PROCEDURE

Hardware removal - extremity

Surgery to remove plates, screws, rods, pins, or wires from an arm or leg

PURPOSE
Relieve hardware-related problems or treat infection after bone fixation

PROCEDURE TYPE
Therapeutic surgery through one or more limb incisions

WHERE IT IS DONE
Operating theatre, usually as an outpatient

ANAESTHESIA
General or local; a nerve block may also be used

HOW LONG IT TAKES
Usually 30 minutes to 2 hours, based on complexity

PREPARATION
Fasting, medicine review, and transport home after anaesthesia

RECOVERY
Usually same day; no driving after anaesthesia

MAIN RISKS
Infection, nerve injury, retained hardware, refracture

RESULTS
Removal confirmed immediately; culture results take several days

Overview

Extremity hardware removal is surgery to remove metal devices from an arm or leg. Hardware may include plates, screws, rods, pins, or wires used to hold a broken bone or joint in position while it heals.

Hardware does not always need to be removed after healing. Many implants can safely remain in the body for life. Removal is considered when the hardware is causing a problem, when infection is suspected, or when removal was part of the original treatment plan.

The operation may be straightforward when hardware is close to the skin. It can be more complex if an implant is covered by bone or scar tissue, has broken, or lies near nerves, tendons, or blood vessels.

Why the procedure is performed

Your surgeon may recommend removal because the hardware:

Pain near an implant does not always come from the hardware. Removing it may not improve pain caused by arthritis, nerve injury, poor bone healing, or another condition.

- Causes ongoing, well-localized pain or irritation
- Rubs against footwear, skin, tendons, or nearby soft tissue
- Has become loose, prominent, or broken
- Is associated with an infection
- Restricts movement or interferes with another planned operation
- Was designed to be removed after a particular stage of healing

Who should and should not have it

You may be offered removal when the bone has healed and there is a clear reason to believe that the implant is causing a problem. Imaging, such as an X-ray, is usually used to assess healing and locate the hardware.

Removal is not routinely needed for every plate or screw. It may not be the right choice when the hardware is not causing problems or when the expected benefit is small.

The operation may be avoided or delayed if:

Sometimes only part of an implant can be removed safely. Your surgeon should explain this possibility before you consent.

- The bone has not healed enough to remain stable without support
- Removal could damage an important nerve, tendon, or blood vessel
- The hardware is deeply buried and removal would require extensive surgery
- A skin problem near the incision increases the risk of wound complications
- Another health condition makes anaesthesia or surgery unsafe at that time
- Infection requires a different plan, such as cleaning the area while retaining or replacing stabilizing hardware

How to prepare

The treating facility's own instructions take priority because preparation differs with the location of the hardware and the type of anaesthesia.

Tell the surgical team about all prescription medicines, over-the-counter products, vitamins, and supplements you use. Blood thinners and some diabetes medicines may require special planning. Do not stop a prescribed medicine unless the treating team tells you to.

You may need to stop eating and drinking before general anaesthesia or sedation. Follow the exact fasting times provided by the facility.

Arrange for an adult to take you home if you will receive general anaesthesia, sedation, or a nerve block. You may also need help at home if the operation affects walking, lifting, or use of your dominant hand.

Bring any requested imaging. Tell the team about previous problems with anaesthesia, allergies, current illness, or changes in the skin around the surgical area.

What happens during the procedure

The anaesthetic plan may include general anaesthesia, which makes you unconscious, or local anaesthesia, which numbs the surgical area. A regional nerve block may numb much of an arm or leg. Some procedures use more than one method.

The surgeon usually opens part or all of the previous scar. Scar tissue and any bone covering the implant are carefully cleared away. Special tools are used to remove the screws, plate, rod, pin, or wire.

Live X-ray imaging may help locate buried or broken pieces. If infection is suspected, samples of tissue or fluid may be sent to a laboratory for culture. A culture checks whether bacteria are present and which antibiotics like amoxicillin or doxycycline may work.

Complete removal is not always possible. A deeply embedded or broken piece may be left in place if removing it would create more harm than benefit.

The wound is closed and covered with a dressing. Depending on the operation, you may receive a splint, boot, sling, crutches, or other support.

Recovery and what to expect afterward

Pain: Soreness, swelling, and bruising are expected around the incision. Pain is often treated with non-prescription or prescription medicine. Follow your discharge instructions, and do not take more than directed. Elevation and cold packs may help if your team recommends them.

Eating: You can usually drink and then eat after you are awake and any nausea has settled. Start with light food if the anaesthetic has upset your stomach.

Activity: Your surgeon will tell you how much weight, lifting, or movement is safe. Empty screw holes can temporarily weaken bone, so restrictions may continue even when the incision feels better. Keep the dressing dry and follow instructions about bathing, wound care, exercises, and use of a splint or boot.

Driving: Do not drive home. After anaesthesia or sedation, facilities commonly prohibit driving for at least the rest of the day and may require a longer restriction. You must also be able to control the vehicle safely and must not drive while taking medicines that impair alertness.

Work: A desk-based return may be possible within days for a small procedure. Work involving walking, climbing, lifting, or machinery may require more time. Your return date should reflect the operated limb, your restrictions, and your job duties.

Risks and possible complications

Possible risks include:

Risk is affected by the implant's location, the amount of scar or bone around it, your general health, and whether infection is present. Your surgeon can explain which risks matter most for your operation.

- Bleeding, infection, or delayed wound healing
- Injury to a nerve, tendon, muscle, or blood vessel
- Numbness, weakness, stiffness, or an uncomfortable scar
- Failure to remove all hardware or breakage during removal
- Continued pain even after successful removal
- Loss of bone stability or a new fracture through weakened bone
- Blood clots after some lower-limb procedures
- Reactions or complications related to anaesthesia

Results and follow up

The surgeon usually knows immediately whether the planned hardware was removed. You may receive an X-ray during or after surgery to confirm the result and check the bone.

Laboratory results take longer. If tissue or fluid was collected because of possible infection, culture results may take several days. Treatment can change when those results become available.

A routine follow-up visit checks the incision, swelling, movement, and use of the limb. Stitches or staples may be removed if they are not dissolvable. Further X-rays may be arranged when bone strength or stability needs monitoring.

Improvement in irritation may become noticeable as the surgical soreness settles. Pain relief is not guaranteed, especially when pain had more than one possible source.

Alternatives

The main alternative is to leave the hardware in place. This avoids another operation and the temporary weakening left by empty screw holes. It also means that hardware-related irritation may continue.

Other options depend on the reason removal was proposed:

Ask what is likely to happen if you wait, whether the bone is fully healed, and how likely removal is to address the specific problem.

- Activity changes, footwear changes, or padding: Avoid surgery but may only reduce pressure or irritation
- Pain treatment and physical therapy: May improve comfort and movement but do not remove a prominent implant
- Observation with repeat imaging: Allows more healing before removal but delays treatment of current symptoms
- Antibiotics and surgical cleaning with hardware retained: May preserve needed stability during some infections but may not fully clear an implant-related infection
- Revision or replacement of hardware: Restores stability when fixation is loose or broken but is a larger operation than simple removal

When to call your healthcare team

Contact the surgical team promptly for:

Seek emergency care for trouble breathing, chest pain, fainting, uncontrolled bleeding, or a limb that suddenly becomes cold, pale, blue, severely painful, or difficult to move.

Questions about dressings, stitches, activity limits, test results, or return-to-work paperwork can usually wait for routine office hours unless accompanied by urgent symptoms.

- Increasing redness, warmth, swelling, or drainage around the incision
- Fever or chills, especially with wound changes
- Pain that is worsening or not controlled as instructed
- New numbness, weakness, or difficulty moving fingers or toes
- A dressing soaked with blood
- A wound that opens
- Calf pain or one-sided leg swelling
- A fall or new injury involving the operated limb

Common questions

Will I be asleep?

You may be asleep under general anaesthesia. Smaller or more superficial removals may use local anaesthesia or a nerve block, sometimes with sedation. The anaesthesia team will explain the planned approach.

Can I drive home?

No. Arrange a ride if you receive sedation, general anaesthesia, or a nerve block. Follow the facility's instructions about when driving can resume.

How painful is hardware removal?

The incision and surrounding tissues are usually sore afterward. The amount of pain reflects the hardware's location, the amount of dissection required, and whether bone must be cleared from the implant.

When will I know if it worked?

You will usually know immediately whether the hardware was removed. It may take days or weeks to judge improvement because early surgical pain and swelling can hide the original symptoms.

Can the hardware break during removal?

Yes. Screws or other parts can break or may already be broken. A small buried piece may be left behind when retrieval would risk damage to nearby structures.

Will there be another scar?

The surgeon usually reuses the earlier scar when possible. The incision may need to be longer or placed differently to reach all parts of the implant safely.

Sources

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