Ortho World
ILIZAROV & LIMB RECONSTRUCTION

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Patient Guide

Ilizarov and limb reconstruction — what to expect, from your first visit to recovery

This guide is for patients and families who are considering, or already having, limb reconstruction treatment. It explains what to bring, how the treatment works, what it asks of you, and when to call for help. Treatment with a frame usually takes **months rather than weeks**, and your care and patience matter as much as the surgery. Keep this guide with you and bring it to every visit.

1 Your first visit

Please bring

- ☐ All X-rays, CT and MRI scans — films and CDs, old and new
- ☐ **CDs copied onto a pen drive as well.** Many CDs cannot be read on newer computers, so a pen drive copy makes sure nothing is lost
- ☐ Previous operation notes and discharge summaries
- ☐ A list of your current medicines
- ☐ Insurance card, Ayushman card, CGHS or ECHS card, and Aadhaar
- ☐ For children: birth and vaccination records, and details of earlier treatment

Before you come

Wear loose clothing so that the limb can be examined properly.

We will usually ask for **full-length standing X-rays of both legs**. These are essential for planning and cannot be replaced by short films of one area.

Email us before you travel

Before coming for pre-evaluation, email your case details — a short history, your X-rays, scans and previous reports — to **enquiry.drhoda@gmail.com**. We review them in advance and tell you what else is needed, so that your first visit is not wasted. This matters most if you are travelling from another district, state or country.

2 Are you a candidate?

This treatment may help if you have

- A fracture that has not healed (non-union)
- A bone that healed crooked or short (malunion)
- One leg shorter than the other
- Bow legs or knock knees causing pain or difficulty
- Long-standing bone infection with a discharging wound
- A missing segment of bone after injury, infection or tumour
- A neglected or relapsed clubfoot

It may not be the right choice if

- A simpler treatment can solve the same problem
- You cannot attend regular follow-up for several months
- Other health problems make a long treatment unsafe

Heavy smoking and uncontrolled diabetes slow bone healing and must be dealt with first.

The treatment needs patience and teamwork from the whole family. If we think surgery will not genuinely help you, we will say so.

3 Before surgery

Tests and health checks

- Blood tests, ECG and any other tests we advise
- A physician's check if you have diabetes, blood pressure or heart problems
- Tell us about blood thinners, diabetes medicines and any allergies

Stop tobacco

Stop cigarettes, bidi, gutkha and khaini **at least four weeks before surgery**, and do not use them at all during treatment. Tobacco delays bone healing more than almost anything else, and increases pin-site infection.

What to pack

- Loose shorts, pyjamas, wide-leg trousers or a lungi that fit over a frame — trousers with a side zip or an opened seam are easiest
- A walker or crutches, if advised
- Toiletries and all your reports

Two practical points

- Do not eat or drink for six to eight hours before surgery, or as the anaesthetist advises
- Arrange for a family member to learn the frame adjustments and pin-site care along with you

Our team will start insurance or government-scheme pre-authorisation for you.

4 Living with the frame

Cleaning the pin and wire sites

Clean pin sites are the single biggest thing you can control. Pin-site infection is the most common problem with a frame, and good daily care prevents most of it. Clean **once a day, or as your team advises**:

1. Wash your hands well with soap.
2. Remove the old dressing gently.
3. Clean each pin site with fresh sterile gauze or a cotton bud dipped in the solution your team gives you — for example sterile saline, or boiled and cooled water. **Use a new bud for each pin.**
4. Wipe outwards, away from the pin, removing any crust or dried discharge.
5. Let it dry, then apply a fresh dressing if advised.
6. Wipe the rings and rods with a clean cloth.

Do

- Look at every pin daily for redness, swelling or discharge
- Keep the dressings clean and dry
- Cover the frame with a clean cloth when you go outdoors
- Walk and exercise every day as advised

Do not

- Apply oil, ghee, turmeric, toothpaste, powder or any home remedy
- Touch the pins with unwashed hands
- Sit in dusty or muddy places, or let pets lick the frame
- Remove, bend or tighten any wire, pin or nut yourself

Early pin infection means increasing redness, pain or discharge around one pin. Clean it twice a day and call us the same day. Caught early, it usually settles quickly with antibiotics.

Daily life

Walking. Walking on the limb helps the new bone grow stronger. Put as much weight through it as you have been told, using a walker or crutches, several times a day.

Exercises. Move every joint near the frame many times a day, as the physiotherapist shows you. Stiff joints are very hard to recover later. Keep the foot at a right angle using the foot plate or strap; do not let it point downwards.

Bathing. Sponge bath until your doctor allows a shower, usually after two to three weeks once the pin sites are dry. Dry and clean the pin sites straight afterwards. Do not bathe in a pond, river or tank.

Sleeping. Rest the limb on a pillow to reduce swelling. A pillow between the legs stops the frame knocking the other leg.

Food. Eat a protein-rich diet — milk, curd, paneer, eggs, dal, fish, chicken, green vegetables and fruit. Drink plenty of water. Take calcium and vitamin D if prescribed.

School, work and travel. Many patients return to school or desk work within a few weeks. Ask your doctor before doing heavy work. Short journeys are fine — protect the frame from knocks and dust.

Turning the frame

If your treatment involves lengthening, correction or bone transport, the frame is adjusted every day, usually **1 mm a day split into four small turns of 0.25 mm**. The team will teach you or a family member and mark the frame for you. Turn exactly as instructed — the right amount, the right direction, at the right times. **Never skip turns, and never do extra turns to finish sooner.** Too fast and the new bone does not form; too slow and it joins too early. Some ache during turning is normal; severe pain, numbness or tingling is not.

Go to hospital immediately if you have

- Toes or fingers that are cold, pale, blue, or numb and cannot move
- Severe pain that does not settle with painkillers
- Calf pain and swelling, chest pain, or sudden breathlessness
- High fever with chills

Call us the same day if you notice

- Redness, swelling, pus or a bad smell around a pin
- A loose, bent or broken wire or pin, or a wire that clicks when you walk
- New tingling or numbness during frame adjustment
- A nut or clamp that has come loose
- The foot or toes starting to bend or point downwards

Do not wait for your next appointment if you are worried. Early care prevents bigger problems.

5 Recovery timeline

1. **Surgery and frame application.** The operation usually takes two to four hours. Most patients stay in hospital three to seven days and start walking with a walker within one to three days.
2. **Rest period, about 5 to 10 days.** Healing begins. No adjustment yet.
3. **Lengthening, correction or transport.** Small daily adjustments, usually about 1 mm a day, until the planned length or correction is reached.
4. **Hardening (consolidation).** Adjustment stops and the frame stays on while the new bone becomes strong. This is usually the longest phase.
5. **Frame removal.** Once X-rays show strong bone, the frame is removed in a short procedure, often as day care. A plaster or brace may protect the limb for some weeks.

6 **Rehabilitation.** Physiotherapy to regain strength, movement and normal walking. Follow-up continues until your doctor discharges you.

As a rough guide, each centimetre of lengthening needs about **one to one and a half months in the frame**. Adults, smokers, people with diabetes and infected cases usually take longer. The length of every stage depends on your age, your condition and how much correction is needed — your surgeon will give you a personal estimate and update it at each visit.

6 Treatment options compared

Option	How it works	Frame visible?	Weight bearing	Usually suited to
Ilizarov ring fixator	Rings and thin wires outside the limb, adjusted daily	Yes	Usually allowed early	Complex deformity, infection, bone loss, poor skin; children and adults
Hexapod frame (TSF)	Ring frame with computer-planned struts	Yes	Usually allowed early	Complex deformities in several planes at once
Monorail fixator (LRS)	A single bar on one side of the limb	Yes, smaller	Partial	Lengthening and transport in selected bones
Lengthening over, or then, a plate or nail	Frame does the lengthening; an internal implant holds the result	Yes, for a shorter time	Varies	Selected patients, to reduce time in the frame
Internal magnetic lengthening nail	A nail inside the bone, lengthened by an external magnet	No	Limited during lengthening	Selected adults with no infection and suitable bone size

Every option has advantages and limits. Cost, bone size, infection, age and skin condition all matter. We will explain which option suits you, and why.

7 Questions to ask your surgeon

Tick the ones you want answered and bring this page to your appointment. No question is too small.

- ☐ What exactly is my problem, and what happens if I do not treat it?
- ☐ What are my treatment options, including non-surgical ones?
- ☐ How long will the whole treatment take?
- ☐ How many operations are likely?
- ☐ What can I do and not do — work, school, travel?
- ☐ What are the possible complications, and how are they managed?
- ☐ Who do I call if there is a problem with the frame?
- ☐ What will it cost, and is it covered by my insurance or scheme?

8 Words you may hear

Consolidation — the stage when the new bone hardens.

Corticotomy / osteotomy — a controlled cut in the bone.

Deformity — a bone that is bent, twisted or short.

Distraction osteogenesis — growing new bone by separating bone ends very slowly.

Docking site — where the moving piece of bone meets the other end in bone transport.

External fixator — a frame outside the limb that holds the bone.

Latency — the rest period after surgery, before adjustment starts.

Limb length discrepancy — one limb shorter than the other.

Malunion — a fracture that healed in the wrong position.

Non-union — a fracture that has not healed.

Osteomyelitis — infection of the bone.

Pin site — where a wire or pin passes through the skin.

Plantigrade foot — a foot that rests flat on the ground.

Regenerate — the new bone forming in the gap.

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Emergency: _____

Send your case details to
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Website: www.drhoda.in

My next appointment: _____

This guide gives general information for patients and families. It is not a substitute for a consultation, and it does not replace the specific instructions your surgeon and physiotherapist give you. Every patient is different: treatment plans, duration and results vary and are discussed individually. In an emergency, call the emergency number or go to the nearest hospital.