OBTURATOR HERNIA

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Morbidity and Mortality
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Case Presentation – 8/6/11

- Xx yo M c/o abdominal pain, constipation, N/V x 4 days
- PMH: Afib, HTN, ESRD (last HD 8/4/11), COPD
- PSH: RIHR x2, LUE AV fistula
- Meds: ASA, plavix, etc
- All: ACE inhibitors

Case Presentation – 8/6/11

- VS: 97.6, 183/113, 118, 19
- PE: mild respiratory distress; dry oral mucosa; bilateral crackles; afib; abd soft, mildly tender, distended; b/l LE edema
- Labs:
  - CBC **13.6**/ 12/ 36.7/ 140
  - Chem 142/ 4/ 105/ 25/ **4.1**/ 117
  - LFTs, Coags – wnl

AXR

SBO, b/l pleural effusions

CT Abdomen

Small bowel obstruction secondary to right obturator hernia, bibasilar pneumonia, bilateral pleural effusions

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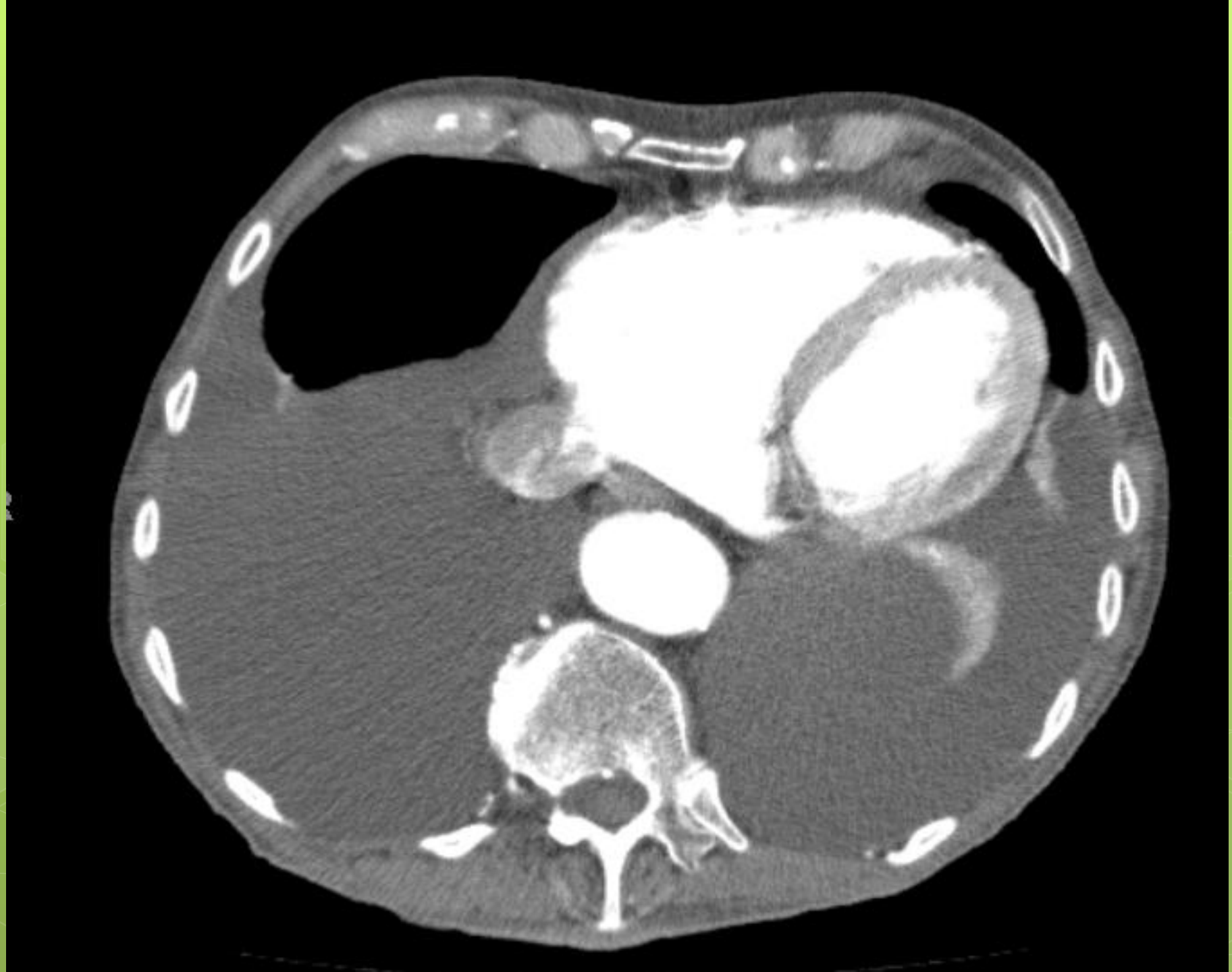


Hospital Course 8/6 – 8/8

- Admision to ICU
- NGT, NPO/IVF
- Dialysis
- Cardizem drip for afib
- Abx for PNA
- Refused surgical intervention
- No improvement of SBO

OR 8/9/11

- Exploratory laparotomy
- Reduction of right obturator hernia
- Clear transition point
- Circumferential bowel ischemia/necrosis without perforation
- Small bowel resection with primary anastomosis
- Repair of obturator hernia with biologic plug (Flex-HD)

Hospital Course 8/10 – 8/30

- 8/11 – extubated
- 8/15 – clear diet, thoracenthesis (1500cc)
- 8/16 – full liquids, transfer to floor
- 8/19 – tolerating regular diet
- 8/20 – 8/29 awaiting subacute rehab
- 8/30 - discharged

Questions

Obturator Hernia

- Protrusion of sac through obturator foramen and canal along the obturator nerve and vessels
- Represents <0.1% of all hernias
- High incidence of strangulation
- “the skinny old lady hernia” - thin, frail, multiparous elderly woman with SBO of unclear etiology

Obturator Hernia

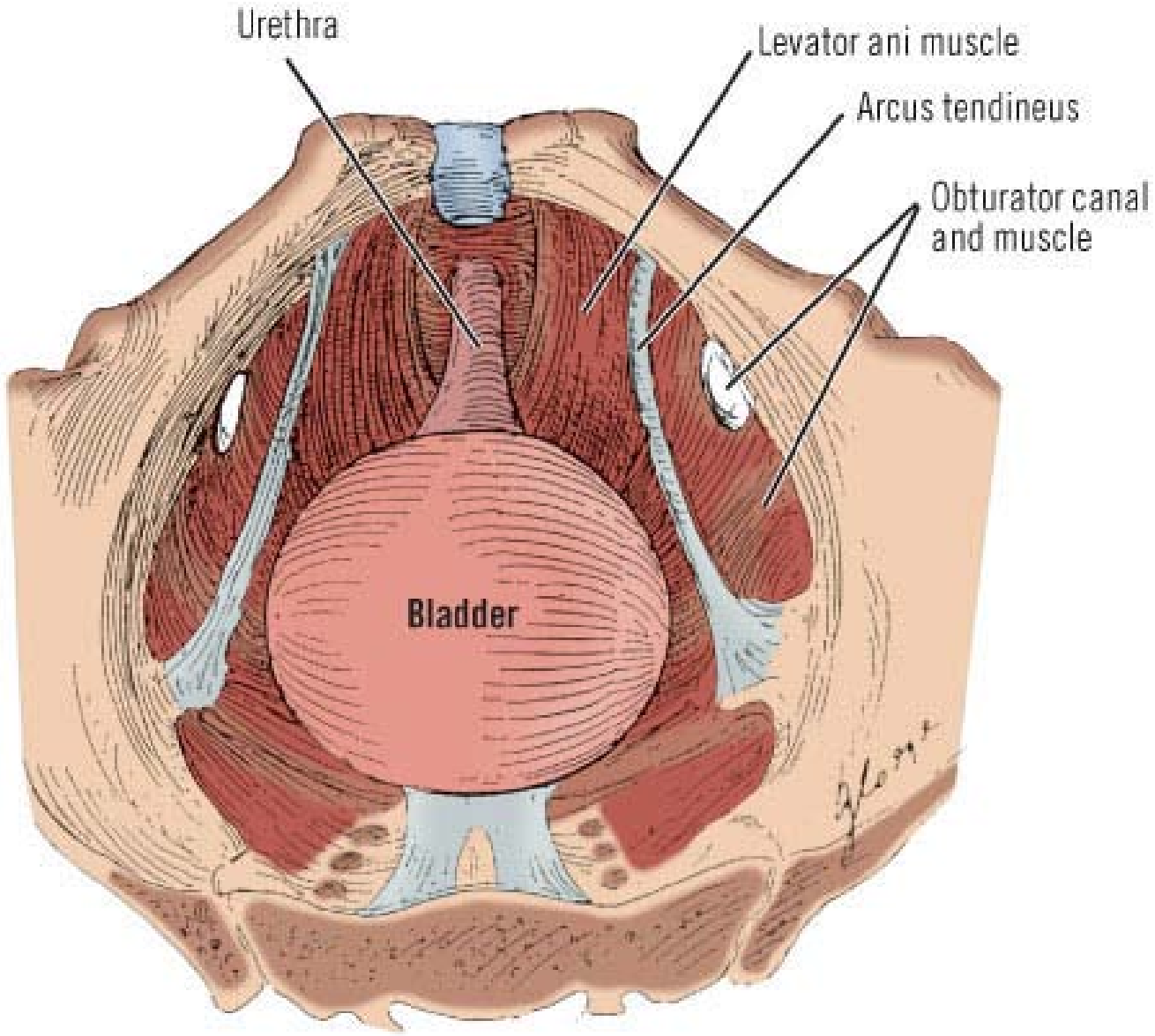
- Female-to-male ratio is 6:1
- Female preponderance is due to the larger and more oblique incline of the obturator canal in the female pelvis
- Occurs more frequently on the right side (sigmoid colon overlying obturator foramen on the left side)
- Bilateral hernias in 6% of cases

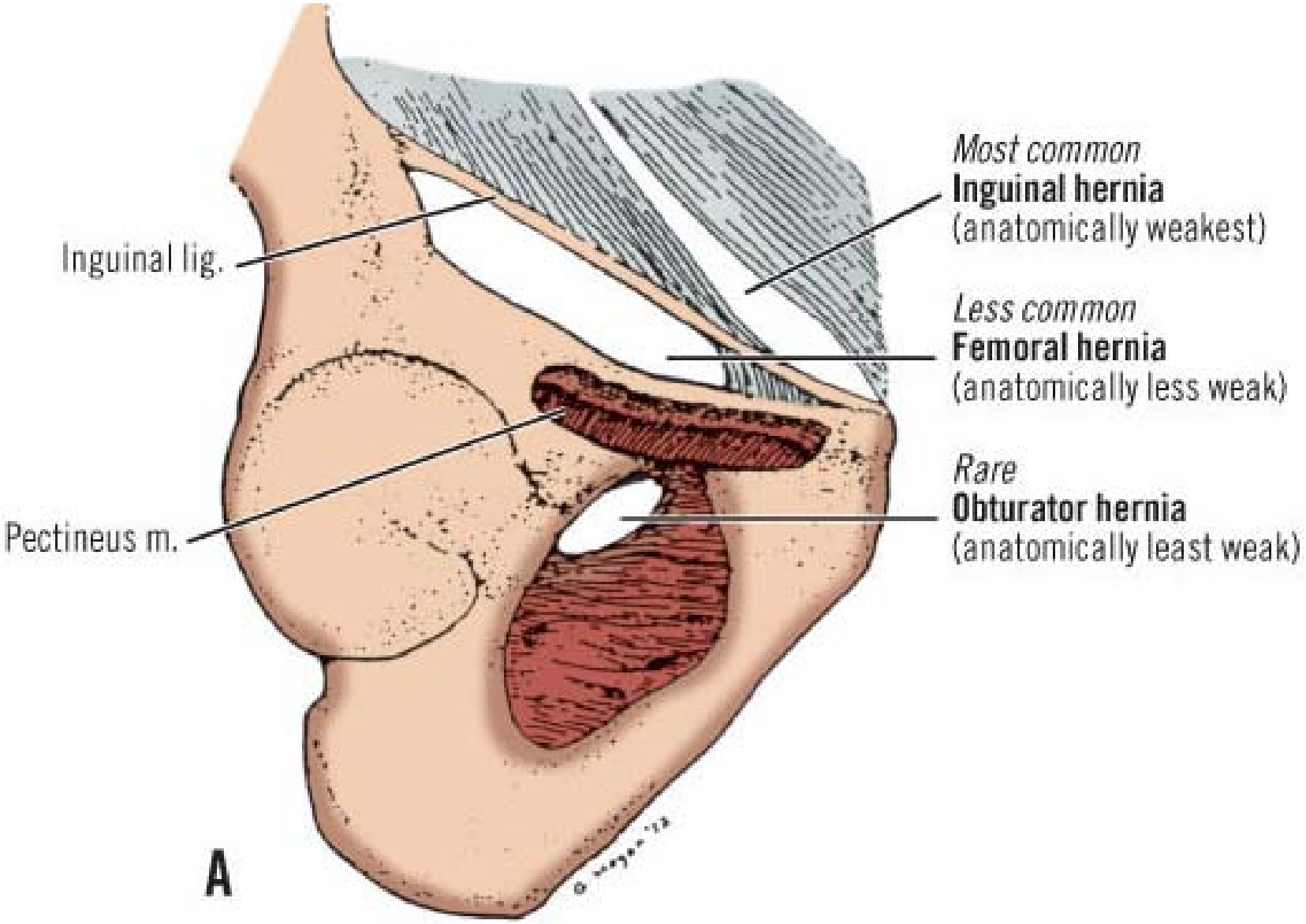
Predisposing Factors

- Increased intra-abdominal pressure
  - Constipation
  - COPD
  - Multiparity
  - Ascites
- Rapid weight loss with a decrease in fatty tissue surrounding the obturator foramen

Anatomy of Obturator Foramen

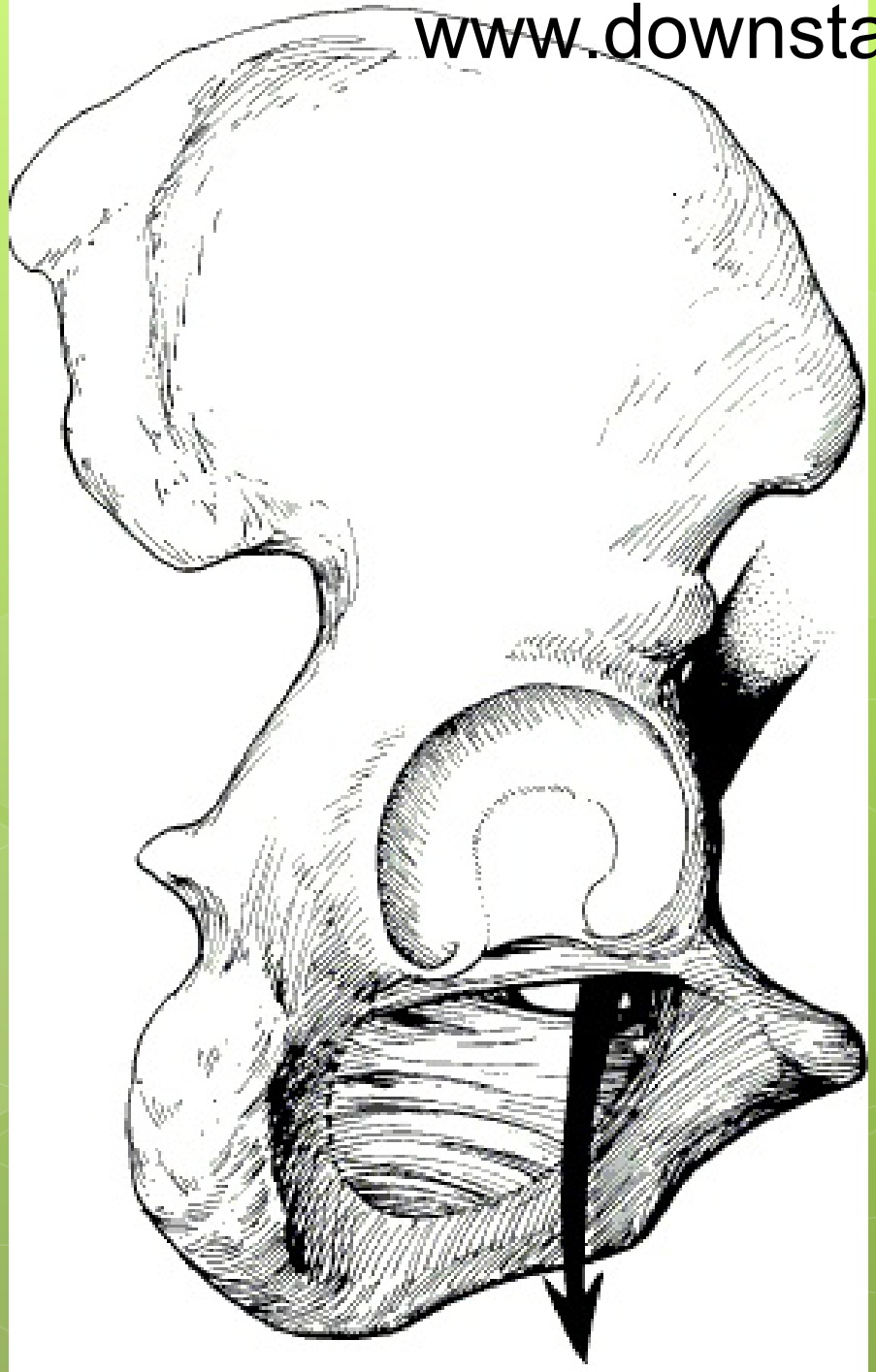
- Located within the anterolateral aspect of the pelvis
- Formed by the ischial and pubic rami
- Obturator membrane covers the majority of the foramen space, except for a small portion for obturator vessels and nerve to pass
- Obturator vessels and nerve traverse the canal and enter the medial aspect of the thigh


Urethra
Levator ani muscle
Arcus tendineus
Obturator canal and muscle
Bladder


Inguinal lig.
Pectineus m.
A
Most common
Inguinal hernia
(anatomically weakest)
Less common
Femoral hernia
(anatomically less weak)
Rare
Obturator hernia
(anatomically least weak)

Obturator Canal

- 2-3 cm long tunnel
  - begins in the pelvis
  - exits through the obturator foramen
  - passes obliquely downward to the obturator region of the thigh
- The canal is bounded
  - superiorly and laterally by the pubic bone
  - inferiorly by the obturator membrane and obturator muscles

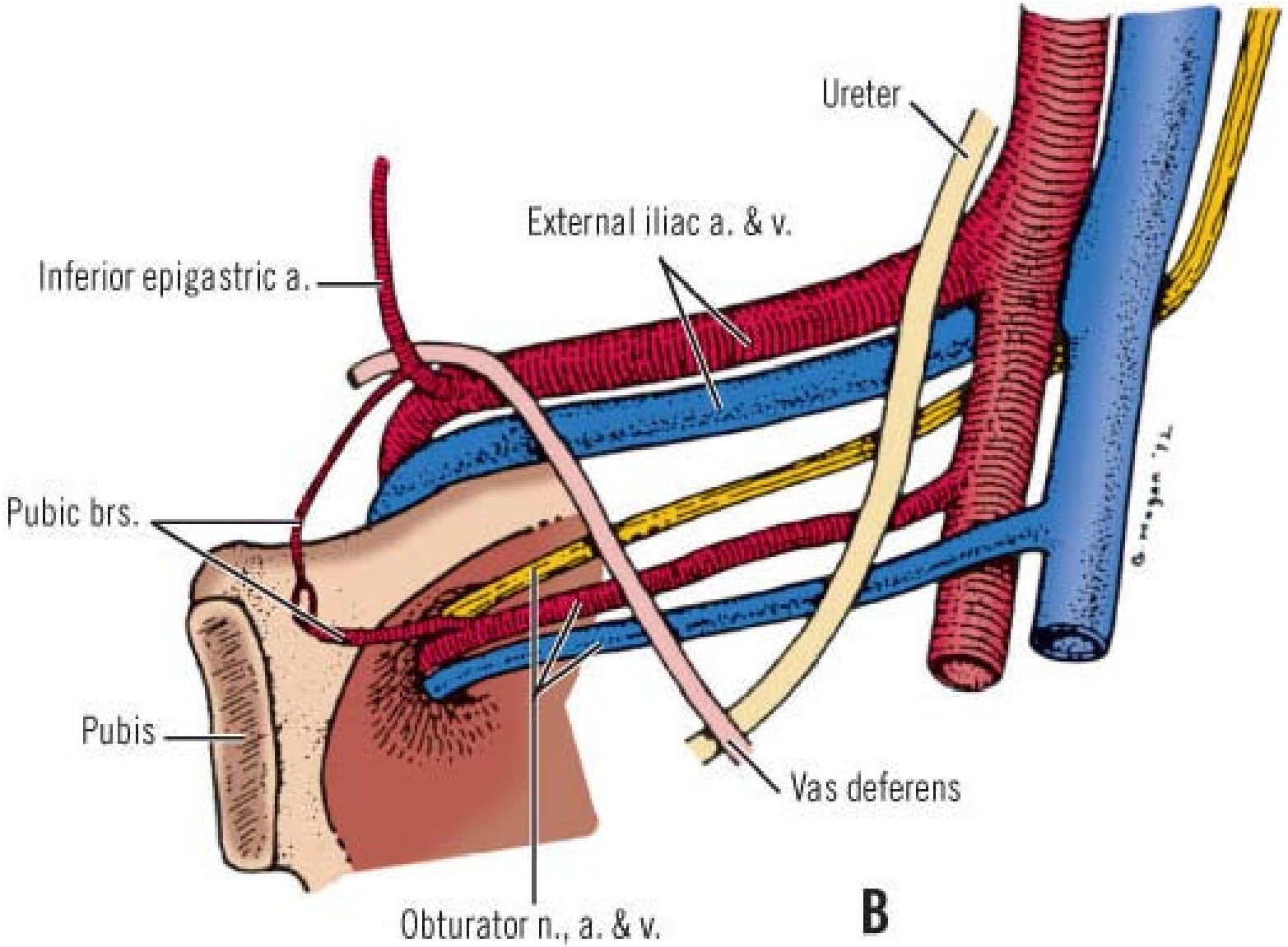


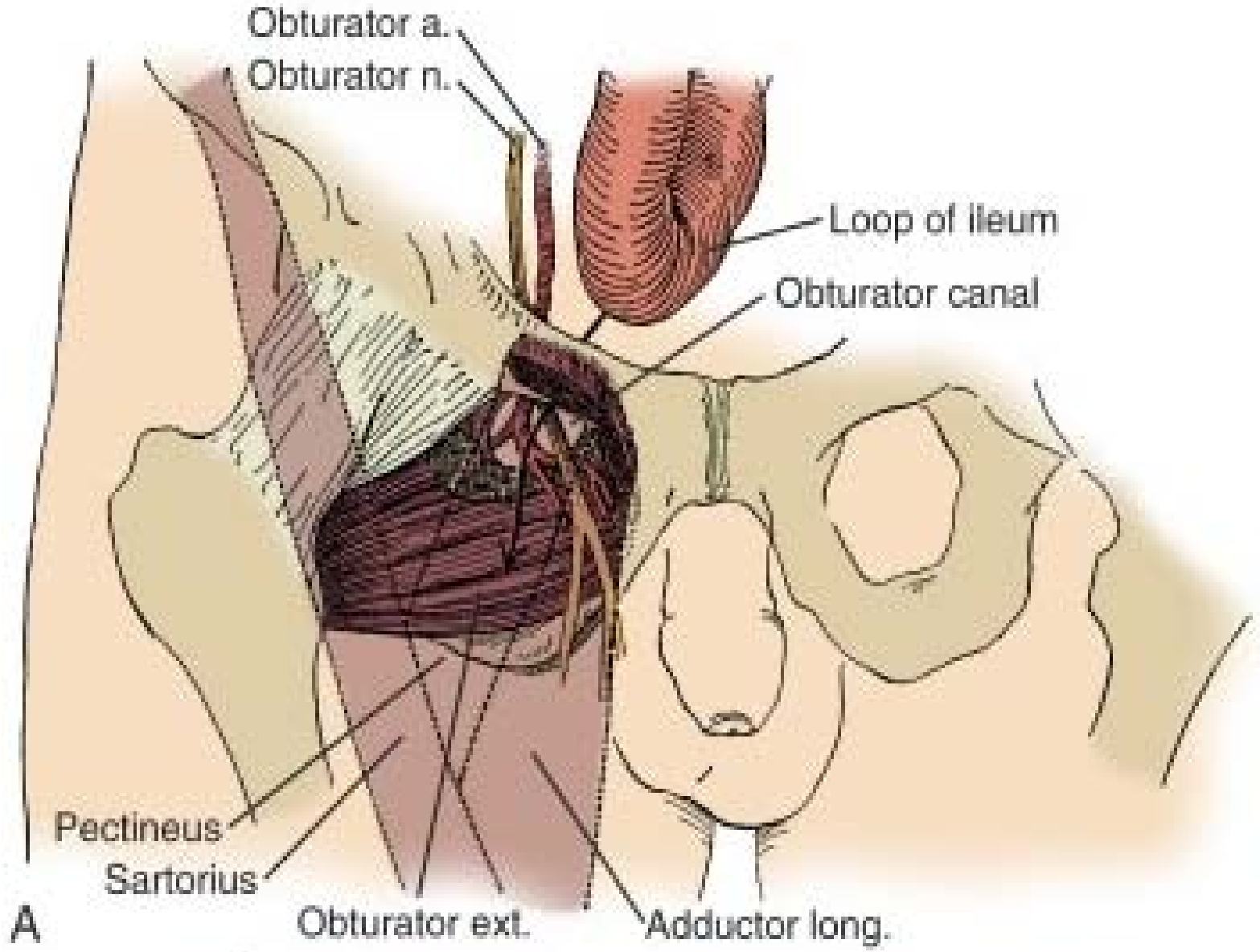
Obturator Anatomy

The direction of the obturator hernia through the obturator canal

Obturator Canal Contents

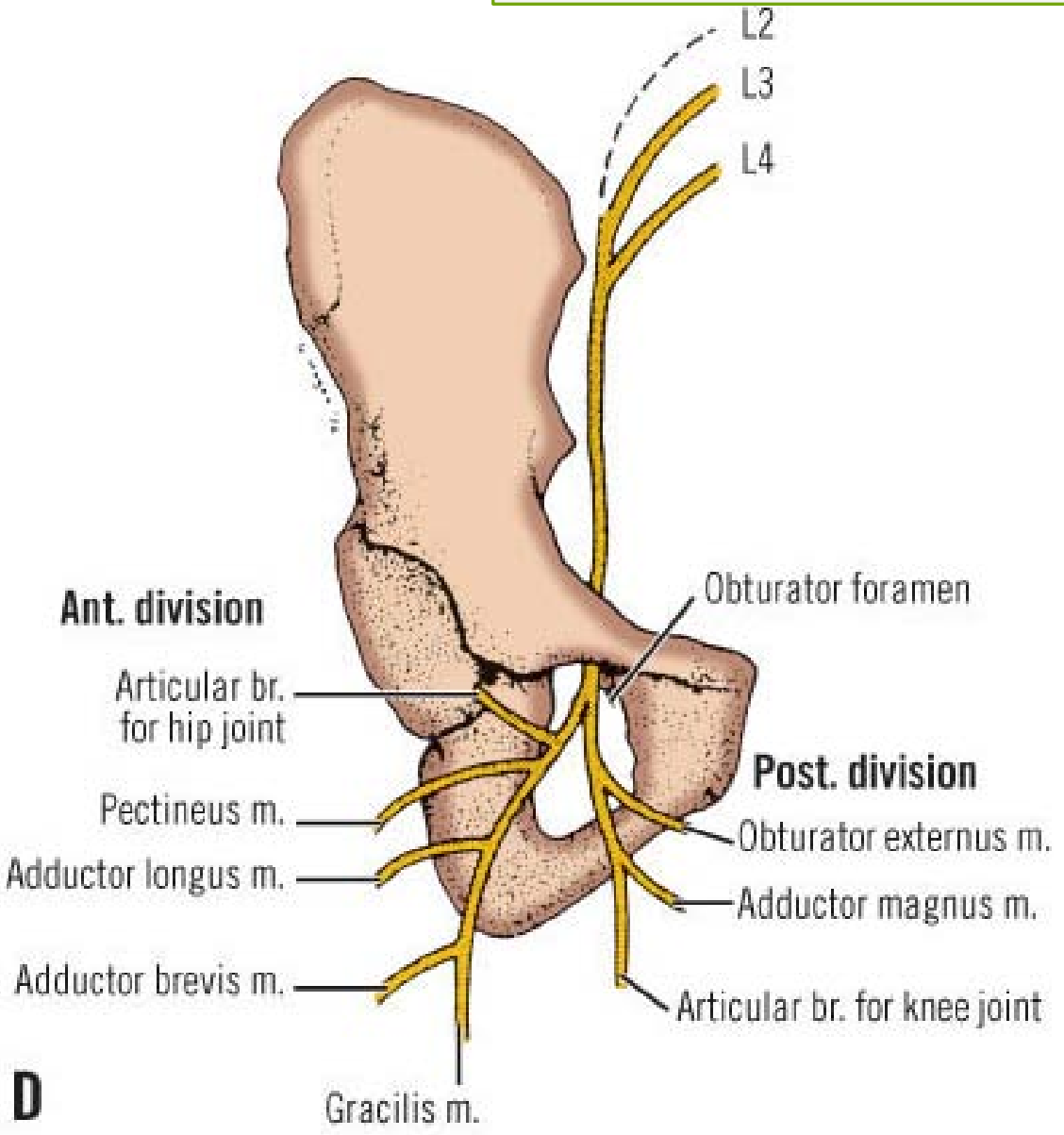
- Obturator nerve, artery, and vein enter the canal through an opening in the anterosuperior aspect of the obturator membrane
- Obturator nerve lies superior to the obturator artery and divides immediately on exiting the canal into anterior and posterior branches


Ureter
External iliac a. & v.
Inferior epigastric a.
Pubic brs.
Pubis
Vas deferens
Obturator n., a. & v.
B


Obturator a.
Obturator n.
Loop of Ileum
Obturator canal
Pectineus
Sartorius
A
Obturator ext.
Adductor long.

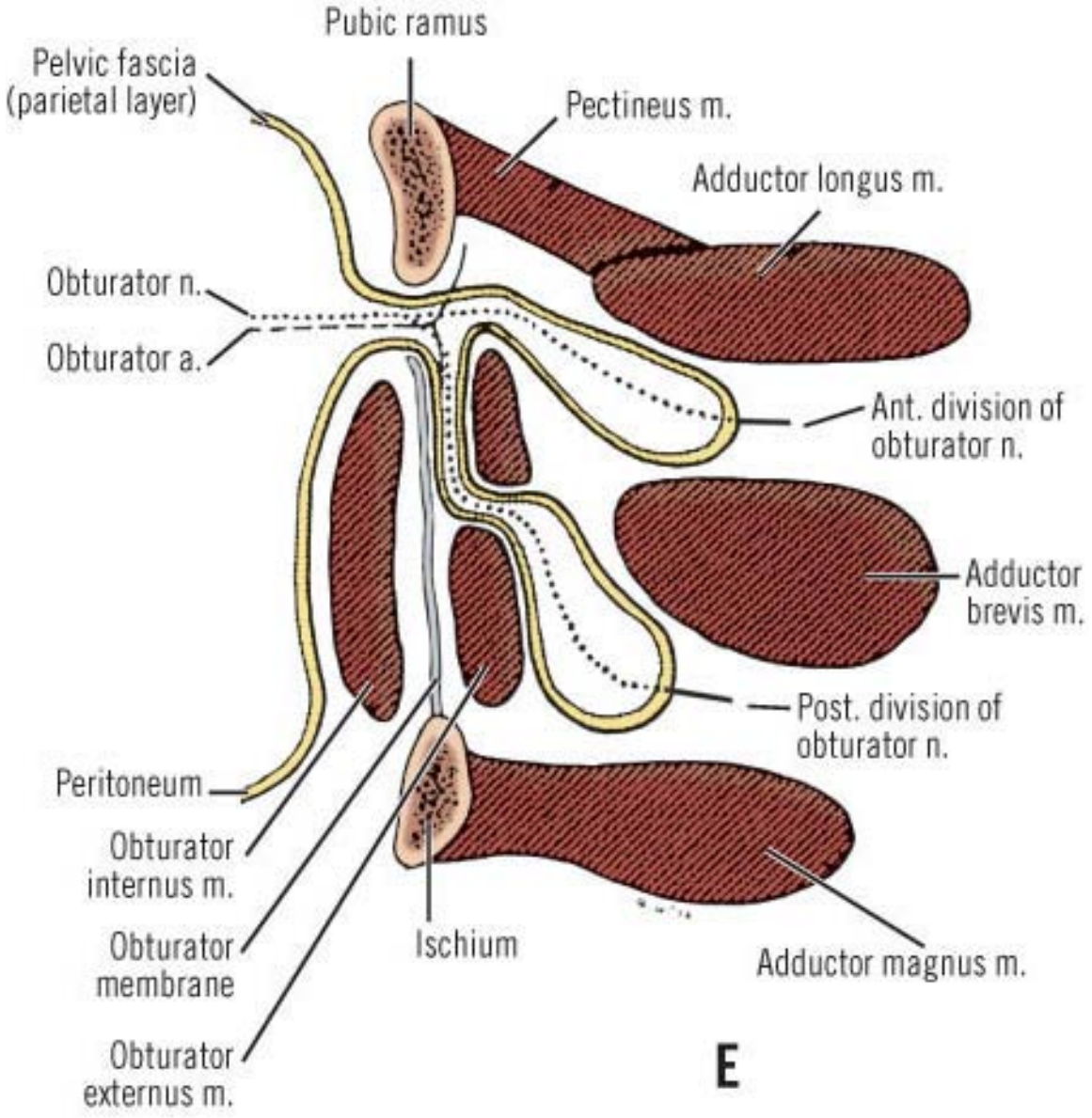
Obturator Nerve

- Anterior branch emerges between the adductor longus and adductor brevis muscles
  - supplies sensory innervation to the medial aspect of the thigh, hip and knee joints and motor innervation to the adductor longus/brevis, gracilis, and pectineus muscles
- Posterior division emerges between the adductor brevis and adductor magnus muscles
  - supplies motor innervation to the obturator externus and adductor magnus muscles


L2
L3
L4
Ant. division
Obturator foramen
Articular br.
for hip joint
Post. division
Pectineus m.
Obturator externus m.
Adductor longus m.
Adductor magnus m.
Adductor brevis m.
Articular br. for knee joint
D
Gracilis m.

Potential Hernia Pathways

- Most common - sac lies in front of the obturator externus and underneath the pectineus, accompanied by the anterior division of the obturator nerve
- Hernia emerges between the middle and superior fasciculi of the obturator externus along with the posterior division of the nerve
- Most rare - sac emerges between the internal and external obturator muscles and membranes
- Recognition of the three variants is important when repair is attempted through the thigh


Pubic ramus
Pelvic fascia (parietal layer)
Pectineus m.
Adductor longus m.
Obturator n.
Obturator a.
Ant. division of obturator n.
Adductor brevis m.
Post. division of obturator n.
Peritoneum
Obturator internus m.
Obturator membrane
Obturator externus m.
Ischium
Adductor magnus m.
E

Obturator Hernia Formation

- Consists of three stages:
  - prehernia stage - which involves preperitoneal fat, or “pilot tags”
  - second stage - formation of a true sac
  - third stage - hernia becomes clinically significant
- Diagnosis during the first two stages is uncommon

Clinical Manifestations: Small Bowel Obstruction

- Up to 80% of cases present with obstruction, either intermittent or acute and complete
- Intestinal obstruction results from involvement of the jejunum or ileum within the hernia sac
- Approximately 50% of patients have an incomplete obstruction secondary to a Richter-type hernia
- History of repeated episodes of bowel obstruction that pass quickly and without intervention is present in up to 30% of cases

Clinical Manifestations: Obturator Neuralgia

- Obturator neuralgia is manifested as cramping or as hypoesthesia or hyperesthesia extending from the inguinal crease to the anteromedial aspect of the thigh

Clinical Manifestations: *Howship-Romberg Sign*

- Pain radiating down the medial aspect of the thigh to the knee and less often to the hip
- Result from compression of the anterior division of the obturator nerve
  - relieved by flexion and external rotation of the thigh
  - exacerbated by extension, adduction, and medial rotation of the leg
- Considered pathognomonic
- Present in up to 50% of patients

Clinical Manifestations: *Hannington-Kiff Sign*

- Absence of the obturator reflex in the thigh, caused by compression on the obturator nerve
- Reflex can usually be elicited by percussing over an extended index finger placed across the adductor muscle approximately 5 cm above the knee
- If the patellar reflex of the ipsilateral side is present in the absence of an obturator reflex, it is highly likely that the obturator nerve is compressed

Clinical Manifestations: Palpable Mass

- In 20% of cases a palpable mass is found in the proximal medial aspect of the thigh at the origin of the adductor muscles
  - The mass is best palpated with the thigh flexed, abducted, and rotated outward or laterally on a vaginal exam
- In rare cases, ecchymoses may be noted in the upper medial thigh due to effusion from the strangulated hernia contents

Modalities Used to Assist in Diagnosis

- Both CT and ultrasound (transvaginal or inner thigh views) are useful in the diagnosis of obturator hernia
- MRI is as good as but not superior to CT
- AXR may show air in the obturator region
- Laparoscopy may be used as a diagnostic tool, as well as a treatment modality

Obturator hernia on AXR

Abdominal radiograph in a patient with small bowel obstruction caused by an incarcerated obturator hernia. There is a gas shadow in the obturator foramen *(arrow).*

Treatment

- In >50% of cases an obturator hernia is found intraoperatively during a diagnostic laparoscopy or laparotomy for SBO
- When diagnosis is made preoperatively, alternative approaches for repair include
  - abdominal extraperitoneal
  - anterior thigh exposure
  - laparoscopic

Transperitoneal Approach

- Lower midline laparotomy
- Run bowel, reduce hernia
- Incise obturator membrane in antero-posterior direction
- Avoid injury to small bowel, obturator vessels and nerve
- Make counter-incision in the medial groin
- Bowel resection required in 25% of cases

Transperitoneal Approach

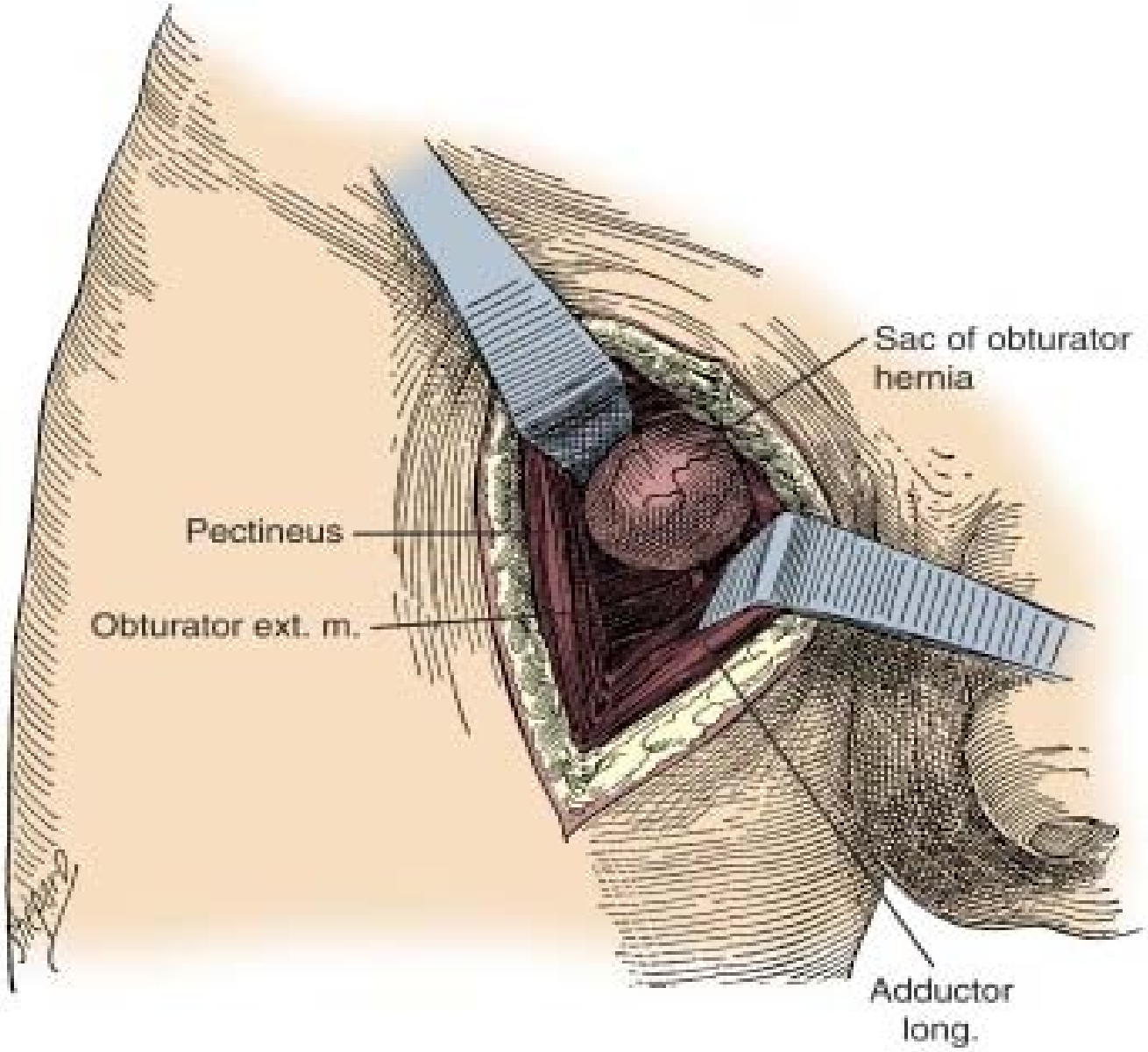
- Close hernia opening around the obturator vessels with a running non-absorbable suture
- Closure should include the periosteum of the superior pubic ramus and the fascia on the internal obturator muscle
- In a clean case, a piece of mesh can be placed over the obturator foramen (may be sutured to Cooper's ligament)

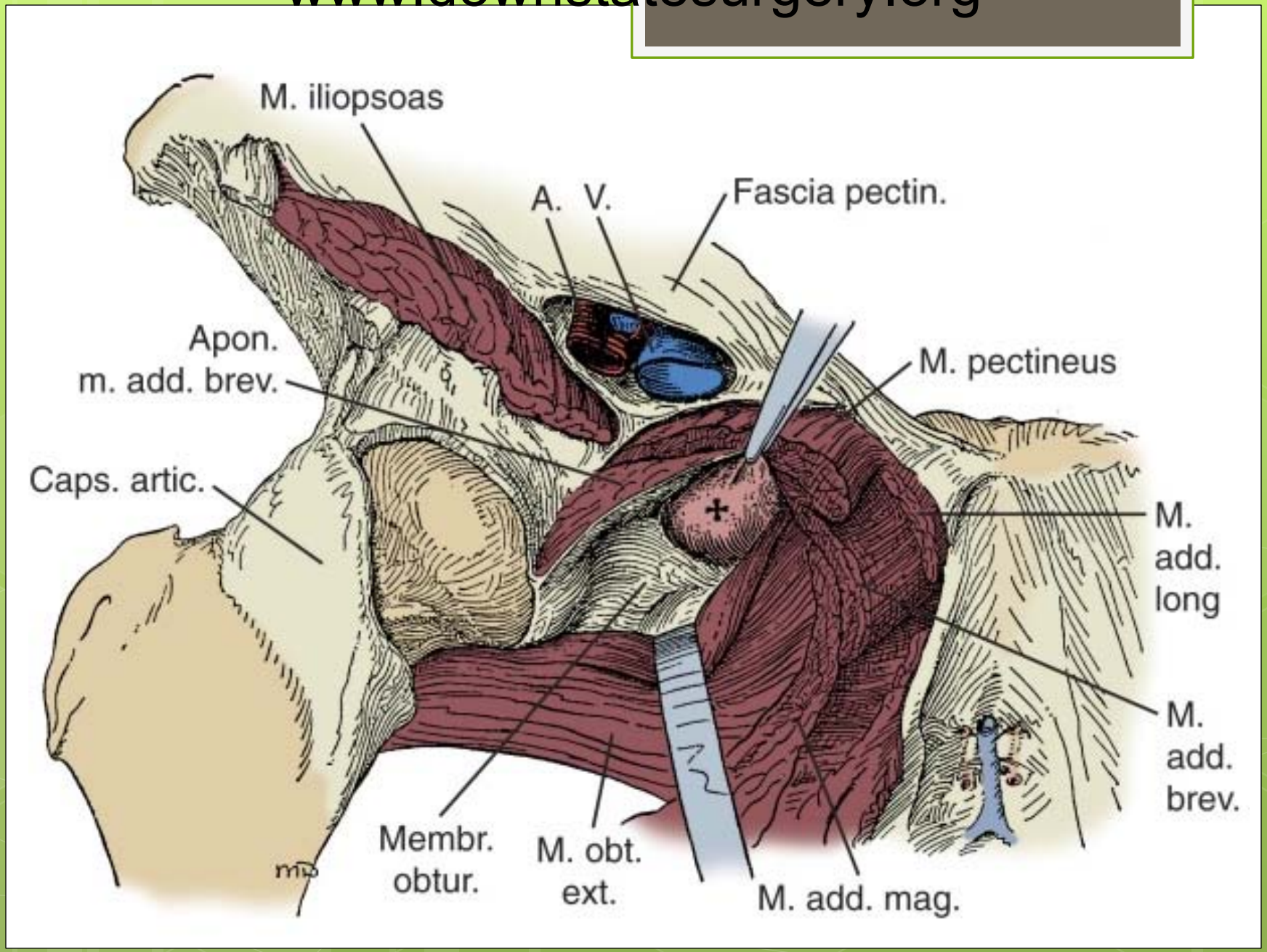
Extraperitoneal Approach

- Lower midline incision
- Enter preperitoneal plane, peel bladder from the peritoneum
- Expose superior pubic ramus and the obturator internus muscle
- Identify the hernia sac (projection of peritoneum passing inferiorly into the obturator canal)
- Reduce the hernia
- Close the internal opening to the obturator canal
- Preperitoneal mesh may be placed

Thigh Approach

- Vertical incision in the upper medial thigh along the adductor longus muscle
- Retract the muscle medially to expose the pectineus muscle
- Cut pectineus muscle across to expose the sac
- Reduce hernia, excise the sac (if viable contents)
- Close hernial opening
- If the bowel contents within the hernia sac do not appear viable, midline laparotomy is usually performed


Sac of obturator hernia
Pectineus
Obturator ext. m.
Adductor long.


M. iliopsoas
A.
V.
Fascia pectin.
Apon.
m. add. brev.
M. pectineus
Caps. artic.
M.
add.
long
M.
add.
brev.
Membr.
obtur.
M. obt.
ext.
M. add. mag.

Laparoscopic Approach

- Both totally extraperitoneal (TEP) and transabdominal preperitoneal (TAPP) laparoscopic approaches are highly effective in the treatment of obturator hernia
- During laparoscopy, the defect is repaired with a prosthetic mesh

World J Surg. 2011 Oct;35(10):2323-7.

Transabdominal preperitoneal repair for obturator hernia.

Yokoyama T, Kobayashi A, Kikuchi T, et al

First Department of Surgery, Shinshu University School of Medicine, 3-1-1 Asahi, Matsumoto, Nagano, 390-8621, Japan.

- **Objective:**
- to assess the effectiveness of laparoscopic transabdominal preperitoneal (TAPP) repair for obturator hernia (OH)
- **Methods:** 659 patients (2001 – 2010) with inguinal hernia underwent TAPP repair, among which were 8 patients with OH
- **Results:**
- 3/8 had occult OH, and 5/8 - diagnosed preoperatively (US or CT) with strangulated OH
- 4/5 – TAPP, 1/5 – 2 stage hernia repair
- **Conclusion:**
- TAPP is an adequate approach to the treatment of both occult and acutely incarcerated OH

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