

Cryotherapy: Tips and Tricks

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Abstract

Cryotherapy using liquid nitrogen as cryogen is a well-established therapeutic modality in dermatology. In recent times, there have been many innovations and improvisation of cryotherapy for various dermatological disorders. In this article, we present a short comprehensive collation of practically useful points of cryotherapy covering the various aspects of procedure-planning, patient selection, storage and delivery techniques, and challenging clinical scenarios which can enhance the utility of this efficacious and economic treatment option.

Keywords: Cryocan, cryogen, cryogun, cryotherapy, liquid nitrogen, warts

Various medical specialities have been reaping the benefits of cryotherapy ever since it came into use for therapeutic purposes.^[1] This treatment modality mainly using liquid nitrogen is now an integral part of the therapeutic armoury of dermatologists too. In this article, we list a few tips and tricks of cryotherapy for the dermatologist.

As for any procedure, the dermatologist needs to spend adequate time educating the patient about the nature of the procedure, possible side-effects, and the need for repeated sessions in some cases. A well-informed and cooperative patient makes the procedure easy for both the patient and the clinician.^[2]

Earmarking a “Cryo day” and pooling the indicated patients have multiple benefits. The cryogen procurement can be planned for the same day and availability ensured. Loss of cryogen from the Dewar cylinder during prolonged storage and multiple transfers to the patient delivery device can be reduced by this arrangement. Keeping a back-up Dewar cylinder is a good idea, if you plan to do cryo procedures daily. Use of proper safety devices—gloves and goggles—while transferring the cryogen to the cryo spray can is important. Keep all devices on stable, non-sloping surfaces, especially in the context of dip-stick cryo. Cryo-dispensers with a tap to dispense liquid nitrogen, with inbuilt pressure gauges, are a useful investment. This makes transfer of cryogen to the flask

less cumbersome and safer. The pressure gauge also gives an idea of the amount of liquid nitrogen left in the Dewar.

Marking the borders of the lesions [Figure 1] by the patient or the attender minimizes the risk of missing lesions. The act of doing this themselves makes them conditioned and prepared for the procedure.

Cryotherapy is an excellent treatment option for lip lesions but difficult to administer at times due to inherent stability issues. Holding the lip everted with one hand and administering cryogen is not an easy task. We have found that an adhesive micropore tape with a window cut to the size of the lesion, which serves to protect the surrounding skin and also evert the lip sufficiently, makes the procedure easier^[3] [Figure 2].

A disposable paper cup can be used with a window cut on the base, to accommodate the lesion in the cup, and firing the cryogen through the cup can help in ensuring that cryogen does not overshoot the target area and is very easy to administer the same near vital organs and orifical areas like the nose or fingertip in children [Figure 3].^[4] We have recently developed a bottle guard technique for cryo administration by which the distance from the tip of the lesion is fixed to facilitate uniform delivery under direct vision [Figure 4].^[5]

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Figure 1: The lesions and the borders marked by the patient with a marker pen



Figure 2: Lip eversion with a micropore to ensure perfect eversion and easy administration of cryogen



Figure 3: Paper cup used as a stencil to administer cryogen to treat periungual warts which is otherwise very painful

A disposable otoscope speculum can also be used to administer cryotherapy on small lesions in sensitive and convoluted areas.^[6] Since they are opaque, visualization of the ongoing freezing is not possible.

A plastic sheet with fenestrations can serve the purpose of fractionated administration of cryotherapy while delivering it on acne scars and on such conditions where only limited exposure is sufficient and also one need to keep in mind the possibility of undesirable tissue damage.^[7]

For cases requiring multiple sittings, it would be a good idea to underfreeze the first time. Also, in lesions of variable thickness, freezing times should be adjusted accordingly [Figure 5].

The edema that is likely to happen after cryotherapy may strangulate rings if cryogen is administered with the ring in place on fingers. Hence, they are best removed before the procedure. One common complication seen, especially in darker skin, is post-cryo hypopigmentation. It is difficult to predict which patient will develop hypopigmentation. It is always better to underfreeze the first time and see how the patient's skin reacts. Also, feathering the edges of the freeze area makes any resulting hypopigmentation cosmetically more acceptable.

Metals being good conductors of cold, it is ideal to use the disposable wooden tongue depressor as a shield while administering cryotherapy near the eyes. In addition, keeping a glass of warm water helps to neutralize the

effect of cryogen in the event of an emergency like the probe getting struck to the mucosal surface.

For intralesional cryotherapy, for keloids, it is important to protect the normal skin on the open end of the canula

by using a piece of gauze or a wooden stick between the skin and the canula. Also wait for the canula to thaw



Figure 4: The guard made out of cut plastic bottle can serve as a good way to maintain the constant distance and at the same time visualize the area being treated



Figure 6: A digital stop watch affixed to the cryogun makes it easy to monitor the correct freeze–thaw timing

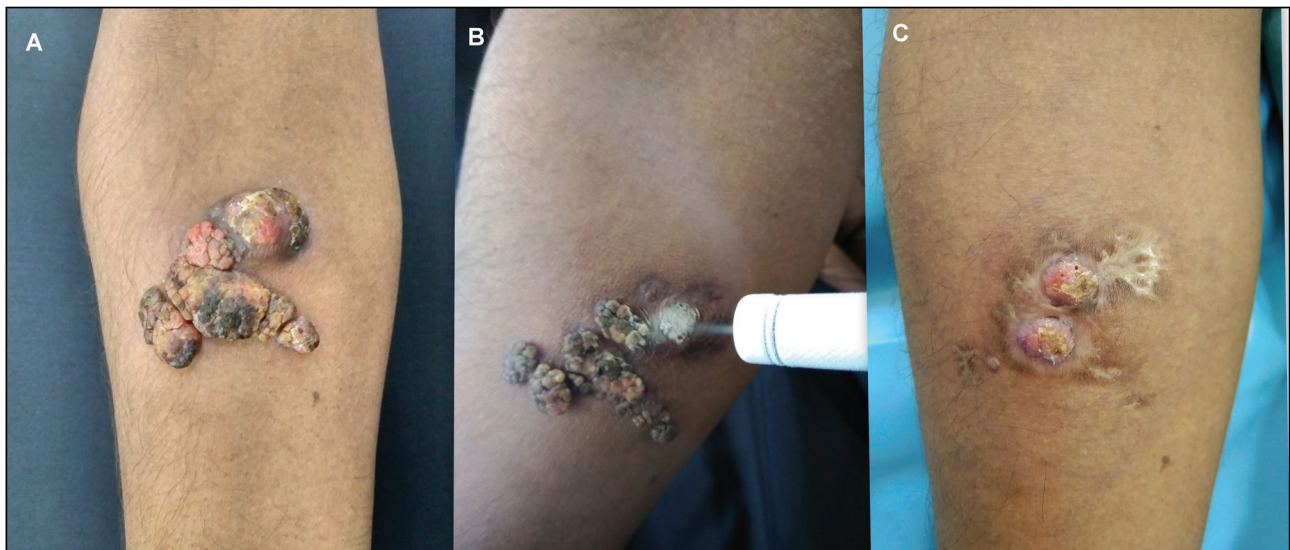


Figure 5: A and B. Rhinosporidiosis being treated with cryotherapy. The patient underwent multiple sessions under freezing initially followed by adjusting freeze–thaw cycles for different areas within the same lesion according to the thickness. C. Visible reduction in size of the lesions is observed after three sessions

properly before withdrawing it, to prevent breakage within the skin. Use of dedicated devices for intralesional cryotherapy (like CryoShape®) reduces complications.

Making a table of common lesions and corresponding freeze–thaw cycle durations in the form of a small laminated card, which can be threaded around the neck of the cryogun itself, can serve as a ready reference. A digital stop watch or a smartphone with timer applications like metronome can also be used to keep time [Figure 6].

A dipstick method is easier to use for small lesions.^[2] Twist the tip of the cotton bud, to make it hard and pointed for more focussed applications. For younger patients and those with lower pain threshold, it would be good to use a topical anesthetic before doing the procedure. However, cryogen should not be reused for multiple patients to prevent cross infections. While administering contact cryotherapy, make sure that the contact probe thaws well before removing, to avoid breakage and associated complications. Keep some warm water handy, in case the probe sticks to the skin.

In the era of the COVID-19 pandemic, it is worth exploring over the counter patient initiated freezing devices which are available in some countries. However, these are generally associated with a lower freeze temperature and hence lesser efficacy.

LEARNING POINTS

1. Cryotherapy is a great value addition to the procedural dermatologist, useful in a wide range of conditions.
2. Planning a designated cryotherapy day helps in conservation of cryogen.
3. Freeze–thaw cycle timings can vary within the same lesion according to the thickness and hence has to be adjusted accordingly
4. Accessories such as otoscope specula and bottle guards along with techniques like lesional windows with adhesive plasters and paper cup help achieve precise and targeted delivery during cryotherapy with minimum peripheral spread.

5. Making a ready reckoner card of freeze–thaw cycles and handy timer options will make the procedure hassle-free.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Author contributions

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