PROCEDURE

Transjugular intrahepatic portosystemic shunt

A TIPS is a stent placed through the liver to lower high pressure in the portal vein.

PURPOSE
Lower portal vein pressure and control portal hypertension complications

PROCEDURE TYPE
Therapeutic, minimally invasive interventional radiology

WHERE IT IS DONE
Operating theatre or interventional radiology suite

ANAESTHESIA
General anaesthesia or deep sedation

HOW LONG IT TAKES
Usually one to three hours

PREPARATION
Fasting, blood tests, imaging, and medication review

RECOVERY
Usually overnight or longer; no driving until cleared

MAIN RISKS
Encephalopathy, bleeding, liver failure, and shunt blockage

RESULTS
Pressure change immediate; symptom response assessed over days

Overview

A transjugular intrahepatic portosystemic shunt, usually called TIPS, is an internal channel made through the liver. A small mesh tube called a stent keeps the channel open.

The portal vein carries blood from the digestive organs to the liver. Scarring or blocked liver blood vessels can raise pressure in this vein. This is called portal hypertension.

During TIPS, the new channel connects the portal vein to a hepatic vein, which carries blood away from the liver. Some blood can then bypass the high-resistance area, lowering portal pressure.

TIPS does not remove liver scarring or cure the underlying liver condition. It is used to control serious effects of portal hypertension and may sometimes act as a bridge to liver transplantation.

Why the procedure is performed

TIPS may be considered when portal hypertension is causing problems that have not responded well enough to other treatments.

Reasons include:

In an emergency, TIPS may help control variceal bleeding that cannot be stopped with medicines and endoscopic treatment. It may also be offered early to selected people at high risk of further bleeding.

For recurring ascites, TIPS may reduce the need for repeated fluid drainage. The possible benefit must be balanced against its effects on liver, brain, and heart function.

- Bleeding from enlarged veins, called varices, in the oesophagus or stomach
- Ascites, which is fluid collecting in the abdomen, that keeps returning
- Fluid around a lung due to liver disease, called hepatic hydrothorax
- Blocked liver veins, known as Budd-Chiari syndrome, in selected cases

Who should and should not have it

TIPS is not suitable for everyone with portal hypertension. Your team will consider why you need it, how well your liver and kidneys are working, and whether your heart can manage the extra blood flow.

It may be appropriate when bleeding or fluid buildup continues despite other treatment, or when repeated procedures are creating a major burden. Your likely access to liver transplantation may also affect the decision.

TIPS may be avoided or delayed if you have:

Hepatic encephalopathy means problems with thinking or alertness caused partly by toxins that the liver normally clears. Because TIPS allows some blood to bypass the liver, it can start or worsen this problem.

Blood-clotting problems, kidney disease, portal vein clots, tumours, or unusual blood-vessel anatomy do not always rule out TIPS. They can make the procedure more complex and require individual assessment.

- An uncontrolled infection
- Severe heart failure or severe disease of the heart valves

- Severely raised pressure in the lung arteries
- Severe or repeatedly uncontrolled hepatic encephalopathy
- Liver failure so advanced that TIPS is unlikely to help
- A bile duct blockage that has not been treated

How to prepare

Your treating facility's own instructions take priority over general advice in this article.

You will usually have blood tests to check liver and kidney function, blood counts, and clotting. Ultrasound, CT, or MRI scans help map the liver's blood vessels. You may also need an electrocardiogram and an ultrasound scan of your heart.

Give the team a current list of medicines, supplements, allergies, and previous reactions to contrast dye or anaesthesia. Tell them if you might be pregnant.

You may need to stop or adjust blood thinners like warfarin or apixaban , diabetes medicines, or other drugs. Do not make these changes unless the treating team gives you specific instructions.

You will normally be asked not to eat or drink for several hours. Arrange transport home and help after discharge. TIPS usually requires at least an overnight hospital stay, so bring essential medicines and personal items.

What happens during the procedure

You will lie on an X-ray table with monitors checking your heart rate, blood pressure, breathing, and oxygen level. TIPS is commonly performed under general anaesthesia or deep sedation, so you may be asleep or very drowsy.

The interventional radiologist cleans the skin over your neck and inserts a thin tube into the jugular vein. Local anaesthetic numbs this area.

Using ultrasound and moving X-ray images, the radiologist guides the tube into a hepatic vein. Contrast dye makes the blood vessels visible. Pressure measurements may be taken before and after the shunt is created.

A special needle is passed through liver tissue into the portal vein. The new channel is widened with a small balloon, and a covered metal stent is placed to hold it open. Enlarged bleeding veins may sometimes be blocked during the same procedure.

Final images and pressure measurements confirm blood flow through the shunt. The neck tube is removed, and pressure or a dressing is applied. There is usually no abdominal incision.

Recovery and what to expect afterward

You may have mild neck soreness, abdominal discomfort, or nausea. Tell the hospital team if pain is severe or increasing.

You can usually drink and then eat when you are fully awake, unless another condition requires restrictions. Your team may continue advice about salt, fluids, or nutrition because TIPS does not treat the underlying liver disease.

At first, rest and avoid heavy lifting or strenuous activity. Keep the neck dressing clean and follow instructions about bathing. Hospital staff will monitor for bleeding, changes in alertness, heart strain, and liver or kidney problems.

Do not drive yourself home. Anaesthesia, sedating medicines, and possible changes in thinking can make driving unsafe. Resume driving only when your treating team says it is safe and you feel fully alert.

Time away from work depends on your recovery, the reason for TIPS, and whether your job is physical. Some people return to light work within several days, while others need longer.

Risks and possible complications

TIPS can provide important benefits, but it changes normal blood flow and has significant risks.

Hepatic encephalopathy can cause poor concentration, altered sleep, unusual behaviour, drowsiness, or confusion. It is often treated with medicines, but some people need the shunt narrowed or blocked.

Other possible complications include:

Serious complications, including death, are possible. Your team should explain how your liver and heart health affect your personal risk before you consent.

- Bleeding or injury to blood vessels, the liver, or nearby organs
- Infection
- Worsening liver function or liver failure
- Heart failure or fluid overload from increased blood flow

- Kidney injury or a reaction related to contrast dye
- Irregular heart rhythms during the procedure
- Narrowing, clotting, or blockage of the stent
- Radiation exposure from X-ray guidance

Results and follow up

The radiologist can usually tell immediately whether the stent is open and how much the measured portal pressure has fallen. Improvement in bleeding control or fluid buildup is assessed over the following days and weeks.

You will need routine follow-up with your liver team. This may include blood tests and Doppler ultrasound, which uses sound waves to check blood flow through the stent. The timing is set by your facility and your clinical needs.

Continue prescribed medicines unless your team changes them. TIPS does not remove the need for liver care, monitoring for complications of cirrhosis, or transplant assessment when appropriate.

A narrowed or blocked shunt may need another radiology procedure to reopen, extend, or replace it.

Alternatives

The alternatives depend on the problem TIPS is intended to treat.

For variceal bleeding, medicines that lower portal pressure and endoscopic banding are less invasive. They may not control severe bleeding or may allow bleeding to return. Balloon tamponade or an oesophageal stent can provide temporary control during an emergency but is not a long-term solution.

For recurring ascites, reducing dietary salt, taking diuretics like furosemide or hydrochlorothiazide , and repeatedly draining fluid with a needle are alternatives. Drainage can provide quick relief without creating a shunt, but the fluid may return and repeated procedures are often needed.

For some stomach varices, a procedure that blocks the abnormal veins, such as balloon-occluded retrograde transvenous obliteration, may be possible. It can control bleeding but may raise portal pressure elsewhere and worsen ascites or other varices.

A surgical shunt can also redirect blood, but it requires a more invasive operation and is used less often. Liver transplantation treats the underlying liver failure rather than only reducing portal pressure, but it involves major surgery, eligibility assessment, and waiting for a suitable organ.

Choosing supportive care without TIPS is also an option when its risks outweigh the likely benefit or it does not match your goals.

When to call your healthcare team

For routine questions, contact your team about follow-up appointments, medicines, activity limits, or ongoing swelling that is not rapidly worsening.

Seek urgent same-day medical advice for:

Call emergency services for vomiting blood, black tar-like stools, severe confusion, difficulty waking, fainting, severe chest pain, major breathing difficulty, or bleeding that does not stop with firm pressure.

- Fever, chills, or increasing redness or drainage at the neck site
- Increasing abdominal pain or swelling
- New or worsening yellowing of the skin or eyes
- Markedly reduced urine output
- New mild confusion, unusual sleepiness, or personality changes
- Bleeding from the neck site that stops with firm pressure

Common questions

Will I be asleep?

Many people receive general anaesthesia and are fully asleep. Others receive deep sedation. Your anaesthesia plan will reflect your health and the facility's approach.

Can I drive home?

No. You will usually stay in hospital overnight or longer, and you must not drive after anaesthesia or sedation. Arrange for someone to take you home when discharged.

How painful is TIPS?

You should not feel the procedure while under general anaesthesia. With sedation, local

anaesthetic numbs the neck entry site. Mild neck or abdominal discomfort afterward is possible.

When will I know if it worked?

Pressure measurements and imaging provide an immediate technical result. It may take days or weeks to judge the effect on ascites or other symptoms.

Can TIPS be reversed?

The stent is intended to remain in place. If it causes severe problems, an interventional radiologist may narrow or block it. Complete removal is not usually attempted.

How long does a TIPS last?

A TIPS may remain open for years, but it can narrow or become blocked. Regular imaging helps identify changes before they cause further problems.

Sources

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