PROCEDURE

Portacaval shunting

Portacaval shunting is surgery that redirects portal blood into a large vein to lower pressure around the liver.

PURPOSE
Lower portal pressure and control related complications

PROCEDURE TYPE
Therapeutic surgery through an abdominal incision

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General

HOW LONG IT TAKES
Roughly 2-6 hours, based on surgical complexity

PREPARATION
Fasting, medication review, blood tests and imaging

RECOVERY
Several hospital days; no driving until cleared

MAIN RISKS
Bleeding, infection, encephalopathy and liver failure

RESULTS
Shunt flow checked immediately; benefit assessed during follow-up

Overview

Portacaval shunting is major surgery used to lower high pressure in the portal venous system. This system carries blood from the digestive organs and spleen to the liver.

During the operation, a surgeon creates a connection between the portal vein and the inferior vena cava, the large vein carrying blood back to the heart. This allows some portal blood to bypass the liver.

The operation may use a direct connection between the veins or a short artificial graft. The exact approach is chosen from your vein anatomy, liver function and reason for treatment.

Portacaval shunting is different from a transjugular intrahepatic portosystemic shunt, or TIPS. TIPS creates a channel inside the liver using instruments passed through a neck vein.

Portacaval shunting usually involves open abdominal surgery.

Why the procedure is performed

The operation may be considered when portal hypertension-high pressure in the veins around the liver-has caused serious problems that other treatments have not controlled.

Possible reasons include:

Surgical shunts are now used less often because medicines, endoscopic procedures and TIPS can often control portal hypertension with less invasive treatment. Surgery may still be appropriate for carefully selected people, particularly when liver function is reasonably preserved.

- Severe or repeated bleeding from enlarged veins called varices
- Portal hypertension that cannot be controlled with medicines or endoscopic treatment
- Selected cases of fluid buildup in the abdomen, called ascites
- A need for long-term portal pressure reduction when TIPS is unsuitable

Who should and should not have it

You may be considered for portacaval shunting if portal hypertension is causing serious complications and less invasive options have failed, are unavailable or are unlikely to work. Your team will assess whether your liver can tolerate blood being redirected away from it.

The operation may be avoided or delayed if you have:

Hepatic encephalopathy is a change in brain function caused partly by toxins that the liver has not cleared. A shunt can increase this risk because more blood bypasses the liver.

Your surgical and liver teams should explain why this operation is being offered, how urgent it is and how your expected benefits compare with its risks.

- Severe liver failure
- Uncontrolled infection
- Ongoing or difficult-to-control hepatic encephalopathy
- Heart or lung disease that makes major surgery unsafe
- Vein anatomy that prevents a secure shunt

- A blood-clotting problem that cannot be corrected
- A condition for which liver transplantation is the more appropriate treatment

How to prepare

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

You will usually have blood tests to assess liver and kidney function, blood counts and clotting. Ultrasound, CT or MRI scans may be used to map the portal vein and nearby blood vessels. Heart or breathing tests may be needed before general anaesthesia.

Tell the team about all prescription medicines, over-the-counter products, vitamins and supplements you take. Blood thinners like warfarin or apixaban , diabetes medicines and some other drugs may need special instructions. Do not stop prescribed medicine unless your treating team tells you to.

You will normally need to stop eating and drinking before surgery. Follow the exact fasting time provided by the hospital.

Arrange help for your return home and early recovery. You will not be able to drive yourself home. If you smoke, stopping before surgery can improve wound and breathing recovery.

What happens during the procedure

You will receive general anaesthesia, so you will be unconscious and will not feel the operation. Monitoring devices will track your breathing, heart rate, blood pressure and oxygen level.

The surgeon makes an incision in your abdomen and carefully exposes the portal vein and inferior vena cava. A connection is then created between them. Depending on your anatomy, the veins may be joined directly or connected with a graft.

The surgical team checks that blood is flowing through the new shunt and looks for bleeding. The incision is then closed. A temporary drain may be placed near the surgical area.

You may also have a urinary catheter, intravenous lines and a tube for monitoring blood pressure. Some people initially recover in an intensive or high-dependency care area because close monitoring is needed after this operation.

Recovery and what to expect afterward

Pain: Abdominal soreness is expected. Pain medicine is provided, and the team will ask you to describe how well it is working. Tell them if pain suddenly worsens or is not controlled.

Eating: You may begin with fluids and progress to solid food as your bowel function returns. Your team may recommend changes in salt or protein intake based on ascites, encephalopathy and overall liver function.

Activity: Staff will help you sit up and walk as soon as it is safe. Early movement lowers the risk of blood clots and chest complications. Avoid heavy lifting and strenuous activity until the incision has healed and your surgeon approves.

Driving: Do not drive home. Avoid driving while taking sedating pain medicine or until you can move comfortably, react quickly and perform an emergency stop. Follow your surgeon's specific restriction.

Work: Returning to work often takes several weeks after open abdominal surgery. Timing is influenced by healing, liver health and whether your job involves lifting or physical effort.

Risks and possible complications

Portacaval shunting is major surgery. Important risks include:

The shunt may narrow or become blocked later. Portal hypertension or variceal bleeding can then return. Further imaging, treatment to reopen the shunt or another procedure may be needed.

There is also a risk of death with major shunt surgery, particularly when it is performed during uncontrolled bleeding or in someone with advanced liver disease. Your team should discuss your individual surgical risk before you consent.

- Bleeding or a need for blood transfusion
- Infection of the wound, abdomen or bloodstream
- Blood clots in the shunt, causing reduced or blocked flow
- Hepatic encephalopathy, including confusion or unusual sleepiness
- Worsening liver function or liver failure
- Fluid buildup, kidney problems or electrolyte changes
- Increased strain on the heart from altered blood flow
- Injury to nearby organs or blood vessels
- Risks from general anaesthesia

Results and follow up

The surgeon can usually confirm blood flow through the shunt during the operation. Ultrasound or other imaging may be used afterward to check that it remains open.

Your team will monitor blood counts, liver and kidney function, mental alertness and signs of recurrent portal hypertension. Routine follow-up may also include imaging and endoscopy, depending on the reason for the operation.

The shunt lowers portal pressure but does not cure cirrhosis or another underlying liver condition. You may still need liver care, medicines, alcohol avoidance where relevant, nutrition support and assessment for transplantation.

Alternatives

The realistic alternatives depend on whether treatment is intended to prevent bleeding, stop active bleeding or manage ascites.

- Medicines: Nonselective beta blockers can lower portal pressure and reduce variceal bleeding risk. They avoid a procedure but may not be enough after severe or repeated bleeding.
- Endoscopic treatment: Banding closes enlarged veins in the oesophagus. It is less invasive than surgery but may require repeated sessions and does not create a permanent pressure bypass.
- TIPS: A radiologist creates a channel through the liver from inside a vein. It avoids open surgery and is commonly used for uncontrolled bleeding or selected cases of ascites. It can narrow over time and can also cause encephalopathy.
- Variceal embolization or obliteration: These image-guided procedures block selected bleeding veins. They suit certain vein patterns but may raise pressure elsewhere in the portal system.
- Ascites treatments: Salt restriction, diuretics and drainage with a needle can control abdominal fluid. They are less invasive but may need to be repeated and do not treat variceal bleeding.
- Other surgical shunts: A selective shunt may redirect blood from particular veins while preserving more flow through the liver. It remains major surgery and is not suitable for every anatomy.

- Liver transplantation: Transplantation treats both advanced liver disease and its portal hypertension. It requires extensive assessment, lifelong anti-rejection medicine and access to a suitable donor organ.

When to call your healthcare team

For routine follow-up, contact your team if you have increasing wound redness, drainage, ongoing nausea, poor appetite, swelling or pain that is not improving.

Seek urgent medical advice for new confusion, unusual sleepiness, fever, worsening abdominal swelling, reduced urination, yellowing of the skin or eyes, or increasing shortness of breath.

Call emergency services for vomiting blood, passing a large amount of black or bloody stool, fainting, severe breathing difficulty, chest pain, sudden severe abdominal pain or difficulty waking.

Common questions

Will I be asleep?

Yes. Portacaval shunting is performed under general anaesthesia, so you will be unconscious during the operation.

Can I drive home?

No. This is inpatient major surgery. You will need someone else to take you home after discharge, and you must wait until your surgeon says driving is safe.

How painful is it?

You can expect abdominal soreness, especially when moving, coughing or standing. Pain medicine and support for the incision usually make movement more manageable.

When will I know if it worked?

The surgeon checks shunt flow during the operation. Blood tests, imaging and whether bleeding or fluid buildup improves provide more information during recovery and follow-up.

Will it cure my liver disease?

No. The operation lowers pressure in the portal veins but does not reverse cirrhosis or other underlying liver damage.

Will I need treatment afterward?

Usually, yes. You will need monitoring for shunt function, liver health and encephalopathy.

Medicines and other liver treatments may continue.

Sources

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