SOFT TISSUE INFECTIONS INCLUDING POST HERNIA REPAIR EVALUATION

- MICHAEL R. WILLIAMSON, M.D.
- UNIVERSITY OF NEW MEXICO
- NO RELEVANT FINANCIAL DISCLOSURES
BRIEF NOTES ON SURGICAL REPAIR
COMPLICATIONS—POST OP

OPEN (N=994)

- POST OP 19.4%
  - URINARY RETENT 2.2
  - UTI 0.4
  - ORCHITIS 1.1
  - SUR SITE INFECTION 1.4
  - NEURALGIA, PAIN 3.6
  - LIFE-THREATENING 0.1

LAP (N=989)

- 24.6%
  - 2.8
  - 1.0
  - 1.4
  - 1.0
  - 4.2
  - 1.1

NEUMAYER, N ENGL J MED 350:1819-1827, 2004
## COMPLICATIONS—LONG TERM

<table>
<thead>
<tr>
<th>Open (N=994)</th>
<th>Lap (N=989)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long Term</strong></td>
<td>17.4%</td>
</tr>
<tr>
<td>Seroma</td>
<td>3.0</td>
</tr>
<tr>
<td>Orchitis</td>
<td>2.2</td>
</tr>
<tr>
<td>Infection</td>
<td>0.6</td>
</tr>
<tr>
<td>Chronic Pain</td>
<td>14.3</td>
</tr>
<tr>
<td>Recurrence</td>
<td>4.9</td>
</tr>
</tbody>
</table>

ORCHITIS

- THROMBOSIS OF VEINS PAMPINIFORM PLEXUS
- LEADS TO VENOUS CONGESTION OF TESTIS
- USUALLY 2-5 DAYS POST OP, MAY GO ON FOR 6-12 WEEKS
- TESTICULAR ATROPHY
- MAY ALSO OCCUR SECONDARY TO LIGATION OF TESTICULAR ARTERY
DEVELOPS OVER DAYS
PRE OP REPAIR
NERVE INJURIES AND PAIN

TRACTION

ELECTROCAUTERY

TRANSECTION

ENTRAPMENT

MESH MAY LEAD TO DYSESTHESIAS (TEMPORARY)
NERVES AT RISK

- Ilioinguinal
- Iliohypogastric
- Genital branch of genitofemoral
- Femoral branch of genitofemoral
- Lateral femoral cutaneous
- Main trunk of femoral
• Ilioinguinal Nerve (L1) runs anterior to the spermatic cord in the inguinal canal and branches at the superficial ring (does not enter the deep ring). It innervates the anterior scrotum, root of the penis.

• Genital branch of the genitofemoral nerve (L1-L2) innervates the cremaster muscle and skin of the lateral scrotum/labia and Mons pubis.

• Femoral branch of the genitofemoral nerve: Skin of the upper anterior thigh, travels adjacent to the external iliac artery.
• LAT FEMORAL CUTANEOUS NERVE: SKIN OF LATERAL THIGH
• TRANSIENT NEURALGIAS, USUALLY RESOLVE

• PERSISTENT NEURALGIAS, PAIN & HYPERTHESIAS
  • SXS REPRODUCED BY PALPATION, HYPEREXTENSION OF HIP
  • RELIEVED BY FLEXION
TRANSECTION=NUMBNESS
SYSTEMATIC F/U LARGE SERIES

- PAIN 29-76%
- MOST COMMON COMPLICATION

- NIENHUIJS ET AL: J AM COLL SURG 200:885, 2005
- NIENHUIJS ET AL: BR J SURG 92:33, 2005
SIGNIFICANCE OF PAIN FOR ULTRASOUND

- INFECTION
- RECURRENT HERNIA
RECURRENT HERNIA

• WITH MESH
  • EDGES OF MESH-try to work your way around the mesh including top and bottom
  • CENTER OF MESH-see if tissue protrudes thru center of mesh
    • MESH HAS FAILED
    • MESH HAS COLLAPSED
    • MESH HAS MIGRATED
    • MESH NOT BIG ENOUGH
FEW FACTS ON MESH

- **2 MAIN TYPES**
  - **POLYPROPYLENE** - MARLEX, PROLENE, SURGIFLEX - .44 MM
  - **EXPANDED POLYPROPYLENE** - GORETEX MICROMESH - 1 MM
- BOTH ARE POROUS FOR TISSUE INGROWTH
- BOTH ARE HYPERECHOIC LINES
- BOTH DIFFICULT TO RELIABLY SEE
ULTRAPRO, VICRYL

- RESORBABLE OR PARTIALLY RESORBABLE
WITHOUT MESH

- DO EXAM LIKE YOU WOULD FOR ANY OTHER HERNIA
INFECTION

- LOOK FOR EDEMA/FLUID AT SURGICAL SCAR
- TRY TO FIND MESH IF PRESENT, LOOK FOR ASSOCIATED FLUID
- LOOK FOR FLUID IN OR ALONG INGUINAL CANAL (not in 1st 30 days)
- LOOK FOR FLUID IN HEMISCROTUM
- LOOK FOR FLUID IN SPACE OF RETZIUS
- LOOK FOR FLUID RETROVESICLE SPACE
DEEP INFECTION AT MESH

- MESH MUST BE REMOVED
- SUPERFICIAL INFECTION, MAY NOT BE NECESSARY TO REMOVE
TERMINOLOGY AND ANATOMY

- CELLULITIS
- FASCIITIS
- MYOSITIS
- ABSCESS
CELLULITIS

INFLAMMATION OF SQ TISSUE
FASCIITIS

• INFLAMMATION OF FASCIA, BROAD SHEETS OF CONNECTIVE TISSUE
MYOSITIS

• INFLAMMATION OF MUSCLE
HOW TO MISS THE BIG ABSCESS

- USE A HIGH FREQ TD
- SEARCH THE SUPERFICIAL 6-8 CM
- MISS THE DEEP ABSCESS ADJACENT TO BONE
GO TO BONE!!!

- SCAN EXTENSIVELY UP AND DOWN THE EXTREMITY

- DON’T COUNT ON THE ABSCESS STICKING TO ONE COMPARTMENT
OTHER WAYS TO MISS THE BIG ABSCESS

• LOOK IN THE WRONG PLACE OR DON’T LOOK EXTENSIVELY ENOUGH

• MISINTERPRET MUSH
COLOR DOPPLER

- ABSCESSES, CELLULITIS, MYOSITIS, FASCITIS MAY OR MAY NOT HAVE INCREASED CD FLOW
- DON’T DEPEND ON IT
GO TO BONE!!!!!!!!!!
GO INTO THE ROOM!!!!!!!!!!
BE READY FOR THE UNEXPECTED