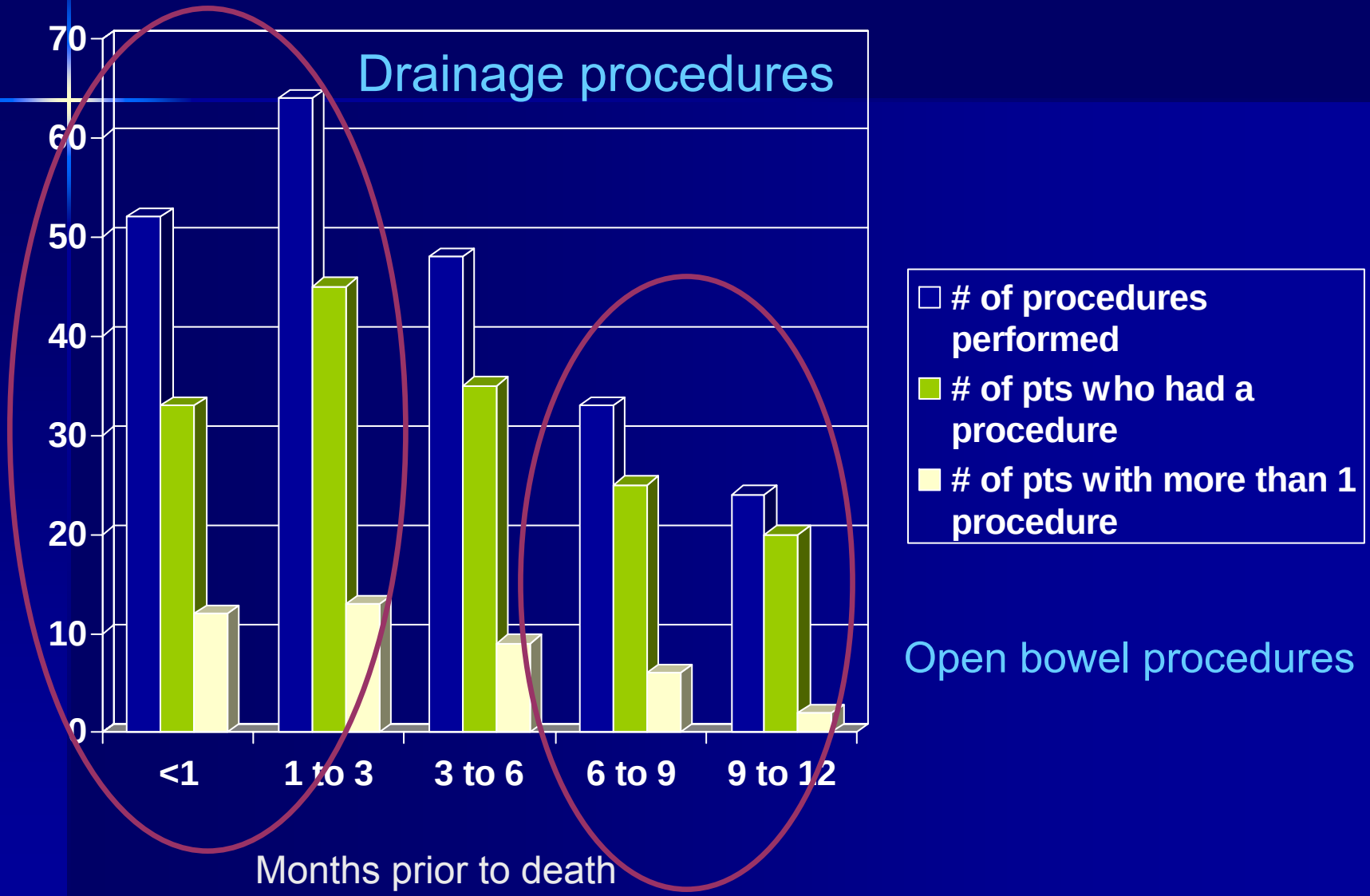
- Chart review of all patients (n=255; 48%) who had died in this cohort (November 2006)
  - All patients had a surgical procedures
  - Palliative surgical interventions (SPI) were described and recorded
    - Endoscopic, operative, interventional radiology

Demographics: Cancer diagnosis

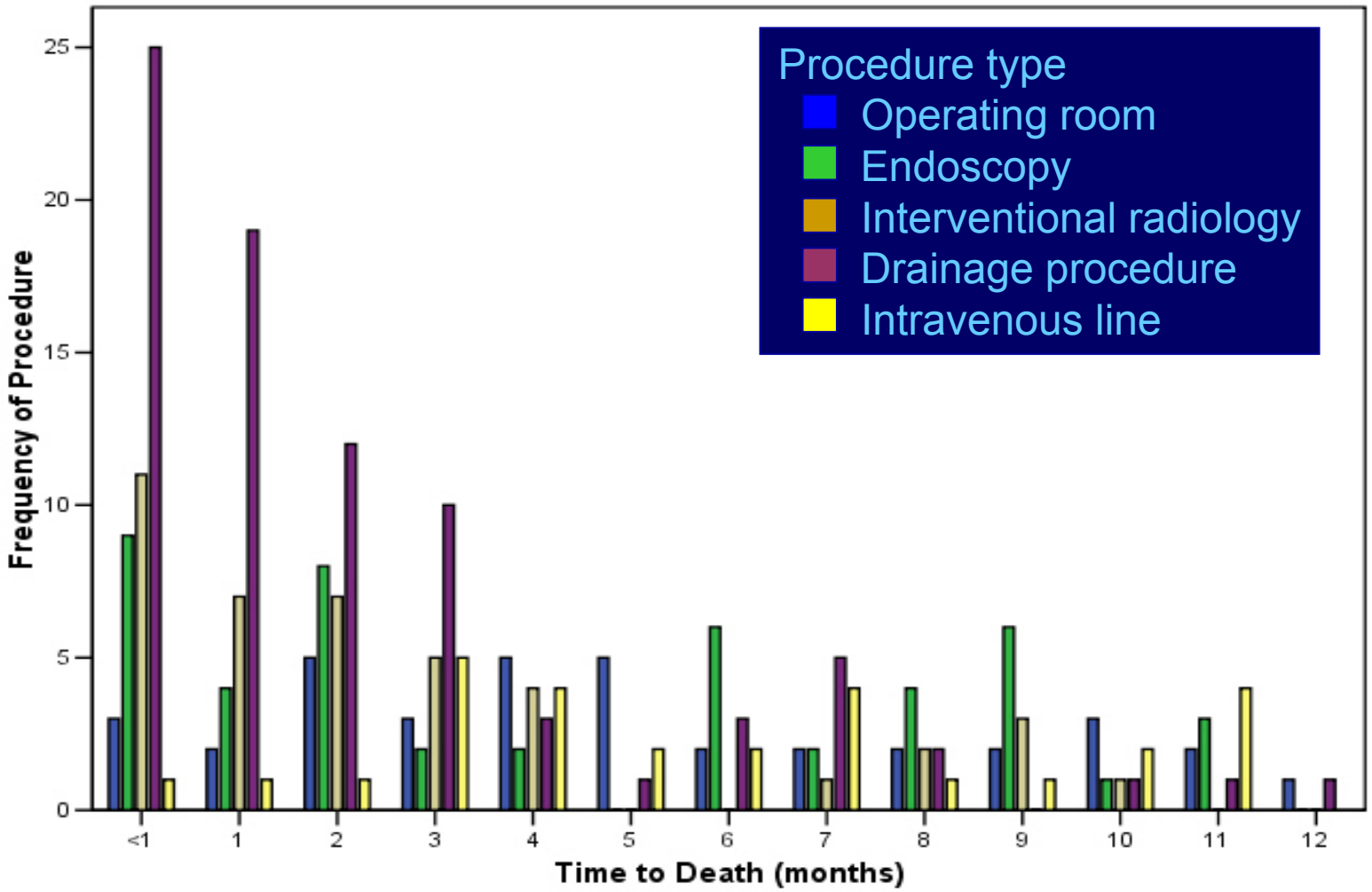
	No SPI	SPI	Total
Pancreas	6	22 (79%)	28
Colon/rectal	31	79 (72%)	110
Gastric/Esophagus	5	9 (64%)	14
Liver/Gallbladder/Bile	5	15 (75%)	20
Lung	51	32 (40%)	83
Total	98 (38%)	157(62%)	255

SPI: Surgical Palliative Intervention

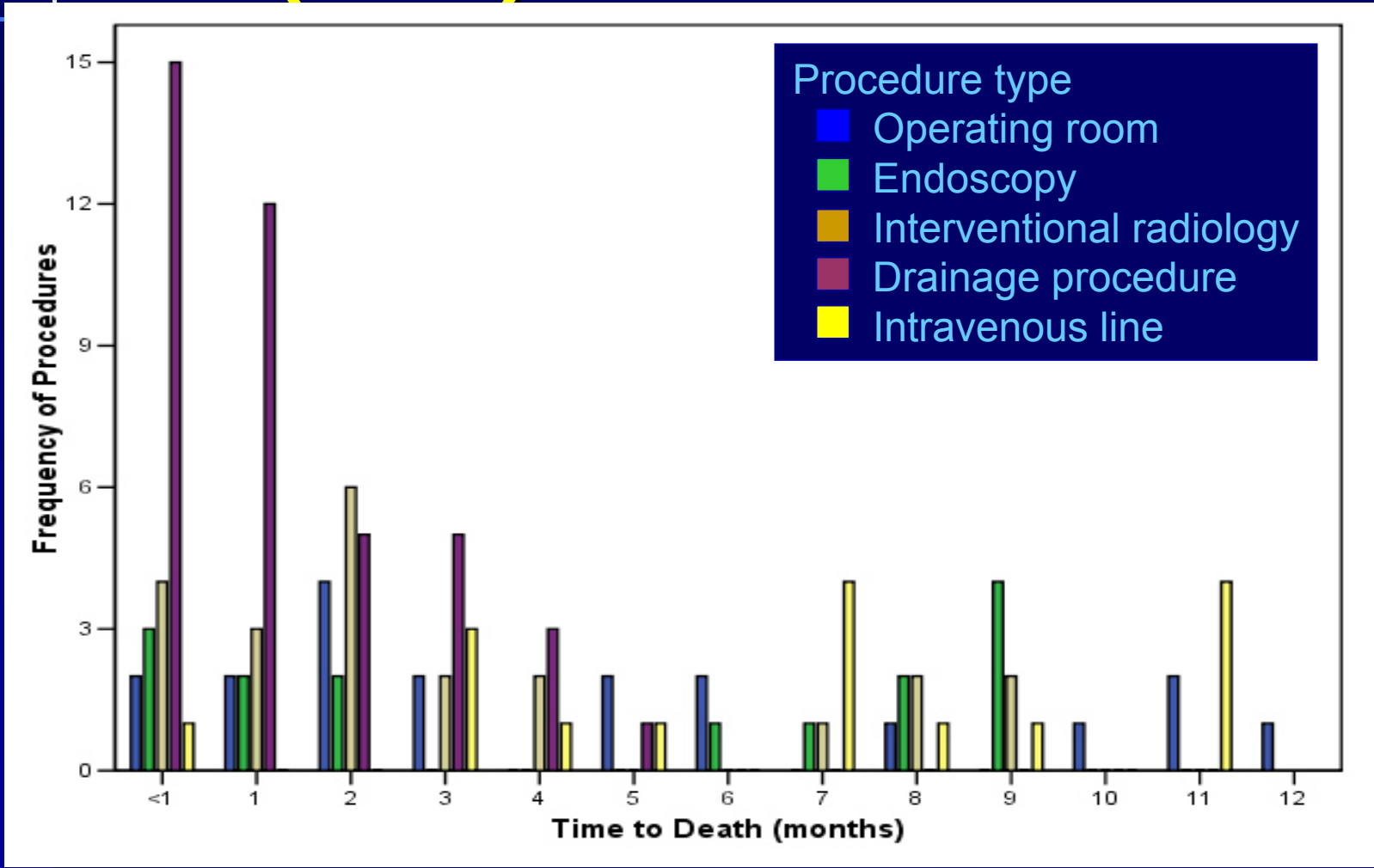
Results: Frequency of procedures



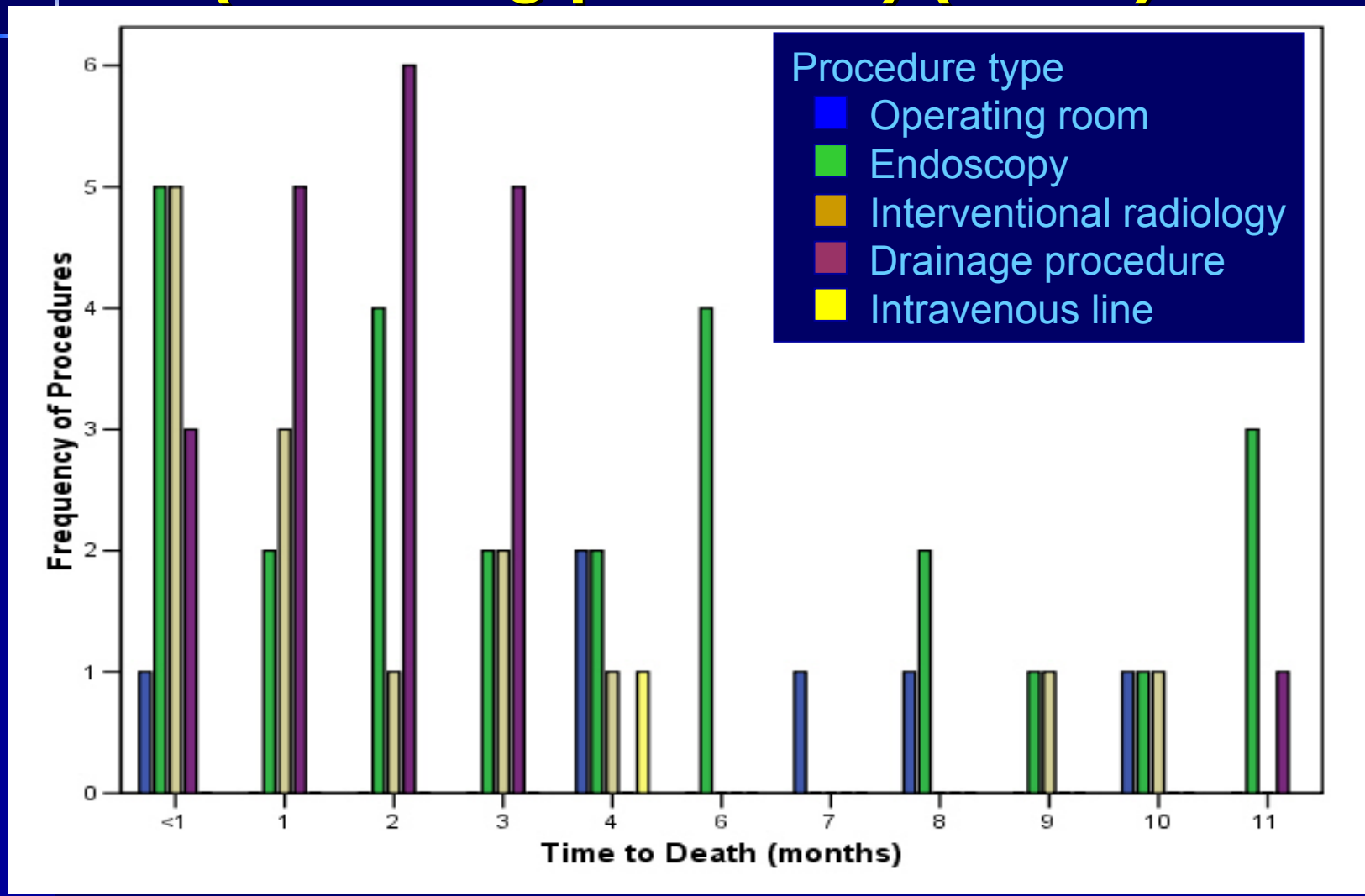
Palliative Interventions: All (n=157)



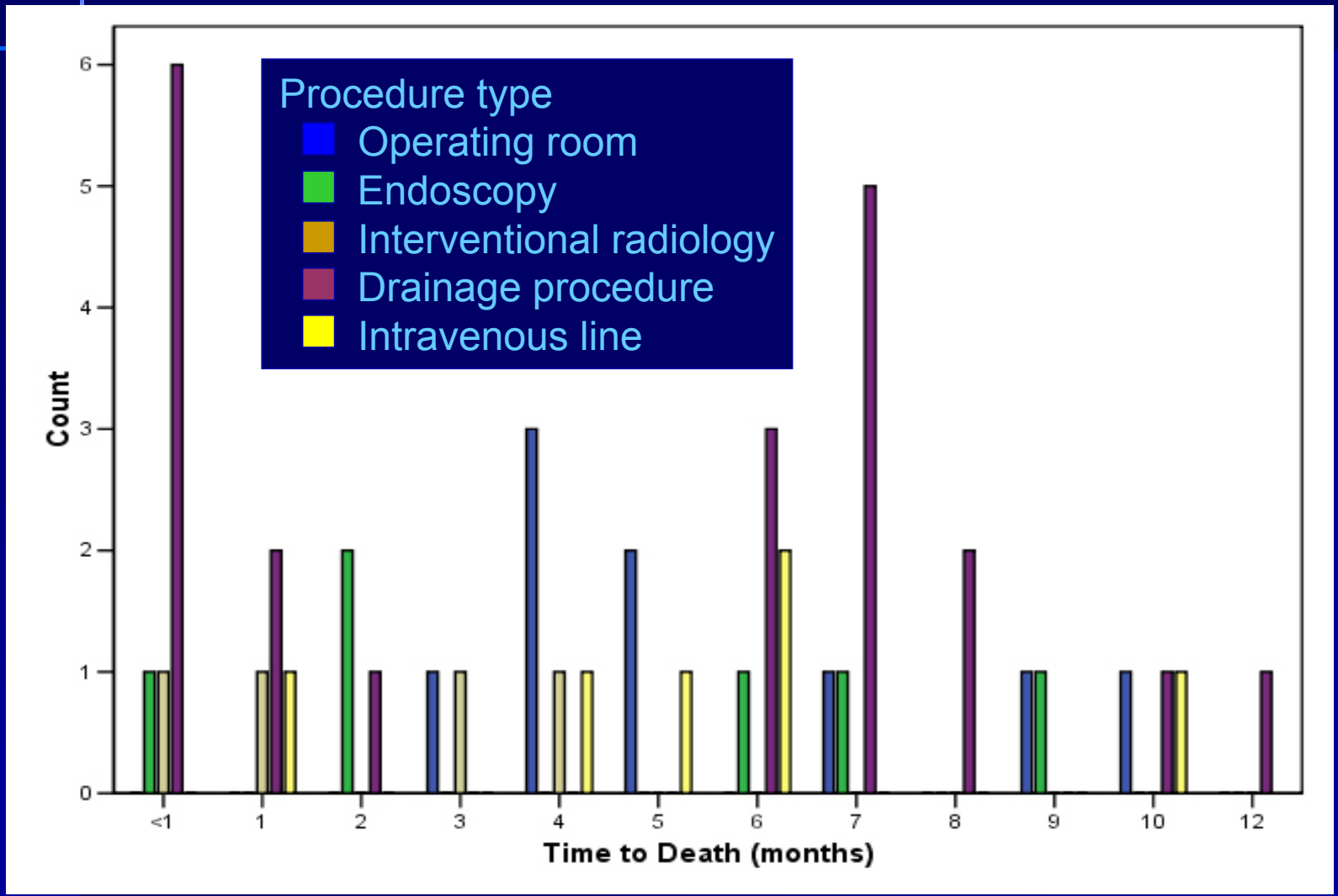
Palliative Interventions: Colorectal Cancer (n=79)



Palliative Interventions: Hepatobiliary Cancer (including pancreas) (n= 37)



Palliative Interventions: Lung Cancer (n= 32)



Conclusion

- Invasive procedures in palliative GI /lung cancer patients
  - common
  - often multiple
  - continue to be performed up to just before death
  - Drainage procedures most common near end
- Surgical palliation is important and warrants further study

Palliative surgical procedures

- Drainage of effusions
  - Ascites: abdomen
  - Pleural: around lungs
  - Pericardial: around heart
- Techniques
  - Tapping of fluid
  - Placement of indwelling catheters
  - Open surgery

Malignant ascites

- Pre-terminal condition
  - Ovarian 35-40 weeks
  - Other cancers 7-20 weeks
- 15-75% of patients significant symptoms affecting Q of L[1,2]
- Management
  - Paracentesis
  - Peritoneovenous shunt: only current literature from Japan
  - Indwelling catheters

Indwelling catheters for the management of refractory malignant ascites: a systematic literature overview and retrospective chart review [3]

- 15 papers (221 patients), mean # para=11
- Tenckhoff, Pleurex, peritoneal catheters, IP ports
- 5.9% (2.5%-34%) peritonitis, if untunneled

[1] Mackey 1996, [2] Parsons 1996, [3] Fleming J Pain Symptom Manage 2009

Management

- Therapeutic paracentesis
  - Effective but short-term relief
  - Repeated q 4 weeks –q 3 days
  - Performed by physician
    - Book a trip to hospital
  - Patients very symptomatic prior to drainage
  - Large fluid shifts
    - Hypotension, electrolyte abnormalities

Measurement of symptom change with paracentesis in malignant ascites

- To describe the symptoms and QOL of patients with symptomatic malignant ascites before and after paracentesis from the patient perspective using existing symptom and QOL instruments

Results

- 103 patients with malignant ascites were approached (Aug 2003-Sept 2004)
  - 57 consented and completed 1st set just before their drainage
  - 4 no fluid drained
  - 38/53 (72%) returned second questionnaire

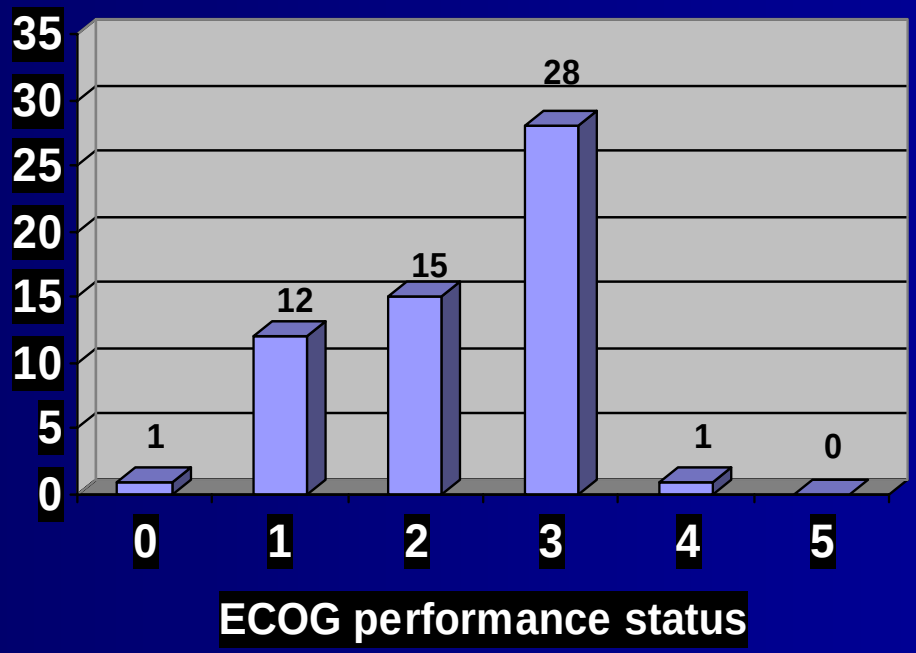
Patient demographics (n=57)

Gender	45 (79.5%) women
Age	59.9 ± 11 (38-80)
Amount of fluid drained (L)	3.24 ± 1.8 (0.3-8.1)
Number of previous procedures	3.23 ± 8.4 (1-30)
Days since previous procedure (days)	12.7 ± 9 (4-35)
Complications	[4 no fluid] 3 required 2 attempts

Cancer diagnosis (n=57)

Diagnosis	# of patients	Percent (%)
Ovarian cancer	23	40
Colorectal cancer	10	18
Breast cancer	7	12
Pancreatic cancer	6	9
Liver cancer	6	7
Unknown Primary	3	5
Endometrium	1	2
Mesothelioma	1	2

ECOG Performance Status (n=57)



3	Capable of only limited self-care, confined to bed or chair >50% of waking hours.

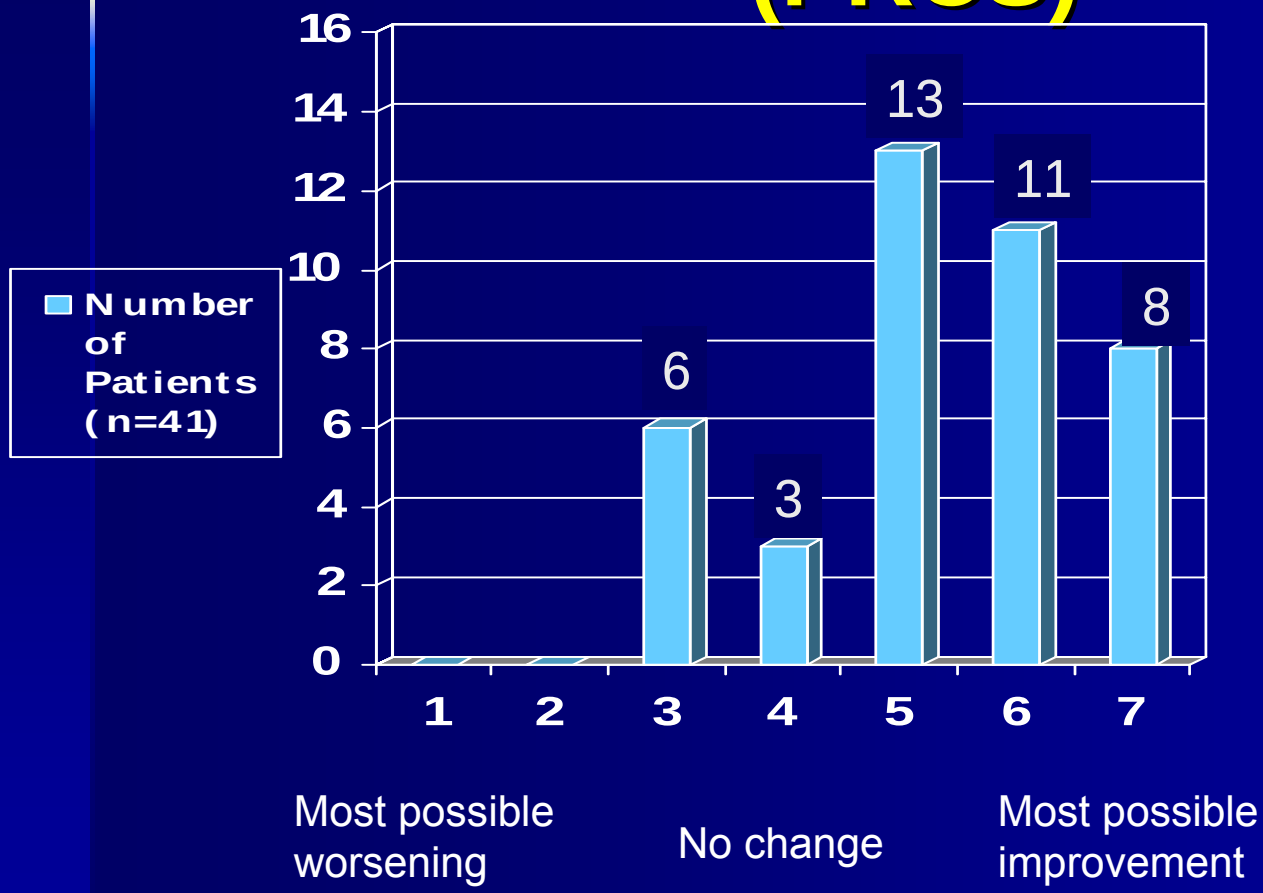
Patient reported change in symptoms after paracentesis (24 hours)

Patient Opinion Sheet **Study #: _____** **Date: ___/____/____**

1. Please circle which number best matches whether or not your symptoms have improved because of the procedure yesterday:

1	2	3	4	5	6	7
Worst possible worsening of symptoms			No change in symptoms			Most possible improvement in symptoms

Patient reported change in symptoms after paracentesis (PRCS)



- 32 (78%) improved
- 9 stayed the same or got worse

Content validity	Patient opinion		Baseline scores			
	Most Bothersome	Most Important	ESAS:AM	MSAS	QLQ C-30	PAN26
Bloating	20	11	65.9 ± 22	66.6 ± 17	N/A	78.8 ± 27
Pain	16	9	35.5 ± 27	40.6 ± 25	43.4 ± 34	51.1 ± 26
Mobility	11	4	53.5 ± 30	N/A	N/A	N/A
Fatigue	8	15	58.1 ± 21	59.6 ± 24	71.4 ± 27	N/A
SOB	6	4	35.3 ± 27	38.6 ± 30	41.9 ± 30	N/A
Sleep	6	1	N/A	44.5 ± 25	53.5 ± 40	N/A
Appetite	5	7	47.3 ± 24	41.5 ± 28	53.5 ± 40	N/A
Nausea	3	N/A	23.8 ± 29	28.1 ± 27	24.1 ± 30	N/A
Body image	5	2	N/A	49.5 ± 23	N/A	61.7 ± 33

Symptom change (after paracentesis)

Patient reported symptom	Before paracentesis (n=44)			After
	Most bothersome	Most Important		Improvement
Abdominal discomfort / bloating	20	11		yes
Pain	16	9		no
Mobility	11	4		yes
Fatigue	8	15		no
Shortness of breath	6	4		yes
Sleep disturbance	6	1		yes
Appetite	5	7		yes
Nausea	3	N/A		yes
Body image	5	2		yes
Anxiety	20	11		yes

Malignant ascites

- Fatigue, abdominal discomfort/bloating, mobility, dyspnea, sleep disturbance, decreased appetite most distressful symptoms
- Paracentesis is effective short term therapy:
  - most bothersome symptoms relieved by drainage
  - Overall improvement in quality of life after drainage
  - Pain, anxiety not relieved
- Use indwelling catheter in select patients

Palliative surgical procedures

- Relief of Obstruction
  - Respiratory, Gastrointestinal, Urological
  - Vascular: SVC, IVC
- Decision-making can be difficult
  - One site of disease versus multiple sites of disease
- Selection of most effective modality
  - Interventional radiology
  - Endoscopy
  - Open surgery

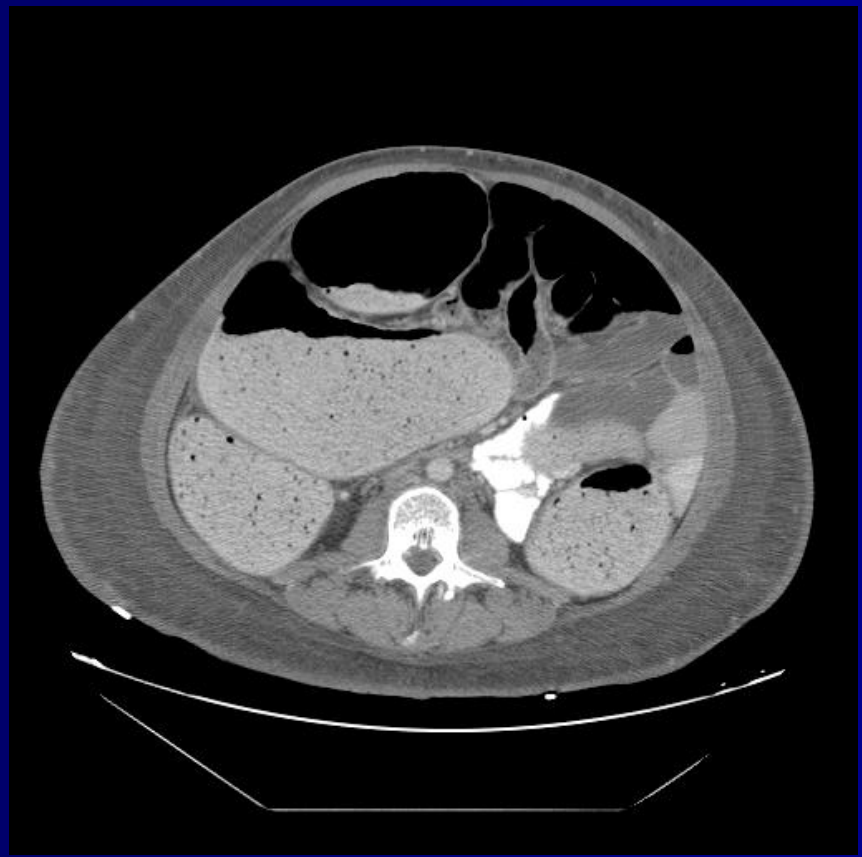
Bowel obstruction in advanced cancer

- A difficult problem, always unique
- Often present as an emergency to a surgeon
  - Does not know the patient
  - May need to make a decision quickly
  - May be the first indication that the disease has progressed
    - Transition from curative to palliative treatment

Case #1: M.P.

- 45 yr old woman on palliative care ward
- Locally advanced cervical cancer
- Radical radiation to pelvis
- Has bilateral nephrostomy tubes
- Now presents with nausea, vomiting, abdominal distension, no BM for 3 weeks

Case #1: M.P.



Management of bowel obstruction

- History and physical examination
- 3 views of the abdomen
- NG tube

Causes of bowel obstruction

- Many possible causes of bowel obstruction
- History of cancer not definitive
  - 3-48% of cancer patients have obstruction from other causes
  - adhesions, internal hernias, radiation
  - must consider even if history of metastatic cancer

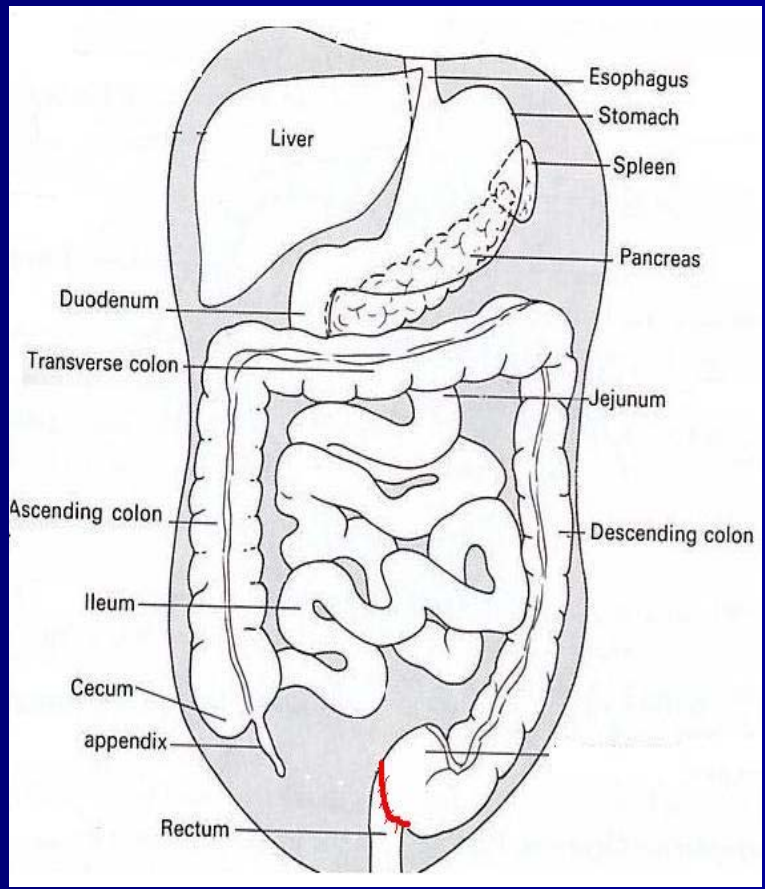
CT scan: gold standard

- Single site of obstruction versus multiple sites (carcinomatosis)
- Site(s): Large bowel versus small bowel
  - Use of oral/IV/rectal contrast
- Partial versus complete bowel obstruction
  - Strangulated / closed loop obstruction: Impending ischemia = emergency
  - Very rare in carcinomatosis[1]

[1] Baines Oxford textbook of palliative medicine 1999 pg 528

Malignant Obstructions: What are the options?

- Resection



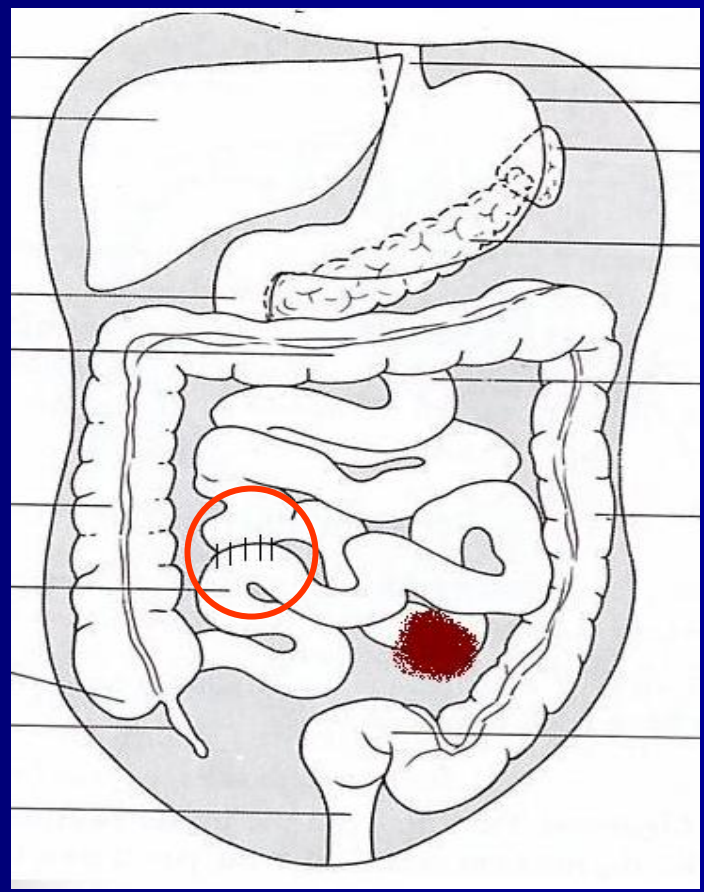
CT scan: gold standard

- Diagnosis of obstruction: 90%[1]
  - Site: GE junction, gastric outlet, small bowel, colon
  - 90% specificity
- Cause of obstruction: 70-95%[1]
  - Tumor, adhesions, internal/external hernias

[1] Furukawa et al Semin Ultrasound CT MR 2003 Oct;24(5):336-52

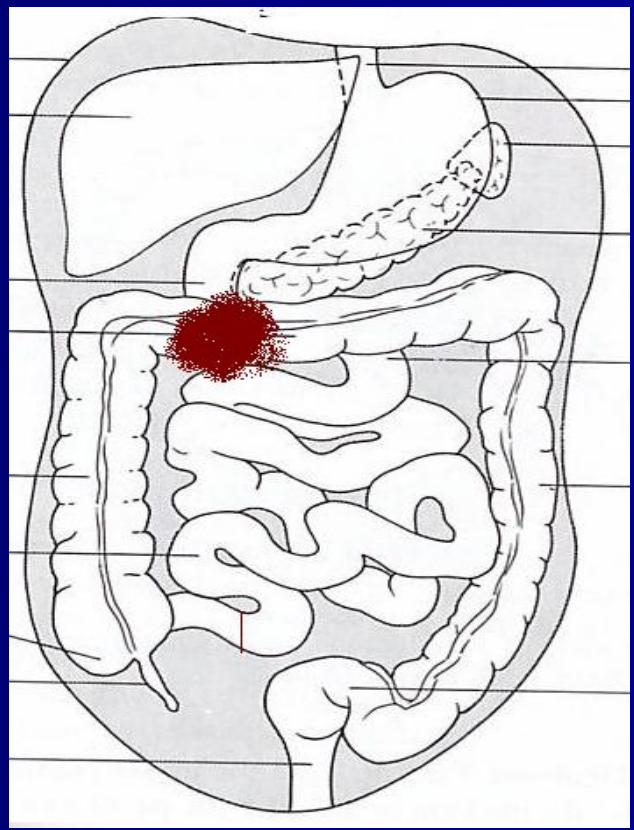
Malignant Obstructions: What are the options?

- Resection
- Bypass



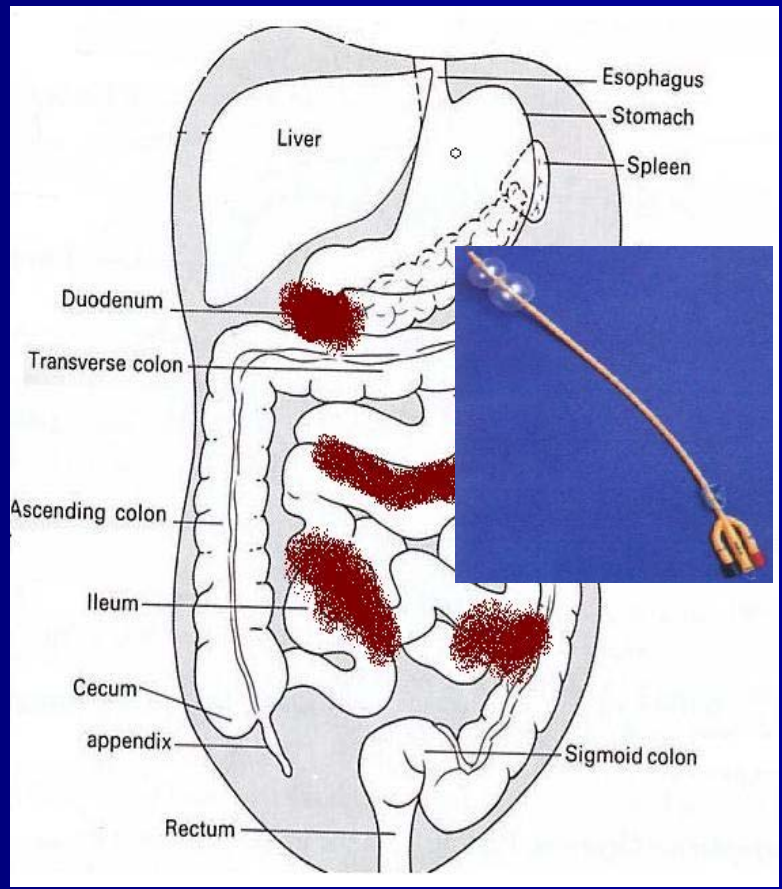
Malignant Obstructions: What are the options?

- Resection
- Bypass
- Stoma



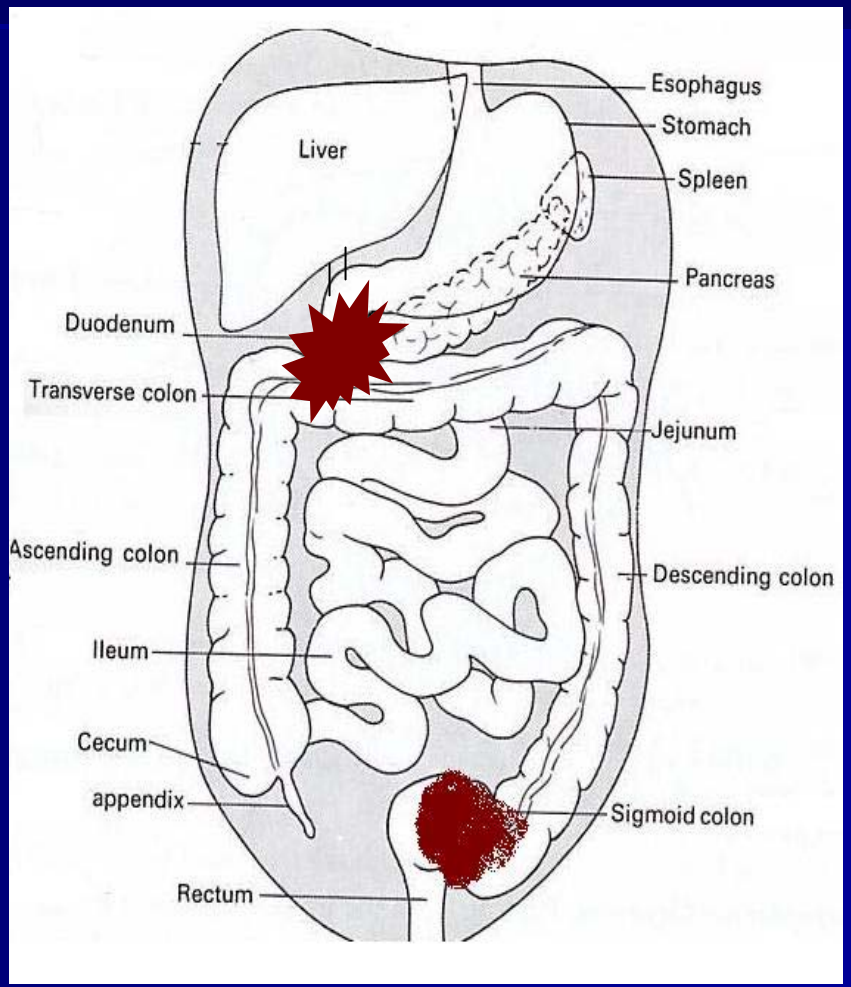
Surgical options: generalized carcinomatosis

- Venting gastrostomy tube
  - radiology
  - endoscopic
  - open



Malignant Obstructions: What are the options?

- Stenting
  - Radiology
  - Endoscopy
- Single site
  - Duodenal
  - Colonic
    - Distal
    - Proximal
- Technical expertise required



Stenting versus surgery

- Meta-analysis of 10 studies 2007
  - 451 patients with malignant incurable colonic obstruction*
  - 244 (54%) attempted, 226 (93%) successful
  - Good short term relief
  - Long term complications (25%)
    - Migration (8%)
    - Perforation
    - Re-obstruction due to tumor ingrowth (15%)
    - Passing liquid stool

Tilney 2007 Surg Endoscopy

Stenting versus surgery

- Less successful for extra-colonic malignancy (20.0%) than for colorectal cancer (94.1%) ($P < .0001$)
  - Either technical failure or required stoma later
- Stent versus surgery for single site obstruction
  - Expected survival < 3-6 months: stent
  - > 3-6 months: surgery

Keswani Gastrointest Endosc. 2009

Case #1: M.P.

- Loop colostomy performed
- Pain medications reduced, more functional
- Died 4 months later

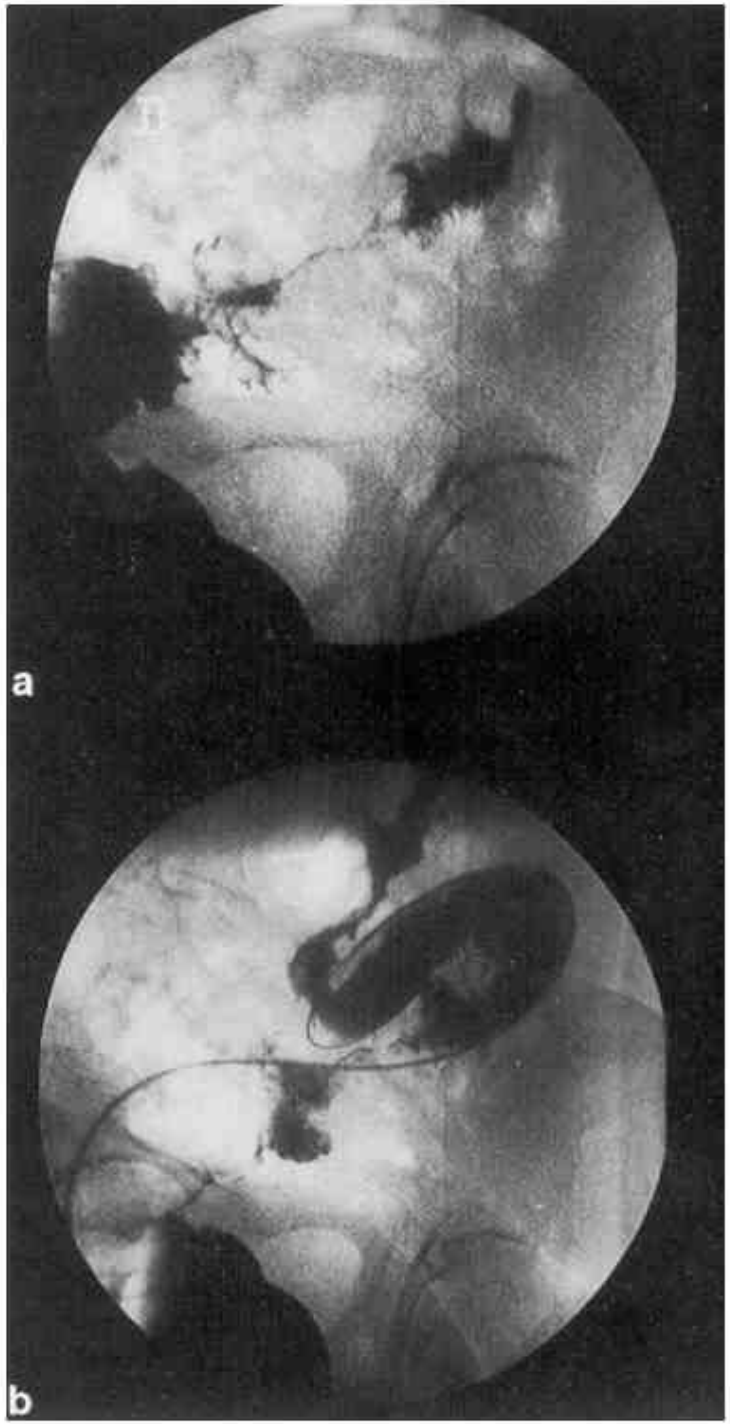
Case # 2 Mr. A.H.

- 75 year old man
- Metastatic neuro-endocrine tumour
  - Responds to chemotherapy
- Large bowel obstruction from primary lesion in sigmoid colon

Case # 2 Mr. A.H.

- Patient factors
  - Advanced liver metastases

- Sigmoid disease amenable to stenting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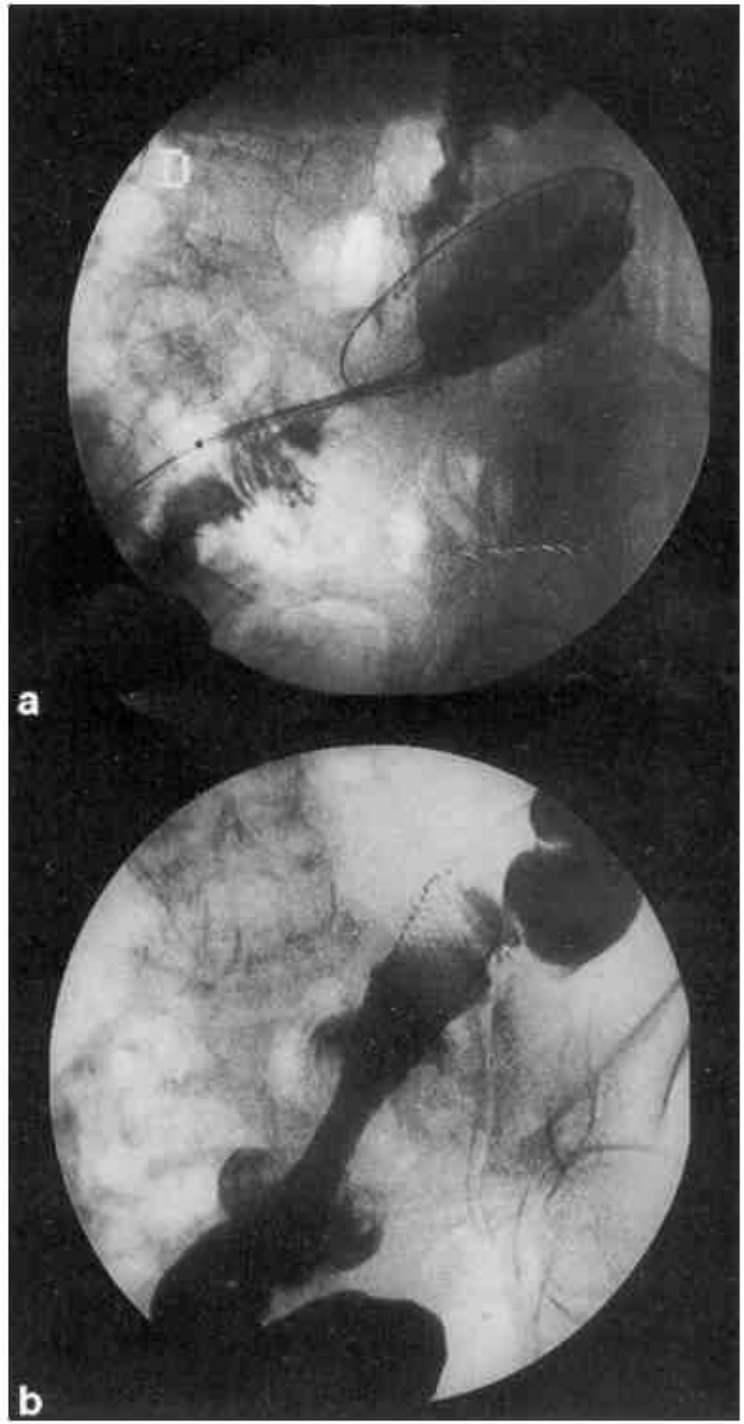
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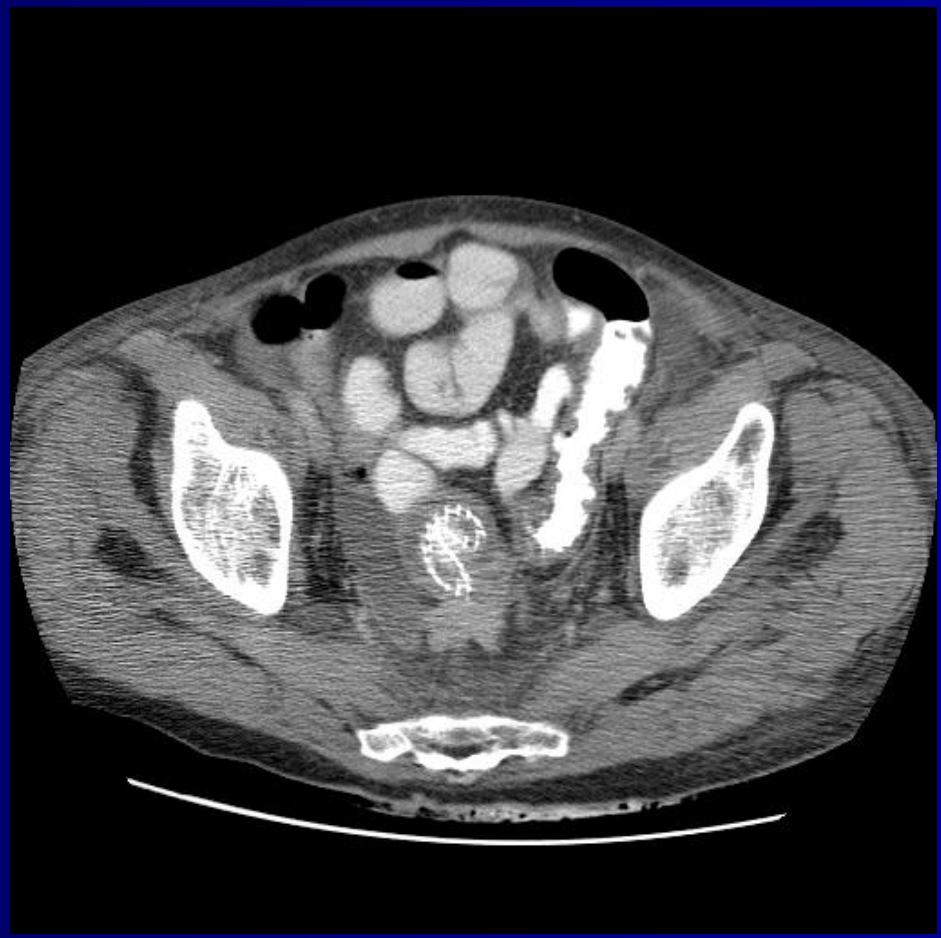
Case # 2 Mr. A.H.



Case # 2 Mr. A.H.

- Able to eat, have bowel movements
- Died 3 weeks later from pulmonary embolus

Case #3: M.D.

- 45 yr-old insurance adjustor
- Married , young children
- Locally advanced pancreatic cancer
- Gemcitabine: stable
- Abdominal pain in ER
  - Nausea and vomiting

Imaging

Malignant bowel obstruction from generalized carcinomatosis

- Usually intermittent, partial, non-strangulated
- Involves multiple sites of small bowel ± large bowel
- May resolve with NG decompression but will recur
- Multiple factors:
  - External compression of tumor at multiple levels
  - Motility disorder 2nd to tumor on wall (< peristalsis)
  - ± involvement of parasympathetic, sympathetic nerves

DEFINITION of MBO

Clinical Protocol Committee: International conference on malignant bowel obstruction 2007

1. Clinical evidence of bowel obstruction.
2. Bowel obstruction beyond the ligament of Treitz.
3. Intra abdominal primary cancer with incurable disease.
4. Non intra abdominal primary cancer with clear intraperitoneal disease.

Anthony T., Baron T., Mercadante S. et al. J Pain Symptom Manage 2007;34:S49-S59

Surgery for malignant bowel obstruction

- Literature poor, retrospective and difficult to interpret

BUT if true, and no anti-cancer therapy exists and perform surgery:

- 30 day mortality > 50%
- Most will re-obstruct within 3 months
- NOT a surgical candidate: aggressive medical management

Medical management

- Able to remove NG tube in 95% of palliative patients with malignant bowel obstruction
- Varying course
  - Tolerating liquids, food
  - Intermittent nausea, vomiting

1 Mercandante 2000

Malignant bowel obstruction

- Anticancer treatment
- Venting gastrostomy tube
- Aggressive pharmacologic management
  - AAAA H

AAAA H

Antisecretory
Octreotide 100-300 µg sc bid
Buscopan 40-120 mg/d sc/iv qid/infusion

Anti-emetic/Anti-nauseant
Haloperidol 2-15 mg/d sc/iv q4h/infusion
Stemetil 10 mg iv/pr q6h

Dexamethasone 8-16 mg sc/d bid/infusion A1
Gravol 50-100 mg iv q4h

Anti-spasmodic (colicky pain)
Loperamide 2 mg po qid/24 hrs then prn
Buscopan 40-120 mg/d sc/iv qid/infusion

Analgesic
Morphine/hydromorphone sc q4h/infusion
Fentanyl patch q 3 days

Hydration: controversial when to stop

Slide 64

A1 Alexandra, 10/21/2011

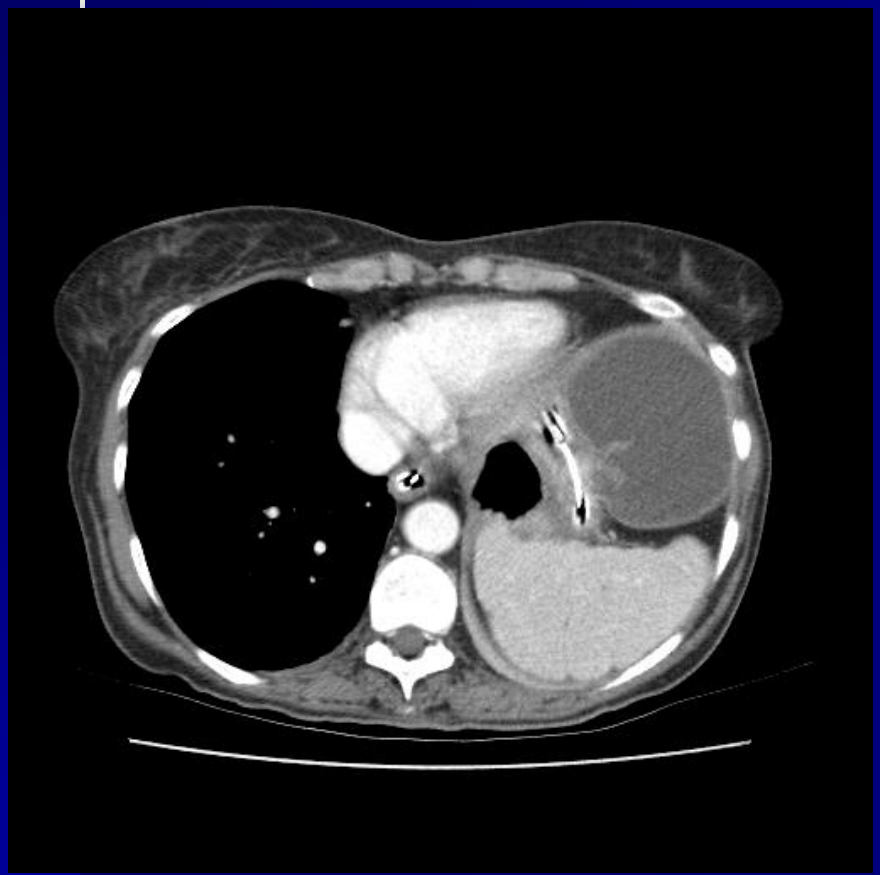
Case #4 Mrs. S.V.

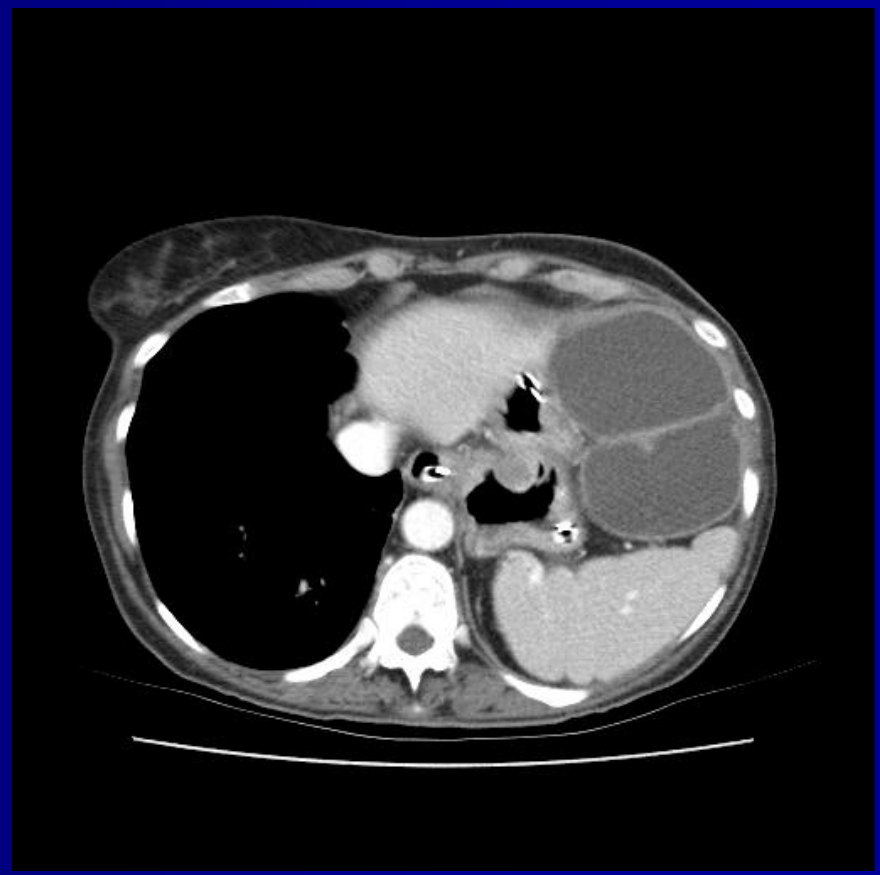
- 54 yr old woman
- 2005 total colectomy/ileostomy for ulcerative colitis, colon cancer, peritoneal deposits seen
- Chemotherapy
- Now complete bowel obstruction 2ND to pelvic peritoneal disease

Case #4 Mrs. S.V.

- Goals of care
  - Wants to see her daughter graduate from medical school
- On TPN, chemotherapy options available
- Symptoms: severe nausea, unable to remove NG tube despite medical management
- Attempts at percutaneous gastrostomy tube unsuccessful

Case #4 Mrs. S.V.





Case #4 Mrs. S.V.

- Asked to see re open gastrostomy tube
- Goals of care
  - Ability to be comfortable without NG tube
- Patient factors
  - No ascites, good performance status, not malnourished
- Open gastrostomy performed
  - 20 minutes, no complications
- Patient very grateful, comfortable

Palliative surgical procedures

- Drainage of effusions
- Relief of obstruction
- Palliative tumor resection
- Control of pain
- Fixation for bony metastases
- Metastases to spine and brain

Randomized, Double-Blind, Controlled Trial of Early Endoscopic Ultrasound–Guided Celiac Plexus Neurolysis to Prevent Pain Progression in Patients With Newly Diagnosed, Painful, Inoperable Pancreatic Cancer

- **48 patients per arm**
  - Randomized to ultrasound–guided celiac plexus block (EUS-CPN) at endoscopy versus standard pain management
  - Pain relief greater in the EUS-CPN group at 1 month and significantly greater at 3 months
  - Morphine use similar at 1 month, trend to lower use in the neurolysis group at 3 months
  - no effect on QOL or survival
- **Conclusion** Early EUS-CPN reduces pain and may moderate morphine consumption. EUS-CPN can be considered in all such patients at the time of diagnostic and staging EUS.

Wyse, Carone et al JCO 29(26):3541

Palliative surgical procedures

- **Tumour resection**
  - Toilet resection
  - Bleeding
  - Fistulas
  - Goal is primary tumor control for symptoms even in the presence of metastases

Palliative mastectomy

- Control of primary disease
- Effect on survival controversial
  - We know it is not worse
  - Studies that show benefit are retrospective

Breast Cancer Res Treat. 2010 **Ruiterkamp J**

Mrs. G.C.

- 68 year old woman
- Presents with small abdominal wall mass, and lung nodule: metastatic small cell lung cancer
- Lung resection and 9 months of chemotherapy
- Abdominal mass enlarges on chemotherapy, radiation no effect
- Evidence of recurrence in the lung

Mrs. G.C.

- ↑ symptoms: odor, dressing changes, pain medication, unable to leave the house

Mrs. G.C.

- Taken to OR for resection of abdominal wall mass

Mrs. G.C.

- No complications from OR
- Complete resolution of pain
- Resumption of normal activities

- Patient died 9 months later of her disease

Was this procedure successful?

Surgical Decision-making in the advanced cancer patient

Good surgical care is more than a good technical operation

Mrs H.C.

- 45 yr old woman, single mother of 5 yr old
- Breast cancer 2 yrs previous
  - Lumpectomy sln rads
  - ER+ PR+ Her 2 -ve

Case

Surgical decision-making in the advanced cancer patient

- Identify the symptom
  - Nausea/vomiting, anorexia, abdominal cramping
- Identify a surgical cause for the symptom
  - Mechanical bowel obstruction vs functional
  - One site of bleeding versus several
- Assess the realistic ability of the intervention to alleviate the symptom
- Does this procedure fit with the patient's goals of care?

Surgical decision-making: Patient Factors

- Medical Factors
  - Prognosis: discussion with medical/radiation oncologist
    - Are there any anti-cancer treatment options?
  - Age: biologic, physiologic
  - Concurrent illness and co-morbidities
  - Malnutrition and/or cachexia
  - Performance status
  - Ascites

The single best predictor of prognosis in the advanced cancer patient is:

a. Age of the patient
b. Burden of metastatic disease
c. Performance status
d. Serum albumin
e. Severity of pain

Surgical decision-making: Technical factors

- Assess likelihood of success[1]
  - Multi-site obstruction/carcinomatosis
  - Poor performance status
  - Nutritionally deprived (< albumin)
  - Ascites
  - Is there something else that is likely to help?

Ripamonti et al Support Care Cancer. 2001 Jun;9(4):223-33.

Surgical decision-making: Technical factors

- Degree of invasiveness
  - Interventional radiology, Endoscopy, Laparoscopic/ open surgery
- Anaesthetic requirements
  - Local/Regional/General
- Risk of post operative complications
  - Bleeding, infection, wound problems
  - Hospital stay, mortality
  - Morbidity of NOT doing the procedure

Surgical decision-making

- Formulate recommendation(s)
  - Consider all options
  - What is feasible? What is futile?
  - Surgeon experience and expertise
  - No ethical or legal obligation to offer futile treatment

BUT "there is nothing more that I can do"

- ignores patient-physician relationship
- violates trust
- actual patient abandonment

Surgical decision-making

- Discussion with patient and family
  - What do they understand about their disease?
  - What do they expect from the surgery?
  - What is their personality and past experience?
  - Does the procedure fit with their goals of care?

Determine a clear definition of success

- How do we measure success?
  - Not length of life
  - ? Patency of intervention
- Success = maximally achieving goals of care with minimal morbidity
- Patient defined outcomes: Quality of life
  - Relief of symptoms
  - Prevention of symptoms

Palliative care and surgery: why?

- Fundamental shift in thinking
  - Expands the definition of a successful outcome
  - Relief from distressing symptoms, easing of pain, and improvement in quality of life
  - The decision to intervene is based on the treatment's ability to meet these goals, rather than its effect on the underlying disease

Surgical decision-making

- If surgery will not help the patient, say so
- Offer alternatives
  - palliative care involvement
  - Aggressive med

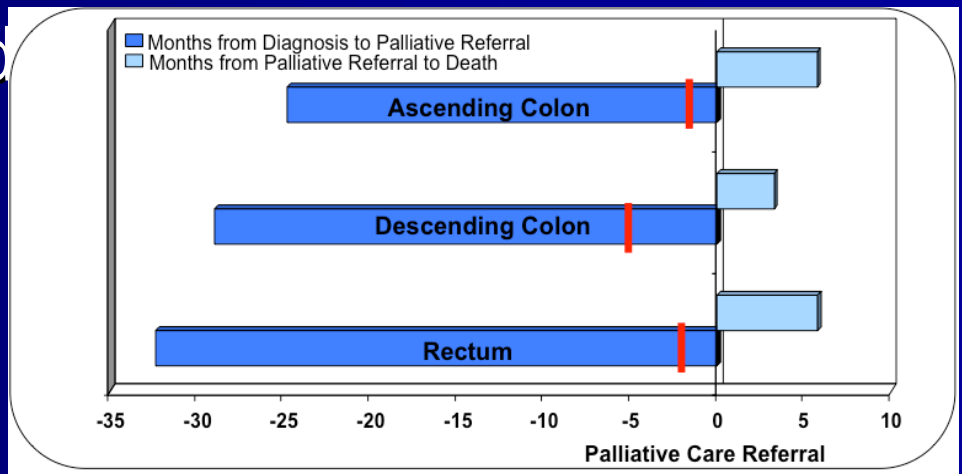


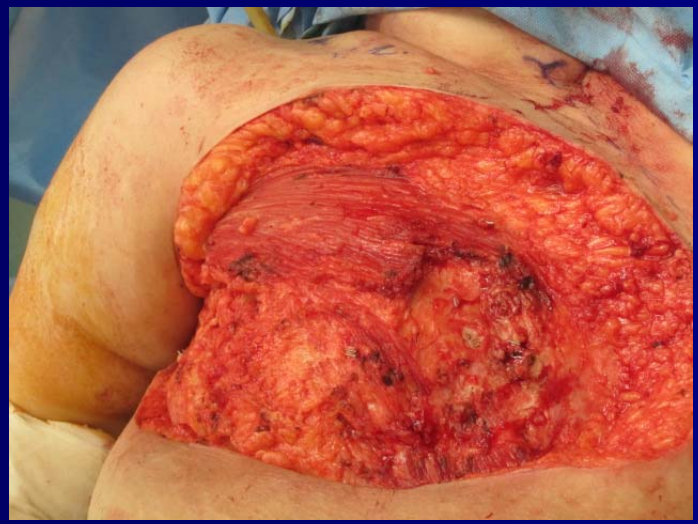
FIG. 6: The chronological relationship of disease progression prior to palliative care referral and prior to death differed across the three disease sites. The red bar (|) indicates the average time at which PIPs were performed. The left extreme of each bar indicates the time of diagnosis and the right extreme indicates the time of death.

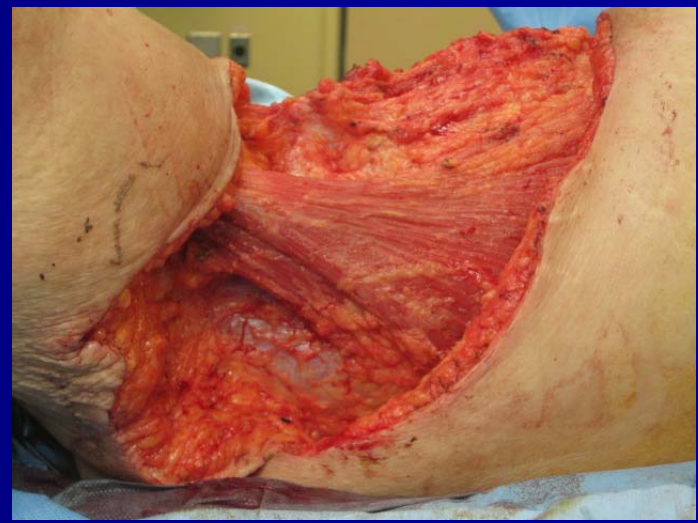
When deciding to operate

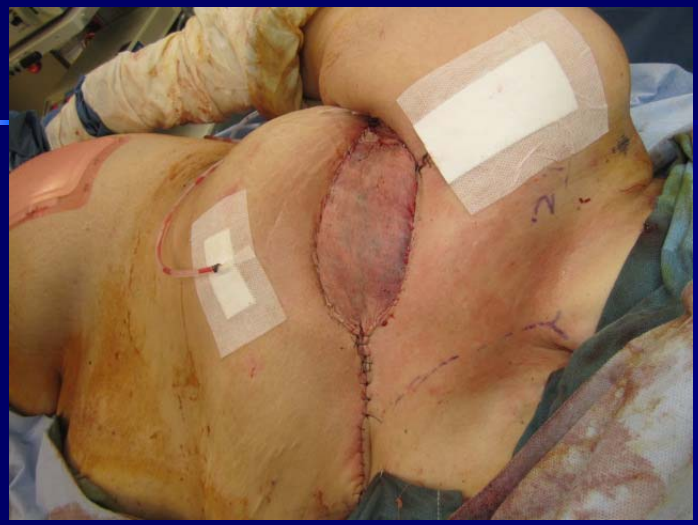
- Thorough preoperative evaluation to avoid intra-operative surprises
- Prevention of emergency situations
- Communication with the patient and family about the goals of care, likelihood of success
- Discuss all potential outcomes of the procedure
- A commitment to ongoing care with a clear care plan whatever outcome of surgery

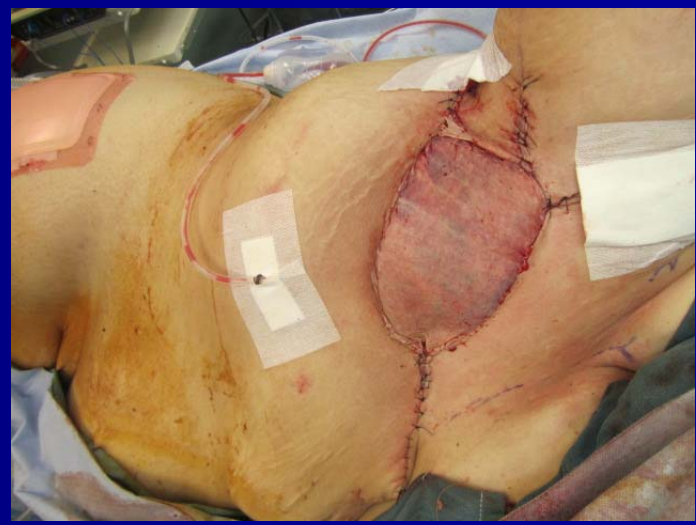
Surgical decision-making

- NOT “Can this operation be done?”
- BUT “Should this operation be done for this patient at this time?”









Conclusion

- Palliative surgical procedures can significantly improve the symptoms and quality of life in select cancer patients
- Successful outcomes as defined by surgeon and patient can be achieved by careful selection