

DENTAL TRAUMA

ARE YOU READY FOR IT?

Luxation injuries. Crown fractures. Knocked out teeth.

Traumatic dental injuries occur frequently in both children and young adults – in fact they make up to about 5% of injuries. 25% of all school children experience dental trauma and 33% of adults have experienced trauma to their permanent dentition, with the majority of the injuries occurring before age 19. Be it from sporting injuries, accidents, or work related, proper diagnosis, accurate treatment planning and follow-up are important to assure a favourable outcome.

And being well prepared for it.

Mouthguards

Prevention is better than cure – ALWAYS. Even more so when one is involved with contact sports and high-risk work related injuries that could lead to the loss of teeth, or worse traumatic injuries.

The Australian Society of Orthodontists have also put out a news release pointing out that sports related injuries to the mouth and jaw are some of the most common injuries incurred by athletes. Even more so when one wears braces – other potential injuries such as cuts to the mouth also need to be taken into account.

However, according to the ADA, three in four active adults who do wear mouthguards wear uncertified, over-the-counter mouthguards, while one in two parents admit that they let their children wear over-the-counter mouthguards as well.

If you haven't already, always insist to your patients, both children and adults, to invest on a good custom fitted mouthguard - emphasizing that not all mouthguards provide adequate protection. Educate them that most boil and bite mouthguards over the counter fit poorly and become loose quickly overtime.



Briteguard Mouthguard Material

Briteguard have been making mouthguards for over 40 years – developed by Technicians for Technicians. Whether your mouthguard needs are large, small simple or complex, Briteguard mouthguard materials offer a choice of materials with greater impact absorbency, a variety of thicknesses and a rainbow of colours. Above all, Briteguard promises a material that is easy to work with in the dental laboratory for those custom fitted cases.



Erkoflex Playsafe® Mouthguard

Every Playsafe mouthguard is fabricated according to the very strict guidelines. It is always laminated (min. two layers) and can be adapted to changing teeth. The individually fabricated mouthguard fits exactly onto the teeth, does not move and allows free breathing, and after a short period of adaptation, normal speaking. Catering for any sport, Erkoflex has a PLAYSAFE Mouthguard for the occasion.





As with everything else, a rational examination procedure is highly essential in order to establish a complete and accurate diagnosis of all soft and hard tissue injuries (Andreasen and Andreasen 1985, Bakland and Andreasen 1996, Andreasen et al 2007).

When it comes to trauma injuries, apart from asking the questions of where, what, how, and when, proper and accurate diagnosis also comes when you start your examination of the injuries.

Transillumination

In the context of minor traumatic injuries to the dentition, transillumination can help dental practitioners better diagnose and treat a dental trauma.

According to R. Michael Peak, (DVM, DAVDC), fractured, discoloured or traumatised teeth are relatively common and can be significant sources of chronic discomfort and infection. Clinical evaluation and dental radiography can help direct treatment. Trauma to the tooth surface may result in enamel fractures without involving the underlying dentin, crown fractures that involve the dentin with or without pulp crown fractures that extend along the root surface, root fractures with no crown involvement, tooth discolouration from pulpitis, or tooth luxation and/or complete avulsion.

Although it is a subjective evaluation of pulp vitality, transillumination through the crown may help detect small fractures. Vital teeth physically transilluminate as translucent, whereas non-vital teeth transilluminate with a shadow within the crown. If the contralateral tooth is considered healthy, it can be used as a reference.

Prof. David J. Manton from the University of Melbourne, Australia explains that transillumination is based on the principle that sound tooth structure has a higher index of light transmission than a carious tooth. This method of diagnosis is primarily used for the detection of proximal carious lesions, and studies have also indicated that it can also improve visual detection of cracks in teeth.

NSK Phatelus Light Probe

Having been in the market aiding dental professionals for over 25 years, the NSK Phatelus Light Probe is used by many dentists for transillumination of teeth. It's great for locating cracks in teeth, chipping occlusal and interproximal caries that are not visible to the naked eye. The handpiece itself contains a fine fibre optic bundle that transmits the light directly into the mouth and allows precise positioning of the beam making it an invaluable tool that your dental practice should have for every examination.





Cold Spray

When it comes to the modality of pulp testing, the applications of agents to the teeth to increase or decrease temperature and to stimulate pulp sensory responses through thermal conduction is commonly practiced. (I.G. Chambers, "The role and methods of pulp testing in oral diagnosis: a review", International Endodontic Journal, vol 15, no. 1, pp. 1-15, 1982).

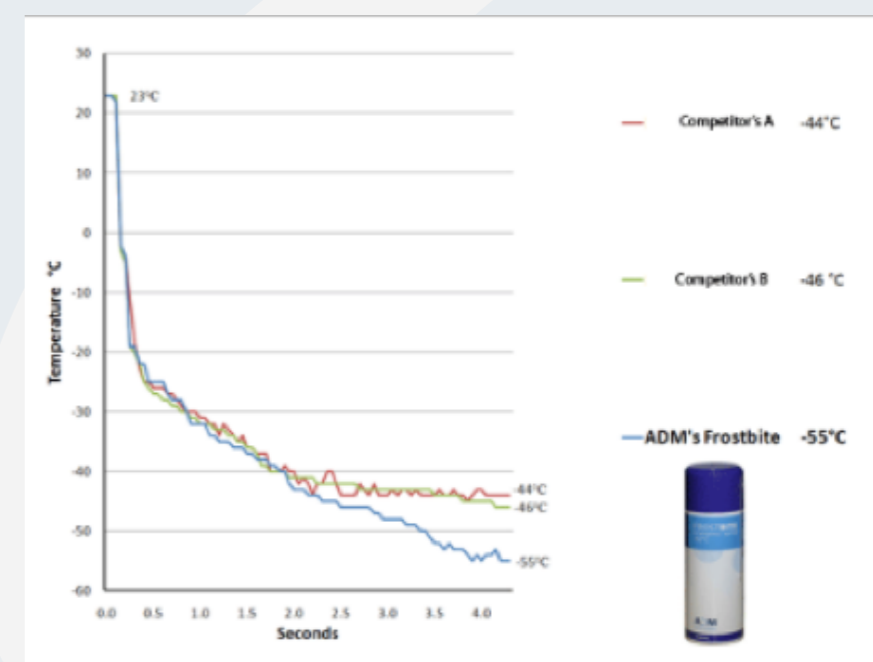
Due to its ease of storage, relatively cheap cost and simple application technique, cold spray or refrigerant spray is widely used in clinical settings. It is also known to evoke faster pulp responses without any differences in accuracy.

FROSTBITE by ADM

Frostbite is an endodontic cryogenic spray used for pulpal sensitivity testing through the application of a cold stimulus to a tooth. It uses a unique and efficient cooling fluid enabling it to reach temperatures down to -55°C and will not leave the patient with cold burns on their cheeks and lips.

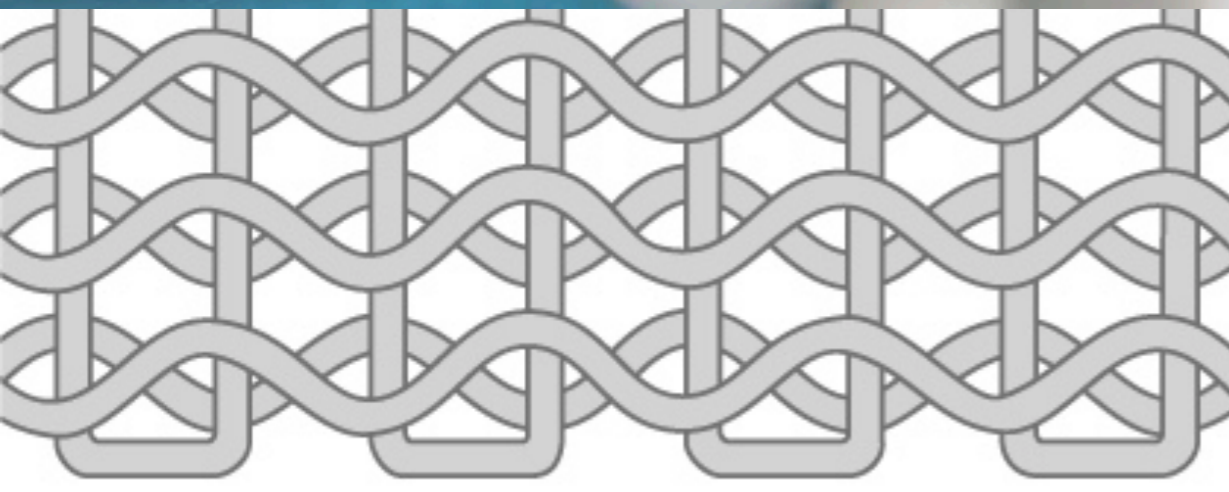
For best results, spray Frostbite on a cotton wool ball and placed on a tooth. The convenience and safety of spray with the certainty of carbon dioxide systems.

- Fast acting
- Low cost, no set or maintenance
- Easy to use



The graph presents a comparison between different cold sprays on the market. Frostbite 248 uses a gas system which has been specifically formulated to produce the lowest possible temperature without the need for exotic and expensive ingredients.

STABILISATION OF TEETH FOLLOWING SUBLUXATION, EXTRUSION OR AVULSION



There are three common diagnosis when it comes to dental trauma related injuries: subluxation, extrusion, or avulsion. Regardless of the situation, the treatment will require the placement or rather the application of a flexible splint to help with the stabilization of the tooth – depending on the severity of the injury, some of the treatment may require the splint to be in place from anywhere between 2 to 4 weeks.

Reattachment of Fractured Anterior Tooth Using Ribbond

Traumatic crown fractures, which are caused from dental injuries, are a serious dental public Health problem[1]. A majority of the crown fractures involve the maxillary incisors[2].The reattachment of the fractured tooth fragment has advantages including the preservation of the remaining tooth structure, reproducibility of the tooth contour and natural colors, and the most well-preserved incisal transparency[3].

Resin based restorative materials are frequently used in restoration of the fractured teeth. Because of the poor mechanical resistance of these materials, different approaches developed to strengthening resistance of composite resin, such as fiber posts [4].

Fiber reinforced composite (FRC) materials when used, as posts are more advantageous than the conventional post systems [5]. This paper presents a case report wherein the fractured fragment of left maxillary lateral incisor was reattached using aesthetic post and Ribbond fibers.



[TREATMENT OF TOOTH SURFACE]

A staple procedure of every treatment phase – antibacterial rinses are vitally important in ensuring dental hygiene when you're treating any tooth. Chlorhexidine has powerful antibacterial properties and can be especially helpful in controlling and killing bacteria in the mouth that can cause infection or gum diseases. Some dentists also prescribe these chlorhexidine rinses to recovering dental trauma patients to ensure they maintain good oral hygiene.

Dentalife Chlorhexidine

Chlorhexidine is a broad-spectrum biocide effective against Gram-positive bacteria, Gram-negative bacteria and fungi. Chlorhexidine inactivates microorganisms with a broader spectrum than other antimicrobials (e.g. antibiotics) and has a quicker kill rate than other antimicrobials (e.g. povidone-iodine). It has both bacteriostatic (inhibits bacterial growth) and bactericidal (kills bacteria) mechanisms of action, depending on its concentration.

Chlorhexidine kills by disrupting the cell membrane. Upon application *in vitro*, chlorhexidine can kill nearly 100% of Gram-positive and Gram-negative bacteria within 30 seconds.¹⁰ Since chlorhexidine formulations can destroy the majority of categories of microbes, there is limited risk for the development of an opportunistic infections.



[MANAGEMENT OF ENAMEL FRACTURES]

The most common fractures encountered in dental traumatology is usually a crown fracture in permanent anterior teeth. An aesthetic rehabilitation of these cases can easily be made possible by using layering techniques and direct composite resin restorations. Shape, colour and surface texture are the most important factors in restoring crown fractures aesthetically. By utilizing strip crowns as a mold for direct resin composite restoration, this provides a cost-effective treatment with operator friendly approach where most outstanding advantage is the minimum chair-side time with a single visit that is very important for young trauma patients.

3M Strip Crowns

- Automatically contours restorative material to match natural dentition.
- Strips off easily leaving a smooth surface.
- Thin interproximal walls allow for tight contacts.
- Provides sufficient strength for easy handling.
- Ideal for use with chemical or light-cured composites.
- Crown set is packaged in a unique, stackable tray that provides convenient, easy storage.

Prefabricated, transparent strip crowns for primary anterior applications. The strip crowns are ideal for use with chemical or light-cured composites.

Suggested Applications

- Pediatric anterior crown applications.
- Ideal for use with chemical or light-cured composites.

Frasaco Strip Crown Pedodontal Assortment of 84 – Transparent, ST-KK84

Superior Frasaco Strip Crown Assortments not only save time and money, their large selection of anatomical forms and sizes also help you achieve the best clinical outcomes and optimum results.

- Outstanding anatomy has smooth inside finish-no polishing required after stripping off the crown shell.
- Crowns are tapered toward the neck to perfectly fit tooth form and easily adapt to gingival rim.
- Thin elastic easy-to-cut celluloid material is resistant to tearing and splitting, yet flexible.
- Anti-static treatment improves handling.
- Assortment compartments and each crown are marked with tooth and size numbers for easy storage and retrieval.
- Marked with international quadrant numbering system.

Use them as molds for temporary restorations or for shaping the final layer in a multiple layer technique. May also be cut and used as matrices for restoration of corners and edges.



3M ESPE

frasaco

[FOR PROVISIONAL TREATMENT]

To prevent the dental pulp from deteriorating when a dental restoration gets near the pulp, calcium hydroxide may be used to preserve the vital pulp if infection and bleeding are controlled; to repair root fractures, perforations, open apices and root resorptions. For years, calcium hydroxide has been recognized as an antibacterial agent due to its high pH as well as its ability to potentially stimulate the healing of the bone. It is the most commonly used dressing treatment of the vital pulp. It also plays a major role as an intervisit dressing in the disinfection of the root canal system.

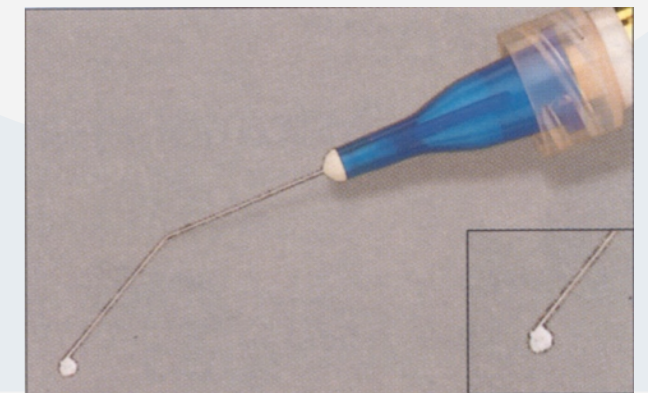
Calcium Hydroxide

UltraCal® XS by Ultradent

UltraCal® XS is a uniquely formulated calcium hydroxide preset paste that is both aqueous and radiopaque, with a high pH (12.5). It is recommended that larger 29g NaviTip be used for predictable flow, enabling direct placement. UltraCal XS can be thoroughly removed from the canal using Ultradent's Citric Acid and a NaviTip FX tip.

Second-visit protocol with an interappointment medication with calcium hydroxide resulted in improved microbiological status of the root canal system when compared with a single-visit protocol.

- Delivers precisely where needed
- Contains 35% calcium hydroxide
- Radiopaque
- Superior delivery control
- The only calcium hydroxide that flows through the NaviTip (we recommend the larger 29g for predictable flow)



ULTRADENT
PRODUCTS, INC.

Glass Ionomer Cement (GIC)

3M Ketac Range makes it easy for you to respond to the needs and wishes of very different patient groups. They allow you to provide immediate help in a wide range of situations, and thus give you more time to get to the root of the real problem (for example, periodontal disease or a high risk of caries) and find the right solution.

Ketac Molar and Ketac Molar Quick Glass Ionomer Restorative Materials

Ketac Molar is a glass ionomer cement in a capsule. On account of its chemical adhesion to the dental enamel and dentin, a gentle preparation and an especially tight seal at the margins is possible.

Ketac Molar Quick material is a bulk-fill, packable and fast-setting conventional glass ionomer. Because it's less "technique sensitive" than a composite, it's ideal for difficult-to-isolate posterior restorations.

They both deliver:

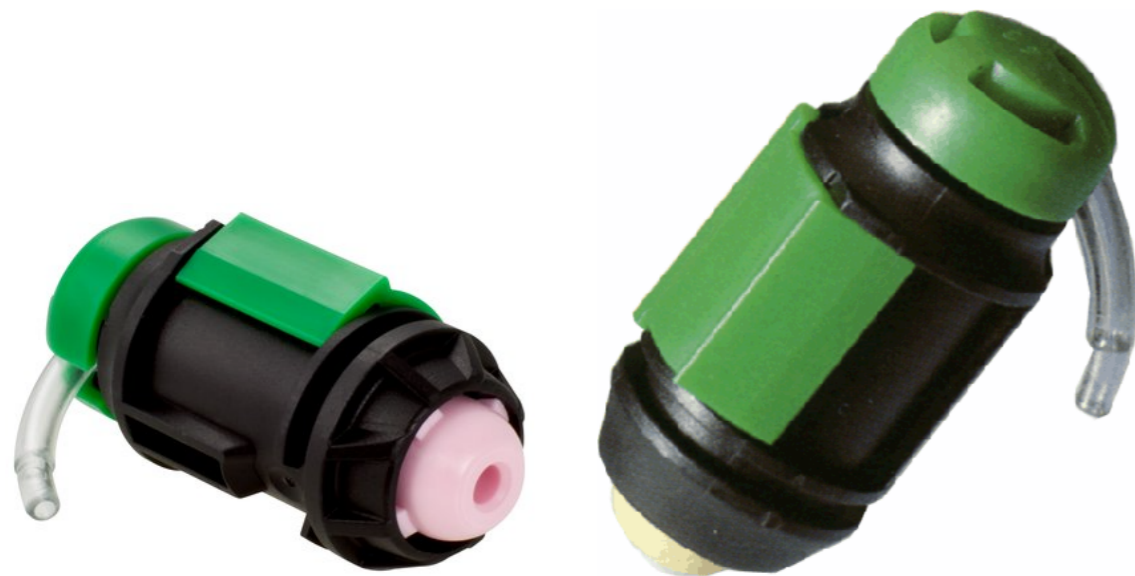
- Excellent mechanical properties for posterior teeth
- Bulk-fill convenience
- Ketac Molar Quick - for fast setting posterior restorations

Ketac Fil Plus filling material is a conventional glass ionomer that helps you achieve virtually invisible anterior restorations. It is available in a handmix version or in the convenient Aplicap™ System, which offers simple handling, constant working properties and reliable quality. Also, with the chemical bond to enamel and dentin, less tooth structure needs to be removed during preparation — which supports a healthy smile.

- Provides molecular bond to enamel and dentin to guarantee a tight marginal seal.
- Offers high fluoride release.
- Radiopaque



[FOR PROVISIONAL TREATMENT]



Glass Ionomer Cement (GIC)

Photac™ Fil Quick Aplicap material is a quick-setting fluoride-releasing, resin-modified glass ionomer that does not require bonding or conditioning. When every second counts - even more so with trauma patients, Photac Fil Quick material lets you finish faster.

- Dual cure provides light-cure control and the assurance of a complete cure.
- High fluoride release.
- Excellent mechanical properties, plus it's radiopaque and biocompatible.
- Lasting and durable bond to natural tooth structure is effective in preventing bacterial micro-leakage.
- Rubber dams are unnecessary because of its moisture tolerance.
- Fast, easy handling makes it ideal for treating pediatric and geriatric patients.
- Less shrinkage than traditional composites – leads to better marginal integrity.
- Unique capsule design assures proper activation – so time-wasting, costly “duds” are not a problem.

3M ESPE

GUNZ
dental
THE PEOPLE BEHIND THE PRODUCTS YOU TRUST

[FOR PROVISIONAL TREATMENT]

Glass Ionomer Cement (GIC)

VOCO GIC

If you are looking for a glass ionomer restorative material which is not only convenient to apply but also has other handling properties, like the ability to be modeled immediately without sticking to the instrument, VOCO's *IonoStar* range leaves nothing to be desired on that aspect.

You can furthermore adjust the consistency to a certain degree by varying the mixing duration of the high-frequency mixer. The products are also great for its very high compressive strength and abrasion resistance and the proven VOCO glass technology, which has been established for many years in the trusted VOCO glass ionomers.



IonoStar Molar

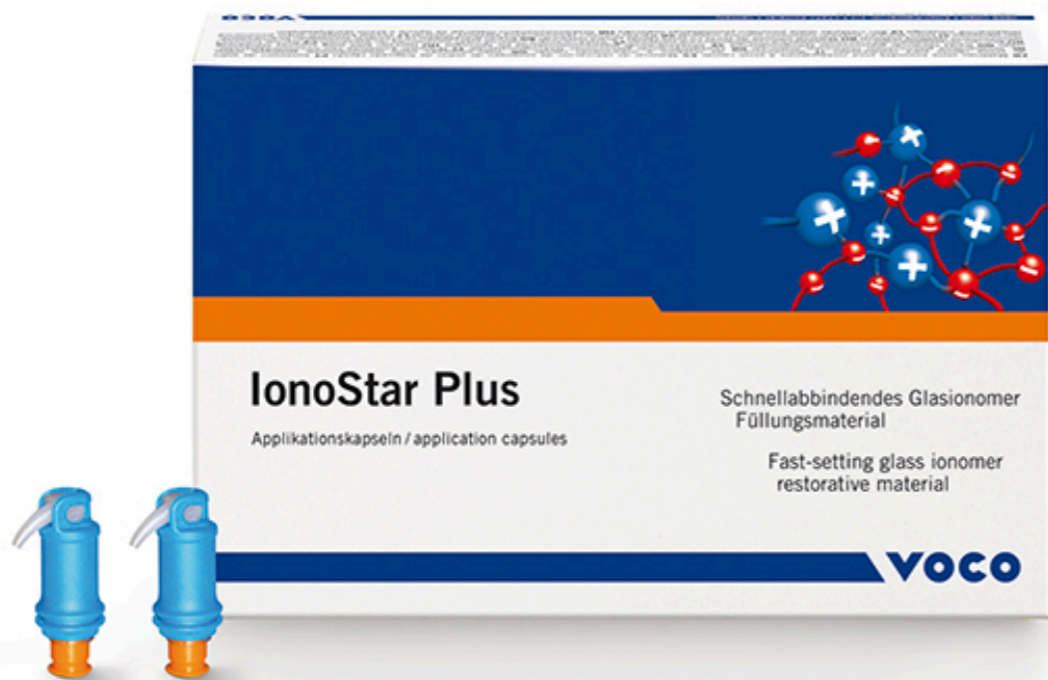
Glass ionomer restorative material

- Variable mixing time for adjustment of consistency
- Easy application and perfect marginal adaptation
- Can be modeled immediately after insertion without sticking to the instrument
- In VOCO's new application capsule, easy activation without activator
- The new capsule design reaches smaller cavities and difficult-to-access areas in the mouth
- High compressive strength and abrasion resistance
- With proven VOCO glass technology

IonoStar Plus

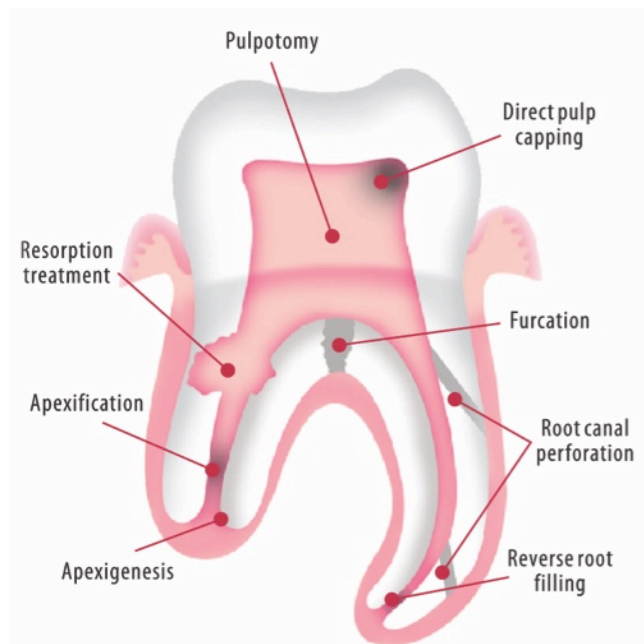
Fast-setting glass ionomer restorative material

- Perfect marginal adaptation and packability in one product, thanks to a change in viscosity during application
- Fast setting time of only 2 minutes from placement of the filling
- The first glass ionomer material with tooth-like fluorescence
- High level of fluoride release
- The new capsule design reaches smaller cavities and difficult-to-access areas of the mouth
- High compressive strength and abrasion resistance



VOCO

[FOR PERMANENT TREATMENT]



MTA Angelus Reparative Cement A Super Treatment for Accidents and Endodontic Complications

One of the more challenging types of fracture to treat is the crown root fracture because the fracture margin has to be exposed around the tooth/ crown to properly restore the tooth. This can be accomplished by gingivectomy if the fracture line is in the sulcus. In more extreme cases, the tooth will have to be extruded with orthodontic forces or surgically repositioned. In the emergency session, if the pulp is exposed, it needs to be protected in the same fashion as complicated crown fractures. If it is not exposed, all accessible exposed dentin areas should be covered for the patient's comfort. Pulpal survival for all these fracture types is generally good; however, endodontic treatment may be indicated later.

Therefore, it is of utmost importance that a recall schedule is followed and that the teeth involved in the trauma are tested every time.

In addressing such complex scenarios, MTA-Angelus Reparative Cement is an endodontic reparative cement, containing mineral trioxide aggregate (MTA) that is a preferred choice for many dental professionals. It is indicated for :

- treatment of root canal and furcation perforations
- sealing of internal resorption
- surgical treatment of root perforation due to internal resorption
- reverse filling in periapical surgery
- pulp capping
- pulpotomy

maxigesic



SIGMA

gsk GlaxoSmithKline



[POST OPERATIVE MANAGEMENT]

Antibiotics (as required in case of avulsion)

In some trauma cases, pending on the severity, you will need to prescribe antibiotics to your patient in managing their post-operative care.

Abbicillin VK Tablets 250mg by SIGMA - Phenoxymethyl Penicillin (Pen V)

Abbicillin VK is a prescription medicine used for the treatment of mild to moderately severe infections caused by penicillin sensitive staphylococci, pneumococci, gonococci and haemolytic streptococci infections. For prophylactic use in recurrent streptococcal infections including the prevention of recurrence following rheumatic fever and to prevent bacterial endocarditis in patients with rheumatic fever and/or congenital heart disease who are about to undergo dental or upper respiratory surgery or instrumentation.

Pain Relief Medication

Following a traumatic injury, patients will no doubt be in some amount of pain whilst they undergo their recovery.

Maxigesic

Maxigesic is the pain-killer to give your patients. It is used for temporary relief of pain associated with: headache, migraine headache, tension headache, sinus pain, toothache, dental procedures, etc. Maxigesic contains paracetamol and ibuprofen and is codein free. Paracetamol works to stop the pain messages from getting through to the brain. It also acts in the brain to reduce fever. Ibuprofen belongs to a group of medicines called non-steroidal anti-inflammatory drugs (or NSAIDs). It relieves pain and reduces inflammation (swelling, redness or soreness). It will be the pain-killer to give your patients.

Augmentin Duo Forte Tablets 875mg by GlaxoSmithKline - Amoxicillin

Augmentin tablets contain two active ingredients. One of these is a penicillin called amoxicillin and the other is clavulanic acid. Augmentin tablets belong to the penicillin group of antibiotics, and these tables are used for the short term treatment of a wide range of infections caused by bacteria. These infections may affect the chest (e.g bronchitis or pneumonia), bladder (e.g cystitis), sinuses (e.g sinusitis), the ears (e.g otitis media) or the skin. Augmentin tablets work by killing the bacteria that cause these infections. Augementin tablets will not work against infections caused by viruses such as colds or the flu.

[POST OPERATIVE MANAGEMENT]

Home Maintenance

Recovering from a dental trauma surgery and injuries also require the patient actively managing their oral health at home. However, not all toothbrushes are right for brushing as it may risk re-opening the wound or worse, cause any further damage and not allowing the wound to heal eventually.

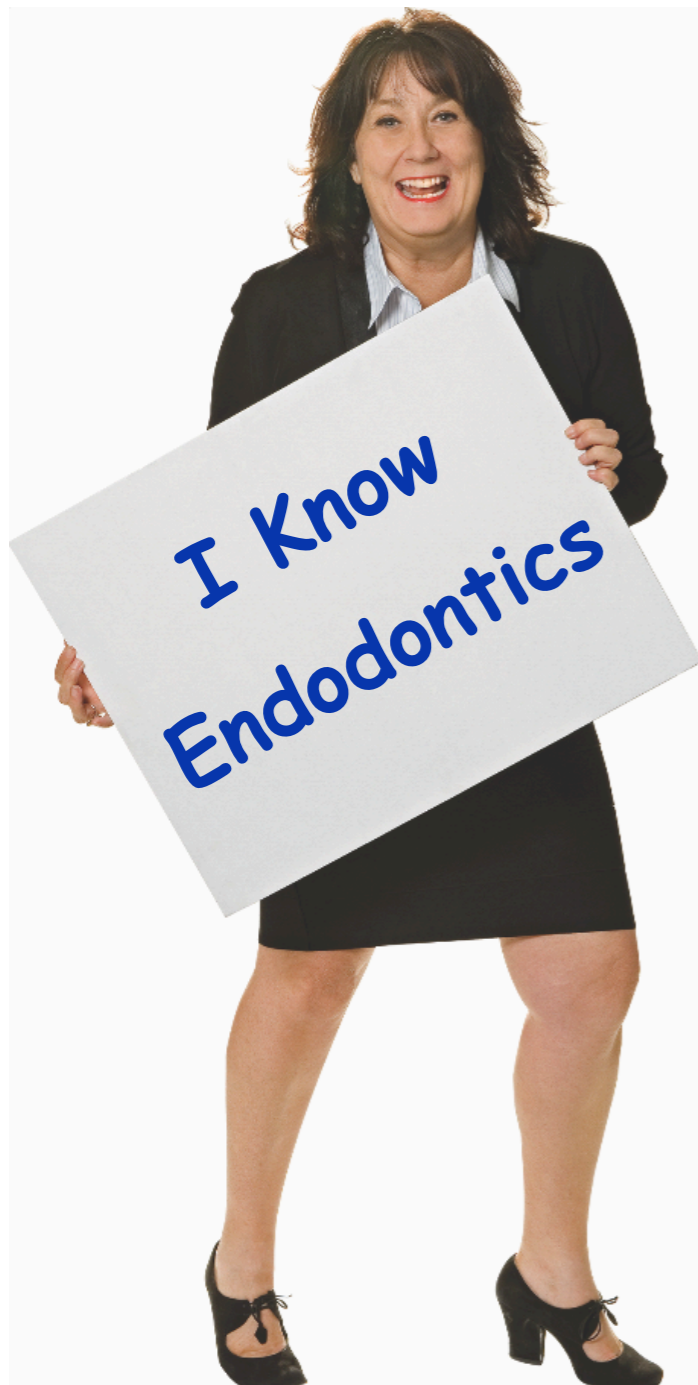
GUM Toothbrush – Post Surgical, Delicate 317 by GUM

The GUM Post Surgical toothbrush has been designed with post-operative care in mind so that you can keep the healing wound clean. The main purpose of the GUM Post-surgical toothbrush is to be very gentle but highly effective in removing dental plaque and food debris from near the wound and any sutures keeping the wound from closing.

GUM Toothbrush – Sensitive Compact, 509 by GUM

The Gum Sensitive Compact toothbrush has extremely fine tapers which enables a deeper clean between the teeth and beneath the gumline. The very fine tapered bristle ends are narrower and more flexible than any other bristle design, so they can reach deep into crevices between the gum and the tooth, as well as farther between the teeth, to remove the disease-causing germs that other brushes may leave behind.





As the largest privately owned Australian importer and distributor of dental products, materials, consumables and equipment in Australia and New Zealand, GUNZ DENTAL has been serving the the Australian Dental Industry for over 80 years. At the very heart of our business, we are passionate about helping you provide the best possible care to your patients, and for you to achieve the best possible clinical outcomes.

GUNZ DENTAL is proud to be a part of the *19th World Congress on Dental Traumatology and the 5th Trans-Tasman Endodontic Conference.*



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