Ipsilateral Access After Axillary Node Dissection

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Questions:
» Is it safe to place an **access** ipsilateral to an ALND?
» Is it safe to place a **catheter** ipsilateral to an ALND?
» Recommendations/Guidelines

What is an Axillary Node Dissection?

What Is Usually Told to ALND Patients?

<table>
<thead>
<tr>
<th>National Lymphedema Network Position Statement: Lymphedema Risk Reduction Practices</th>
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<tbody>
<tr>
<td>♦ No IV’s</td>
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<td>♦ No venipuncture</td>
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<td>♦ No tourniquets</td>
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<tr>
<td>♦ No BP</td>
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<tr>
<td>♦ Avoid lacerations or skin punctures</td>
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<td>♦ No specific caveat regarding surgery</td>
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None of these guidelines are evidence-based!

What Is Lymphedema?

♦ Potential complication of ALND (breast ca)

♦ Accumulation of fluid in subcutaneous tissue
  » Decreased joint distensibility
  » Increased arm weight
  » Subcutaneous fibrosis (xrt)
  » Constriction of lymphatic vessels

What is an Axillary Node Dissection?

1-3 Level Node Dissection
Sentinel Node Dissection
**What Is Lymphedema?**

- **Consequences**
  - Functional impairment
  - Increased risk of infection (cellulitis)
  - Infections can further damage lymphatics

**What Is the Risk of Lymphedema Following ALND?**

- Up to 56% after ALND & XRT
- Increases with time

**What Is the Time Course of Lymphedema Following ALND?**

- >75%: within 3 years
- But … may appear at any time
  - 1%/year (up to 20 years)

**What Are the Risk Factors for Lymphedema Following ALND?**

- Arm infection
- Trauma
- Weight gain
- Radiotherapy
- Chemotherapy

**What Is the Risk of Lymphedema From an AV Fistula Ipsilateral to ALND?**

- There is only one series in the literature
  - n = 3 cases!
- Perhaps we can extrapolate from the hand surgery literature …

**Does Hand Surgery Increase the Risk of Lymphedema Following ALND?**

- Carpal tunnel release s/p ALND
- Trigger finger release s/p ALND
- 3 studies
  - Little or no effect on inducing or exacerbating lymphedema
  - But length of follow up is not specified
Should an AV Fistula Be Placed Ipsilateral to an Axillary Node Dissection?

2012: Olsha, Goldin, Man, Carmon, Shemesh

Ipsilateral hemodialysis access after axillary dissection for breast cancer

Breast Cancer Research and Treatment

♦ Retrospective case series
♦ 3 patients s/p ALND
♦ Ipsilateral avf created

Patient characteristics (n=3)
» Age: 58, 67 and 76
» Mastectomy + ALND (1)
» Lumpectomy + ALND (2)
» > 20 lymph nodes removed (3)

Adjunctive Therapy
» Axillary XRT + Chemo (1)
» Chemo (1)
» Neither (1)

Criteria for Diagnosis of Lymphedema
» Patient’s subjective feeling
» Physician’s observation
» No Quantitative tests
  – Displacement
  – Measurement of arm circumference

Results
» All avf were patent

No lymphedema at follow-up (2, 20 and 76 months)

What about Central Catheters?
What about Central Catheters?

♦ Theory
  » Should be ok
  » Chest wall lymphatic drainage
    - Axillary nodes, and …
    - Internal mammary nodes

2003: Gandhi, Getrajdman, Brown, Gandras, Covey, Brody, Khilnani

Placement of Subcutaneous Chest Wall Ports Ipsilateral to Axillary Lymph Node Dissection

♦ Retrospective case series
♦ 28 patients s/p ALND
♦ Ipsilateral chest wall port placed

2003: Gandhi, Getrajdman, Brown, Gandras, Covey, Brody, Khilnani

Placement of Subcutaneous Chest Wall Ports Ipsilateral to Axillary Lymph Node Dissection

♦ Results
  » Incidence of lymphedema
    - 3.6%
    - Equivalent to incidence following ALND alone

♦ Conclusions
  » AV Access (and hand surgery) does not seem to contribute to lymphedema development
  » Recommendations for lymphedema prevention may exaggerate the risk of interventions

Recommendations:

» Medical personnel/patients should not oppose the use of the ipsilateral arm for AVF creation s/p ALND

» Ipsilateral arm should be used if that arm has the best available vasculature

What I Tell The Patient

♦ There is no good reason not to use the arm
♦ You may swell
♦ There are a number of reasons why you may swell
♦ If the swelling does not go away we can always ligate the access and the swelling will go away
♦ I avoid the swollen arm
Conclusion …

- Class C data refutes Class C Guideline

What about Central Catheters?

- Theory
  - Chest wall lymphatic drainage
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What about Central Catheters?

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*Placement of Subcutaneous Chest Wall Ports Ipsilateral to Axillary Lymph Node Dissection*

- Retrospective case series
- 28 patients s/p ALND
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Results
- Incidence of lymphedema: 3.6%
  - Equivalent to incidence following ALND

Demographics
- 27 female/1 male
- Age: 39 – 72 yrs
- MRM or Lumpectomy + ALND

Contraindication
- Pre-existing arm edema

Time from ALND to Port Placement
- Mean 80 months (1-286 months)

Concomitant XRT
- 9 patients
- Interval from XRT to Port mean 69 months

Follow-up
- Chart review
- Telephone conversation

Criteria for Diagnosis of Lymphedema
- Edema persisting for > 1 month
- No other possible etiology
- No objective testing

Outcomes
- Arm edema s/p Port placement (2/28 patients)
  1. SVC syndrome from extensive mediastinal disease (improved with dexamethasone)
  2. Developed arm edema 27 days s/p Port placement
     - Serial venous duplex/7 months: “focal attenuation of SCV, no thrombus” (venogram not done)
     - Lymphedema “Presumed” (1/28, 3.6%)
     - Why not simple venous hypertension?
Placement of Subcutaneous Chest Wall Ports Ipsilateral to Axillary Lymph Node Dissection

Outcomes

- Arm edema s/p Port placement (2/28 patients)
  - 1. SVC syndrome from extensive mediastinal disease (improved)

“The Patient With Lymphedema” May Actually have venous pathology

- http://www.breastdiseases.com/anat.htm
- http://dcismystory.com/my-medical-team/lymphedema/

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What is a Mature Access?
Ultrasound Guided AV Access Maturation

Non-maturing
High Origin Radial Artery to Basilic Vein Fistula

23 failing or non-maturing AV fistulas
Contrast fistulagram and angioplasty
VF assessed pre and post PTA (<2 weeks)

Reports of Duplex-Guided AV Access Intervention

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2010: Ascher, Hingorani, Marks
Duplex scanning-derived access volume flow...

VF Pre-PTA
652 +/- 438 mL/min
VF Post-PTA
867 +/- 517 mL/min
P < .13

2010: Fox, Amador, Clarke et al.
VF Pre-PTA
340 mL/min
VF Post-PTA
663 mL/min
P < .001

Ipsilateral Access After Axillary Node Dissection

Why are we having this talk?
A topic that you may not think about very much...

Ipsilateral Access After Axillary Node Dissection

Questions:
- What is an axillary node dissection?
- What is lymphedema?
- What is the risk of lymphedema after ALND?
- Does the placement of an access increase this risk?
- Recommendations/Guidelines
- Can this be done?
- Should it be done?
Axillary Dissection is a surgical procedure in which the lymph nodes in the axilla (armpit) are removed and examined to determine if breast cancer has spread to the lymphatic system. A traditional axillary lymph node dissection usually removes nodes in levels 1 and 2. In the case of invasive breast cancer, this procedure may be done after a lumpectomy (through a separate incision), or a mastectomy. The surgeon will generally remove as many nodes as possible (between five and 30 nodes), during a traditional axillary dissection. The total number of lymph nodes showing evidence of cancer is more important than the extent of cancer in any one node.

Axillary Lymph Nodes in Level 1 are located lateral to the pectoralis major. Axillary Lymph Nodes in Level 2 lie underneath (deep to) the pectoralis minor muscle. Axillary Lymph Nodes in Level 3 are located medial to the pectoralis minor muscle.
Elective hand surgery in the breast cancer patient with prior ipsilateral axillary dissection

1995: Dawson, Elenz, Winchester, Feldman
Annals of Surgical Oncology

♦ Patient characteristics
   » > 20 lymph nodes removed (3)
   » Axillary XRT + Chemo (1)
   » Chemo (1)
   » Neither (1)

» ALND: 4-10 years previously

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Questions:
» What is an axillary node dissection ?
» What is lymphedema ?
» What is the risk of lymphedema after ALND ?
» Is is safe to placement of an access increase this risk ?
» Recommendations/Guidelines

Patient characteristics (n=3) ...

Ipsilateral Access After Axillary Node Dissection

2004: Assmus, Staub
Postmastectomy lymphedema and carpal tunnel syndrome. Surgical considerations and advice for patients.
Handchir Mikrochir Plast Chir

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2007: Hershko, Stahl
Safety of elective hand surgery following axillary lymph node dissection for breast cancer.
Breast Journal

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Breast Cancer Research and Treatment

♦ Questions:
   » Timing of AV Fistula Creation
     » 4 years s/p ALND (1)
     » 10 years s/p ALND (2)
Ipsilateral hemodialysis access after axillary dissection for breast cancer

Methods
- Regional anesthesia
- AVF created ipsilateral to ALND
- Surveillance program (exam and duplex)
  - @ 1 month
  - @ 3 months
  - q 6 months