SCROTAL ULTRASOUND EXAMINATION

POLICY: Scrotal ultrasound will be performed with an order from a physician or other qualified clinical practitioner. The examination will be supervised and interpreted by a radiologist or other licensed practitioner who is qualified by reason of training to understand the normal anatomy, pathophysiology of the scrotum and its contents, and integration of ultrasound with other imaging techniques to optimize the probability of detecting disease.

PURPOSE: To assess the anatomy of the scrotum, testicles and supporting structures, and to evaluate testicular venous and arterial blood flow.

INDICATIONS: Scrotal ultrasound is indicated for patients with signs and symptoms of disease involving the scrotum and its contents to include: scrotal pain, scrotal enlargement, testicular masses, peritesticular masses, testicular torsion, inflammatory disease, infertility, trauma, and undescended testicles.

PATIENT PREPARATION: No prep is needed.

PROCEDURE: The patient is scanned in the supine position with the scrotum supported with towels to best evaluate the area of interest. If a varicocele or hernia is suspected, examination with the patient standing may be necessary to expose the pathology. A combination of gray scale and Doppler techniques are utilized. The order of organ imaging will be (minimal number of images in parenthesis):

**Gray Scale Images**

- Long axis right testicle (3 images and 1 cine)
- Long axis right epididymis (3 images)
- Short axis right testicle (3 images and 1 cine)
- Long axis left testicle (3 images and 1 cine)
- Long axis left epididymis (3 images)
- Short axis left testicle (3 images and 1 cine)
- Logiqview or virtual convex image to include both testicles in short axis (1 image).
- Axial split screen image comparing right and left scrotal wall thickness (1 image).

**Doppler Images**

- Representative color Doppler image of the right testicle (1 image)
- Representative color/spectral Doppler image of right testicular arterial and venous flow (2 images)
- Representative color Doppler image of the left testicle (1 image)
• Representative color/spectral Doppler image of the left testicular arterial and venous flow (2 images)
• Representative color virtual convex (or split screen) Doppler image comparing relative flow of right and left testicles (1 image).

GRAY SCALE IMAGES

• Measurements of the long axis of each testicle should be performed with a single frame (not dual frame) and include sufficient surrounding soft tissue to clearly identify the margins of the testicles. If the testicles are bigger than the field of view, a panoramic (Logiqview) sweep of the testicles should be used to image the superior and inferior margins. Measure both the longitudinal and AP measurements in the sagittal plane. Obtain the short axis measurement at the widest transverse diameter.
• Minimal stores images should include:
  o Three long axis views of the right testicle, lateral, mid, and medial, labeled right long lateral, mid or medial;
  o Three long axis views of the right epididymis to include the head, body, and tail labeled right head, body or tail;
  o Three short axis views of the right testicle to include the superior, mid and inferior aspects labeled right trans sup, mid or inf;
  o One long axis cine sweep of the right testicle labeled right long;
  o One short axis cine sweep of the right testicle labeled right trans;
  o Three long axis views of the left testicle, lateral, mid and medial, labeled left long lateral, mid or medial;
  o Three long axis views of the left epididymis to include the head, body, and tail labeled left head, body or tail;
  o Three short axis views of the left testicle to include the superior, mid and inferior aspects labeled left trans sup, mid or inf;
  o One long axis cine sweep of the left testicle labeled left long;
  o One short axis cine sweep of the left testicle labeled left trans;
  o One Logiqview or virtual convex image to include both testicles in short axis.

COLOR AND SPECTRAL DOPPLER

• Spectral Doppler waveforms should be obtained with the spectrum occupying at least 50% of the image format and the pulse repetition frequency optimized so that the waveform occupies at least 50% of the velocity scale. In situations when flow is difficult to identify with color, power Doppler should be attempted.
• Minimal stored images should include:
  o One color Doppler image of the right testicle labeled right testicle;
  o One color/spectral Doppler image of right testicular arterial flow labeled right testicle;
  o One color/spectral Doppler image of right testicular venous flow labeled right testicle;
o One color Doppler image of the left testicle labeled *left testicle*;
o One color/spectral Doppler image of left testicular arterial flow labeled *left testicle*;
o One color/spectral Doppler image of left testicular venous flow labeled *left testicle*;
o One split screen or virtual convex color Doppler image of both testicles comparing relative flow of right and left testicles.

**PATHOLOGIC CONDITIONS:** When pathologic processes are detected during the course of the examination, extra images are necessary to characterize the abnormalities. The following is a description of abnormalities that may be encountered during the examination. The list is not intended to be comprehensive and Sonographers are expected to apply their knowledge of pathophysiology to produce clear images of the disease processes they encounter.

**Scrotal Masses:** Long and short axis images should be taken of each intra and extra testicular mass encountered. In cases of large masses (e.g. hydrocele) that cannot be included in a single convex linear image, Logiqview images in orthogonal planes shall be obtained. Measurements in three orthogonal planes should be documented along with color/spectral Doppler images. Obtain a cine sweep of the mass that best represents the area of interest.

**Varicocele/Infertility:** Sonographic evaluation of varicoceles requires both diameter measurement of the largest veins in the pampiniform plexus and demonstration of venous reflux. Venous reflux is best documented with spectral Doppler of an individual vein utilizing a slow sweep speed to demonstrate biphasic flow during respiration or with abdominal compression. A magnified gray scale (or B flow) cine image demonstrating biphasic venous flow of at least 1 second duration is satisfactory for documentation. Both pampiniform plexuses should be investigated in cases of infertility.

**Torsion:** Extra color/spectral Doppler images should be obtained if absent or diminished venous or arterial flow is observed. Short axis, virtual convex, color or power Doppler images including both testicles shall be included. A short axis, virtual convex, color or power Doppler cine clip of both testicles is particularly useful.

**Testicular Pain/Inflammatory Disease:** Split screen color or power Doppler images of the epididymides should be recorded if epididymitis is suspected clinically or by ultrasound exam.