Orthodontic Pain Management: Is It Time to Protocolize Analgesic Use?



Research demonstrates that up to 90% of orthodontic patients have reported treatment to be painful and almost 30% of those have considered premature cessation of treatment.[1,2] Patients' pain is an important aspect of oral health-related quality of life (QOL). Poor oral health can affect physical, psychological, and social conditions, which in turn affect a patient's QOL.[3,4] This phenomenon is a concern to orthodontic care seekers and providers alike!

The big question posed to the clinician is - "Will it hurt?" The answer usually is "there will be some discomfort associated with all orthodontic procedures such as placement of separators, archwire placements and activations, expander placements, temporary anchorage device (TAD) insertions, putting on new aligners, elastic wear, and debonding." The two most important parts of orthodontic pain – its duration and intensity – are often ignored.[5] Krishnan states, "It is known that the above-mentioned procedures will cause pain but what is not known is "why they cause pain?" It is reported that orthodontic procedures will reduce the proprioceptive and discriminating abilities of the patients for up to 4 days, which result in lowering of the pain threshold and disruption of normal mechanisms associated with proprioception input from nerve endings in the periodontal ligament (PDL). At the same time, there will be pressure, ischemia, inflammation, and edema in the PDL space." Burstone reported an immediate and delayed painful response after orthodontic force application. He attributed the initial response to compression and the delayed response to hyperalgesia of the PDL.[6] This hyperalgesia has been related to prostaglandins (PGEs), which make the PDL sensitive to released algogens such as histamine, bradykinin, PGEs, serotonin, and substance P. It is clear that all orthodontic procedures will create tension and compression zones in the PDL space resulting in a painful experience for patients.[5,6]

There has not been a linear relationship that has been established between perceived factors such as age, psychological status, gender, cultural background, appliance type, and cultural backgrounds of patients. Thus, management protocols do not have many deliberations in orthodontic literature as well. Orthodontic pain has been assumed to be that reality that co-exists with the therapeutics. Orthodontic pain management (OPM) has relied on prescription or over-the-counter (OTC) pain killers, plastic wafer chewing gums, or mild analgesic gums, lower level laser therapy, warm water salt rinses, anesthetic gels, vibratory stimulations, and transcutaneous electrical nerve stimulations.[7]

Analgesics are still the mainstay of OPM. While orthodontists in some part of the world recommend OTC painkillers, for procedures likely to induce pain, others prescribe them for their patients. As orthodontists, it is important to understand the wide range of individual variations and factors to be taken into account while prescribing analgesics to patients. Dr. Pratik Premjani devised an interesting survey to assess knowledge of analgesics among orthodontists in the Middle East.

The Analgesics Survey

A two-part questionnaire, written in English, to be understood by all orthodontists was developed and printed for this survey. Part 1 of the questionnaire had a check of yes or no while Part 2 of the questionnaire required the orthodontist to fill the answers. Part 1 of the questionnaire had factual questions, based on the types of analgesics, their pharmacological actions, their type and side effects, i.e., etodolac (Lodine), tolmetin (Tolectin), and diclofenac sodium (Voltaren) are what class of drugs? (A) carboxylic acids (salicylates), (B) acetic acids, (C) nonacidic compounds, and (D) natural opioids. Part 2 of the questionnaire had subjective questions which covered topics like whether the orthodontist prescribed analgesics or preferred to recommend OTC analgesics, how often did the orthodontist prescribe analgesics, how many in a day and type of analgesics.

Eighty-seven randomly selected orthodontists from a database filled in the questionnaire online. The purpose of the study was explained to all and verbal consent was obtained. The questionnaire started with demographic data including name (optional), age, gender, and year of graduation, university of graduation, nationality, and working place. After completing the questionnaire, the orthodontists were also given correct answers to all questions in Part 1 of the questionnaire.

Data was analyzed with Microsoft Excel 2011 software. Results with 65% total correct answers and above, for each orthodontist, were considered acceptable level of knowledge and any result below 65% was considered

nonacceptable. Furthermore, 65%–75% were referred to as fair, 75%–90% as good, and 90% and above as excellent. The Part 1 survey questionnaire was prepared by a team of three professionals (a senior orthodontist, a pharmacologist, and a practicing physician) and validated. The total number of orthodontists with an acceptable knowledge on analgesics was 79.3%. Eighteen orthodontists (20.7%) had scores below 65%. Thirty-five orthodontists scored between 65% and 75%, 28 scored between 75% and 90%, and 6 orthodontists scored above 90%. The best score recorded was 95% and the lowest was 25%.

Results from Part 2 of the survey also had interesting findings. Eighty-three orthodontists (95.4%) recommended OTC analgesics to patients while only four of them (4.6%) prescribed analgesics of their choice. Analgesics were prescribed post bonding by most orthodontists, followed by placing appliances such as TADs, expanders, or headgear/face-masks. The most common regime recommended was use of analgesics for 3 days post bonding – twice daily (64 orthodontists) if one arch was bonded and 1 week postbonding – twice daily (75 orthodontists) if both arches were bonded. Overuse, I certainly think so! 11 orthodontists recommended analgesics to patients at each wire change.

Is it time to consider "standardized operating protocols" (SOPs) for analgesic use in orthodontics? Results from this pilot survey demonstrate that though most orthodontists sufficiently recollect the pharmacology of the drugs in use, the practical applications need a re-think. Almost 80% of orthodontists had acceptable pharmacological knowledge of analgesics. Most orthodontists prescribed OTC analgesics and advised patients to have them twice a day for up to a week while bonding both arches. Almost 13% of orthodontists recommended an analgesic with every wire change!

There are local regulations in a lot of countries that govern whether the orthodontist can prescribe analgesics or not. Orthodontists in these countries suggest OTC medications to patients. However, analgesic misuse or overuse is a potential issue with any OTC drug! Though nonsteroidal anti-inflammatory drugs remain the most preferred method for pain control during orthodontics, a lack of an appropriate protocol for their administration after orthodontic appointments is considered to be a major drawback that should be addressed in future research.

Pain management or prevention is not really an important part of orthodontic teaching or continuing education protocols, even today. Hence, a lot of clinical decisions made for OPM are based on individual experiences and opinions. Is this acceptable in "a more than a century old" specialty? Not really! We have made great strides in appliances and therapeutics in the 21st century so far; however, streamlining OPM research is the need of the hour. Research that gives us clinically applicable information! Research that serves to develop a SOP on evaluation, quantification, measurement, and management of orthodontic pain. We sincerely hope to see more lecture slots at congresses and pages in literature dedicated to this important aspect of orthodontic care that will improve the QOL of both the patient and the professional alike!

Nikhilesh R. Vaid, Premjani Pratik[1], Ferguson Donald[1]

Department of Orthodontics, Dubai Healthcare City, European University Dental College, [1]Department of Orthodontics, Dubai Healthcare City, European University, Dubai, UAE

Address for correspondence:
Prof. Nikhilesh R. Vaid,
Department of Orthodontics, Dubai Healthcare City,
European University Dental College, Dubai, UAE.
E-mail: orthonik@gmail.com

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