

The Vascular & Endovascular Clinic

I Have Bad Veins

Is an Intravascular Ultrasound (IVUS) Right For Me?



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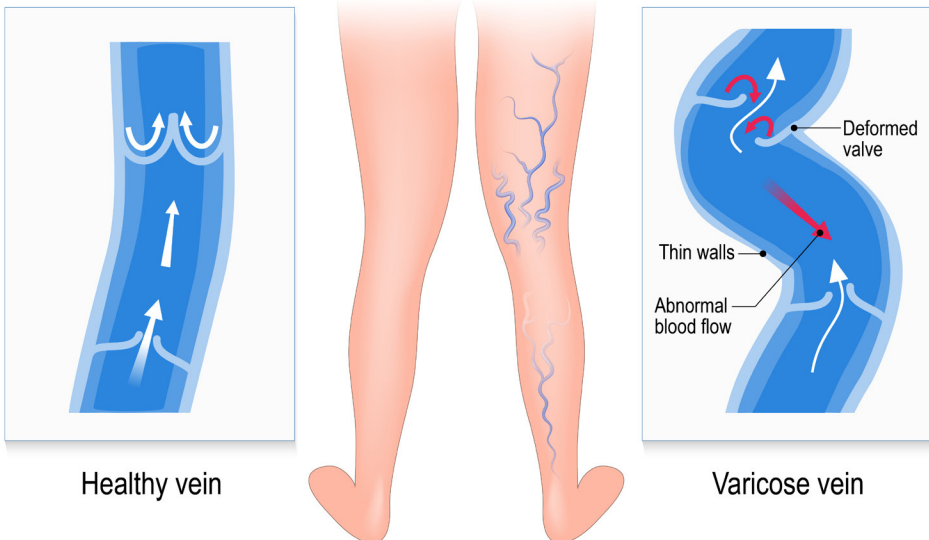
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What is Chronic Venous Insufficiency (CVI)?

- CVI is a common condition that occurs when blood flows backwards and pools in your legs, instead of returning to the heart
- It is largely caused by:
 1. Non-functioning or abnormal vein valve function
 2. Blockage of the Deep Veins in your legs and abdominal/pelvic area
 3. Combination of both

The accumulation of extra blood in the legs can lead to vein distension (bulging veins), and the leakage of fluid into the surrounding tissue, which can cause skin discoloration and/or breakdown (ulcer)



Are you at risk of CVI?

- Family history
- Obesity
- Immobilization after surgery or injury
- Hormonal Changes (e.g. pregnancy, menopause, hormone therapy) •
- History of Deep Vein Thrombosis (DVT) – blood clots in the leg veins •
- Previous abdominal/pelvic/back/joint surgery
- Prolonged standing or sitting
- Smoking (previous or current)

Are you experiencing symptoms of CVI?

- **Leg Pain/Calf Ache/Throbbing** after standing or sitting for prolonged period of time
- **Leg Heaviness** especially towards the end of the day
- **Swelling/excess fluid** around the ankle and/or calf
- **Varicose veins** – large visible veins under the skin
- **Skin redness** and inflammation called stasis dermatitis
- **Eczema** – dry flaking skin on the lower legs
- **Brown Pigmentation of the Skin** - mistaken for a sun tan
- **Venous Ulcers** – breakdown of the skin on the leg, which can be very painful and negatively impact the quality of life

These symptoms can lead to difficulty in walking and performing your normal day-to-day tasks (reduction in quality of life)

Understanding Chronic Venous Insufficiency



What are the available treatments?

Treatment Type	What does it do?
Compression Therapy	<ul style="list-style-type: none"> • Provide external compression to reduce reflux or backflow of blood in your legs. • Most patients are recommended to wear compression stockings, especially during the day (i.e. at work, while doing day-to-day activities).
Endovenous Ablation	<ul style="list-style-type: none"> • Seals diseased superficial veins, which will route blood flow to healthy veins and treats reflux. This can be achieved via the use of: <ul style="list-style-type: none"> • Heat (Radiofrequency Ablation, RFA) • Mechanical Injury and Sclerosing agent (ClariVein™) • Medical-grade adhesive (VenaSeal™) • These procedures are usually performed under local anesthesia. • Patients can return home on the same day and resume normal activities. Superficial vein closure is a very common procedure that has minimal risks.
Intravascular Ultrasound (IVUS) and Deep Vein Stenting	<p>An ultrasound catheter (“camera”) is inserted into the deep vein, usually through a puncture made at the thigh area. The process helps to determine if there is any obstruction or compression of the big vein in the abdominal and pelvic region. Depending on the severity, a stent may be placed at the narrowed site to help the vessel remain patent (“open”) and allow the blood to go back from the leg to the heart more efficiently.</p> <p>This procedure is usually performed under General Anesthesia, and will typically require inpatient admission for a one night stay.</p>

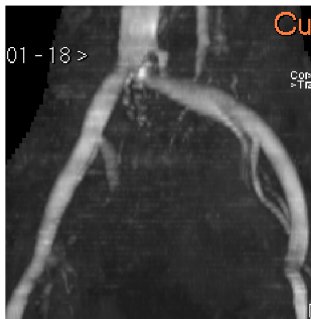
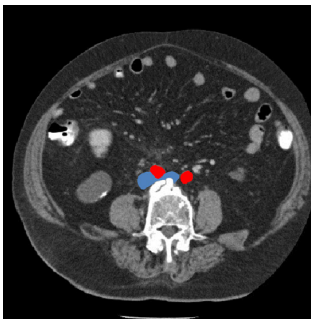
Which treatment is suitable for me?

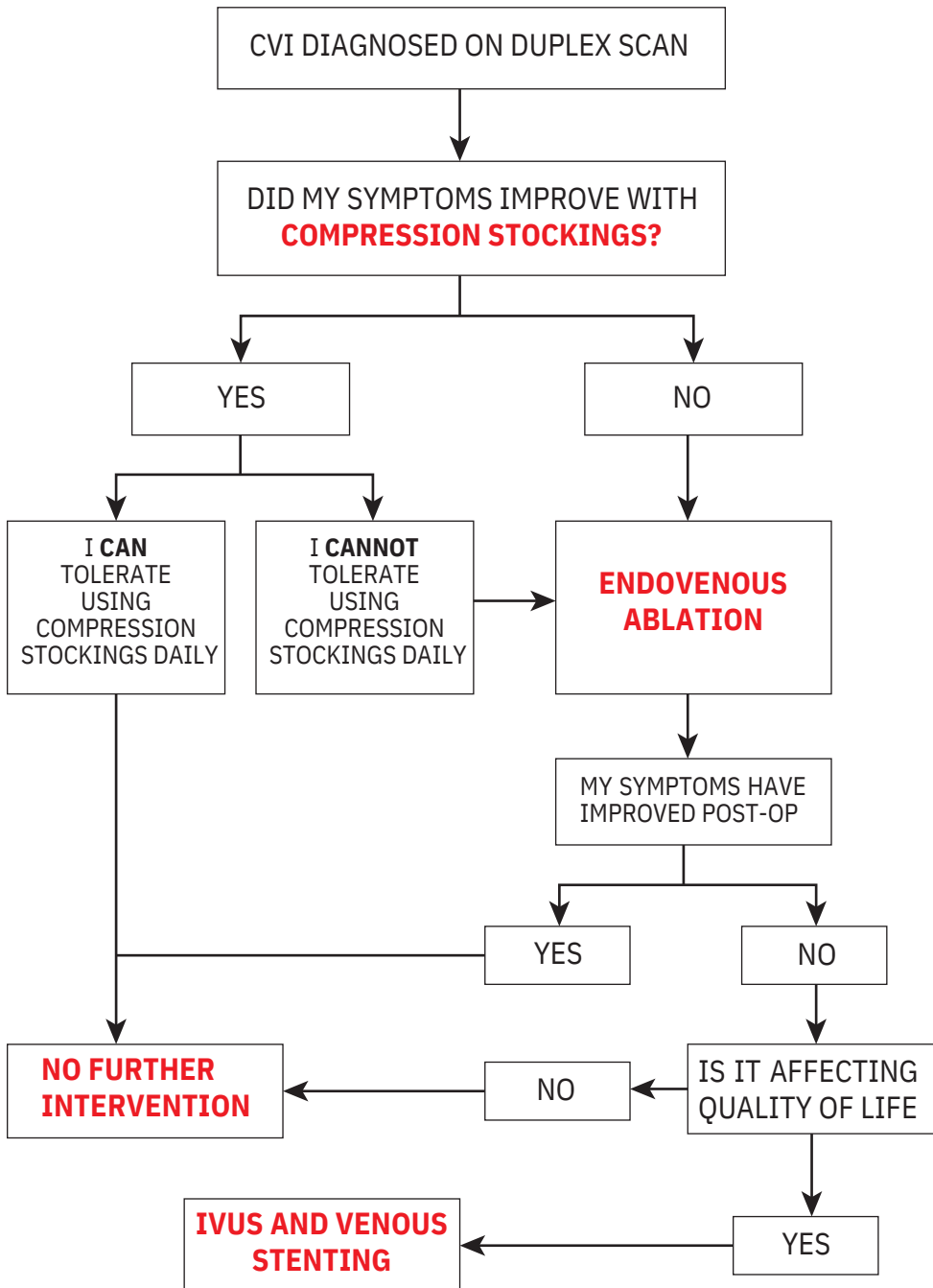
You may see an improvement in symptoms with compression stockings alone. However, not all patients can tolerate the use of compression stockings, especially in the local heat and humidity.

Superficial veins can be treated via endovenous ablation. Patients will not usually need to wear compression stockings post-operatively.

In the event of persistent swelling or poor healing ulcers after treating the superficial veins, IVUS and stenting are recommended. Such symptoms may signify a venous obstruction higher up in the deep venous system. CT Abdomen and Pelvis and MR Venogram (MRV) are imaging methods that can be used to further assess narrowing of iliac veins or if there are any mass / lesions causing extrinsic obstruction.

The above is summarized in the following flow chart.

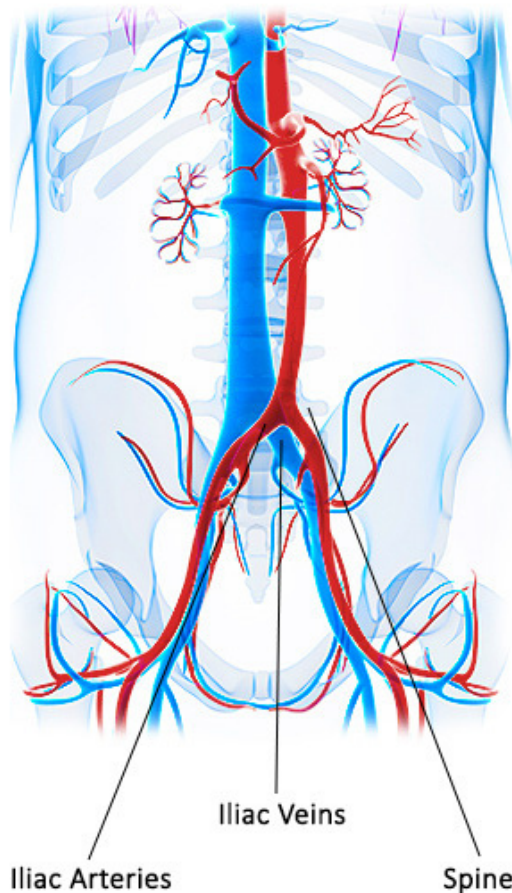




What is a venous obstruction?

Normally, blood from lower limbs flow through the iliac vein in the pelvic area to the big vein of the abdomen (inferior vena cava), then finally to the heart.

The iliac vein is positioned in between two hard structures – the overlying iliac artery and the spine.



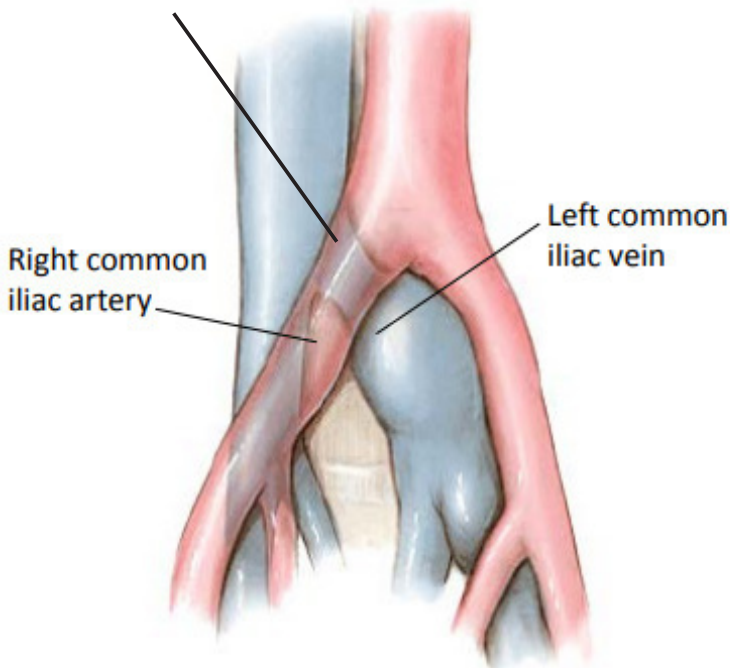
What is a venous obstruction?

With every contraction, the iliac vein gets compressed by the iliac artery against the spine. Over time, the iliac vein weakens and narrows at this compression point.

The result is a venous obstruction, which causes poor blood flow back to the heart, as well as persistent symptoms despite the treatment of superficial veins.

This narrowing of the iliac vein can be accurately assessed only with an Intravascular Ultrasound (IVUS).

Narrowing of iliac vein



What is IVUS?

- IVUS stands for **Intravascular Ultrasound**
 - It is a minimally invasive camera procedure to look at blood vessel narrowing and blockage more carefully from the inside
 - It is now considered the gold standard for imaging venous obstruction

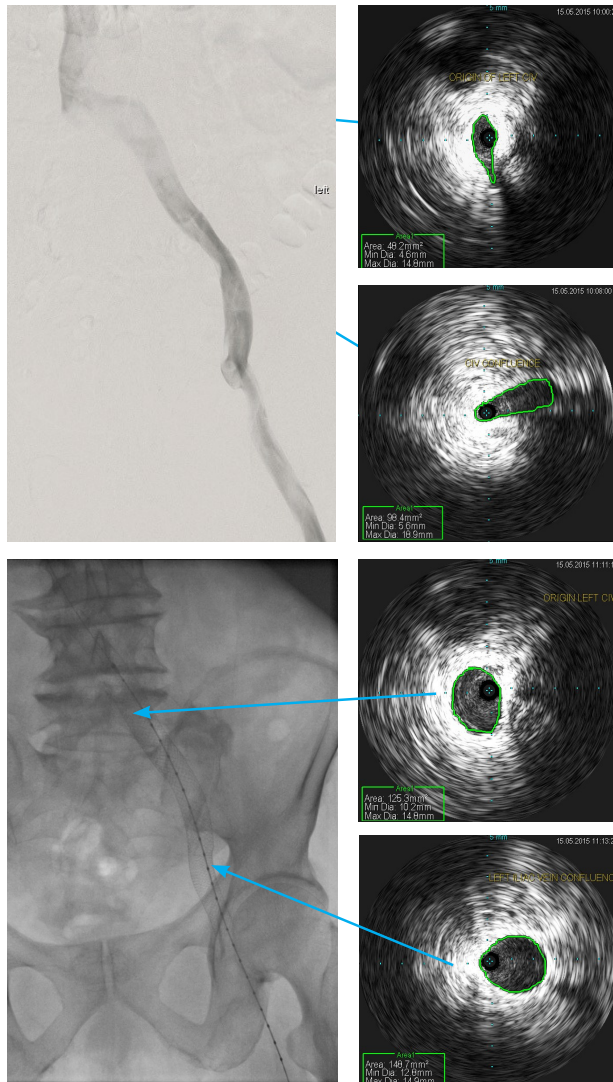


- Quick procedure (< 1hr duration)
- Minimal morbidity
- Quick symptomatic relief
- Decrease leg swelling
- Decrease wound weeping – Promotes ulcer healing



What happens during an IVUS?

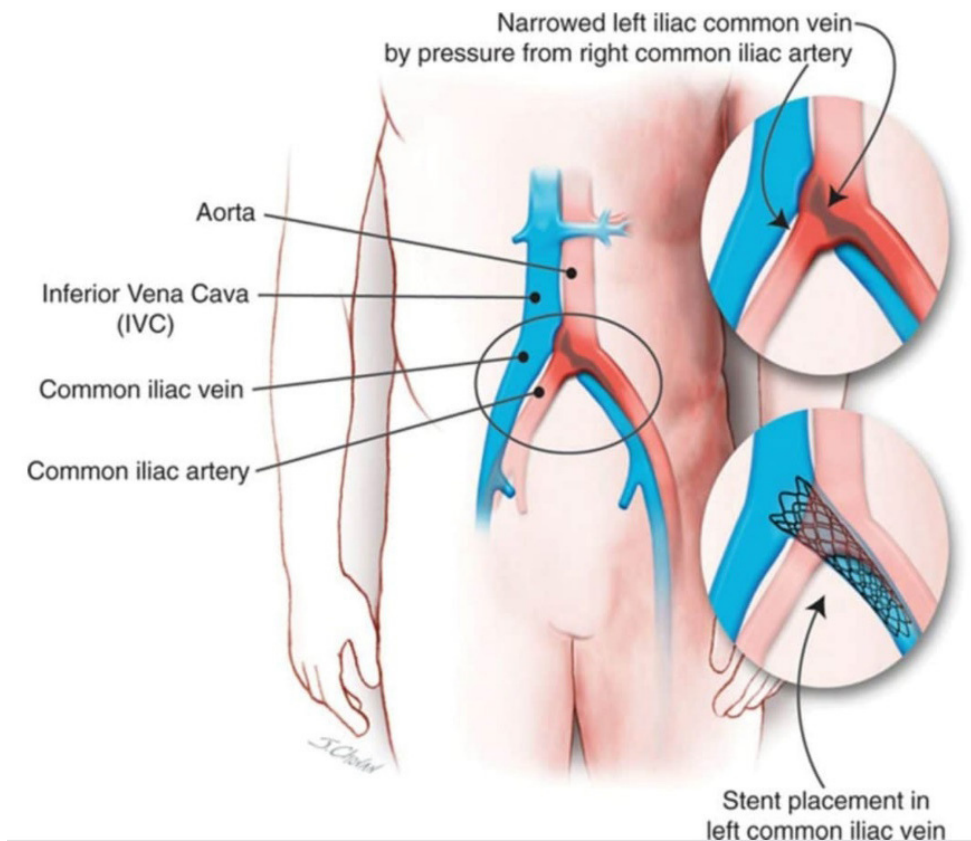
A small incision is made in the thigh to insert an ultrasound catheter into the blood vessel. The surgeon can then acquire ultrasound images and assess if there is any compression of the outflow vein of your leg.

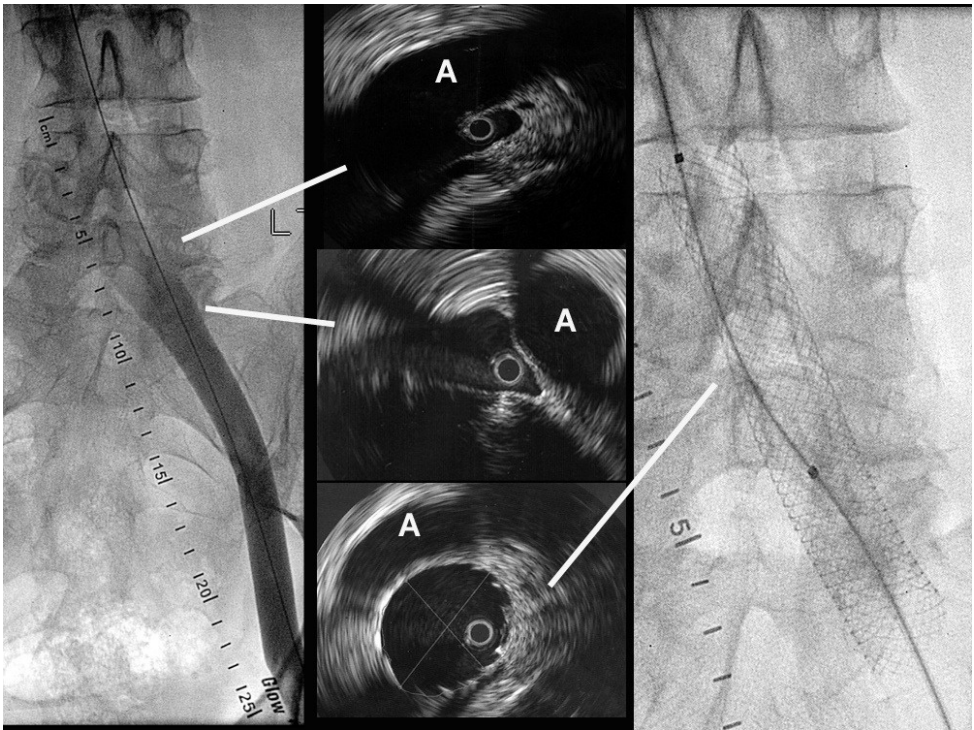


What happens during an IVUS?

If necessary, the surgeon may place a stent at the point of narrowing to ensure that the vein remains open (i.e. patent), and thus treating the venous obstruction.

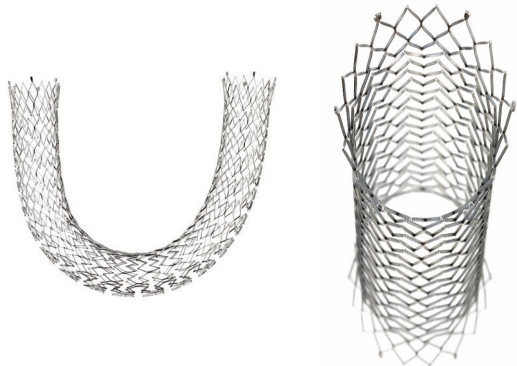
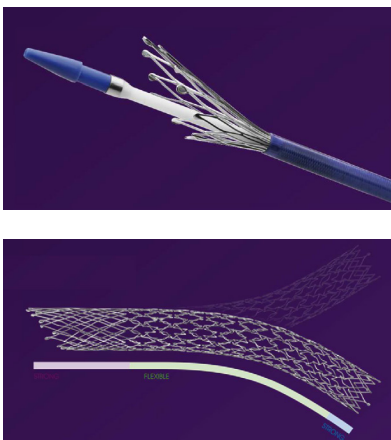
After operation, the patient may have to be on blood thinners if they have a stent placed.





Why are venous stents necessary?

- During IVUS, the affected area is first dilated with a balloon. However, like an elastic band, the vein will usually collapse and narrow again quickly.
- To prevent re-narrowing, it is necessary to insert a stent into the vein. • The size of the stent is gauged using IVUS.
- Stents are made of high grade steel or nitinol. Like a spring, the stent can be compressed and squeezed into a catheter of size smaller than a straw
- Once the compressed stent is placed at the site of blockage, it springs back to its original size and can be half an inch or more in diameter
- The stent creates an inner circular tube, which helps to keep the vein open
- In event of multiple blockages, more than one stent may be used.
- Stents are usually placed in the iliac veins above the groin crease in the pelvis, but the exact position depends on where blockage is.



Risks & Benefits of the Procedure

Risks

- Minor bleeding or bruising after intervention
- Pain in back or groin after stent placement (temporary)
- Blood clot causing:
 - Obstruction (Deep Vein Thrombosis) - rare, requires another intervention
 - Pulmonary Embolism (i.e. blood clots travel to lung) - rare
- Nerve Injury (very unusual)
- Recurrence of Symptoms

Benefits

- Improvement of overall quality of life
 - Reduced leg swelling
 - Reduced leg heaviness and pain
 - Improved ulcer healing and reduce chance of ulcer recurrence -
- Improved quality of skin

What to expect after the operation

After the operation, you will be admitted for observation overnight at our inpatient wards. The estimated length of stay is 1 day. You can walk normally the next day.

If a stent was placed during the procedure:-

- You will be started on blood thinners: A stronger anti-coagulant for approximately 6 months and then switched over to an anti-platelet agent like aspirin

- Depending on your underlying condition and risk of clots in the future, the duration of medication can be longer or even life-long.

Your surgeon will advise you accordingly.

- You will need regular follow-ups at our outpatient clinic for stent monitoring. The usual stent surveillance protocol is with ultrasound scan at 3, 6, 12 months post-operatively and, depending on the risk of stent blockage, on an annual basis thereafter

After discharge, you may return to your normal activities.

Post-operative Care and Advice

After discharge, you can shower and clean around the incision site with soap. Keep the incision site dry. If steri-strip dressings are present over the incision site, they can be left alone until they come off naturally. You can also remove it after 4 days.

You can return to your normal activities. Brisk walking and some exercise are recommended. If you experience some swelling, sitting down and elevating your leg will help to relieve swelling.

If you have a leg ulcer, continue care as prior to surgery and as advised by your doctor until it heals. This would usually involve a compression dressing

If you experience any of the following, please go to the Emergency Department:

1. Significant Bleeding / Extensive bruising
2. Increase in Pain Intensity
3. Pus or feeling warmth at the incision site



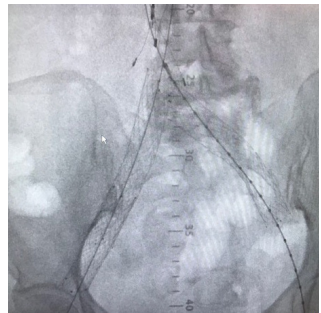
Patient Results – Examples of IVUS & iliac vein stenting



Pre Stenting



5 months later



December 2018



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