“No Anaesthesia” endodontics in children

By Dr Imneet Madan, UAE

“Laser Popping Sound” in dentistry for children is one of the best approaches that can help us to overcome the initial fear of the unknown when it comes to first treatment appointments in children. Its uniqueness lies in the fact that the need for numbing is completely exempted. Today’s children like technology playing at its best. Lasers definitely meet that perception of technology.

The routine first visit appointments are usually not a concern as children do not anticipate any intervention. Since they are not in pain, their mindset of approach is not defensive. Rather when there is no pre-biased opinion or fear, there is a pleasant sense of adaptation that allows the smooth flow of the appointment. Any different kind of behavioural exhibit occurs only when kids are anticipating an intervention, when they had been in pain or when in general they come fatigued.

The discussion of needles is considered to be the most common subject just prior to the visit to the dentist. This discussion can become even more intense when there is already a perceived treatment need. Very young children can have the fear of the unknown, anxiety with strange and new places.

The older ones develop extreme fear by talking to peers who have been to the dentist before. Some of them might have had good and some others not so good experience. Sometimes, past unpleasant parental experience can distort the child’s adaptability to the dental appointment. They enter the clinic with the preformed image of the dentist which is not very convincing and helpful to the child. These external experiences can lay the foundation of the child’s coping ability in the dental chair.

How can lasers help?

Since laser is not commonly available at all practices, there could be a possibility that there had been no real discussion on the use of lasers in the treatment. Another possibility of having a good experience with lasers can change the perception of the child who is in for the first time. When laser is introduced to the parents, they are informed about details on the functioning of laser and its benefits. While explaining euphemisms to the child, the laser is shown as “Popping Light”. There is a significant number of children who go awe-inspired to come back and get their teeth fixed.

The whole mindset of the child changes when they are told that treatments do not involve any needles approach.

“How Anaesthesia” Procedures that can be done without anaesthesia are:

- Restorations: Decays involving occlusal, labial, palatal, buccal or proximal surfaces of the teeth.
- Deep restorations on teeth with decays close to the pulp.
- Pulpotomies in primary teeth.
- Pulpectomies in primary teeth.
- Pulpectomies in primary teeth with abscess, fistula or swellings.

The term “No Anaesthesia” is a misnomer as the procedure is accom-
plished with few drops of anaesthesia in between, especially when endodontics is involved. The "No Anaesthesia" approach for enamel dentine restorations is the erbium laser Prep mode for restorative dentistry. MX7, 3.75 W, 25 Hz, air 80, water 50; and then adjusted rapid prep settings: MX7, 5 W, 20 Hz, air 80, water 50. This setting is usually used for enamel caries removal as water content is lesser. Since there is less water in the enamel, higher power is needed for appropriate absorption of laser.

– Comfort Prep: MX7, 3.75 W, 25 Hz, air 60, water 30. This setting is usually advised when we have reached the level of the dentine as the water content in the dentine is higher in comparison to enamel.

Once complete excavation of the decay has been attempted with laser, gentle hand excavation, low speed excavation is attempted. This step should be followed with Bond Prep: MX7, 3.75 W, 50 Hz, air 60, water 30. Following this step, the tooth is isolated and restored with composite (Figs 1 & 2).

Pulpotomy procedure with erbium laser

When the carious decay is found deep and in close proximity to pulp, exposure of the pulp canals can happen while removing this decay. In such situations, exposed pulp needs removal of both coronal and radicular pulp contents. This procedure is referred to as Pulpotomy.

Deep caries are excavated with pre-adjusted rapid prep settings: MX7, 5 W, 20 Hz, air 80, water 50; and then comfort prep settings: MX7, 3.75 W, 25 Hz, air 60, water 30 are used as we approach deep into the dentinal caries. As soon as there is pin point pulp exposure, few drops of Lignospan are dropped inside the coronal pulp chamber. This step is followed by opening partial access into the coronal pulp chamber. As we go further deep into the coronal chamber, more anaesthetic intrapulpal infiltration is used followed by complete laser access opening.

After removing the coronal pulp contents, the chamber is irrigated and dried followed by diode laser sterilisation and coronal pulp filling with zinc oxide eugenol. The tooth is then filled with base Fuji IX and final restoration is done with composite or stainless steel crown.

Pulpotomy procedure with erbium laser

Teeth that have chronic profound caries, active signs and symptoms, and radiographical signs of pulp involvement, are indicated for Pulpotomy. Pulpotomy involves the removal of both coronal and radicular pulp contents. When the tooth is indicated for pulpectomy or root canal procedure, deep caries are excavated with pre-adjusted rapid prep settings: MX7, 5 W, 20 Hz, air 80, water 50; and then comfort prep settings: MX7, 3.75 W, 25 Hz, air 60, water 30 are used as we approach deep into the dentinal caries. As soon as there is pin point pulp exposure, few drops of Lignospan are dropped inside the coronal pulp chamber. This step is followed by opening partial access into the coronal pulp chamber. As soon as there is pin point pulp exposure, few drops of Lignospan are dropped inside the coronal pulp chamber. This step is followed by opening partial access into the coronal pulp chamber.

As we go further deep into the coronal chamber, more anaesthetic intrapulpal infiltration is used followed by complete laser access opening. Before gaining access into radicular pulp chamber, few more drops of anaesthesia are dropped. Complete extirpation of radicular pulp contents is done with rotary instruments.

Continuous copious irrigation is done with saline and chlorhexidine. Canal measurement is done and as a final step before obturation, both the erbium and diode laser are used for sterilisation. Final step is zinc oxide eugenol obturation, Fuji IX base filling and composite restoration.

Pulpectomy procedure in primary tooth with abscess or fistula

In cases where there are long standing infections or chronic irreversible pulpsitis, it becomes inevitable to use both diode and erbium laser sterilisation after the laser assisted access and further steps as described above.

Until the point that carious canals are found completely dry, obturation is deferred. Usually it takes one or two visits to complete the final step of obturation in teeth with abscess or fistula. The entire treatment is completed with intrapulpal drops of anaesthesia when required. No intrafillations or blocks are used in the entire procedure.

This procedure has been practiced as an alternate to pre times extraction of primary teeth that has to be then replaced with a space maintainer. Most of the parents prefer this approach when compared to extraction, as they do understand that having the natural tooth as the space maintainer is indeed the best approach.

Benefits of "No Anaesthesia" dentistry

– No risk of children having traumatic bite after the procedure is completed.

The times when anaesthesia in children was a common practice, it was imperative to let the child and parents know about the numbing effect that would stay for few hours after the procedure. Cotton roll is given to bite on so that it serves as a reminder for the child.

– Despite all the precautions, children may still land up in biting their lip or cheek. Once there is a traumatic bite, there is nothing much that can be done as the traumatized tissue has to self heal. This can be quite painful for the child, thereby defeating the entire purpose of pain free dental approach.

– Multi-quadrant dentistry can be practiced on the same day. Same appointment.

– There is actual saving of chair side time, as there is no waiting period for local anaesthesia to work.

– Children can eat a few minutes after the procedure, which is not the case with the local anaesthesia.

Conclusion

Practicing contemporary dentistry in children with the appropriate use of technology and the key tools, is the way forward. The benefits of the "No Anaesthesia" erbium approach far outweigh the existing alternatives. This kind of professional approach can certainly become the gold standard for dentistry in children in the very near future.
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Root canal therapy and coronectomy

By Drs Mirna Hobeika, Ali Hajj Hasssan, Edgard Jabbour & Philippe Sleiman

Coronectomy is a procedure that generally spares the vital coronal pulp and is performed to avoid the risk of damaging the inferior alveolar nerve (IAN) during the surgical procedure when extraction of mandibular third molars is indicated or needed. Coronectomy is the removal of the crown of the mandibular third molar without exposing the pulp. The coronectomy procedure is performed only on the third molar crown, leaving the roots in the socket. This procedure is now known for its benefits and success rate, in contrast to the contemporary belief that the roots left behind will be a source of problems. Risk factors for nerve injury include root proximity, the surgeon’s experience, surgical procedure, the patient’s age and pre-existing disease. Several studies have shown that coronectomy significantly decreases the risk of iatrogenic injury to the IAN and lowers the complication rate. Coronectomy has been associated with a low incidence of complications in terms of IAN injury (0-09.5%), lingual nerve injury (0-0.1%) and pulp disease (0.9-3.5%), in addition to other rare events, such as swelling, fever, alveolitis, pulps and root exposure. Coronectomy to prevent IAN damage was first proposed by Lucier and Deben in 1984 and it remained controversial owing to the possibility of infection and other pathologies arising from the roots left behind. Potential complications include deep dry sockets, local postoperative infections, postoperative pain, pulpal, root canal necrosis and infection, and an increased risk of IAN infection, which is known as failed IAN. The point of discussion is whether it is necessary to perform root canal therapy simultaneously with coronectomy if the pulp is going to be exposed during the surgical procedure.

A new method combining coronectomy with root canal therapy, when necessary, in order to decrease the risk of infection, pain and other complications is introduced in this paper. The case presentation is about the potential injury to the IAN during the surgical procedure, especially in view of the efforts to cut the crown below bone level, pulp exposure and partial pulpectomy were inevitable. Therefore, in order to minimize postoperative complications, the decision was made to perform a root canal therapy on the third molar to reduce the risk of pulpitis or infection in the apical part. The patient agreed to this solution.

Endodontic treatment was performed using the TF Adaptive SM root canal therapy system (Kerr), as any extrusion of sodium hypochlorite could have severe consequences for the nerve and the apical area. The root canal therapy was completed in a single visit (Fig. 5), following which the surgeon performed the coronectomy. A bitewing radiograph was taken to check the level of the coronal part after the extraction (Fig. 3). The cross section revealed an intimate relation between the apical part of the root and the IAN, and confirmed the bone level relative to the pulp chamber. The patient returned to the clinic complaining of acute pain, which would require treatment, possibly antibiotic therapy, which in the future would be her go-to in case of a flare-up. This was definitely not an ideal situation, especially in view of the efforts currently being undertaken by the European Society of Endodontontology to limit antibiotic prescription for root canal therapy to a reasonable and evidence-based minimum. The alternative solution in such cases is coronectomy.

From this discussion with the surgeon and studying carefully the radiographs and CBCT data, it was clear that the main point was to cut the crown below bone level, pulp exposure and partial pulpectomy were inevitable. Therefore, in order to minimize postoperative complications, the decision was made to perform a root canal therapy on the third molar to reduce the risk of pulpitis or infection in the apical part. The patient agreed to this solution.

Endodontic treatment was performed using the TF Adaptive SM root canal therapy system (Kerr) for root canal shaping. During the treatment, one perapical radiograph was taken (Fig. 4) and it showed the curve on the mesial roots. Irrigation was performed very safely with the EndoVac unit (Kerr), as any extrusion of sodium hypochlorite could have severe consequences for the nerve and the apical area. The root canal therapy was completed in a single visit (Fig. 5), following which the surgeon performed the coronectomy. A bitewing radiograph was taken to check the level of the coronal part after the extraction and confirm that it was completely under the bone level (Fig. 6). A reinforced glass ionomer was used to seal the roots, and sutures were placed and left for one week. A small field of view CBCT was taken to check the postoperative outcome of the procedure (Fig. 7).

Two years after the treatment, the patient returned to the clinic complaining of some pressure sensations in the area. A CBCT scan was allowed to investigate the situation, and it revealed a pleasant surprise: the tooth had migrated coronally and gone above the nerve (Figs. 8 & 9). The patient returned to the clinic, and the remaining part of the tooth had moved towards the gingival level, which was why the patient was feeling pressure, and now it would be safe to remove the remaining tooth. The surgeon performed the intervention. Figure 10 shows how much the tooth had migrated over the two years and demonstrates the absence of any infection under the roots.
When an idea turns into innovation

By Marc Chalupsky, DTI

Although the headquarters of COLTENE are in Switzerland, its endodontics plant is in southern Germany. At the factory, located in Langenau, a town between Stuttgart and Munich, 155 employees produce treatment auxiliaries and endodontic equipment in a fully automated and camera- and laser-controlled process. The German location houses an impressive logistics department thanks to the office’s central location. Dental Tribune was invited to learn more about the company’s endodontic products.

A now well-known expert in endodontics, Dr Barbara Müller has been responsible for the company’s endodontics business unit for over 20 years. She takes pride in the company’s achievements. Today, COLTENE is an international leader in the development and manufacture of dental consumables and solutions for a variety of applications. The company operates worldwide, with subsidiaries and distributors in over 120 countries. With the 1990 introduction of the ParaPost X System, COLTENE came to be known as a provider of endodontic solutions. This position has been further entrenched in recent years as the company’s portfolio of endodontic products has continued to grow.

An impressive endodontic range

The CanalPro line, for example, features a cordless endodontic motor, a fully automated electronic apex locator and a variety of rinsing solutions, which are colour-coded for procedural safety. ROEKO and HYGENIC paper points are sterile and highly absorbent, and being non-adhesive, allow for reliable and easy drying of the root canal. Fast and safe obturation can be conducted with GuttaFlow bioseal, a bioactive three-in-one obturation material that combines cold free-flow gutta-percha with a sealer and bioceramic in one outstanding filling system and with HYGENIC and ROEKO Gutta-percha points. Recent studies have evaluated the in vitro toxicity of endodontic sealers such as GuttaFlow bioseal and GuttaFlow 2, as well as Angelus’s MTA-FILLAPEX and Dent...
Root canal treatments with the Endo-System by VDW – Peace of mind included

By VDM

MUNICH, Germany: Deliver root canal treatments with an optically integrated concept from a single source. This claim is be-hind the campaign’s “Peace of mind included – the Endo-System by VDW.”

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About VDW

VDW GmbH based in Munich, Germany is one of the most well-known manufacturers working in the dental field of endodontics. For almost 150 years, VDW has been a pioneer in shaping the evolution of root canal treatment significantly. VDW focuses on offering the dentist a holistic solution covering the entire endodontic treatment process including preparation, irrigation, obturation and post-endodontic care as well as service and training.

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