

## Poster journal

### Endodontic cryotherapy: A review of current status, potential sequelae, and call for action

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#### Commentary:

Patients undergoing endodontic treatment may develop post-endodontic pain, which can be attributed due to several factors such as: during chemo-mechanical preparation, an extrusion of debris (dentinal), irrigants, and micro-organisms beyond an apical limit might produce inflammation<sup>1</sup>. The utmost priority in such situations would be to manage the pain. Prevalence of post endodontic treatment pain is estimated to be from 1.5% to 50% or more<sup>1</sup>.

According to Hargreaves and Hutter, a painful state can be forecasted mostly in teeth with pulpal necrosis, symptomatic apical periodontitis, and pre-operative pain<sup>2</sup>. Dentists can win the patient's confidence by prescribing medications and by making the patient familiarize with post-operative pain, this can change the patient's point of view towards further dental treatment. As per literature pulp therapy and root canal therapy causes severe and repeated pain in comparison to other dental operative procedures. Adequate cleaning and shaping helps in eliminating the bacteria from an infected root canal and proper three-dimensional obturation helps in achieving the fluid-tight seal (hermetic seal)<sup>3</sup>.

Non-steroidal anti-inflammatory drugs, paracetamol, or corticosteroids can help to reverse the inflammatory process and control pain but these medications have some side effects. To overcome these side effects various strategies were developed to reduce post-endodontic treatment such as the use of lasers, cryotherapy, and manual lymphatic drainage. Some clinical and physiologic evidence recommended that the application of cold through different methods may reduce the local inflammation, edema, conduction velocity of nerve signals, and hemorrhage. Thus, helps in the reduction of pain<sup>2</sup>. Felho et al. in 2005 concluded that the use of cryotherapy notably reduces the post endodontic pain and swelling<sup>4</sup>.

The word cryotherapy is derived from the Greek word 'Cryos' meaning cold. Change in temperature vastness and biophysical tissue variance depends on the dissimilarity in exposure time, application of heat and cold, the thermal conductivity of lesion, etc. Various modes of cold application are an ice pack, gel pack, prepackaged chemical ice pack, and melted ice water. In dentistry, after intraoral surgical procedures, the cold application has been frequently used for controlling postoperative pain. A. Alharthi et al. stated that the use of cold saline as final flushing of the canal was effective for controlling post-endodontic pain<sup>3</sup>.

Duaa S. Bazaid et al. concluded that the use of cold saline during root canal irrigation using 27-G side vented needle reduced the intensity of postoperative pain in cases of irreversible pulpitis with apical periodontitis<sup>5</sup>. Use of more than 10-degree Celsius cold saline for final irrigation reduces the external root surface temperature and maintained it for 4 minutes<sup>2</sup>.

Lately, cryotherapy was used to control the bleeding from the vital pulp. Over the direct or the indirect exposure of the pulpal tissue shaved sterile water ice (0°C) was placed. After 1 minute, it was removed, irrigated with EDTA (17%) then covered with a bioceramic material, and after that permanent restoration was done. The tooth remained vital, asymptomatic, and functional even after 12–18 months follow up. However, to determine the long-term results of this therapy more studies are required<sup>3</sup>. V Jorge et al. concluded that the need for medication, post-operative pain in patients with symptomatic apical periodontitis and necrotic pulp is reduced after using cryotherapy<sup>2</sup>. It has been reported that cryotherapy is a long-established therapeutic method for reducing inflammation, pain, and edema. Cryotherapy could be contemplated as an uncomplicated, harmless, and cost-effective therapy for controlling postoperative pain in single visit root canal treatment<sup>6</sup>.

## References

1. Al-Nahlawi T, Alabdullah A, Othman A, Sukkar R, Doumani M. Postendodontic pain in asymptomatic necrotic teeth prepared with different rotary instrumentation techniques. *J Family Med Prim Care*. 2020;9(7):3474.
2. Vera J, Ochoa J, Romero M, Vazquez-Carcaño M, Ramos-Gregorio CO, Aguilar RR, Cruz A, Sleiman P, Arias A. Intracanal cryotherapy reduces postoperative pain in teeth with symptomatic apical periodontitis: a randomized multicenter clinical trial. *J Endod*. 2018;44(1):4-8.
3. Gade V, Barfiwala D, Asani R, Gawande R, Gade J. Cryotherapy: An Emerging trend in the field of endodontics. *IJDRD*. 2020;2(3):70-6.
4. Laureano Filho JR, de Oliveira e Silva ED, Batista CI, Gouveia FM. The influence of cryotherapy on reduction of swelling, pain and trismus after third-molar extraction: a preliminary study. *J Am Dent Assoc*. 2005;136(6):774-8.
5. Bazaid DS, Kenawi LM. The effect of intracanal cryotherapy in reducing postoperative pain in patients with irreversible pulpitis: a randomized control trial. *Int J Health Sci*. 2018;8:83-8.
6. Yadav SS, Goud B.V, Paturu P, Ateeq Z, Reddy AS, Yeligati P. Evaluation of postoperative pain after various cryotherapy applications in teeth with chronic irreversible pulpitis—an in vivo study. *IJMSTR*. 2020;4(2):9-11.

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