Air cooling for improved analgesia during local anesthetic infiltration for nail surgery

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SURGICAL CHALLENGE

Nail surgery is performed under local anesthesia, and local agent infiltration is typically the most painful experience reported by patients during the procedure. There are several methods to improve patient comfort during infiltration, including the use of a buffered anesthetic solution, warming the anesthetic, slower infiltration technique, use of a 30-gauge needle, 90° angle injection technique, use of a vibration device, and direct cold application.

Skin cooling for analgesia has been used successfully in laser therapy and general surgery. Local cooling reduces epidermal damage and promotes analgesia by causing vasoconstriction, decreasing tissue metabolism, and retarding the neural signal transmission.[1] Cold has traditionally been applied by direct contact, including ice, cool saline bags, and liquid nitrogen or gel for nail surgery. Despite these improvements in analgesia for nail surgery, anesthesia is often quite painful for patients.

THE SOLUTION

The use of an air-cooling device can serve as an alternative to any contact cooling method. It does not cause any physical interference with the anesthetic infiltration and is independent of the topography of the area to be treated. The air-cooling device uses a compressor system to deliver a stream of cold air through a thin tube with a flow of 500 to 1000 L/min at a temperature as low as −30°C (Fig 1).[2] This technique minimizes pain in patients

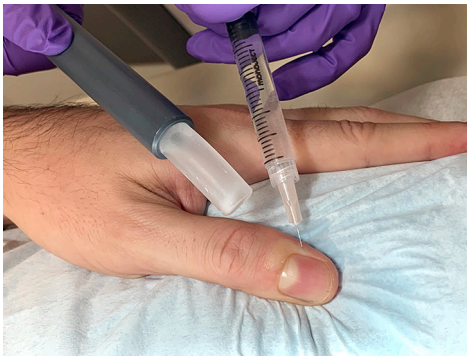

Fig 1. Demonstration of an air-cooling device being applied to deliver a stream of cold air through a thin tube directly to the area infiltrated with the local anesthetic medication.

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undergoing local anesthesia for nail surgery. Controlled trials are needed to determine whether this method reduces pain more compared with other cooling methods.

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