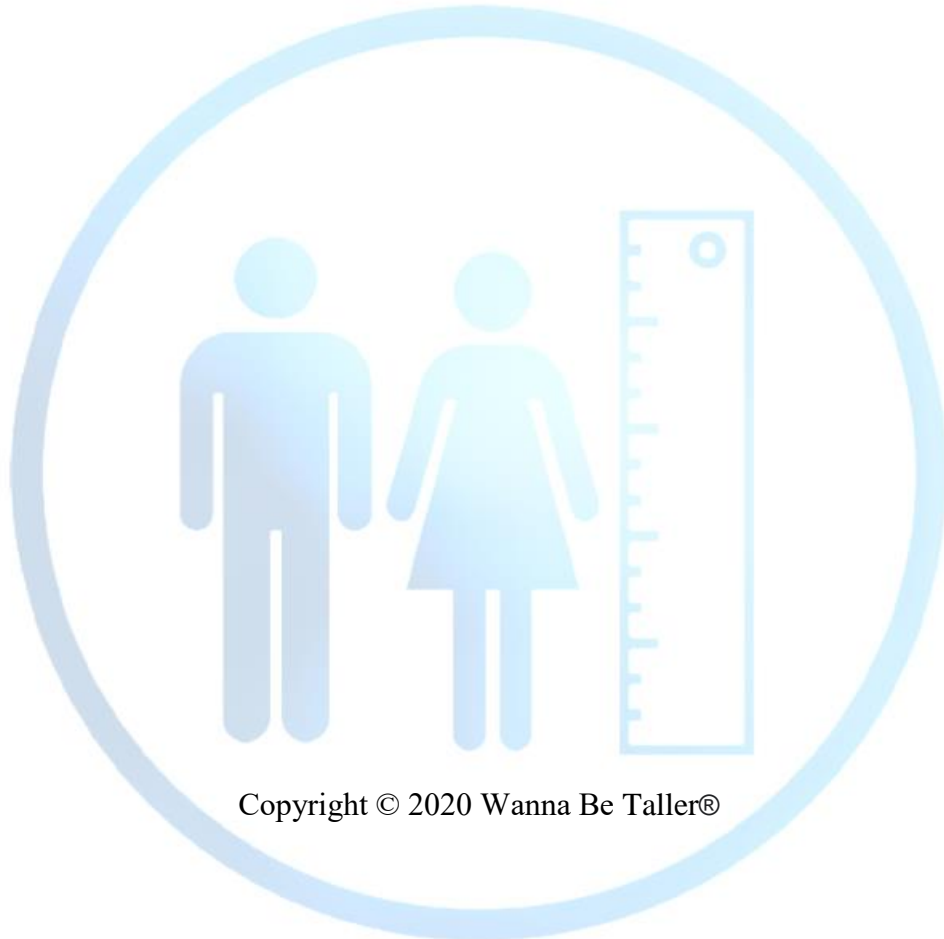


COMPLETE GUIDE TO LIMB LENGTHENING SURGERY



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For more information about limb lengthening surgery from our experts, contact us via WhatsApp
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What is Limb Lengthening Surgery?

Cosmetic limb lengthening is a procedure in which the major bones of legs (either femur or tibia) are surgically cut, then metal fixators are attached to legs, and with the help of these devices, growth of the bones are achieved on a daily basis.

This surgery is based on distraction osteogenesis principle, which means the height gain is achieved by distracting the severed bone, which generates new bone tissue, thus making the bone grow in length. For this purpose, external, internal or combined fixator systems can be applied, but the basic principle will remain the same.

The purpose of cosmetic limb lengthening operation is to increase patient's height for cosmetic purposes. Up to 7-8 cm (around 3 inches) height gain is possible in one procedure. By undergoing two consequent surgeries, it is possible to gain an absolute maximum height gain of 12-15 cm (or approx. 5-6 inches).

Post-surgery period is at least as important as the surgery itself. After a successfully performed limb lengthening surgery, months of bone distraction, physiotherapy, exercising and recovery period begins. It is a gradual and critical process which demands responsibility, patience and effort from the patient.

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Step by Step Guide to Limb Lengthening Surgery

1) Contact Our Patient Consultants

You can contact us via email, WhatsApp, voice calls, Facebook and Instagram and get FREE consultation service and extensive information about limb lengthening methods, pre and post-surgery procedures and services. We provide free consultation, because we believe you have all the rights to learn everything about limb lengthening before making a decision and actually proceeding to it. If you want more technical and detailed info about surgical techniques, used materials, devices or just have an online chat with surgeons we work with, you can book a paid video consultation session by making a request to patient consultants.

2) Making a Decision and Reservation Process

After acquiring all info you need, you can make your choices of surgery method, doctor, the part of limb you are planning to have operated (femur or tibia for legs, forearm/humerus for arms), plan a date for your surgery, decide whether you are going to stay in Turkey for the duration of treatment or return home after a brief hospital stay. By properly filling out the form provided by our patient consultants, you will let us know about your decisions and preferences, thus enabling us to provide you highest quality services in nearest times. If you have difficulties in making choices, you can always contact your patient consultant for further info and guidance.

To reserve a date for your surgery it is important to get the doctor, hospital and surgery materials ready. By paying 10% of the surgery cost as a deposit you can make a reservation for the date you are planning to come. Paying a deposit give the following advantages:

- Reserving the desired date for your surgery
- Securing the current price of surgery for that date and guaranteeing yourself from possible price increases
- Benefiting from any possible price drops, deals and vouchers that will be active from the date of your reservation till the date of surgery

We will provide you a document confirming your reservation after deposit is paid. When you come for surgery, you will pay the remaining 90% of the surgery cost.

For deposit regulations and refund policy, please check Deposit Agreement on our website.

3) Preparing for Your Visit to Turkey

It is very important to get info about what kind of document you need to enter Turkey. We are able to provide help in getting e-visas/regular visas, or residence permits in case you plan to stay for long periods and your visa doesn't allow to do so. Also it is recommended to book airplane tickets long before your travel, so that you do not miss your surgery date due to tickets being sold out on that date.

It is highly recommended to come with a caretaker. This can be a parent, sibling, relative or anyone close to you. Especially in the first week after surgery, there can be high levels of pain and due to limited ability of movement, you may feel more comfortable with somebody around, staying with you. For this reason, we have included a caretaker service in the surgery cost you pay. A caretaker speaking your language will be around whenever you want during your hospital stay. But you may feel lonely if you move to hotel, so a friend or family member may be a great idea.

4) Your visit to Turkey and Pre-Surgery Procedures

Our staff will wait for you at the airport. Once you arrive, you will be taken to your 5-star hotel for a good rest. On the next day, you will be taken on a guided city tour to see our beautiful Istanbul city, enjoy local meals and best sights. Then the driver will take you to hospital for a meeting with doctor and important tests to make sure you are eligible for this surgery. Test results are usually arranged later on the same day, or on the next day.

Once you tick all the boxes, you can proceed to payment. The preferred payment method is bank transfer (money wiring), but on special requests, a credit card or cash can also be accepted. As bank transfers usually take around 1-3 working days to be processed, in order to save your time, you can initiate the payment in your country a few days before you come. In this scenario, your payment will have arrived to our bank account and there will be no delays in your surgery.

After every step before surgery is completed, a consent form will be presented to be signed by you. Once you give consent for the surgical operation to be performed, you will be taken to hospital for surgery.

5) Shortly After Surgery

Congratulations on having your limb lengthening surgery successfully! On the next day after surgery, we will provide you a walker to make your first steps (Precice 2.2 method is an exception, because you cannot walk for the first 2-2.5 months or so in this method. You will be gifted a wheelchair to move around). It will be difficult at first, but with your strong will, you will make it. A caretaker will be at hand for your additional needs. After 4-5 days, when you are about to be released from hospital, your doctor will give necessary instructions about how to make daily distraction (lengthening), how to clean pin sites and

change bandages, and what to do to improve your walking and reduce pain. We will double check to make sure you can do these on your own. Now you are good to go.

If you initially planned to return to your home country, we can take you directly to the airport. Before leaving, the doctor will issue a flight permission report, so that you don't have difficulties boarding the plane with fixator devices on your legs. Using this report, you can also ask for help from airport staff to help you board the plane.

In case you prefer staying in Turkey for a week, ten days, or even till your distraction is over and external fixators are removed (Ilizarov, Holyfix and LON methods), we can help you find accommodation (a hotel, house or flat depending on your preferences and budget). Since we have agreements with several hotels, we are able to get lower than regular prices for our patients. More info on hotel and other service costs will be provided later.

6) Distraction (Lengthening) Period

Now you are on your daily journey to become taller. You use the screws on external fixators (Ilizarov/Holyfix/LON) or electronic controller (Precice 2/Stryde) to make your legs longer by around 1 mm every day. Due to having fixators on your legs, and due to bones being previously cut in the surgery, it is natural to have high amounts of pain. Luckily, an amount of painkillers will be provided before you leave the hospital.

On the week 2-3, most patients feel enough improvement to be able to walk with crutches, one crutch or no support at all. At this point, pain have minimized, walking ability has increased and overall feeling is better. But this is not the end yet.

In around 1 month or more, when you have reached 3-4 cm, there will be enough tension in leg muscles to cause muscle pains, feeling of tension and discomfort. This is the time to get assistance from a physiotherapy professional. It is highly recommended to get at least 1 physio session per week, however 2-3 sessions per week is obviously better and will have more positive effects. You can do complimentary daily exercises on your own, but this is not always enough. You will be also encouraged to walk a certain distance every day despite the pain and difficulties. The more you force yourself to walk, the faster the bone regeneration process will be.

To monitor your distraction and bone regeneration progress, an x-ray of your legs will be taken once or twice a month. (X-rays in post-surgery period are not covered by surgery cost, but we will do our best to get minimal prices for you from imaging centers). If you are in your country, you can communicate with your doctor over phone or Internet and send x-rays, photos and videos for professional opinion. After consulting with your doctor, it may be beneficial to see a local doctor as well if you feel there is a need. For general questions feel free to ask us anytime you want and need. For more professional opinion and medical and technical questions, please always refer to your surgeon.

If you stay here in Turkey, we can arrange transportation for you to go to doctor controls. Also, at a reasonable price, we can arrange a physiotherapist, doctor assistant, or nurse to visit you several times a week depending on your needs. For your convenience, provide service packages that include most necessary services compiled together.

- a. Comfort package:
 - i. Accommodation at a 3-star hotel + 2 meals a day
 - ii. Physiotherapy (monthly, 1 session per week)
 - iii. X-rays
 - iv. Medications

- b. Luxury package:
 - i. Accommodation at a 4-5-star hotel + 2 meals a day
 - ii. Physiotherapy (1 session every two days)
 - iii. X-rays
 - iv. Medications

Please note that these packages were made for the convenience of patients by getting deals from hotels and other facilities. It is difficult to get these prices from the same facilities as regular clients, and to help our patients save their money and time we have gathered essential services into packages. The prices are subject to change, but the patient will always be informed in such cases.

7) End of Distraction and Removal of Devices

With proper physiotherapy and good hygiene level, you will finish distraction and reach your aim height with minimized risk of complications. In Precice 2.2 method, after distraction is over, you will now be allowed to walk again. Initially you will need some kind of support, but walking more and more, as well as continuing exercising and physiotherapy, your walking will improve and you will quickly return to your regular daily life. In Precice Stryde method, patients are able to walk relatively more easily even during distraction, but after it is completed it will be easier to walk each following day. After 1-1.5 years have passed from your operation, the internal nails can be removed. Internal nail removal is optional and these nails can remain inside the bones without causing health problems to the patient. They can be removed at a later date, or not be removed at all.

In external and LON methods, there are external devices to be removed before you can enjoy your life with your new height. By examining your x-rays, the doctor will tell when to come to have the devices removed.

In Holyfix/Ilizarov methods, the devices can be removed only after FULL consolidation of operated bones. This usually takes 9-12 months from the date of operation and this

duration depends on patient age, bone regeneration speed, the efforts of patient in walking, nutrition etc.

In LON method, in around 2-4 weeks after distraction is over, the doctor will evaluate your x-rays and invite you for external device removal. It means you can get rid of external fixators in 3-5 months depending on the lengthening amount, compared to 9-12 months in fully external methods. After externals are removed, you will quickly be able to return to work, studies and your daily routines. Regardless of the chosen surgery method, doing sports involving leg movement and weight bearing is only allowed after full bone consolidation.

After bones have fully consolidated, the internal nails being used in LON can also be removed.

It becomes obvious that there are two relatively minor device removal surgeries in LON method and one device removal surgery in Holyfix, Precice 2 and Stryde methods. Each surgery of device removal costs 750 eur and can be paid when coming for device removal surgery.

8) Before Enjoying Your New Height

Please do not forget that we are always happy to help and answer your questions, till the day you fully recover from your limb lengthening procedure and enjoy your taller and healthy life. Even after you return to your daily lives and forget about all those painful days and nights, we will be glad to see you here in Istanbul for a cup of tea or coffee, or spend some good time together in our beautiful city.

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Limb Lengthening Surgery Methods

Ilizarov Method

Ilizarov fixator was named after the Soviet surgeon and inventor, Gavriil Ilizarov. It has many variations, modified by various doctors all over the world. Nevertheless, all Ilizarov fixators consist of a circular metal frame, and thin wires that go through this frame. The circular structure makes the device sturdy and reliable enough to bear the patient's weight. The pins go through the soft tissue and bone, to hold the bone in place. The frame is adjustable from various points. It is an advantage because it allows the surgeon to correct any deviations of the bone during lengthening process.

Ilizarov method is the cheapest limb lengthening method in use. The system has its disadvantages though. These fixators are extremely bulky and heavy. It means especially when applied to femurs, they cause huge amount of discomfort when walking, and sleeping. Sitting is almost impossible. For this reason, patients with the intention of cosmetic leg lengthening are limited to lengthening tibia. It is also difficult to find a suitable pair of trousers to wear over the fixators. Combined with the long period of fixation, which is up to 1 year or so, one can imagine how exhausting and nerve wrecking the whole procedure can be. For the mentioned reasons, in modern days, Ilizarov method is being used for medical purposes instead of cosmetic.

Holyfix method

This is a fully external method based on the Ilizarov technique. Holyfix method is a monolateral rod type method that has been used in success since 1997. It is an improved version of Wagner and De Bastiani's methodology.

In other words, monolateral external fixators are attached by pins to the patient's legs. The nails are attached to the nearest and safest area, especially not near any vein and nerve. The chances of open wound infection is very small.

Holyfix apparatus is made of a special, aluminum and titanium alloy, thus lighter in weight and is MRI and radiology compatible. Hence, making this biomechanical system extremely stable and safe; allowing the patient to walk during the treatment phase. This device makes the distraction (bone lengthening) process very practical and easy, allowing the patient to perform extensions on their own. In addition, Holyfix apparatus has such a superior design that it allows for accelerated bone formation and transfers the burden from the bone without any shortening (Dynamization). However, it shares the same disadvantage with Ilizarov, because the Holyfix fixators should remain on legs till bones fully consolidate (9-12 months).

LON Method

LON eliminates most of these difficulties of Ilizarov and Holyfix methods off the shoulders of our patients. LON stands for Lengthening Over Nails. This method has two types of fixators used in combination: an external fixator and an intramedullary nail, which is implanted into the bone cavity. The external device can be an Ilizarov fixator, a monolateral (rod-like) fixator, or any other device developed by some doctor anywhere, it is mainly up to the preference of the surgeon who practices limb lengthening. Because it is much more compact, lighter, easier to maintain and it is easier to track your lengthening progress on the scale of the fixator.

Internal fixation plays a significant role in LON method. Firstly, it adds extra stabilization to the bone by preventing deviations. Additionally, it allows a much earlier removal of external devices. With this approach, patients only spend around 3-4 months with external devices on their legs compared to 9-12 months in completely external methods such as Ilizarov. The internal nails continue to hold the bone from inside for some more time. They are removed after full consolidation of bones.

PRECICE 2.2

Precice nail was developed by Nuvasive. It is a completely internal limb lengthening system. Due to lack of external fixation, there is overall less pain and discomfort for the patients. There are no open pin sites which you can see in LON method. The intramedullary nail is placed in to the bone and the cuts are stitched and closed. Which means there is no way for infection to penetrate, and no need to regularly change bandages to avoid infection. When there are no pins and pin sites, there are also less scars after recovery. The scars are almost invisible on most skin types, and they are in form of thin lines. When sleeping or lying on your bed or couch, you feel more comfortable because there are no external fixators that would limit movement.

Precice device allows both lengthening of the bone and shortening, which is a very important feature. Because in some patients, there might be a need to reverse the lengthening process, if the bone consolidates slowly or there is unbearable pain caused by too much tension.

Internal nail removal is an optional procedure in Precice method. After full consolidation of bones, the patient may decide whether to have the internal fixators removed or keep them.

PRECICE STRYDE

Precice Stryde is the latest version of Precice intramedullary nails. It became available worldwide in 2019. The main improvement here is increased weight bearing capacity.

After Stryde surgery, patients are able to walk throughout the procedure. In the first several days or weeks, they may require a support but later it becomes easier to walk.

Comparison between Precice 2.2 and Precice Stryde

- The new “PRECICE STRYDE” system has essentially reduced the difficulties of its older counterpart “PRECICE 2” system:
- “PRECICE STRYDE” nails are made of stainless steel, which has been proven as being much stronger and sturdier than “PRECICE 2” intramedullary titanium-made nails.
- The older “PRECICE 2” system was not full weight-bearing, as the titanium nails could only bear the partial weight of the patients thus the use of wheelchairs was necessary to move around. However, with “PRECICE STRYDE” and its stainless steel nails can easily bear the full weight of the patients; thus with only a few weeks of crutch/walker usage, then the patients can move around with ease and without any external support mechanism.
- With “PRECICE STRYDE” the usage of ‘blood thinning medication’ is not necessary.

As you may notice that “PRECICE STRYDE” is a more advanced version of the technology already in use under the “PRECICE 2” system, and soon it is meant to eliminate and replace the need for “PRECICE 2”, altogether.



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The Pre-Requisites for Undergoing Limb Lengthening Surgery

There are certain general factors which may disqualify a patient from having limb lengthening surgery at all.

Certain diseases may restrict a patient from undergoing limb lengthening surgery:

1. Diabetes
2. High blood pressure
3. Heart diseases and conditions
4. Bone degenerative diseases
5. Genetic bone disorders
6. Smoking (doctor may accept the patient only after giving up smoking)
7. Anemia

These are just the basic factors which may disqualify some patients from having the surgery; moreover, it is always highly advisable to consult your doctor or medical health care provider for a more accurate assessment.

Physiotherapy and exercising

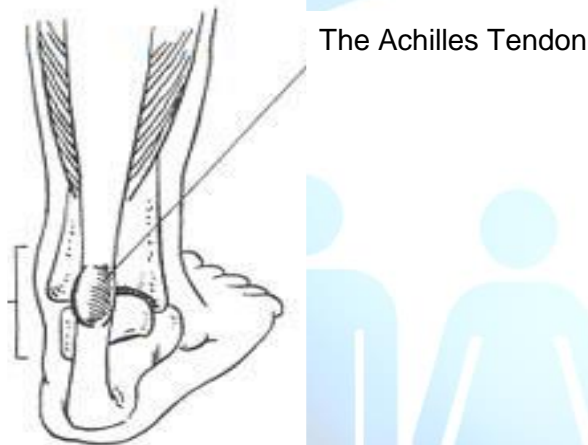
Once, you have been given the go ahead by your doctor or health care provider, that you are qualified to have the surgery and you are mentally prepared for the surgery and have booked and finalized the procedure; it is vital that the patients start physiotherapy at least 3-4 weeks before having the surgery.

Physiotherapy and exercising is so important in maintaining the proper posture and growth of the muscles and nerves, that it is recommended to start doing exercises 3-4 weeks in advance in order for the muscles and nerves to be flexible and allow for a more comfortable and less painful experience for our patients.

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I. Physiotherapy before the surgery (Pre-Surgery)

Prior to the surgery, the most important muscle to exercise for a smooth and less painful lengthening experience is the Achilles tendon, especially in case of a tibia lengthening surgery. The Achilles tendon is the thick tendon above the heel that attaches the calf muscles to the heel bone.



Calf Stretching and Strengthening exercises

Calf stretch (Stretching exercises): This exercise will feel like a pulling sensation in the tendon, which is normal, and you must try to avoid feeling pain during stretching. Repeat 5-6 times per day. Hold each stretch for 30 – 60 seconds.

1. Knee straight: You will have to place the leg you are aiming to stretch behind you; while keeping your heel on the ground, knee straight and your toes pointed straight ahead. Now, lean forward until you feel a gentle stretch in your calf.



2. Knee bent: You will have to place the leg you are aiming to stretch behind you, while starting a little closer to the wall. You must keep your heel on the ground. And now, bend your back knee until you feel the stretch in the lower part of your calf.



Sitting heel raises (Strengthening Exercise no.1)

1. You must sit upright on a chair and rise up onto your toes as high as you can without feeling pain. Then lower your heels, slowly. You must complete at least 20-25 reps without pain and must perform this 5-6 times per day



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2. Now, you can add resistance by pressing down on your thigh with your hands, or by placing a weight on your thighs; and you must complete 20-25 reps without pain.



Standing Heel Raises (Strengthening Exercise no.1): Now, you must use both feet to rise up onto your toes and then lower the heels, slowly. Post-Surgery, you may use this exercise with assistance, so that there is no pain. It is important to exercise the lengthening legs so that they may do most of the work at this stage. You must complete 20-25 reps without pain.



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You may further progress these exercises by either:

- You may increase the weight on the treated limbs slowly and gradually and the goal is to reach 20-25 reps without pain.
- Do the heel raises while only with the treated legs, with the goal to reach 20-25 reps without pain.
- Place your toes on the edge of a step. Use two feet at first and follow the same movement.

You must allow your heels to slowly drop below the step as you complete 20-25 reps.



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II. Physiotherapy after the surgery

After, the surgery, it is very natural for the patients to spend a lot of time in bed; which may, in turn, weaken the muscles and slow blood circulation, as well. Thus, it is vitally essential to maintain a good muscular strength and blood circulation, by physiotherapy exercises.

Your physiotherapist will advise you which of the exercises which are best for you, depending on your surgical method selection and body type.

The exercise below mentioned, must be repeated every hour in the recovery period until you are regularly up on your feet.

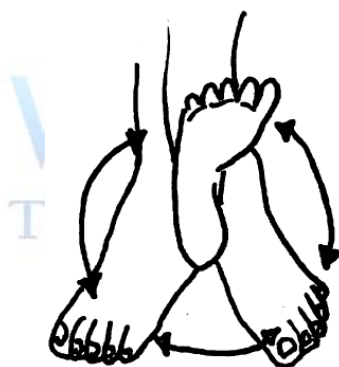
It must be remembered that your recovery progress is hugely dependent on the amount of effort and determination that the patients puts in; thus in order to get the best results, self-motivation is the key factor.

Now, the aim of your bed exercises are:

- To help maintain and improve muscle strength and movement
- Help with the patient's ability to relieve pressure in the treated area
- Reduced pain and prevent the risk of muscles becoming tight and cramping
- To allow for an easier and less painful post-surgery recovery.

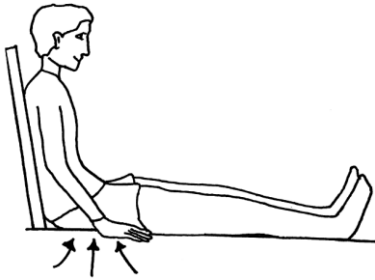
8 Essential Bed Exercises – For Muscular strength and Blood Circulation (Post-Surgery)

1. Foot and ankle - Bring your toes and feet towards you and point them away again.



Repeat x 10

2. Buttock squeezes - Tighten your buttock muscles, hold for 5 seconds then release.



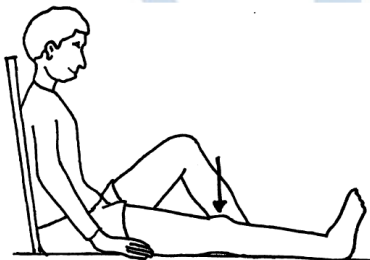
Repeat x 10

3. Knee bending - Bend and straighten your hip and knee by sliding your foot up and down the bed.



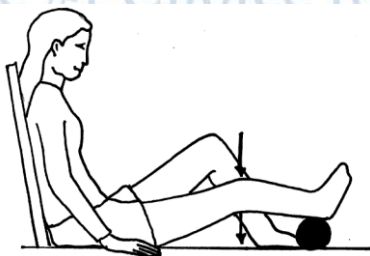
Repeat x 10

4. Knee straightening - Sit upright with your leg in front of you. Bring your toes towards you and press your knee down into the bed by tightening your thigh muscles. Hold for 5 seconds.



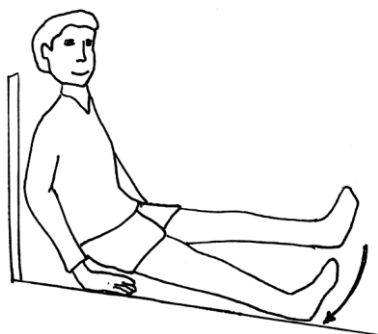
Hold for 5 sec. Relax and repeat.

5. Knee hangs - If you are unable to straighten your knee fully, you can help this by lying down and resting your heel on a thick rolled up towel. Allow your knee to 'hang'.



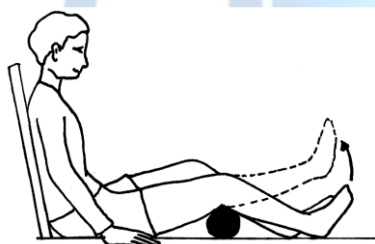
Tighten your thigh muscles. Hold for 5 sec. Relax and repeat

6. Leg sliding - Keeping your leg straight and your toes pointing towards the ceiling, slide your leg out to the side as far as you can manage, then slide back in.



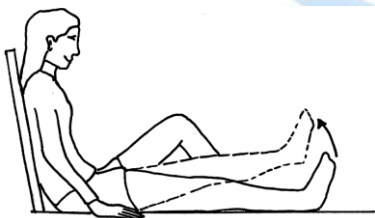
Repeat 10 times.

7. Quadriceps - Place a rolled up towel or pillow under your knee. Squeeze your thigh muscles to lift your heel up off the bed. Hold 5 seconds then relax.



Repeat 10 times.

8. Straight leg raise - Keeping your knee straight lift your whole leg slowly off the bed. Hold 5 seconds then relax.



Repeat 10 times.

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These are just a few of the basic Physiotherapy exercises which are essential both pre and post-surgery lengthening. Furthermore, your physiotherapist may include these exercise and many more in a regiment suited to your body factors and routine.

Side Effects and Complications Associated with Limb Lengthening Surgery

I. Side effects

Pain

The main and most common side effect of this surgery is pain, which is quite natural. All of our patients experience varying degrees of pain at least on some points of their procedure. As you probably know, the bone is cut with special tools during bone lengthening surgery. This is called osteotomy. It is a major cause of pain, especially in the first few days after surgery. If the applied surgery method involves external fixation, such as Holyfix, Ilizarov or LON, then there are metal pins used to attach the fixator to the leg. These pins pierce the soft tissue and go through the bone, and the caused damage to soft tissue also causes pain. These two kinds of pain go away or at least subside after approx. 1-3 weeks from the surgery. Then there is another kind of pain, which begins to show itself when patients reach a certain amount of bone lengthening. This type of pain is caused by the nerves being stretched and experiencing high tension. For some people it may happen when patient reaches 4-5 cm, for others it may be 6 cm or 7 cm. To reduce the tension in legs, the muscles of legs have to be trained and adjust themselves to the new length of the bones. It can only be achieved by physiotherapy sessions and stretching exercises. If these are not done, the tension will remain and so will the pain and limitations of movement.

Swelling

It is quite typical to see your legs and feet becoming swollen, right after you wake up from your limb lengthening surgery. This is due to oedema, which is our body's natural reaction to surgical injuries. The swelling of the legs and feet reduces significantly in approximately 10-15 days after surgery and disappear over time. This symptom is nothing to worry about.

Muscle Cramping and Contractures

Generally, this is the most common side effect associated with limb lengthening surgery; as bone distraction happens the muscles and nerves are pulled apart slowly and can cause the muscles to tighten and cramp. It is common for a muscle contracture to occur; which happens when a muscle gets too tight and pulled that it does not allow the joint moves freely and entirely. The only real and preventative solution to this complication is

Physiotherapy (PT); hence it's essential to have several sessions of PT per week and regular regime of exercise and stretches daily. Generally, surgeons advise PT to every patient of LL surgery; as it is the only way for the muscles and nerves to adapt to the new bone growth and allow movement with muscle growth simultaneously. Thus, the patients need to maintain the proper movement of their ligaments and prevent contractures during distraction as it helps in reducing the time required to return to normal after the distraction phase is completed.

Being unable to extend or fully move limb or joint

It mainly happens due to daily stretching of bones. We see our patients having difficulties to move their knee as they wish, and the limitation increases as they make progress with their bone lengthening. You may prevent this symptom from becoming worse, by exercises and physiotherapy, and try to be as physically active as possible throughout the day. Too much rigidity, sitting or lying on a bed will do no good for a limb lengthening patient.

Blood Accumulation

Dense blood accumulation is not expected in the areas treated after surgery. Precautions are taken for this purpose. However, if there is any blood accumulation, it is necessary to consult a doctor.

Bruises

It is normal for bruises to appear around the incisions opened during surgery. These are expected to go away on the days following the procedure.

Hunch when walking

Your height does not increase immediately after the lengthening surgery. After the procedure, there is 1 mm elongation every day. With both systems, internal and external, full weight immediately after the procedure, is never recommended. Slowly and gradually, patients can start to exert weight on their legs and because of all this, walking with a slight hunch may happen; which is normal. Once the healing process is completed, walking posture becomes more natural and correct; owing to regular physiotherapy session.

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II. Complications

Infection

Infection is one of the possible complications when external fixation is involved. Here, we are mainly speaking about methods such as Ilizarov, Holyfix and LON. The pin sites, where the pins enter the skin, are in form of circular openings. These are covered with bandages treated with antiseptics, right after the surgery. It is very important to change these bandages regularly, and treat the wounds with antiseptics to avoid infection. However, approximately 2-3 patients out of 10 patients get infection. It is not difficult to find out you have infection. The typical symptoms are: redness, swelling and increased pain at the pin sites, as well as yellow pus and discharge. It takes some time for the surface infection to turn into something serious, but patients must inform their doctor as soon as they find out there is something wrong with pin sites. It is quite treatable with oral antibiotics, combined with local application of antiseptics, in short period of time, usually in 1 week or so.

I would like to note that in patients who undergo Precice 2 or Stryde surgery, we don't see infection cases because there is simply nowhere to get infection into. I mean, after the intramedullary nails are implanted, the cuts are stitched. This is one of the advantages of internal methods over other limb lengthening methods with external fixation.

Slow union/non-union of bones

It is when bones take longer time to heal and consolidate, or refuses to heal at all. The possibility is higher when patients age is more. For example, bones of a patient in his mid 40s is more likely to consolidate more slowly than a patient in his 20s. Another significant factor which deteriorates bone consolidation speed is smoking. According to scientific researches, smoking increases the total recovery time by up to 3-4 times. For this reason, we don't accept cigarette smoking patients unless they give up smoking months before their surgery.

There is one more factor affecting bone healing process speed, and it is the amount of bone distraction. A bone, distracted by 7-8 cm takes more time to heal, compared to a bone lengthened by 5-6 cm for example.

Some of the extra treatments to increase bone healing process are: PRP (platelet rich plasma) therapy and Hyperbaric Oxygen Therapy.

If the bone is not consolidating at all, the distraction process may be reversed. By shortening a little bit of the bone, it can be possible to trigger bone regeneration. In case

this doesn't help either, then with a corrective intervention, the surgeon may trim both ends of non-uniting bone, and then wait a little more for bone to heal.

Bone regeneration process is a challenging and demanding process for human body. Many patients lose significant weight during recovery period. It is very important to supply enough nutrients for the body, to prevent body weight loss and help the regeneration process. The food must be rich in calcium, phosphorus and vitamin D.

Faster than normal bone union

It is even rarer than slow union. The optimum bone distraction rate is 1 mm/day for the great majority of patients. This speed is slow enough to ensure the soft tissues aren't exposed to abrupt tension increase and damage, and fast enough to prevent early consolidation of bones. If a patient's bone consolidates so much during bone distraction, that it makes bone lengthening impossible or difficult, it is early bone union. If you feel too much resistance when turning the key or using electronic controller during bone distraction, it is necessary to inform your doctor, because your bones may have consolidated early and the nail or external fixator may get stuck and not extend further. This kind of complication can be treated by a secondary osteotomy, which is re-cutting the affected bone, allowing the process to resume. Or, if enough bone distraction has been done and both legs are of equal lengths, the process may be terminated.

Thrombosis

This happens when blood clots clog the veins and severely disrupts blood circulation. A type of thrombosis is called deep vein thrombosis, when it occurs inside a vein deep in the patient's body. In other cases, the blood clot may end up in lungs, which is called pulmonary embolism. Thrombosis in general is a serious complication and there is a small possibility of death, if symptoms are not detected and controlled in time. However, as a standard procedure, our patients are given blood thinner medications, which makes the blood difficult to clot, and keeps clot sizes minimum, so that they don't close a major blood vessel.

Fat embolism

The mechanism of occurrence is very similar to thrombosis, but it is caused by fat, travelling through blood stream and causing damage to organs. This type of complication may especially happen in long bone fractures, which is the case in limb lengthening surgery. Luckily, the risk is significantly smaller, when the broken bone is fixed immediately, which is also true for limb lengthening operations. Fat embolism also has a possibility of mortality, however our surgeon and medical team does everything possible to keep the possibility of thrombosis, fat embolism and consequent mortality risk at minimum.

It should be noted that the possibility of these serious complications is extremely lower compared to other minor complications, and these kind of risks are not specific to limb lengthening operations but to most types of surgical procedures.

Nerve damage

It is possible to get a nerve damage if you attempt to do extreme amounts of bone distraction. Usually, for the majority of patients, femur lengthening max limit is 8 cm, and tibia max limit is 7 cm. Patients are at their own risk if they neglect doctor recommendations, and increase daily bone distraction rate, or attempt to prevail the maximum total limits. As a consequence of excessive tension, nerves may get damaged, and this damage may be permanent. In this scenario, there is a possibility of losing the sensations or mobility in the affected limb. A condition called drop foot may occur, due to the damage to peroneal nerve.

Anesthesia Complications

Every type of anesthesia does have certain risks. Therefore, the patient undergoes an examination and precautions are taken beforehand. When general anesthesia is applied, the patient may get side effects such as, pain in the throat, dizziness, nausea and vomiting. Anesthesia-induced breathing problems may happen as well. In very rare cases, the patient may also remember the surgery while under anesthesia.

Allergic Reactions

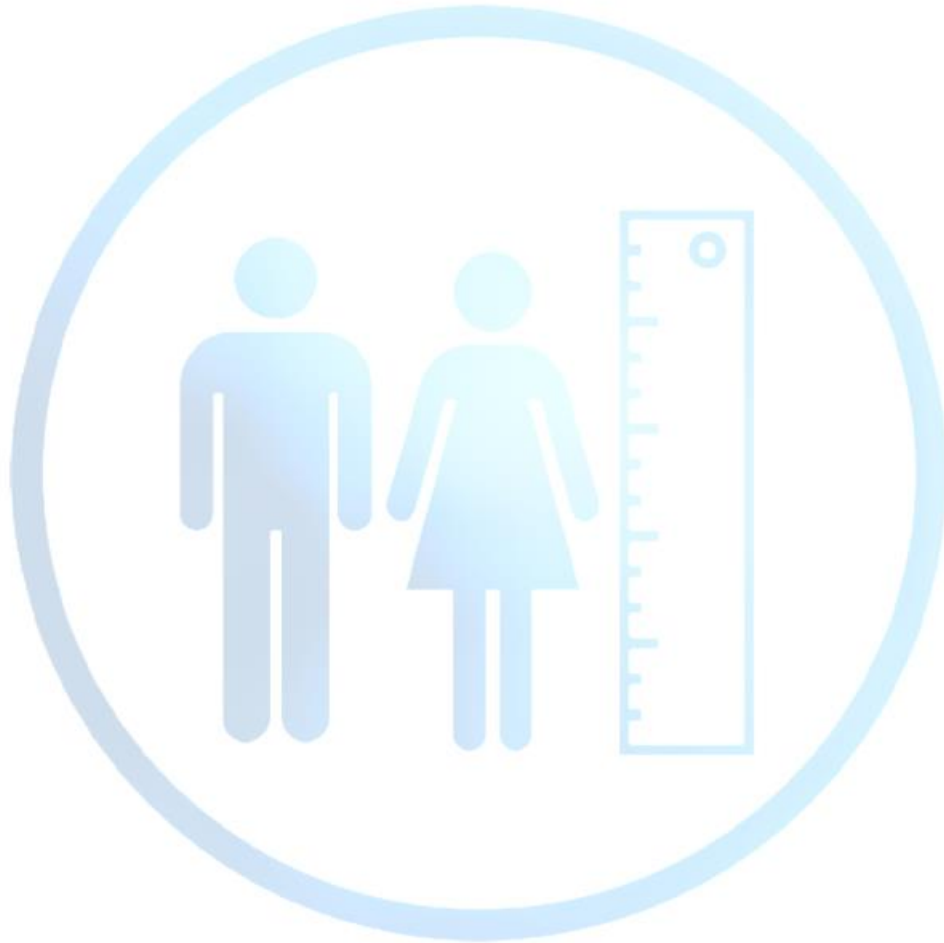
The patient may develop an allergy to drugs administered during or after the procedure. In this case, the patient is intervened and the substance causing the allergy is removed. If there is a known allergy before the operation, it must be informed to your doctor so that precaution could be taken.

Long Term Problems

The recovery treatment process is long and time consuming with limb lengthening surgeries. In case of any complications, the recovery time will get longer. According to the method of surgery, lengthening devices may either be placed on the inside of the bone (Precice 2 and Precice Stryde) or on the outside of the leg (LON & HolyFix) and external fixators can adversely affects the comfort levels of the patient. Furthermore, as daily lengthening routine continues, muscular pain can occur. That is why, it is very important to do the necessary physiotherapy exercises to reduce the pain from muscles stretching. In some patients, bone development can be very slow, "slow-unification". In such a case, lengthening can take more time and can sometimes be stopped. It is imperative to know that failure to do the exercises properly affects muscle development and can cause difficulties in leg movement.

Permanent Problems

Permanent problems can also happen and may require another corrective surgery. Accidental Bone breakage or internal nail breakage may also occur, especially, if proper care is not taken by the patient. In such a case, bigger problems may occur requiring, another surgery to replace the broken nails or in case of non-unification of bone; oxygen therapy or bone grafts may also be used.



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Instructions and Important Advice for Pre-Surgery and Post-Surgery Period

I. Before Surgery

The first step is to ascertain the suitability of the patient, for limb lengthening surgery. Medical testing is used to help determine the course of the procedure and decide the type of anesthesia. Generally, the tests are x-ray, blood test, routine tests. In order to ascertain the change in height, height measurement are done, before and after the surgery. The type of anesthesia and how to apply it is decided by an anesthetic examination. Apart from these, some additional tests that the doctor deems necessary may be carried as well. After the examinations are completed, the patient, the surgical team and the operating room are prepared. If some medications are used some time before the procedure, they are stopped.

Medical Examinations

Generally, the tests are x-ray, blood test, routine tests. The condition of the bone is checked with imaging techniques. In order to see the change in height, height measurement are made. The type of anesthesia and how to apply it is decided by an anesthetic examination. Apart from these, some additional tests that the doctor deems necessary may be applied as well.

- X-ray
- Blood test
- Anesthesia Examination - Anesthesia examination is usually performed by the anesthesiologist on the day of surgery. Here, information about the general state of health and diseases is collected. During this examination, the patient should inform about their allergies, if any. In addition, conditions such as regular medication and alcohol use should be specified. Information about the previous operations the patient has received is also obtained. It is investigated whether there are any problems in the respiratory tract. In addition, the psychological state of the patient is observed. In this examination, risks that may arise from the application of anesthesia are examined and preventative measure are taken.
- Imaging Tests - By imaging tests, images of a part of the body are obtained. By giving various energies to the body, the image is obtained. Thus, information about internal organs is obtained. Examples of these are computed tomography, MR. Depending on the patient's condition, some imaging tests may be requested before surgery.

- **General Health Status** - Before the procedure, medical examinations are carried out, about the general state of health and to determine if any, chronic diseases are present. Specially, diseases that may interfere with surgery or pose risks are investigated. These allow precautions to be taken beforehand.
- **Height Measurement** - General height measurements are made before the procedure. This information is recorded to monitor the patient's lengthening after the procedure.
- **Urine test** - The test in which the urine sample is examined in a laboratory environment is called a urinalysis. For example, the appearance, density and content give information about the state of health. Kidney diseases or urinary tract infections can be evaluated or give information about high protein level. Usually, a urinalysis is performed before each operation.
- **Other Routine Surgery Tests** - Before the operation, blood tests, and routine tests and other than a full urinalysis are carried out. These may include; coagulation tests, ECG, lung film, Hepatitis and HIV tests, blood group tests. These tests are applied before each operation, even if there are no symptoms of disease. The doctor may also order additional tests depending on the patient's condition.

Height Gain Achievable by Surgery

In lengthening operations, maximum height achievable is:

1. Up to 7 - 8 cm on the Femurs OR
2. Up to 5 - 7 cm on the Tibias

If the patients seek for an average increase of height 12 to 15 cm, then it is possible to undergo two operations with around 5-6 months waiting time between two operations, in order to limit any post-surgery complications.

Bone lengthening is performed at the rate of 1 mm per day. Therefore, the more height gain is achieved, the longer the treatment continues. Considering all these factors, the doctor and the patient decide together on the most appropriate amount of height gain.

Pre-operative Cigarette and Alcohol Consumption

Before each operation, smoking and alcohol should be stopped a few days to a week, before the procedure. However, it must be noted that lengthening surgery is not usually done on people who smoke. Alcohol should be stopped a few days to a week before the procedure, as well.

Preoperative Drug Use

There may be medications used by the patient that have blood-thinning effects, they are left for the doctor to control and ascertain use. Usually, such medication is restarted, after the procedure, under the control of the doctor. In addition, vitamin supplements with a

blood thinning effect are temporarily stopped as well. Likewise, antibiotics, steroids, tranquilizers can be dangerous under anesthesia. Therefore, all medicines used by the patient, should be reported to the doctor before the procedure.

Blood Thinning Drugs

For other diseases, their regular medication may be used by the patient; but those with blood-thinning effect are left under the control of the doctor before the procedure. This is because of the effect of blood thinning drugs, as bleeding may occur during the procedure. Simply put, even aspirin has a blood thinning effect. These drugs can then be started under doctor's control. In addition, vitamin E dilutes the blood. If the patient is taking vitamin supplements, they should be stopped.

Antibiotic Use

If antibiotics are used before the procedure, it is left under the control of the doctor as well. Antibiotics can interact with anesthetics during the procedure and may lead to undesirable complications.

Other Medicines

Steroids, diuretics and tranquilizers should be left before the procedure, among other drugs. Steroids suppress a gland that is responsible for secreting hormones. In this case, it may be difficult to cope with anesthesia and surgical stress. Diuretics cause potassium and fluid loss, which can endanger the patient during the procedure. Sedative drugs, used to lower blood pressure should also be left or informed to your doctor as the patient may suffer from a shock, if combined with surgery. For this reason, all medicines used should be reported to the doctor and let them decide the best treatment plan for you.

Treatments Taken and Examining General Health Status

Before the procedure, the doctor should be given complete information about the previous treatments. Previous diseases, their treatments, surgeries, if any, and the type of anesthesia should be explained. In addition, the general health of the patient should be examined. All of these are necessary to minimize complications that may occur during and after the procedure and to reduce the healing process.

Clarification of the Operation Plan and Treatment Process

After the method to be used in the surgery is determined, the procedure is planned. This plan includes the progress of the procedure and the details of the intervention. These are shared with the patient. Conditions such as method of surgery, type of anesthesia, patient's condition, length of extension, and structure of the bone, all aspects which may affect the details of the process and treatment process, are thoroughly informed to the patient.

Patient Reconciliation, Information and Psychological Preparation

Details of the procedure, plan and treatment process are clearly explained to the patient. If the patient has concerns, it is tried to be resolved. It is important and comfortable to share what happens during and after the procedure with the patient. It provides the patient to be ready. A consensus is reached with the doctor regarding the method and procedure.

Nutrition and Diet before Surgery

Eating and drinking must be stopped 8 hours before lengthening surgery and this fasting period may increase or decrease. This is because, vomiting may occur during the surgical procedure if eating and drinking are not stopped, which can be a great risk during surgery.



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II. After Surgery

After the surgery, the lengthening process starts first in the hospital and then, continues at home. It covers a relatively long period, as we daily lengthen by 1 mm; thus reaching a goal of 6 to 8 cm may take 60 to 80 days. The post-surgery hospitalization can last between 2-7 days. Then the patient is discharged and the lengthening continues at home. Regular doctor checks are performed, every two weeks and lengthening continues under the doctor's control. Careful attention should be paid to the lengthening and bone consolidation process, and the doctor's instructions must be followed exactly.

Operation Day

It must be kept in mind that the patient's effort is decisive in the entire lengthening process after the surgery. Once the patient is awakened after the surgery, their blood circulation is monitored. Patients are encouraged to walk at regular intervals. Furthermore, the handling and care of the lengthening devices are instructed and taught to the patient.

Do not stand for too long

It is very helpful to allow the patient to get up, after lengthening surgery, as it regulates blood circulation and also reduces post-surgery risks. Post-surgery, the patient is encouraged to walk as staying stationary may have adverse effects, on the healing process. But, the patient should not stand up too much, or lift anything heavy.

Mobility

In the first days, it is recommended that the patient tries to get used to the lengthening devices and they must try to take short walks at intervals. After, the hospitalization period, it is very necessary to start all the recommended physiotherapy exercise, in order to maintain the joint gaps and muscle structure.

Drug Use

Pain killers may be prescribed to subside post-surgery pain and other medication can also be given to reduce the risk of infection, as well. Furthermore, the patient's medication, which were paused before the surgery, they may be started again, with the doctor's advice.

Use of Auxiliary Materials

Crutches, walkers and wheelchairs maybe used for mobility and to allow the patients to stand up; which will also help in controlling the pressure on the treated legs, after surgery.

The crutch or walker maybe used as long as the lengthening process continues, then it can be left in a controlled manner.

Dressing-Control

HolyFix & LON: With both these methods, the surgical cuts opened in the treated areas are usually the entry points of the lengthening device. Various measures are taken to prevent infection in these areas; from changing wound dressing at regular intervals and protection from water. The patients are informed how and when to regularly change the dressings and keeping the open wounds safe from infections.

Precice 2 & Precice Stryde: Both if these methods are totally internal, hence, there is no risk of post-surgery infection; as there are no open wounds, after the surgery, for the lengthening devices.

Nutrition and Diet

In the recovery process after the surgery, it is necessary to give importance to healthy nutrition. Getting enough protein will affect the condition of the muscles. It is beneficial to meet the daily water need properly and to give importance to foods that affect muscles and bones positively. If there are foods that should not be consumed according to the person medical history, the doctor informs about it.

Psychology

Lengthening procedures are not limited to surgery. The lengthening takes months and the strengthening of the bones and muscles begins. The motivation of the patient is very important in this process. He must do the necessary exercises, take precautions, and take care of their general mental wellbeing.

Things to pay attention

Lengthening operations require months of attention, care and effort. For this reason, detailed information should be obtained prior to the procedure and care should be taken to ensure a good recovery. The patient's commitment is necessary in preventing the risks that may arise.

Taking a Shower

Water should not be applied to the treated areas for a while. After 2-3 dressings, the cleaning and care routines are duly taught to the patient and it's necessary to carry out care, accordingly. Keeping the wound area clean is very important to mitigate the risk of infection.

Washing the Feet

The leg areas that has undergone surgery should be kept away from water for a while. The feet should be washed in a way that they do not touch the devices and wounds. The doctor will explain the precautions in detail.

Friction

With methods with external fixators, rubbing or constant friction to the area where the devices are located may damage the area. It is necessary to pay attention to the treated areas and protect them.

Dress Preference

The external devices (HolyFix & LON) required for the lengthening process may cause disturbance to the patient, for a while, visually and in overall comfort. It would affects their choice of clothing. It is beneficial in terms of comfort to prefer wearing loose clothes that does not tighten the area treated in this process.

Sexual intercourse

After lengthening, it is necessary to stay in the hospital for a while. After returning home, the protection of the area is very important. Reverse movement or too much load on the leg can lead to the fracture of the bone again. This can also causes major long-term problems, as well. Therefore, it is necessary to be careful to protect the leg while having sexual intercourse after the procedure, just like in any other physical activity.

Moving

It is useful to move in a controlled manner after lengthening surgeries. But until the recovery is completed, heavy loads must not be lifted and patients must not tire themselves. It must be understood that being immobile does affects muscle development and causes further pain. Therefore, it is necessary to exercise in a controlled manner, to maintain muscle movements and not to strain the leg too much.

Sitting Position

Devices attached after lengthening surgeries may strain the waist and can cause pain. Therefore, it is necessary to protect the waist while sitting and doing daily work. It is necessary not to stay too long in the sitting position, and to sit upright while sitting.

Sleeping Position

While the healing process continues after the procedure, the treated bone should be protected. Some strains can cause bones to be broken or damaged, especially when the bone is not yet strong and consolidated. Lying on your back while sleeping will protect the leg.

Hot-Cold Contact

Although generally cold and pain applications are applied for pain, they should not be applied directly to the treated areas. It is useful to keep the area away from extreme cold or heat.

Drug Use

Some medications are prescribed for pain and to prevent infection after surgery. These usually occur in the form of painkillers and antibiotics. If the doctor deems it necessary, other medications can also be prescribed. If there were any medications left before the surgery, they can be started, soon after by consulting the doctor.

Hygiene

There is a risk of infection in the bone or soft tissue after lengthening surgeries, with external fixator lengthening systems (HolyFix & LON). The most important thing to consider for mitigating this risk is hygiene. The incisions on the leg vary according to the method of the surgery. The patient is taught how to take care of the treated areas. This regular hygiene routine should be done carefully in the specified intervals.

Automobile Use

Patients are not allowed to drive automobile or cars/bikes, before bone healing is completed, after the surgery. As, driving can both increase the load on the leg and damage the bone with sudden shocks or movements.

Travel on Airplane

Although it is generally not recommended to travel for a while after the operations, in some cases, it is possible to travel after the operation. It is useful to consult a doctor beforehand.

Special Care after Surgery

There are two basic recovery stages to be completed after lengthening surgery. These include, the lengthening process and strengthening or consolidation of bones and muscles. In both cases, it is necessary to adjust the daily routine according to the healing process. In the lengthening phase, 1 mm extension is made every day in different ways depending on the method. Meanwhile, the necessary physiotherapy exercises must be done. If there is an external device on the leg, the area should be cleaned and maintained, daily. It is necessary to pay attention to patient's nutrition and movement. After lengthening has been completed; consolidation and strengthening of the bone begins; and it is important to keep regular exercises or proper rehabilitation process. During these phases, the doctor's remarks should be applied fully.

Post-Surgery Sports and Exercise

After the surgery, the lengthening process begins and exercises is of great importance for the muscles to become suitable for new bone growth; while bone lengthening is in progress, in order to prevent any problems with joint movements. It is also possible to reduce pain with regular exercises. Rehabilitation is usually recommended after lengthening surgeries; as it can be useful in fast and less painful recovery. However, it is necessary to avoid heavy activities before the bone is fully recovered and consolidated.

Exercises to Do

Lengthening procedure starts 5-7 days after lengthening operation. Every day the bones are lengthened by 1 mm. The gaps created by the lengthening devices will fill up over time by new bone growth; thus, lengthening occurs in between the length of the gaps created by the lengthening devices. As the bone grows, the muscles around the bones must work in harmony with the newly elongated bone. It must be remembered that not using the treated leg may cause the muscles to tighten and the joint movements to be restricted. Because of all this, daily exercises and physiotherapy should be done after the procedure. The doctor gives the necessary information about the exercise and how much of them you will have to complete. In addition, proper rehabilitation provides the best recovery in this process.

Light Sports

Sports activities outside of the necessary physiotherapy exercises can cause damage until the bone is strong and consolidated. Apart from the necessary physiotherapy exercises and walking at regular intervals, other sports are limited till the recovery is completed.

Heavy Sports

Unless the entire recovery process is complete, it is necessary to stay away from all heavy activities and any heavy sports can only begin after all the recovery processes have been completed.

Fitness & Physiotherapy

While Physiotherapy is often essential, but it can be inconvenient to do it immediately after lengthening surgery. Excessive physiotherapy can damage the lengthened and weak bone. Some of the fitness movements may exist during the rehabilitation process, but these movements should be determined under the control of the doctor.

Swimming

With external fixator systems (HolyFix or LON) entering a pool or sea may increase the risk of infection. Also, the external devices on the leg can prevent swimming. Before starting any swimming, it is necessary to consult a doctor.

Pilates

Pilates is a very heavy activity for lengthening surgery. Even if only one's own body weight is used, excessive load on the leg can cause major problems. Exercise outside of the necessary exercises and walks can be a risk until recovery is complete. When the bone is strong enough, you can return to sports life.

When are the devices removed after surgery?

In most lengthening methods, a device is placed on the leg; and this device remains in or on the leg until the necessary lengthening is achieved. Then it is removed under anesthesia again. In some methods, the length of leg stay is shorter and in others it is longer. However, as the amount of lengthening increases, the duration of the devices stay on the legs will increase.

Nutrition and Diet

With lengthening surgery, the bone is surgically cut in a controlled manner and it is expected to elongate from day to day and form new bone. Also, the muscles must adapt to new bone development. Therefore, it is useful to prefer foods that feed muscles and bones. Attention should be paid to daily water consumption. A healthy planning with fruit and vegetable-based foods helps in recovery. It is also important to get enough protein.

Smoking and Alcohol Consumption after Surgery

Lengthening surgery is restricted for people who smoke. Starting smoking after the procedure negatively affects the healing and delays it. Likewise, alcohol has bad effects in this process, as well; and these indulgences should be restricted until recovery is complete.

First Week Nutrition and Diet

In the first week after the surgery, no lengthening is usually performed. The bone is expected to consolidate and in this process, less movement is recommended and generally patients cannot walk without support. Nutritional measures can be taken as a precaution for constipation that may occur due to inactivity. Calcium supplements are generally recommended after the procedure, as it positively helps in new bone growth and it can be taken during the entire recovery period.

Next Week Nutrition and Diet

When the surgical recovery happens after the first week, the lengthening process begins. However, the necessary physiotherapy exercises will also begin. During this process, taking care of healthy eating speeds up recovery. It is helpful to note that enough minerals, vitamins and proteins are taken while creating the nutrition plan.

Nutrition in the Process of Intake of Materials and Control Process

When the lengthening has reached the planned height, the devices on the leg are planned to be removed, but in some cases, they may need to stay longer. Anesthesia is applied while removing the device. The devices are removed without feeling any pain. With LON method only, after the devices are removed, strengthening of the bone begins. With Internal methods (Precice 2 & Precice Stryde), once the lengthening stops, the bone consolidation begin right away and the internal nails are only removed when the bones have completely healed, in about 9 to 10 months after the surgery. Necessary exercises are performed and bone strength is increased. In this process, it is important to consume healthy foods that will speed up the healing process.

Doctor Controls

After lengthening surgeries, doctor consultation and controls are performed in the first, second and third weeks. Subsequent controls are planned according to the needs of the patient and continue every two weeks. It is very important to continue the doctor's controls regularly.

Healing Process, End of Treatment

After the necessary lengthening and bone strengthening are completed, the patient can walk and continue his life as before. During the recovery process, the patient's devotion and commitment does have a positive impact on the recovery and may shorten the recovery process. Depending on the method applied, some scars may remain on the leg; which can later be removed by aesthetic plastic surgery methods.

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Limb Lengthening Surgery FAQ

Is there any height gain method without surgical intervention?

After a certain age, people's bone growth cartilage closes, naturally and after that, growth cannot be achieved naturally. If any diseases are realized to be affecting the height at an early age, the legs are extended by treating them at an early age. If there is a limb height discrepancy, between the legs at an early age; if the difference is little, it can be treated using insoles. However, if the difference is large then lengthening is only possible through surgery. In cases such as dwarfism, the only method is limb lengthening surgery at an early age.

Which of the limb lengthening surgical methods is more advantageous?

Lengthening processes are carried out by methods such as Ilizarov, Holyfix, LON, Precice 2 and Precice Stryde. Ilizarov method is the original methodology, used for a long time. In this process, the device placed on the leg remains on the leg for a long time. The Holyfix method also has device status on the leg, but it is not as heavy and large as in Ilizarov; and as a result causes less discomfort and in addition, of reducing the risks. With the LON method, the devices are the same as HolyFix, with the addition of an internal nail device which drastically reduces the post-surgery recovery period. Then we have the internal methods with Precice Systems; both Precice 2 and Precice Stryde are internal systems of limb lengthening, and have virtually no risk of infection as the wounds are stitched after the surgery. Lengthening is achieved with an electromagnetic remote control device; with the only difference is that Precice 2 nails is not weight bearing; hence the lengthening phase the patient be wheelchair bound. However, Precice Stryde nails are fully weight bearing and the patients can start to walk without assistance in just 4 to 8 weeks after the surgery. The real difference between the methods obviously lies in their costs and price differences, as certain devices cost significantly more than others.

Is limb lengthening a difficult surgery?

It must be kept in mind that limb lengthening surgeries are major surgeries and the experience, expertise and quality of the devices used are of great importance. In addition, the post-procedure lengthening process is long and enduring. Lengthening of 1 mm is achieved every day till the desired height is achieved. After the lengthening phase has elapsed, bone strengthening or consolidation phase begins and during these processes, communication with the doctor, regular doctor control and patient's attention are of great importance. Regardless of the method of lengthening, it must be kept in mind that lengthening processes that require great effort and patience, by patients.

How many hours does the surgery last?

The duration varies according to the method of lengthening processes and the regions to which the process will be applied. The surgery usually takes at least 1.5 and no more than 3-4 hours.

Is a doctor's resting report provided? When can I get back to work?

The process after lengthening is very important for patients. It is necessary to stay in the hospital for 2-7 days. It is a matter of process as it will require the patient to lengthen, after returning home. Therefore, a doctor's report of rest is provided. However, if the people who prefer the procedure have heavy jobs standing for a long time, it is not appropriate to return to work. Patients with desk jobs can return to work sooner.

How important it is to have an experienced doctor and medical staff?

Experienced doctors and an expert team are important in lengthening surgical procedures. It is beneficial for the patient to choose doctors that they trust and can communicate easily when needed. Because lengthening is a long process and during this process, it is necessary to be in regular contact with the doctor.

Does age have an effect on the result of the surgery?

The healing speed of bones decreases with age; therefore, lengthening procedures are not recommended at very advanced ages. The rate of new bone formation may differ from person to person and age also has an effect on this; as age status shortens or lengthens recovery time. But this may not be the only factor to a quick recovery. The ideal age group is between 18 – 40 years of age. However, after an evaluation and approval of the doctor, patients in their 40s may also be eligible.

Does medical insurance cover limb lengthening surgery?

If the lengthening requirement arises from a health problem or affects the physical health of the person, the process is evaluated within the scope your medical insurance and is valid to be used in Turkey; we can help. However, most insurance policies do not cover limb lengthening for cosmetic purposes and thus it can be a financial burden on the patients who want to be taller but are not suffering from any medical concerns because of their height.

How are the surgery prices determined?

There are many issues that affect the prices of the operations. Price can differ for single bone lengthening to bilateral lengthening; and depending on the method of surgery as well. Lengthening operations can be performed in 4-5 methods and the prices of each of these methods are different. As the devices which are to be used in the surgery have

differing price. In addition, the hospital where the surgery will take place is also a factor that may change the price.

Can the surgery be done with other aesthetic treatments?

Extending the bones in the legs or arms is one of the major surgeries. It is carried out in the field of orthopedics. Usually, several aesthetic surgeries, simultaneously, are not possible at the same time.

Can health problems interfere with lengthening surgery?

Some diseases can prevent lengthening procedures and they include, but are not limited to; diabetes, heart failure, cancer. In addition, bone healing slows down in later ages and lengthening processes can become dangerous.

Is Turkey a good choice for limb lengthening surgery?

Limb lengthening surgeries have been carried out in Turkey for more than two decades now. The procedures are carried out successfully with experienced surgeons, expert team and quality materials. Turkey has made a name with the high-quality medical services and institutions, many of which have JCI certification. The reputation of Turkey is not only in limb lengthening field, but in many other treatments such as hair transplant, rhinoplasty etc.

The culture and cuisine of the country will make it enjoyable to become taller here in Turkey. Local people are very helpful and kind, and most of them speak English at least up to a certain level.

Can my height become shorter again after the operation?

Surgery is the beginning of the lengthening process. Lengthening after the procedure requires a certain time, usually 60 to 80 days to achieve 6 to 8 cm. In the meantime, when the necessary exercises are performed and precautions are taken, usually, there are no problems. Height gained does not shorten again after the operation and processes are completed; as the processes permanently lengthen the bones in the area. However, if problems such as osteoporosis occur in an older ages in people who undergo surgery, there is a chance that their bones may shorten.

Can i become a professional athlete after the surgery?

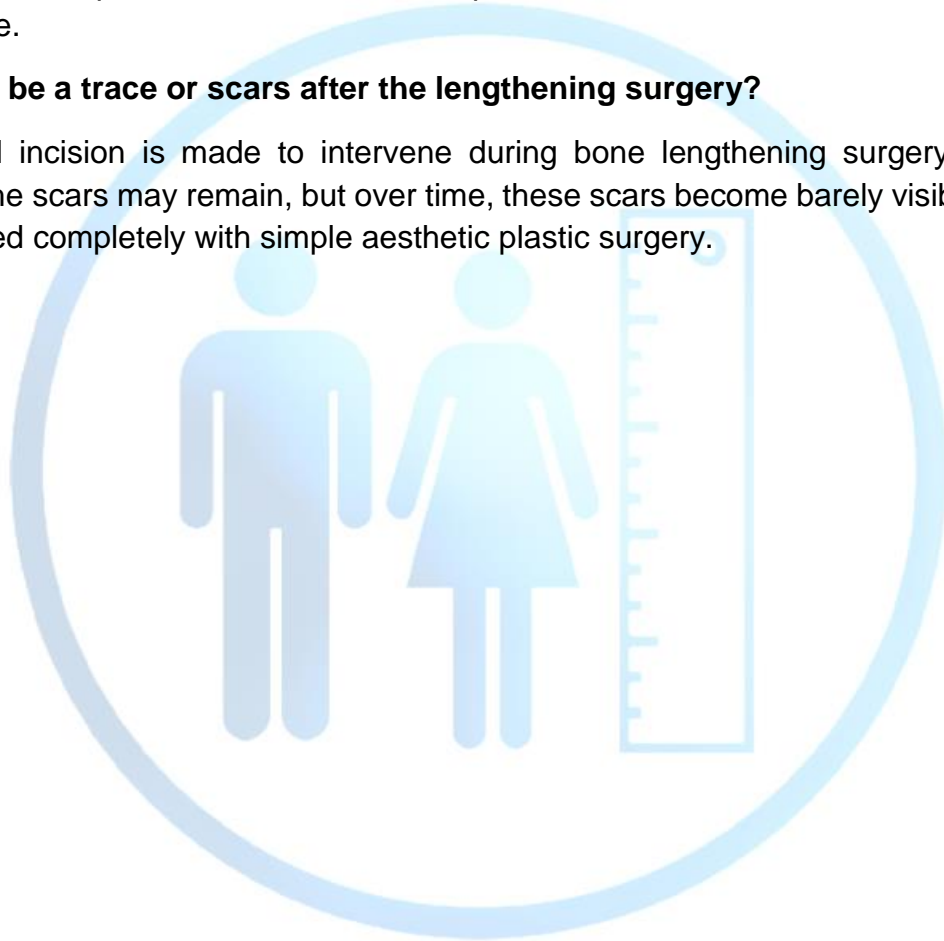
Lengthening does not take place immediately after surgery. The extension takes months to complete. Then the strength of the bone and muscles is ensured. Heavy sports and exercises should not be done before these processes are completed. After recovery, the desired sport can be indulged with by consulting a doctor.

Is there any danger of lengthening surgery?

Limb lengthening surgery, although being a serious and invasive surgical treatment, is much safer than many surgeries out there. With the development of modern and advanced limb lengthening technologies, it is much safer than decades ago, and almost all complications are completely preventable and treatable. Among hundreds of patients, only a handful experience some sort of complication, all of which are addressed properly and in time.

Will there be a trace or scars after the lengthening surgery?

A surgical incision is made to intervene during bone lengthening surgery. After the surgery, the scars may remain, but over time, these scars become barely visible and can be removed completely with simple aesthetic plastic surgery.



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The #1 Choice for Limb Lengthening Surgery

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