Cryotherapy for prophylaxis of wisdom teeth impactions?

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Abstract

Introduction
Not all third molars become impacted, but much pathology derives from those which are impacted. Consequently, many impacted wisdom teeth demand surgical removal with resultant traumatic morbidity. Prophylaxis of impactions includes removal of teeth anterior in the arch with follow up orthodontics. Other methods have been proposed for terminating growth of third molar follicles for prophylaxis of impaction. This paper proposes cryotherapy for prophylaxis of wisdom teeth impaction.

The hypothesis
The management proposed here is based on a novel hypothesis which suggests cryotherapy on developing follicles to avoid future impactions.

Evaluation of hypothesis
Placing and use of a suitably designed cryo-explorer demands the use of a local or general anaesthetic for the patient, in conjunction with locating techniques to define the growing follicle in the jaws.

Conclusion
Cryotherapy thus far stands up to the most rigorous criticism, with excellent successful applications and results; it may well turn out to be the treatment of choice in the future.

Introduction
Teeth derive from invagination of oral epithelium, to form a double-layer of epithelial cells which in turn develop as dental follicles within the bony alveoli. Developing follicles start growing calcified crowns and roots. This growth is a part of the eruption process, which occurs at different times for the various designated teeth. Wisdom teeth follicles [third permanent molars, referred to as 8’s FDI nomenclature as 18, 28, 38 and 48] can be seen at 8–9 years (±9 months) with various imaging techniques. Exact location in the bony jaws may be determined using radiography (R/G), 3-D computer-assisted tomography (CAT-Scan), or magnetic resonance imaging (MRI). Space in both upper and lower dental arches are limited, and usually can accommodate all teeth, with the exception sometimes of wisdom teeth. Third molars are the last teeth to erupt, and should the space needed by all the adult teeth which exceed the space available in the arch, the wisdom teeth will become impacted in bone.3,4 Often teeth are extracted to make space for others in the arch, and this may also be done to allow eruption of an impacted wisdom tooth. Due to the mandible shape, lower impactions are more prevalent than upper, and pathologies deriving from partially erupted or completely impacted teeth are common. The most prevalent time for eruption of wisdom teeth is between 17–23 years, and third molar impaction-morbidity is common. This includes: pericoronitis, osteomyelitis, oral infections [like ANUG], cyst formations, pain, and arguably also contribute to other pathologies and malocclusions. Fully developed wisdom teeth removal using surgical techniques, is invasive, severely traumatic, causes much pain and can also precipitate complicating co-morbidities.

Cryotherapy
Cryotherapy has been used before, not only for dermal lesions (like HPV papillomata and warts), prostate cancer, and cervical dysplasias, but also for a host of intra-oral lesions.6–16 A rapid freeze and slow thaw essentially kills off viable cells within a formed ice-ball, and subsequent necrosis, is replaced by healthy tissues from the surviving vital surrounds which results little scarring if any and minimal amounts of freezing is effective.9,17 Any reference to using this technique to ablate under-developed tooth follicles is exiguous. Hopefully this article proposes the successful use of cryotherapy for the above purpose, to avoid future impactions.

The hypothesis
The hypothesis proposed here is to locate developing third molar follicles as early as possible, and to render them inactive in a sterile surround, through freezing (Cryoablation).

Evaluation of hypothesis
Application of cryoablation could be done with a cryo-probe. This instrument will work on the principle that matter when changing from one form to another (solid to liquid or liquid to gas) demands an inherent energy exchange, as the physical form of the matter changes. The cryoniceffect obtains when circulating a liquid gas (like nitrogen or nitrous oxide), through an applicator and converts to a gas; in so doing, the probe cools to temperatures which drop to over −200°C or lower. Placing and use of a suitably designed cryo-explorer

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MRI could note any co-destruction or regular monitoring with R/G and variable and the contra-lateral side emerge. Surgical removal of wisdom teeth will lead to the development of invisible folicles, from epithelial dysplasia, even to accessible neoplasias, sias, even to accessible neoplasias, and side effects of co-destruction seems minimal. Subsequent longitudinal checks for complications could be sustained throughout the teenage years.

Discussion

Experimentation on humans

As modern imaging and energy management innovations evolve, alternative techniques other than surgical removal of wisdom teeth will emerge. Ipsi-lateral cryoablation could easily act as an experimental variable and the contra-lateral side not treated, could act as a control. Regular monitoring with R/G and MRI could note any co-destruction or unexpected complications. With modern techniques, precise location of the earliest third molar follicles is possible at the earliest (8–9 years) stages of dental calcification, and cryoablation will render the wisdom tooth follicle non-vital, arrest growth of third molar crown and roots, and so avoid future impactions and morbidity. Touyz stated, “Optimal operating protocols and technical instructions should be procured from research for human application and management.”

Conclusion

Change always takes time and many will oppose using new techniques of fear of the unknown, and also possible loss of earnings by interested parties. Highly trained, informed dental specialists should be free to use these advanced techniques, and they must accept the responsibility for patient management and care. Cryotherapy thus far stands up to the most rigorous criticism, with excellent successful applications and results; it may well turn out to be the treatment of choice in the future.

References