Procedure Name: TIPS (Transjugular intrahepatic portosystemic shunt)

Updated 1/29/2009

Indications:
May include but not limited to abdomen pain, follow up to prior exam, abnormal liver function test values, or any other valid medical reason. There are no absolute contraindications.

General Description:
This is a survey of the upper abdomen. May be ordered as a limited abdominal study for TIPS evaluation or a complete abdominal examination with attention for TIPS evaluation.

Patient Preparation:
NPO after midnight for morning exam. For afternoon exam, the patient may have a low fat breakfast with no dairy products, prior to 7:30a.m.

Imaging Sequence:
The following imaging sequence is for a normal exam. Include additional images of pathology to demonstrate dimensions in three planes, texture, size, shape, and relationship to adjacent anatomy.

May be ordered as a complete abdominal study with additional evaluation for TIPS (for complete abdominal exam please refer to Abdominal Ultrasound protocol). For limited studies include images to demonstrate hepatic parenchyma in both longitudinal and transverse planes and obtain measurements of the spleen in three planes. Include the following images for TIPS evaluation for both limited and complete studies.

Splenic Vein (pre and post TIPS evaluation when applicable)
1. Measure peak velocity (angle corrected) in splenic vein at both the hilum and distal portion (make sure distal measurement is not within the portosplenic confluence)

Portal Veins (pre and post TIPS evaluation when applicable)
1. Check patency and direction of flow in the MPV, RPV and LPV
2. Measure peak velocity (angle corrected) within the MPV, RPV and LPV
3. Measure diameter of MPV

Hepatic Vessels (pre and post TIPS evaluation when applicable)
1. Hepatic Veins – Check patency and direction of flow in the RHV, MHV and LHV
2. Hepatic vein to which TIPS drains (most common RHV). Check flow direction both at proximal and distal to where the TIPS stent enters.
3. Hepatic Artery – Measure resistive index (angle corrected PSV and EDV)
Shunt (TIPS stent)
1. Measure peak velocity (angle corrected) in the proximal, mid and distal portions of the shunt. Distal measurement should be as close to the hepatic vein as possible.

TIPS information:
1. Main portal vein (MPV) velocities are expected to be higher in a post shunt placement patient.
2. Portal vein velocities should be > 35 cm/sec
3. Direction of blood flow within the intrahepatic portal veins following shunt placement can in many patients (> 50%) be hepatofugal within the left or right portal vein. This is a normal finding but on follow-up evaluation a change in direction of flow (from hepatofugal to hepatopetal) can be indicative of a stent malfunction.
4. Focal changes in the velocity of blood flow through the shunt (increased velocity) can be suggestive of a shunt stenosis. A decrease in shunt velocity as well as a reverse of flow in the hepatic vein draining the shunt suggests stenosis at the hepatic vein outflow site.
5. Shunt velocities should be > 90 cm/sec
6. Hepatic vein to which stent enters should be evaluated for direction of flow at proximal and distal to TIPS insertion. The normal direction (to the IVC) can reverse proximal to the stent if there is a stenosis at the junction of the stent and the draining hepatic vein.
7. Make sure to adjust Doppler scale to eliminate aliasing so direction of flow can be evaluated.