Extraction of impacted mandibular third molars

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INTRODUCTION

The extraction of impacted mandibular third molars is a common procedure in oral and maxillofacial surgery. The reasons for extracting these teeth include acute or chronic pericoronitis, presence of cysts or a tumour, periodontal problems and presence of a carious lesion on the second or third mandibular molar. In some cases, extraction is performed in preparation for orthodontic treatment or orthognathic surgery In most cases, the removal of third molars will lead to a significant degree of tissue trauma that causes an inflammatory reaction. Thus, the patient develops the common postoperative symptoms and signs of pain, facial swelling, dysfunction, and limited mouth opening (trismus).

The pain is typically brief and will peak in intensity in the early postoperative period. The facial swelling and trismus will reach their characteristic maximum 48 to 72 hours after surgery. Those symptoms are major disadvantage and affect the patients quality of life. The inflammatory process is necessary if healing of traumatic tissue has to occur, but often excessive inflammation lead to unnecessary pain, trismus and swelling. The impact of these symptoms affect the quality of life in the days following surgery.

Injured tissues immediately release local inflammatory mediators, like histamine, that produce vasodilatation leading to extravasations resulting in edema and sensitize the peripheral noci-receptors resulting in hyperalgesia. Although these inflammatory mediators are released immediately after the

trauma, these symptoms are not observed immediate after the surgery but rather begin gradually, peaking 1 – 3 days after the surgery.

Pain has been an indispensible part of all surgical procedures and minor oral surgical procedures are not an exclusion. Through ages mankind has been in constant quest for various methods to control pain .

The specificity theory proposed in 17 th century by Descartes R explains pain as the activity of highly specific peripheral nerve endings that receive sensory information from the environment, which is then transmitted by nerve fibres through the spinal cord to the pain centre, or the pineal body, in the forebrain. However it is merely a biological explanation and does not address the multidimensional, complex process of pain as we understand today. [1]

Various factors contribute to determine the intensity of post-operative complications such as host defense mechanism, type of healing, duration of the procedure, [4-8] extent of reflection of the mucoperiosteal flap, types of flaps, bone removal, need for tooth sectioning, [5] and experience of the surgeon. [9, 10] To increase patients satisfaction after third molar surgery it will be necessary to avoid the inconvenience associated with tooth extraction and minimize the subsequent side effects.

Methods to reduce the side effects is to prescribe medications such as corticosteriods , non-steroidal anti-inflammatory drugs , a combination of corticosteroids and non-steroidal anti- inflammatory drugs or enzyme preparation.

Synthetic “ inflammation inhibitors” which are active at certain points during the course of the inflammatory reactions are available. They are sometimes associated with undesirable side effects such as insomnia, depression, systemic fungal infection, increased calcium excretion, gastrointestinal irritation, visual complaints, fever and fatigue.

These “ inflammation inhibitors” are divided mainly into two groups: Steroids, i. e., cortisone and its derivatives, and the Non-Steroids, which are usually salicylic acid derivatives such as butazolidine, indomethacin and others. The side effects of prolonged corticosteroids use are well known, and are fundamentally dependent upon the dose employed and the duration of treatment. These effects include peptic ulcer, immune suppression, water and electrolyte balance metabolic effects, muscle atrophy, osteoporosis, increased fatty tissue (full moon facial appearance), Cushing syndrome, avascular osteonecrosis, lessened resistance to infection, hirsutism, amenorrhea, acne, hyperglycemia or hypertension. Systemic glucocorticoids , which are frequently used as anti-inflammatory agents, are well-known to inhibit wound repair via global anti-inflammatory effects and suppression of cellular wound responses, including fibroblast proliferation and collagen synthesis. Systemic steroids cause wounds to heal with incomplete granulation tissue and reduced wound contraction. Glucocorticoids also inhibit production of hypoxia-inducible factor-1 (HIF-1), a key transcriptional factor in healing wounds

Non-steroidal anti-inflammatory drugs (NSAID) have been used since many years for their analgesic and anti-inflammatory properties. Although these drugs have been proven efficient in management of post operative pain,

adverse effects and associated morbidity pose a serious problem. It has long been known that NSAID may have a range of side effects, of which the commonest are gastrointestinal. [5]

Non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen are widely used for the treatment of inflammation and rheumatoid arthritis and for pain management. Low-dosage aspirin, due to its anti-platelet function, is commonly used as a preventive therapeutic for cardiovascular disease, but not as an anti-inflammatory drug.

In contrast to chemical inhibitors of inflammation such as nonsteroidal anti-inflammatory drugs (NSAIDs), enzyme preparations support and accelerate the natural inflammatory process without contributing to pain, redness and swelling. This is accomplished by helping degrade and remove plasma proteins and fibrin that invade the interstitial space within tissues at the site of inflammation. Improved microcirculation and removal of inflammatory products results in an analgesic effect and complaint relief.

Proteolytic systemic enzymes (proteases), such as those found in bromelain, papain and pancreatin, cleave protein compounds by hydrolysis. That is, they split their substrate by incorporating water. These enzymes are absorbed from the gastrointestinal tract into the bloodstream and travel to specific sites where they break down cell debris, fibrin and toxins. They also stimulate phagocytosis within the immune system and accelerate elimination by way of the lymphatic system and blood vessels. This translates into improved circulation and reduced inflammation.

Proteolytic enzymes, which when taken with a meal is used to help digest food. Proteolytic enzymes are known as systemic enzyme supplements and are taken on an empty stomach, 45 minutes to one hour before meals or 3 hours after a meal, to digest proteinaceous or fibrous waste material throughout the body including the outer coating of bacteria, necrotic tissue and immune complexes. The only negative effects are for people with rare cases of protein allergies.

Purpose of this randomized , single blind study is to compare the efficacy of proteolytic enzyme such as bromelain , trypsin and rutoside as an alternative to corticosteroids in pre and post- operative swelling , pain and trismus after removal of third molar.