Palliative Therapies: An Interventional Approach

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Objectives

- Discuss common palliative interventional procedures.
- Identify indications for percutaneous gastrostomy versus percutaneous transesophageal gastrostomy (PTEG) placement for malignant bowel obstruction.
- Recognize appropriate application and timing of tunneled line placement for malignant effusions and ascites.
- Describe procedures to palliate malignant pain.
PALLIATIVE THERAPIES

Palliative Therapies

• Malignant Bowel Obstruction
  • Venting Gastrostomy Tube
  • Percutaneous Transesophageal Gastrostomy Tube (PTEG)

• Recurrent Malignant Pleural Effusion/Ascites
  – Permanent Tunneled Line Placement

• Malignant Pain
  – Abdominal Pain
    • Celiac Plexus Block
  – Spine Pain
    • Vertebroplasty
    • Kyphoplasty

MALIGNANT BOWEL OBSTRUCTION
Case Study

• 37 y.o. male with stage IV gastric CA presented with abdominal distension and intractable vomiting concerning for malignant bowel obstruction.

• Palliative medicine requests consult for percutaneous venting gastrostomy for symptomatic control.

• Imaging ordered to work up possible SBO and a distension.

Enteral Access

• Indications
  – Long-term nutritional support
  – Venting
    • MBO
Percutaneous Venting

- Venting is effective in reducing N/V secondary to malignant SBO
  - Relief of obstructive sx in 86-91%  
- Percutaneous gastrostomy tube placement is safe
- Relative contraindications
  - Peritoneal Carcinomatosis
  - Ascites
    - PTEG placement (Percutaneous Transesophageal Gastrostomy)

PTEG
Overview

- Japan 1994 by Dr. Oishi
- A viable option for appropriate end-stage patients with known relative contraindications to percutaneous placement
  - "PTEG kit"

PTEG

- VIDEO
Procedure

- General Anesthesia
- After aspiration, NGT removed over wire then replaced with 22m X 4cm angioplasty balloon and partially withdrawn up into lower neck at the level of cricopharyngeus muscle.

With US and fluoro guidance, 18-guage needle advanced into balloon

0.03, 5 inch stiff wire advanced into balloon and distally into the stomach.
Wire is dislodged from balloon and coiled into stomach. Balloon is then removed.

Over wire, fascial dilation followed by placement of 14-French, 45cm multipurpose drain. Self-retention locking loop formed in gastric lumen and secured with 2.0 Prolene at neck site.
PTEG: Mayo Clinic Experience
Outcomes

- Largest case series in the U.S.
- 13 successfully placed from 12/14-present
  - Peritoneal carcinomatosis and/or ascites
  - Immediate and continued relief of obstructive symptoms
- 100% symptomatic improvement
- Low complication rates
  - Appropriate patient selection key
  - “Mayo Clinic PTEG Protocol” developed
“Mayo Clinic PTEG Protocol”

- Use GA & aspirate gastric contents in IR suite prior to procedure
  - Airway protection
  - Reduce risk of aspiration
- Preoperative prophylactic antibiotics
  - SSI, Aspiration pneumonia
    - Rocephin, Levofloxacin, Azithromycin/Moxifloxacin
- PTEG venting only
- Patient/caregiver/staff education

PTEG: Mayo Clinic Experience Outcomes

- Ongoing research
  - Earlier placement
  - Jejunal feeding
  - Gastric Bypass/Altered gastric anatomy
  - Gastric feeding for ESLD with ascites
  - Need for general anesthesia?
  - “PTEG kit”
    - Clinic Trial

Case Study
Peritoneal Carcinomatosis
Case Study: PTEG Placement

RECURRENT ASCITES/PLEURAL EFFUSION

Case study

- A 36 y.o. male with DM, HTN, and HCC admitted to hospital for hematochezia and 2 week history of abdominal discomfort and bloating. Palliative medicine team requesting permanent drainage of ascites.

  - Studies/Procedures
    - Paracentesis 5 days ago - 2.0L
    - Paracentesis yesterday - 2.5L

  - Imaging
    - CT abd
Ascites

Tunneled Drain
Overview
• Tunneled Drains
  – Thoracic or Abdominal
  – Malignant effusion or ascites
    • ≥1 effusion/ >1 L ascites
    • Recurrent (≥ Q weekly taps)
  – Hospice vs use as pleurodesis
  • Convenience
    – Replaces thoracentesis/paracentesis
  • Relative Contraindications
    • Peritoneal carcinomatosis? Omental caking?
    • Loculated
      – May need CT to discern

Tunneled Drain
Procedure
• Using US, ascites accessed with 18-guage needle and stiff wire advanced into ascites.
Drain tunnelled through SQ tissue to puncture site. Over wire, dilators placed followed by 16F peel-away sheath.

Through peel-away sheath, tunnelled drain advanced into ascites and studied fluoroscopically.

Case Study

- Candidate for an abdominal tunneled drain
  - Recurrent large volume malignant ascites
  - No recent history of SBP/infection
  - Hospice
    - Palliative procedure for end of life care/comfort care
Tunneled Drain Placement

Tunneled Drains Benefits

• Malignant Ascites
  – 4 year study, n=32 abdominal drains placed
  – Dyspnea, abdominal pain/distension
    • No major complications
    • 100% symptomatic relief and improved QOL

• Malignant Pleural Effusions
  – 3 year study, n=223 pleural drains placed
  – Dyspnea
    • No major complications
    • 88.8% full or partial relief of sx
    • 42.9% spontaneous pleurodesis

PAIN MANAGEMENT: CHRONIC ABDOMINAL PAIN
87 y.o. with pancreatic CA c/o chronic abd pain. Refractory to conservative management. Request for CT guided celiac plexus block.

Chronic Abdominal Pain Cancer

• Chronic abdominal pain is difficult to treat
  – Pancreatic Cancer

• Pain medications
  – Chronic
  – High doses
    • Numerous adverse effects

Chronic Abdominal Pain Celiac Plexus

• Pain from the upper abdominal viscera
  – Visceral afferent fibers relay pain via splanchnic nerves and celiac plexus

• Celiac plexus
  – Innervates liver, pancreas, spleen, omentum, alimentary tract to mid-transverse colon
Celiac Plexus
Anatomy

Celiac Plexus Block

- Goal
  - Improve pain control
  - Disrupt nociceptive impulses at the level of the celiac plexus or splanchnic nerves
  - Enhance or reduce opioid analgesia
  - Improve quality of life

- Procedure
  - Temporary Block
    - Bupivacaine
  - Permanent Neurolysis
    - Absolute Ethanol

Celiac Plexus Block Procedure

- CT guided
- Minimal sedation
- Posterior approach
  - T12/L1
  - Celiac Plexus Identification
  - Contrast/lidocaine
    - 21-gauge Morrison needle
  - 12-15 mL Absolute alcohol/5 mL ropivacaine/2 mL contrast
    - Injected Celiac Plexus and confirmed with CT
Celiac Plexus Block Outcomes
• Literature Review
  – First introduced in 1914
  • External bone landmarks
  – Patient selection key
  • Pancreatic Cancer
  – Safe
  • Block can be repeated
  – Reduction post-procedure and 4 and 8 weeks post-procedure
  • Pain
  • Opioid Use
    – Improved Quality of Life

PAIN MANAGEMENT: LYtic SPINAL LESIONS

Case Study
• 43 y.o. female with metastatic ovarian CA presented to the ED with worsening intractable back pain. Pt previously evaluated by palliative medicine and pain management last 2 months. Failed radiation therapy to lytic lesions. Pn 10/10 with any movement reduced to 7/10 pn with morphine and fentanyl patch.
• Pt is primary provider of 4 young children necessitating narcotic intake to perform ADLs.
• Pain reproduced on palpation L2 spinous process.
• MR spine ordered.
Osseous Metastases T12, L2, L4, & L5
Pathological Fx L2

Vertebral Augmentation: Indications

• Osteoporotic compression fractures
• **Neoplastic Vertebral Involvement**
  — Myeloma, Metastases
• Painful vertebral Hemangiomas

Cause of Pain

• Micro or Macroscopic Instability
  — Resultant Periosteal Motion (Irritation)
Painful Lytic Lesions:
Traditional Therapies

- Supportive Therapy
  - Bedrest
  - Analgesics
    - Multiple Side Effects
  - *Medicare requires failure of conservative management before proceeding with vertebral augmentation
- Bracing
- Radiation Therapy
- Epidural Injections

Interventional Therapies

Procedure

Vertebroplasty
Kyphoplasty

Via small incision, 13-gauge vertebroplasty needle is advanced down the pedicle under fluoroscopic guidance. Needle is positioned within the vertebral body. Under direct fluoroscopic guidance, 4 cc of methylmethacrylate is instilled directly into the vertebral body.
Good opacification of the vertebral body is identified in two planes.

Mechanism of Pain Relief

- PMMA into vertebral body provides stabilization
  - Prevents Periosteal motion and pain
- Destruction of nerve endings via direct neurotoxic or exothermic effects

"A Randomized Trial of Vertebroplasty for Osteoporotic Spinal Fractures"

- Randomly assigned 131 pts
  - Vertebroplasty (n=68)
  - Simulated procedure without cement (n=63)
- No significant difference between the two groups with pain control
- Limitations
  - MRI not required
    - Pt age indeterminate
  - Pts in severe pain opted out

2010

"Vertebroplasty Versus Conservative Treatment in Acute Osteoporotic Vertebral Compression Fractures (Vertos II): An Open-Label Randomised Trial"

- 2005-2008
- 202 patients randomly assigned
  - Vertebroplasty (n=101)
  - Conservative Management (n=101)
- Vertebroplasty for pts with acute osteoporotic compression fractures is safe and effective
  - Pain relief immediate and sustained x 1 year
  - Significantly greater pain control over conservative management
Patient Selection

- Pain localized to level of fracture
- No retropulsed fragments with signs/sx of cord compression
  - Contraindication
- Degree of compression <75%
- Failed conservative management
- Acute to sub-acute
  - Subjective complaint
  - Imaging
    - MRI-STAR fat suppressed T2 weighted
    - CT or Bone Scan if MRI incompatibility

Vertebral Augmentation: Outcomes
Mayo Clinic Experience

- VB since early 1999
- KP since late 2000
- Total patients MCR and MCA 163
  - Osteopenic fx and lytic lesions
- Total 246 vertebrae
  - 111 thoracic
  - 135 lumbar
- 2/3 between T11-L4
- 91% either significant or complete relief of axial back pain

Vertebral Augmentation: Outcomes
Mayo Clinic Experience

- 71% reduced usage of analgesics
- 73% improved mobility
- At 12 months 85% still had pain relief
- 9 patients returned with additional fractures
Case Study

- Pt is a candidate for L2 vertebroplasty
  - Prevent further compression deformity
  - Pain control
- Lytic lesions no longer considered a contraindication for vertebral augmentation
- Patient selection key
  - Acute lesion (< 2 months)
  - Edema present on MRI
  - Failed conservative management
  - Narcotic therapy
    - Side Effects
  - Persistent Pain
  - Unable to perform ADLs

L2 Vertebroplasty

Radiation Planning
Benefits

• Pain Reduction/Resolution
• Stabilize Fracture
• Early Ambulation
• Reduce or Eliminate Narcotic Use
  – Side Effects
    • Constipation, Confusion, Unsteadiness
• Low Cost
• Safe

Conclusions

• Variety of palliative procedures are performed in Radiology.
• PTEG is emerging as a promising procedure to aid in symptomatic control of MBO
• Tunnelled abdominal and pleural drains are safe and effective in symptomatic control of recurrent malignant ascites and pleural effusions.
• Malignant pain can be addressed via vertebral augmentation of lytic lesions and celiac plexus blocks for chronic pancreatic cancer pain.

Thank You

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