

Advancements In Local Anaesthesia- A Review

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ABSTRACT: -

Intra oral local anesthesia is perceived as a painful and an anxiety causing dental procedure. Most of the researches are focused on improvement in the area of anesthetic agents, delivery devices and technique involved. Newer technologies have been developed to reduce the pain of injection and adverse effects. These include buffering the local anesthetic, warming the local anesthetic, applying topical anesthesia before injection, reducing speed of injection using finer needles with electric delivery devices^[1]. Sterile local anesthesia should be used and effort should be made to reduce the speed of injection^[2]. This article will discuss in detail about the various advanced techniques of local anesthesia.

Key words: Dental anesthesia, local anesthesia delivery device, computer controlled anesthesia, vibratory stimulation.

INTRODUCTION: -

A significant number of patients still perceive local anesthesia as a painful and anxiety causing dental procedure. The achievement of good local anesthesia requires knowledge of agents being used, the neuroanatomy involved, and best techniques and devices available. Injection of local anesthetic is the greatest source of patient fear^[3]. The most widely used devices are WAND, comfort control syringe and iCT.

Materials and methods:-

VIBROTACTILE DEVICES:-

Some of the newer local anesthetics delivery systems aimed at easing the fear of needle take the advantage of gate control theory of pain management^[4], suggesting that pain can be reduced by the simultaneous activation of nerve fibres through the use of vibration.

Vibra Ject:-

It is a small battery operated attachment that snaps on to the standard dental syringe. It delivers a high frequency vibration to the needle that is strong enough for the patient to feel^[5]. Research showed effectiveness of vibra jet showed mixed results. They also found no statistically significant decrease in pain scores at needle insertion or anesthetic injection.

Dental Vibe:-

This also utilizes vibratory mode of anesthesia delivery to the patients. It is a cordless, rechargeable, handheld device delivering pulsed, percussive micro-oscillations, to the site where it is administered. It also lights the injection area with an attachment to retract lip or cheek.

COMPUTER- CONTROLLED LOCAL ANESTHETIC DELIVERY SYSTEMS:-

It can reduce pain by controlling the speed of anesthesia delivery of a small amount of anesthetic at a slow speed, which reduces pain not only from the resistance felt in the tissues, but also from anesthesia taking effect simultaneously with injection, which in turn allows the anesthetic to be injected into tissue, that has already been anesthetized. The WAND is known for a longer time period in market, known for its ease in operation due to its light weight and circumference, which is half that of traditional syringe. However, it is difficult to consider it as speed controlling device, because it doesn't have a syringe needle and difficult to use in posterior teeth. It is suited for children's anterior teeth or as preliminary anesthesia method. Aspiration is not a mandatory criterion for selecting CCLAD device.

JET INJECTORS:-

It is based on the principle of using mechanical energy source to create a release of pressure sufficient to push a dose of liquid medication through a very small orifice, creating a thin column of fluid with enough force that it can penetrate soft tissue into subcutaneous tissue without a needle. Jet injectors are fast and easy to use, with little or no pain, less tissue damage and faster drug absorption at the site of injection.

Syrijet :-

It is been on market for past 4 decades and has been improved over the years. It accepts 1.8 ml cartridges of LA solution, actually ranging from 0.2 -2ml and is autoclavable.

SAFETY DENTAL SYRINGES:-

Use of safety syringe minimizes the risk of accidental needle stick injury. Surveys have reported with wide dissatisfaction on usage of the syringes.

UltraSafe Syringe:-

It is a disposable syringe and needle with a plastic syringe barrel, with a retractable needle sheath. The difference between the syringe is that an ultra safe plus XL syringe is that, the ultrasafe syringe is that, the entire assembly is disposable not autoclavable.

SafetyWand:-

Safety Wand has been used with CompuDent system. It has a pen like grasp that allows maximum tactile control and an auto retracting design that shield the needle, when not used. It is lighter and safe to use. It is the first patented device compliant with OSHA regulations under federal needlestick safety Act.

DEVICES FOR INTRA-OSSEOUS ANESTHESIA:-

Several systems have been devised for intraosseous anesthesia. Although, differences exist, their main aim is to inject into the cancellous bone adjacent to the tooth apex.

Stabident:-

It is safe and effective and its advantages being inexpensive and can be used with an equipment , existing in a dental office. Disadvantage being perforation is to be made in a reasonably accessible and visible location , distal to the tooth to be anesthetized.

Conclusion:-

An area of future interest is the development of newer improved devices and techniques for achieving profound anesthesia. Syringe micro vibrator , a new device introduced in dentistry , helps to alleviate pain and anxiety from intraoral injection.

Local anesthetics have grown leaps and bounds in the aspect of techniques , making the patients relieve from anxiety and fear from injections. Hence, more techniques are to be introduced and implemented in near future, to make patient comfortable and familiar with the devices available for the dental procedures in near future.

Conflict of interest:-

There are no conflict of interest declared.

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