www.jcimcr.org

JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Short Commentary

Open Access, Volume 3

Bottle opener technique for extraction of molars using cowhorn forceps: Redefining the principles of exodontias

***Corresponding Author: Anroop Anirudhan**
Department of Oral and Maxillofacial Surgery,
KMCT Dental College, Manassery, Calicut, India.
Email: anroop.a@gmail.com

Received: Jun 14, 2022
Accepted: Jul 08, 2022
Published: Jul 15, 2022
Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/1950

Introduction

A successful extraction is always satisfying to the clinician and to patient as well. The armamentarium for extraction has evolved from simple pliers to most modern forceps which we use today. The conventional technique to use cowhorn forceps for extraction is by gripping the forceps as apically as possible into the furcation of molars. The wedging of beaks of the cowhorn applies an apical force which tears the periodontal ligaments luxating the tooth apically [1]. Due to the application of excessive force there in an inadvertent fracture of tooth. The sectioned tooth is eventually extracted using a root forceps.

Here a novel technique called the bottle opener technique applies the principle of first order lever principle during buccal traction and second order principle during lingual traction. This technique re defines the buccal and lingual tractions given for extraction of lower molars.

The bottle opener technique since it uses the lever principle is less traumatic and more acceptable to the patient [2].

Methodology

A total of 255 lower molar tooth extracted using cowhorn forceps no 86. Inferior alveolar nerve block given using lignocaine with adrenalin. Attached gingival raised exposing the furcation, and No 86 cowhorn forceps were then deeply engaged into the furcation area. After making sure the mandible is well supported, a firm buccal traction is given such that the cowhorn beak on the buccal furcation acts as the fulcrum and the beak on the lingual furcation acts as the effort arm, lifting the tooth out of the socket. Hemostasis achieved and closure given.

Mechanics

There are three classes of levers, first order, second order and third order. They differ in the position of the fulcrum, load and effort.

Depending on where the fulcrum, load or efforts are positioned a lever can actually magnify the force applied and make it easier to do work.

Class 1 lever principle has the fulcrum between effort and resistance, the effort is applied to one side of the fulcrum and the resistance or load on other side.

Class 2 lever principles have resistance between the effort and fulcrum, the effort is applied on one side of the resistance and the fulcrum is located on the other side.

Discussion

An extraction is one of the most difficult minor surgical procedures and is always challenging for the dentist. It involves minor alveolar bone expansion separation of periodontal ligament and judicious use of force [3].

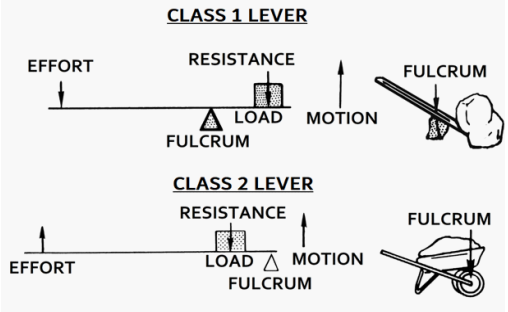

Figure 1: Mechanics of lever principles.

The path of exit of a molar tooth depends on the area of least resistance for the tooth to be luxated out of the socket. First molars usually exhibits almost equal amount of bone on buccal and lingual side, where as in the region of second molar region external oblique ridges starts which can influence the path of exit of second molar. In third molar region there is thick buccal bone due to presence of external oblique ridge and anterior border of ramus, so it is always easy to luxate the tooth out lingually from the socket.

Use of first order lever principle mimics the bottle opener wherein a downward force is applied on effort arm, the buccal beak on the buccal furcation is the fulcrum and the load arm is on the lingual furcation. The force on the effort arm is given keeping in mind the threshold at with the tooth fractures. An upward force is also applied on the handle of the forceps so that it lifts the tooth out of the socket.

On applying the lingual traction with cowhorn forceps the effort arm gives an upward force, the beak on the lingual furcation acts as the fulcrum and the beak on the buccal furcation acts as the load arm, lifting the tooth out of the socket lingually following the second order lever principle.

For third molar extraction the external oblique ridge acts as a resistance for luxation for the tooth buccaly, so lingual traction with cownhorn forceps using second order lever principle can be used.

A major setback for bottle opener technique using cownhorn forceps is the variation in normal anatomy for molars. We have encountered difficulty in extraction if the roots are convergent with no furcation for the beaks to engage. A greater degree of root tip fracture was encountered if there is dilacerations or hypercementosis.

Path of exit of a tooth is influenced by many factors like angulation, rotation, position and morphology, root pattern, number of roots etc. the principle may need to be modified according to this [4].

The cowhorn forceps may not work effectively if it cannot be engaged well into furcation as in case of completely fused roots, where the mechanical principle may not be effectively advantageous.

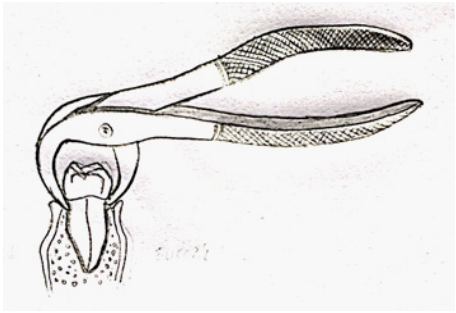

Figure 2: Griping of the tooth with cowhorn forceps.

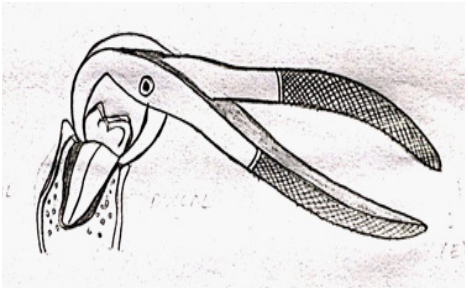

Figure 3: Applying buccal traction with fulcrum at the buccal bone.

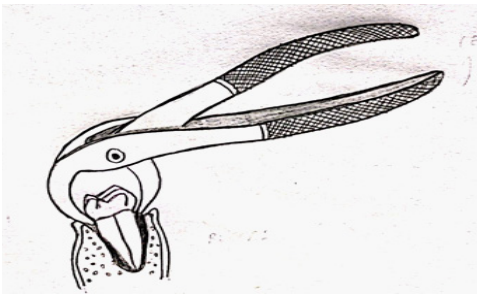

Figure 4: Applying lingual traction with fulcrum at lingual bone.

In our experience out of 255 extraction on lower molars only 45 extractions encountered difficulties since the caries had involved the furcation and had unsupported dentine. This lead to facture of the tooth which were removed using root forceps. Tooth which had dilacerations, hypercementosis, fused or conical roots, angulated molars interfering with path of exit for extractions were excluded from the study.

Conclusion

A bottle opener generally has two point of contact on opposite sides of the cap. Both downward and upward force applied on the handle will easily open the bottle, which works on either first or second order principle according to the force applied.

We have applied the same concept of “Bottle opener” technique to our advantage for extraction of molars using cowhorn forceps.

Bottle opener technique is a new concept which uses first order or second order lever principle according to tooth position thereby extraction is made more effortless thus redefining the principles of extraction.

References

1. Malcolm. Coombs Eagle beak molar forceps evolution and usage. Australian Dental Journal. 1985; 30: 5.
2. Misch CE, Perez HM. Atraumatic extractions: A biomechanical rationale. Dent Today. 2008; 27: 98, 100–101
3. McKenzie WS. Principles of Exodontia Oral Maxillofacial Surg Clin N Am. 2020; 32: 511–517.
4. Harry Dym, Adam Weiss, Exodontia: Tips and Techniques for Better Outcomes Dent Clin N Am. 2012; 56: 245–266.