

Plate, Screw, or Rod *and When the Metal Comes Out*

How surgeons hold a broken bone together from the inside, and whether the hardware needs to be removed later.

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Key Takeaways

- Screws, plates and rods are all ways to hold a fracture **still from the inside** while the bone heals.
- A **rod (nail)** down a long bone shares load and allows early walking; a **plate** suits bones near joints.
- Modern titanium and steel implants are **designed to stay in for good**. Most are never removed.
- Removal is for **symptoms**, not routine. It is a second operation with its own risks.

Once a fracture needs surgery, the next question patients ask is "what will you actually put in?" Plates, screws and rods sound intimidating, like the body is being turned into a hardware shop. They are really just three answers to one simple problem: how do you hold two pieces of broken bone perfectly still, in a good position, while the body knits them back together?

Here is how each one works, how the choice is made, and the question that worries people most: does the metal ever have to come back out?

Why fix a bone from the inside at all

A cast holds a bone still from the outside, and for many fractures that is enough. But when a break is displaced, unstable, or crosses a joint surface, an external cast cannot hold the pieces precisely enough. Internal fixation solves that by stabilising the bone directly, from the inside, so the fragments stay exactly where they should be. The metal does not heal the bone. It simply holds the position while your own biology does the healing.

The three workhorses

Screws are the simplest. A screw can pull two fragments together and compress them, which is ideal for certain clean breaks or to hold a small piece of bone in place. Screws are often used on their own for the right fracture, and they are part of almost every plate construct.

Plates are metal strips laid across the fracture and fixed to the bone on each side with screws. They are versatile and are a favourite near joints, in the forearm, the wrist, the collarbone and around the ankle, where precise alignment matters. A plate acts like an internal splint, bridging or compressing the break.

Rods, also called nails, are passed down the hollow central canal of a long bone, like the thigh bone or shin bone. Because the rod sits along the central axis of the bone, it shares the load rather than carrying it off to one side, which often allows the patient to start bearing weight and walking relatively early. For many breaks of the femur and tibia, a nail is the standard choice for exactly this reason.

There is no "strongest" implant in the abstract. The best fixation is the one that holds your specific bone, in its specific location, still enough to heal and stable enough to let you move.

How the choice is made

The surgeon weighs several things: which bone is broken and where, the pattern of the fracture, whether it enters a joint, the quality of the bone, and how soon we want the patient moving. A mid-shaft thigh fracture in an adult usually calls for a nail, because it lets them walk sooner. A fracture at the wrist or around the ankle usually calls for a plate, because alignment near the joint must be exact. A single clean fragment might need only a screw or two. The decision is tailored, not off the shelf.

Does the metal have to come out?

This is the question I am asked most, and the answer reassures most people: usually, no. Modern implants are made of titanium or stainless steel and are designed to remain in the body permanently without causing harm. They do not rust, they do not "expire", and for most patients they are simply left in place for life, quietly doing nothing once the bone has healed.

According to a survey of 500 orthopaedic and trauma surgeons indexed on PubMed, implants are mainly removed only in patients who have symptoms, and removal is not routinely performed in people who have no problems. The same survey noted that the great majority of surgeons work without any hospital guideline on the question, which is part of why advice can seem to vary. The mainstream position is clear, though: leave a comfortable, well-healed implant alone.

Why "just take it out" is not free

Removing hardware is a real operation, not a tidy-up. According to a hospital study on PubMed of routine implant removals, the complication rate was around 6 percent, many patients needed more than one day in hospital, and the large majority required general anaesthesia. Removal can also be technically tricky if a screw head is stripped or the metal has bony overgrowth. So taking out a plate that is causing no trouble means accepting the risks of surgery for no real benefit.

When removal does make sense

There are good reasons to remove hardware, and when one applies I am happy to do it. The common ones are a plate or screw that sits prominently under thin skin and rubs or hurts, hardware that is irritating a tendon, an implant involved in an infection, or a young, active patient where there is a shared decision that removal is worthwhile after the bone is fully healed. The thread running through all of these is a reason. Removal answers a problem; it is not a routine final step.

Living with an implant

For day-to-day life, a plate, screw or rod asks very little of you once the fracture has healed. You can exercise, fly, and go through life normally. Larger implants such as plates and rods can occasionally set off airport metal detectors, in which case you simply mention you have an orthopaedic implant. Beyond that, most people forget the metal is even there, which is exactly how it should be.

The bottom line

Plates, screws and rods are just three tools for one job: holding your broken bone still and in line so it can heal. The right one depends on your fracture, not on which sounds strongest. And in most cases the metal stays in for life, comfortably and safely. If anyone suggests removing healthy, symptom-free hardware as a matter of course, it is fair to ask why, because the evidence says routine removal usually is not necessary.

The evidence behind this article

Journal findings retrieved via PubMed.

1. AlOmran AK, Alosaimi N, Alshaikhi AA, et al. Burden of routine orthopedic implant removal: a single center retrospective study. *World Journal of Orthopedics*, 2024. Routine removal of asymptomatic implants carried a complication rate of about 6%, frequently required more than one day in hospital, and predominantly used general anaesthesia. doi.org/10.5312/wjo.v15.i2.139
2. Masoni V, Ciatti C, Andriollo L, et al. Implant removal: benefits and drawbacks. Results of a survey with five hundred participants from the Italian Society of Orthopedic Surgery and Traumatology (SIOT). *International Orthopaedics*, 2025. Surgeons reported that implants are not routinely removed in asymptomatic patients, and that most lacked any hospital guideline on the practice. doi.org/10.1007/s00264-025-06564-7

Findings sourced via PubMed. Implant choices and indications reflect standard orthopaedic practice and are general, not patient-specific. This article is educational and does not replace a consultation.

Dr. Vishnu's Perspective

Patients often assume the metal that fixed their fracture must eventually come out. For most people, it does not, and it should not. Every operation carries risk, and removing a perfectly comfortable plate just because it is there means accepting the risks of surgery for no real gain. I remove hardware when it is causing a problem, not as a routine.

Frequently Asked Questions

What is the difference between a plate, a screw and a rod for a broken bone?

They are different ways of holding a fracture still from the inside. Screws compress and hold fragments together. A plate is a metal strip fixed across the fracture with screws, often used near joints and in the forearm. A rod, or nail, is a metal rod passed down the hollow centre of a long bone like the thigh or shin, which shares the load and allows early walking. The surgeon picks the one that best stabilises that particular bone.

Does the metal have to be removed after the bone heals?

Usually not. Modern implants are made of titanium or stainless steel and are designed to stay in the body permanently without harm. Most surgeons do not routinely remove implants from people who have no symptoms. Removal is considered mainly when the hardware causes pain, irritation under the skin, or other problems.

When should orthopaedic implants be removed?

Implant removal is generally reserved for a reason: the metal is prominent and rubs or hurts, it is irritating a tendon, there is an infection, or the patient is young and the surgeon and patient decide together it is worth it. Removing hardware purely because it is there, in someone with no symptoms, is not routinely recommended, because it is a second operation with its own risks.

Is removing the metal a big operation?

It is a real operation, not a trivial one. It usually needs anaesthesia and carries its own small risks, including wound problems, nerve irritation, re-fracture and technical difficulty if a screw is stuck. In one hospital study, routine implant removal had a complication rate of around 6 percent and many patients needed more than a single day in hospital. That is why removal is a considered decision, not automatic.

Will I set off airport metal detectors with a plate or rod?

Sometimes, yes. Larger implants such as plates and rods can occasionally trigger metal detectors, though many do not. If asked, simply tell security you have an orthopaedic implant. A formal implant card is not usually required, but you can ask your surgeon for a note if it reassures you.

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