

# TRA-MINW

## Hernia Ultrasound Protocol

**Reviewed By:** Spencer Lake, MD; Anna Ellermeier, MD  
**Last Reviewed:** April 2019

**Contact:** (866) 761-4200, Option 1

### Billing

- Peri-umbilical, abdominal wall: US Abd Ltd
- Low pelvis wall, inguinal, femoral: US Pelvis Ltd

### **\*\*NOTE for all examinations:**

1. If documenting possible flow in a structure/mass, all color/Doppler should be accompanied by a spectral gate for waveform tracing
2. CINE clips to be labeled: "at rest" and "with Valsalva"
  - MIDLINE structures: "right to left" when longitudinal and "superior to inferior" when transverse
  - RIGHT/LEFT structures: "lateral to medial" when longitudinal and "superior to inferior" when transverse**\*\*each should be 1 sweep, NOT back and forth\*\***

Hernia evaluations should be performed using a high frequency linear array transducer.

**NOTE:** US probe should not be moving during CINEs acquired while the patient is performing Valsalva. US probe should remain as still as possible within the area of interest during Valsalva.

### Assess focal area of concern

#### Required STILL images:

Representative transverse: at least 2 per side  
Representative sagittal: at least 2 per side

#### Required CINE images (4 per site):

- 2 CINEs at rest (no Valsalva)
  1. Transverse (superior to inferior)
  2. Sagittal (right to left)

-2 CINEs with Valsalva

# TRA-MINW

1. Transverse in the area of interest *during the act of Valsalva without moving the probe*
2. Sagittal in the area of interest *during the act of Valsalva without moving the probe*

## **Document 4 features – detail on worksheet:**

-**Content** of hernia sac: fat, bowel, both, etc. --> images in transverse and sagittal

-**Size** of hernia **defect** (neck): transverse x sagittal

-**Size** of total hernia **sac**: 3 dimensions

-**Reducibility**: describe as ONE of the following

1. Not reducible (either spontaneously or with transducer pressure)
2. Reducible spontaneously (*without* transducer pressure)
3. Reducible but not spontaneously (i.e., requires gentle transducer pressure)
4. Reducible spontaneously and more so with transducer pressure

-**Relationship to inferior epigastric vessels** (for inguinal hernias): show hernia relationship to the inferior epigastric vessels in **transverse plane**

-Document images in both greyscale and color

-**LABEL** clearly the inferior epigastric vessels and the medial/lateral parts of the screen

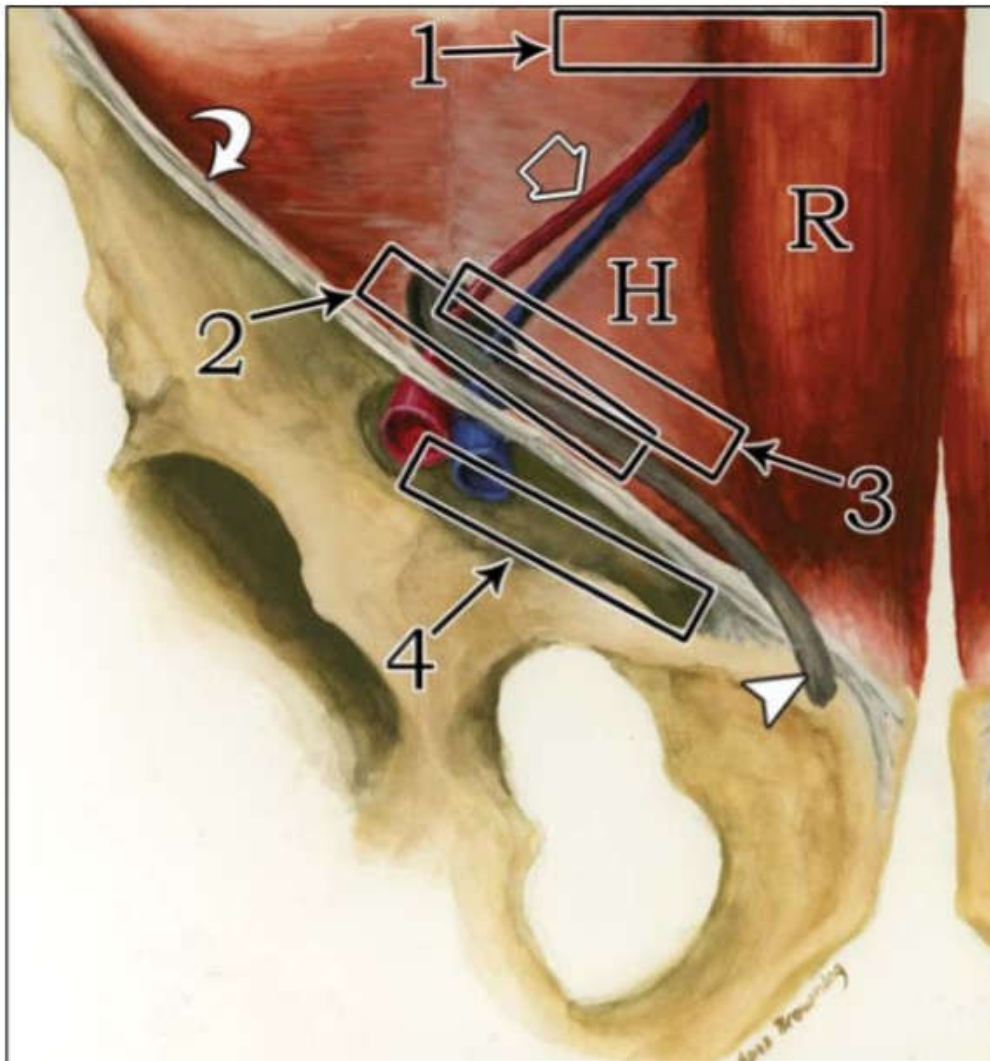
-If any of the above are *unclear*, please note that on the worksheet

**S/P hernia repair** with recurrent pain: Attempt should be made to scan the entirety of the mesh, including the edges of the mesh, when visible.

---

# TRA-MINW

## NOTES of specific hernia types:

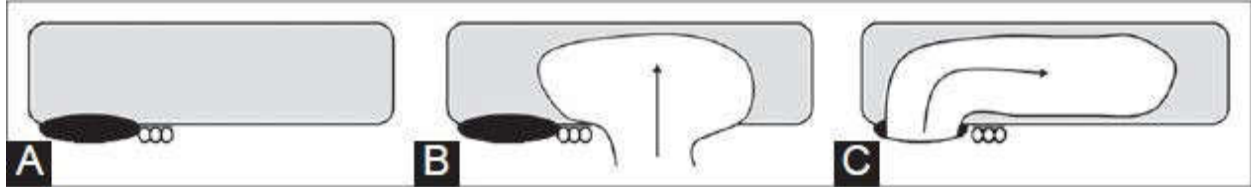


**Fig. 4**—Illustration of man's right inguinal region from anterior view shows transducer position to evaluate for spigelian hernia (1), indirect inguinal hernia (2), direct inguinal hernia (3), and femoral hernia (4). Note locations of inguinal ligament (*curved arrow*), rectus abdominis muscle (R), lateral boundary of Hesselbach's triangle (H) defined by inferior epigastric artery (*open arrow*), and spermatic cord (*arrowhead*).

DA Jamadar, et al. Sonography of the inguinal region hernia  
AJR 2006; 187:185-190

# TRA-MINW

**Inguinal**: clearly label and document location of epigastric vessels



Simplified diagram of a long axis view through the right inguinal canal.

(A): The deep inferior epigastric vessels (three circles) lie at the medial aspect of the deep inguinal ring (black oval) (A)

(B) **Direct** inguinal hernias originate medially to the inferior epigastric vessels

(C) **Indirect** inguinal hernias pass through the deep ring laterally and then over the inferior epigastric vessels

[Indian J Radiol Imaging](#), 2013 Oct-Dec; 23(4): 391-395.

1. Ideally, demonstrate hernia defect in the same image as epigastric vessels
2. Clearly label medial and lateral on the image
3. In the case of a positive examination, CINE with color may be helpful
4. If positive, image opposite side for comparison

**Femoral**: scan below the inguinal ligament (inferior to course of epigastrics) --> potential space will be MEDIAL to femoral vein

-Through femoral ring into femoral canal (posterior/inferior to inguinal ligament)

-Remain lateral to the pubic tubercle

-Compresses femoral vein

# TRA-MINW

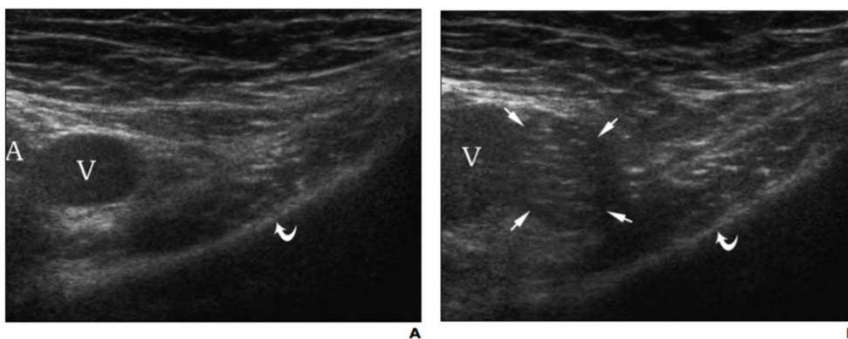
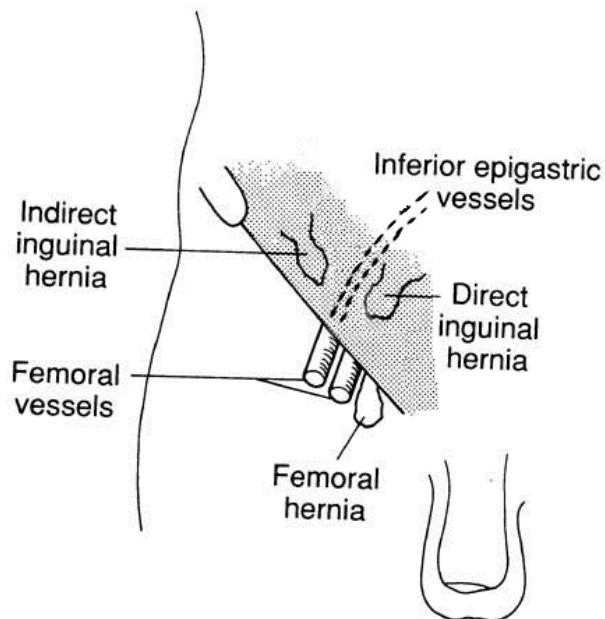


Fig. 10—31-year-old woman with femoral hernia. Sonogram of right inguinal region parallel to and caudal to inguinal ligament corresponding to transducer position 4 in Figure 4.  
A, Pre-Valsalva maneuver sonogram shows (hernia not visible) femoral artery (A), femoral vein (V), and superior pubic ramus (curved arrow).  
B, Post-Valsalva maneuver sonogram shows dilated femoral vein (V) lateral to femoral hernia (arrows). Superior pubic ramus (curved arrow) is also seen.

DA Jamadar, et al. Sonography of the inguinal region hernia  
AJR 2006; 187:185–190