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Importance Of Physics Forceps In Dental Extraction- A Review

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Abstract: -

The history of dentistry originates from ancient Egypt, Romans and Greeks. The advancements made in the field of dentistry is due to their own discoveries and progress towards it. This started with the usage of bow drills to remove pain the teeth. The removal of teeth from the alveolus is called as extraction. Its removal is facilitated by the application of forceps, which leads to the expansion of periodontal ligament, making it easier to remove from the mouth.

Key words: Physics forceps, hyaluronidase, atraumatic extraction, one point contact

Introduction: -

The bow drill is the first instrument to remove the pain from the tooth[1]. Tooth extraction is a procedure resulting indestruction and loss of alveolar bone and surrounding soft tissues. This can be minimized or avoided by the usage of physics forceps, which prevents the buccal cortical bone from fracture and expands the lingual bone. When force is applied, the forceps is held firm and due to the presence of a rubber or an acrylic bump, tooth, bone and soft tissues associated with it, are preserved or the damage is minimized when compared with conventional forceps. When the acrylic or rubber bump firmly grasps the tooth, *hyaluronidase* enzyme is liberated, causing expansion of periodontal ligament, which helps in easy extraction of teeth. This enzyme catalyses the hydrolysis of hyaluronic acid. Nowadays, dentists prefer atraumatic mode of extraction, preserving the alveolar bone, minimal soft tissue damage, which is achieved by the usage of physics forceps and maintaining the bone width for immediate implant placement after extraction[2]. More the hyaluronidase released per unit time, moreeasier the tooth is removed and lesser the trauma to the alveolar bone. When compared to conventional forceps, physics forceps make one point contact. The days of pulling, squeezing, and twisting are not done now and is replaced by the physics forceps, in which , the tooth in a position , which cannot be removed by conventional forceps, can be easily removed by means of physics forceps with exertion of less force and tooth comes out easily due to the release of hyaluronidase enzyme, facilitating loosening of periodontal ligament , thus tooth is removed. The physics forceps utilizes the physics of rotation, torque, power, lever. This helps in eliminating root - tip fractures. This device follows first order principle, utilizing only wrist , without harming buccal alveolar bone. The physics forceps have epic bumper and beak design that allows atraumatic extraction , utilizing only wrist, based on first order principle without harming buccal alveolar bone[3].

Materials and Methods:-

Scenario 1:-

Study involves a female patient aged 26 years, reported with a chief complaint of presence of remaining root trunk in lower first molar, with pus discharge present through pulpal opening. The lower universal physics forceps was used to remove the fractured molar[4]. The bumper was placed on the buccal plate of bone and placed at right angle to the long axis of the tooth at the level of mucogingival junction and the lingual beak placed deep to lingual sulcus. The time taken to extract the tooth was 2 minutes and 52 seconds.

Next study involves a female patient aged 38 years complaints of presence of remaining roots in upper left first molar, causing irritation to the patient and to be extracted before implantation. The time taken to extract the tooth was 3 minutes and 23 seconds.

Scenario 2:-

Thus involves the sequential removal of teeth using 2% lignocaine hydrochloride and adrenaline injection , involving following steps:

Moons probe was used to separate the attached gingiva

Beak was placed in palatal or lingual aspect, with handles wide opened, to set the beak on the solid root surface.

At the level of mucogingival junction, bumper is placed at a right angle, where squeezing and pulling of handle is not needed.

Once placed in position, steady rotational force is applied buccally, until it meets with resistance. Pressure increases exponentially due to the release of hyaluronic acid, loosening the teeth.

Deliver the tooth with conventional instruments like rongeurs or hemostat. Once extracted, it is examined for the presence of excessive bleeding, granulation tissue , bony margins and soft tissue injuries.

Medications like amoxicillin 500 mg for 5 days and analgesics like paracetamol and ibuprofen combination for three days.

Discussion: -

Once the tooth is luxated, it can be delivered using conventional forceps and rongeur .According to Dym and Weiss[4], there is no need to raise a mucoperiosteal flap or elevator before attempting extraction with physics forceps.

Physics forceps require constant traction and only unidirectional force while extracting any teeth. Conservation of marginal bone following tooth extraction is important in the recent era of implantology. It was found that less gingival laceration was present , while extracting using a physics forceps. The pain was measured using visual analog scale , where mild to no pain was noted in patients in both postoperative and follow up periods.

In scenario two, physics forceps can be called as dental extractor, using , first class lever mechanics as name implies. One handle is connected to the beak, positioned in lingual or palatal aspect and

bumper placed facial aspect of alveolus, acting as a fulcrum during extraction. Physics forceps does not give crushing weight to the tooth. The handles are pivoted as one unit for a couple of degrees, afterwhich,the activity is stopped for a minute. It is the instrument of choice for unpredictable extractions. By using physics forceps, buccal alveolar bone fracture is reduced comparatively. The vital part is to understand the biomechanical changes occurring within the tooth and socket upon using the physics forceps.

Conclusion: -

Physics forceps is very predictable, atraumatic and has reduced extraction complications ranging from normal to grossly decayed teeth. By implementing this procedure, anxious patients can also make their tooth to be extracted easily without complications. Nowadays, patients are in a favour of highquality mode of treatment, by using these instruments, which can make them hassle free during procedure, which will be made a unavoidable instrument in near future.

Ethical clearance – Not required since it is a review article

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Conflict of interest – nil

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