

Cryosurgery

What is Cryosurgery?

Cryosurgery is the specialized field of using extremely low temperatures to destroy pathological tissues. Cryosurgery is not a new concept in the elimination of pain. Hippocrates recognized the analgesic and anti-inflammatory of ice on injuries in the year 430BC. In the past few decades, cryo-technology has been used in the treatment of malignant tumors of the prostate, liver and other organs. Moreover, cryosurgery is gaining acceptance in dermatology, plastic surgery, urology, pain management and podiatry.

The application of cryo-technology in podiatry has been increasing since it first became approved by the FDA in late 2003. Common foot conditions that can be treated with cryosurgery are plantar fasciitis, infracalcaneal bursitis, neuromas, neuritis, and plantar fibromas.

How Does Cryosurgery Work?

Cryoanalgesia or cryoablation as it is also called is a minimally invasive procedure that uses extremely cold temperatures to selectively destroy nerve endings. Nitrous oxide is forced under pressure between 600 and 800 psig between the inner and outer tubes of the cryoprobe. The gas is released through a small opening into the chamber at the tip of the probe. As the pressurized gas is released into the chamber it expands and results in a rapid drop in temperature. This is referred to as the Joule-Thompson effect and results in an ice ball forming at the uninsulated tip of the probe. The temperature can reach -70C and the size of the ice ball can range from 3.5mm to 10 mm depending on the amount of the tube that is uninsulated. This is a closed system therefore no gas escapes from the system.

What is a Typical Cryosurgical Procedure?

When performing cryosurgery it is extremely important to identify the area or areas of greatest pain. This becomes the target point for the cryoprobe. The area is injected with local anesthesia. A 3mm percutaneous incision is made and a trocar is inserted to separate tissue. After which, the cryoprobe is inserted and depending on the foot pathology the area is treated with 2 cycles of 2-3 minutes with a defrost cycle of 30 seconds in between.

What Happens After Surgery?

Activity should be reduced for about three days. The bandage is changed the next day by the patient. The patient puts on bacitracin ointment and a new bandage. The incision heals in 3-4 days. A patient may take an oral anti-inflammatory for 3-4 days postoperatively if needed.

When is Cryosurgery of the Foot Needed?

Cryosurgery is used when previous treatments such as non-steroidal anti-inflammatory medications, orthotics, night splints, physical therapy and injection therapy have failed. Our patient, a 56-year-old male, presented with a chief complaint of right heel pain on and off for 10 years. The patient had tried all of the above with lessening of symptoms but no resolution of symptoms. The patient described his pain as 9 out of 10 with 0 being no pain and 10 being the worst amount of pain. We performed

cryosurgery on his right heel. One week after surgery the patient had a pain level 4 out 10. On the patient's next visit the patient reported pain of 1/10. Six weeks after the procedure the patient was completely asymptomatic.

Overall, cryosurgery is an effective procedure where conservative methods have failed. The procedure is minimally invasive with a very short postoperative course.