Keep abreast of new treatment and management options related to surgical oncology. In this comprehensive and coordinated overview, you’ll use case-based reviews incorporating the latest research and perspectives from multiple disciplines to facilitate discussion among your peers.

**Target Audience:** Registered Nurses

**Level of Content:** Advanced

**Speaker:**
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**Full Disclosure:**
Nothing to Disclose

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New York, NY

**Full Disclosure:**
Nothing to Disclose

**Objectives:**
At the end of this session, participants will be able to:
1. Describe the use of a hepatic artery infusion pump to manage metastases in the treatment of colorectal cancer.
2. Describe the benefits of identifying and measuring pre-operative anxiety in female breast cancer patients.

**Bibliography:**


Tumor Board: Surgical Oncology Treatment Modalities

Meghan Routt MSN, GNP/ANP-BC, AOCNP
Jennifer Aviado-Langer DNP, FNP-C

Case Study: Hepatic Artery Infusion Pump

Patient
- Myrtle
- 76 y/o
- Cancer Diagnosis: metastatic colorectal cancer
- Presents to surgical oncology office to discuss treatment options

HPI
- S/p right colectomy
- Underwent 6 months of FOLFOX
- CT scan showed progression of liver disease on 5FU+ bevacizumab

Treatment Options
- Continue with chemotherapy
- Liver resection: would include portal vein embolization and staged hepatectomy
- Hepatic artery infusion pump placement (HAIP)

What is a HAIP?
- HAIP is an implantable pump which is inserted into the hepatic artery and delivers chemotherapy to the liver
  - Liver metastases greater than 2-3 mm in size are perfused by the hepatic artery
  - Normal liver cells receive their blood supply from the portal vein

Advantages of HAIP
- Chemotherapeutic agents delivered specifically to malignant cells
- 5-FU (fluorouracil) and FUDR (floxuridine), high first pass hepatic clearance effect
- Decreased systematic exposure to chemotherapy
- Higher chemotherapy exposure to malignant cells, minimizing toxicities
- The higher drug level may overcome the tumor’s resistance

Disadvantages and Complications
- The pump can run dry, become clotted, or can be damaged
- Catheter Displacement
- Hepatic Artery Occlusion
- Catheter Related Infection

Kanat, 2012) and (Callahan, 2010)
HAIP Implantation
- Inserted intraoperatively via the femoral, axillary or subclavian arteries under fluoroscopy
- Tips of HAIP catheters are fixed at the gastroduodenal artery or proper hepatic artery
- HAIP ports are immobilized subcutaneously

How The HAIP Works
- Divided into an inner and outer chamber
- Medication is located in the inner chamber
- It flows into the liver at a constant rate all day
- Propellant is sealed inside the outer chamber
- Propellant is warmed by the body, medication flows out of the catheter and into the liver

Filling the HAIP
- Sterile technique to access the pump
- Standard chemotherapy precautions while instilling the chemotherapy
- Must get fluid back into the empty syringe (verifies you are in the correct position)
  - Document how much fluid flows out of the pump. The physician will use that information to dose subsequent fills

Filling the HAIP
- Pump is filled with medication through a raised area in the center called the septum
- Pump will only hold enough medication for 14 days. It must be refilled on the 14th day
- When on a chemotherapy holiday, pump is filled with glycerol
  - This allows refills every 6 weeks

Patient Education
- Patient will be given an identification card to carry while pump is in place
- Ability to undergo MRI is dependent on the type of pump inserted

Patient Education
- Avoid rough physical activity which can cause pump displacement
- Avoid lifting heavy objects which can cause pump displacement
- Should check with doctor if planning air travel. Pressure changes in the cabin can cause medication to flow faster
Patient Education

- Avoid heating pads, electric blankets, or hot water bottles directly to pump site
- Avoid hot baths or showers
- Do not use sauna or hot tub
- Avoid overexposure to the sun
  - These raise the body temperature and cause the medication to flow faster

Call The Doctor For:

- Temperature of 100.4F or higher
- Redness, tenderness, or drainage at the pump site
- Swelling at the pump site
- Cannot keep a pump fill appointment

Myrtle’s Course of Treatment

- Myrtle had her pump placed
- She did well for about 6 months
- She decided the every two week pump fills were inhibiting to her quality of life
- She had the pump filled with glycerol for an 8 week pump break
- She recently presented to surgical oncology clinic to resume pump therapy

Final Thoughts

- It is vital the patient and patient family understands the importance of maintaining good communication with the care team
- Proper technique is important when accessing and filling the pump
- Fun Fact: Hepatic artery infusion pumps have been in existence since the 1960’s.

Case Study: Preoperative Anxiety

Patient
- M.J. 52 y/o female
- Diagnosis: left invasive ductal carcinoma; ductal carcinoma in-situ; left axillary involvement
- Presents for presurgical testing (PST) anesthesia evaluation

HPI
- Routine yearly mammogram
- Calcifications in left breast
- Ultrasound-guided core biopsy
- PMH
- Hyperlipidemia

Morbidity & Mortality

- Breast Cancer (BC)
  - Most common type of cancer in females of all ages
  - Ranks 2nd in all cancer deaths in women (Lung Cancer 1st)

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<th>2014</th>
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<tr>
<td>Females</td>
<td>232</td>
<td>870 cases</td>
<td>40,000</td>
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<tr>
<td>Males</td>
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<td>410 cases</td>
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<tr>
<td>Total</td>
<td>2,352</td>
<td>910 cases</td>
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(Morbidity Mortality 2014: Surveillance Epidemiology and End Results, 2014)
Background Information

- Preoperative (Pre-op) anxiety
  - Another burden to endure
  - Women experience higher pre-op anxiety level compared to men
- Pre-op anxiety is a prevalent concern with deleterious effects in patient recovery.
- Women with breast cancer face anxiety as it relates to anesthesia, surgery, and recovery

Breast Cancer Diagnosis = Stressor

- Preoperative period is crucial
  - Identifying
  - Evaluating
  - Managing Preoperative Anxiety

Presurgical Anxiety Testing (PST)

- Preoperative anxiety – a significant concern
  - Deleterious in recovery
  - Uncertainty and apprehension pre-op period
  - Foments a physiologic response
  - Unfavorable in induction+maintenance of anesthesia
  - Unfavorable in post operative recovery
- Unmitigated ↑ pain ↑ healing time ↑ LOS

Background Of The Problem

- Same day surgery or 23 hour stay
  - Limited pre-op encounters with healthcare provider
- Assessing anxiety
  - Easily overlooked
- Limited staff interaction until day of surgery
- Paucity of time to intervene
  - Advocates for identifying pre-op anxiety

Current Practice

- Screening for anxiety is not commonly performed or measured
- There is limited documentation of the use of preoperative anxiety tools
- Implementation of measures such as the preoperative Visual Analog Scale supports the provision of safe, high-quality, patient-centered care.

Study:

"Measuring Preoperative Anxiety in Patients with Breast Cancer Using the Visual Analog Scale"

Purpose:
- Introduce a pre-op anxiety screening tool in female BC patients to quantify anxiety before primary BC surgery

Objectives:
- To measure pre-op anxiety in female BC patients using the pre-operative VAS
- To examine the feasibility of using the VAS in implementing a process improvement in pre-op screening of female patients
Study VAS Results

Study’s VAS scores

The higher VAS scores were pertaining to surgery:
- $\bar{x} = 6.93$ (Waiting for the operation)
- $\bar{x} = 7.20$ (Results of the operation)

The lower VAS scores were pertaining to anesthesia:
- $\bar{x} = 4.25$ (Not awakening from anesthesia)
- $\bar{x} = 4.08$ (Awareness during anesthesia)

Study Outcome

- Inverse proportion in terms of age and pre-op anxiety scores were noted:
  - Younger patients scored higher in pre-operative anxiety
  - Older age group scored lowest in pre-op anxiety scores
- Invasive BC had higher pre-op anxiety scores than non-invasive BC
- Scheduled mastectomies had higher pre-op anxiety scores than scheduled lumpectomies

The Preoperative Anxiety Visual Analogue Scale (VAS)

1. Waiting for the operation
2. Being at the mercy of medical staff
3. Results of the operation
4. Fear of surgery
5. Discomfort after the operation
6. Fear of anesthesia
7. Not knowing what is happening
8. Physical and mental harm after the operation
9. Not awakening from anesthesia
10. Awareness during anesthesia

Pre-Op Anxity VAS

3.) Significance: Addresses practice demands → increasingly complex healthcare system → Quality care

2.) Institute a process improvement using quantitative data obtained from the VAS in the setting of PST

1.) Identify and quantify levels of anxiety

Pre-Op Visual Analog Scale (VAS)

- Likert Scale from 0–10
- Patient reported anxiety levels
- Describes anxiety level before anesthesia and surgery
- < 5 minutes to administer
- Has been compared to State Trait Anxiety Inventory (STAI) “gold standard”
  - fear of anesthesia ($r = 0.55$, $P<0.01$)
  - fear of surgery ($r = 0.66$, $P<0.01$)
Interpreting Findings of VAS

- Category scores are totaled
- Divided by 10 (number of categories)
- Total scores
  - considered significant if ≥ 4.5
    - This warrants further investigation and possible intervention

(Moliver et al., 2000) w/ permission

M.J.’s VAS Score

- M.J.’s pre-operative VAS score average is 6.4
  - highest scores in the following concerns:
    - Waiting for the operation
    - Being at the mercy of staff
    - Results of the operation
    - Discomfort after surgery

Interventions for M. J.

- Pre-op instruction/teaching
- Mentoring to solidify, expand, and support the management of anesthesia and surgery to maintain M.J.’s trust, well-being, and safe recovery
- Identifying and informing the team of MJ’s pre-operative stressors to reduce deleterious incidents such as post op nausea and vomiting, heightened emotions, anxiety, and pain

How did it help M.J.?

Goal attainment – congruent with relationship-based, quality-driven, patient-oriented care

- MJ experienced a seamless recovery with minimal expression of post-operative anxiety
- M.J. was discharged with post-op instructions
  - keeping incision clean, analgesics as needed, and post-op follow-up appointment

Practice Implications

- Patients scheduled for surgeries undergo PST
- Patients qualitatively express concerns
- Anxiolytics by surgeon office practice and/or consult with psychiatrist or psychologist may be offered

Why Screen???

- Introducing an instrument with quantitative design and documented reliability, validity, and sensitivity may . . .
  - Identify and address pre-op anxiety
  - improve the process of anesthesia and surgery
  - address practice demands
  - Utilize evidence-based tools to address patient concerns

(Wysoki et al., 2012)