

**THE USE OF THE "FORCED-EXTRUSION" METHOD IN THE
PROCESS OF ORTHOPEDICAL TREATMENT**

Ruziyev Sh.A.

The 2nd year Resident doctor of the Department of Craniofacial Surgery at the
Tashkent State Dental Institute

Abstract: In most cases, tooth extraction operations were performed as a result of vertical and horizontal fractures resulting from mechanical trauma to the teeth, with subsequent restoration of the dental defect using bridge prostheses. And this, in turn, led to a violation of the integrity of healthy teeth. Vertical and horizontal bone atrophy was observed in the alveolar process of the tooth removed after trauma. Therefore, this significantly reduces the possibility of dental implantation. In such cases, it is advisable to use dental preservation methods. In this study, the "forced-extrusion" method was chosen and used as one of the dental surgeries. The satisfactory results of our research showed that this method, in addition to preserving the tooth to be removed, also ensures the regeneration of periodontal tissues around the tooth.

Keywords: Forced-extrusion, extrusion, trauma, fiberglass pin, build-up, ptfе, polytetrafluoroethylene, the B.O.P.T. technique. dental implantation, regeneration, retraction, isolation, orthodontic, orthopedic, implant, zirconium dioxide.

Introduction.

It is well known that vertical or horizontal root fractures of teeth are indications for tooth removal, i.e., not only in the tooth itself, but also in the surrounding tissues of the tooth - periodontium - there is a violation of tissue integrity. As a result, it becomes impossible to restore or prosthesis the tooth using a simple therapeutic or orthopedic method. This leads to the removal of the teeth. Tooth extraction, in turn, leads to specific changes in periodontal tissues. First of all, horizontal and vertical atrophy of the alveolar bone, as well as a certain degree of atrophy, which also occurs in soft tissues, are examples of this. As a result, it is difficult to restore the replaced

tooth not only functionally, but also aesthetically. Numerous studies have been conducted over many years to address this problem. Several treatment methods have been developed as a result of the research. A striking example of this is tooth extraction called "forced-extrusion." The difference between this method and other methods lies in a minimally invasive approach to the teeth and surrounding tissues.

In the "Forced-extrusion" method, in the first stage, the tooth is "build-up" using a therapeutic method with a modern fiberglass pin. "Build-up" is the restoration of the integrity of the crown part of the destroyed teeth. It should be noted that absolute tooth isolation plays a significant role at this stage, while in the case of incomplete tooth isolation, the adhesive protocol is violated. In our case, due to a vertical tooth fracture, the integrity of the periodontium around the tooth is disrupted, which makes absolute isolation of the tooth impossible. In this case, we used a unique material - PTFE. PTFE is a substance consisting of a polytetrafluoroethylene matrix. The main advantage of retracting the surrounding tissues of the tooth not with ordinary retraction threads, but with the substance PTFE, is that this substance not only retracts the tooth in this case, but also promotes the regeneration of the surrounding soft tissues. The next stage is the orthodontic stage. At this stage, an auxiliary system is installed to create an extrusion force using two lateral teeth as a support.

Research objective: to use the "Forced-extrusion" method as a dental preservation procedure for post-traumatic teeth with indications for removal, as well as to determine its clinical effectiveness. In this method, the tooth is displaced, i.e., as a result of extrusion, the tooth acquires ferrulum, which can serve as a sufficient support for the orthopedic construction, and most importantly, the integrity of the connective tissue and epithelium around the tooth is restored.

Materials and methods: 38 patients with dental trauma were admitted to the clinic. Of these, 13 had tooth fractures caused by mechanical trauma. Of these, 10 patients had a fracture in the upper 1/3 of the root, while 3 patients had a fracture up to half the root. The remaining 25 had tooth crown trauma due to caries complications. 13 patients with mechanical trauma were selected for the study.

Result: The first group of 38 patients, consisting of 25 patients, underwent standard treatment, meaning that the fracture did not enter the root zone of the tooth, resulting in the restoration of the tooth only in the crown zone using the build-up method.



Image – 1. Tooth condition with traumatic fracture

The control group consisted of 13 patients, and 3 patients with deep fractures underwent simultaneous tooth extraction and implant placement. After 2 months, orthopedic structures were installed on these implants.



Image – 2. The condition of the oral mucosa in a post-traumatic tooth

The "Forced-extrusion" method was used in 10 patients. After a two-and-a-half-month orthodontic extrusion stage, these patients underwent orthopedic treatment using the B.O.P.T. technique. A temporary coating was made for 2 weeks, after which permanent coatings were installed using zirconium dioxide material.

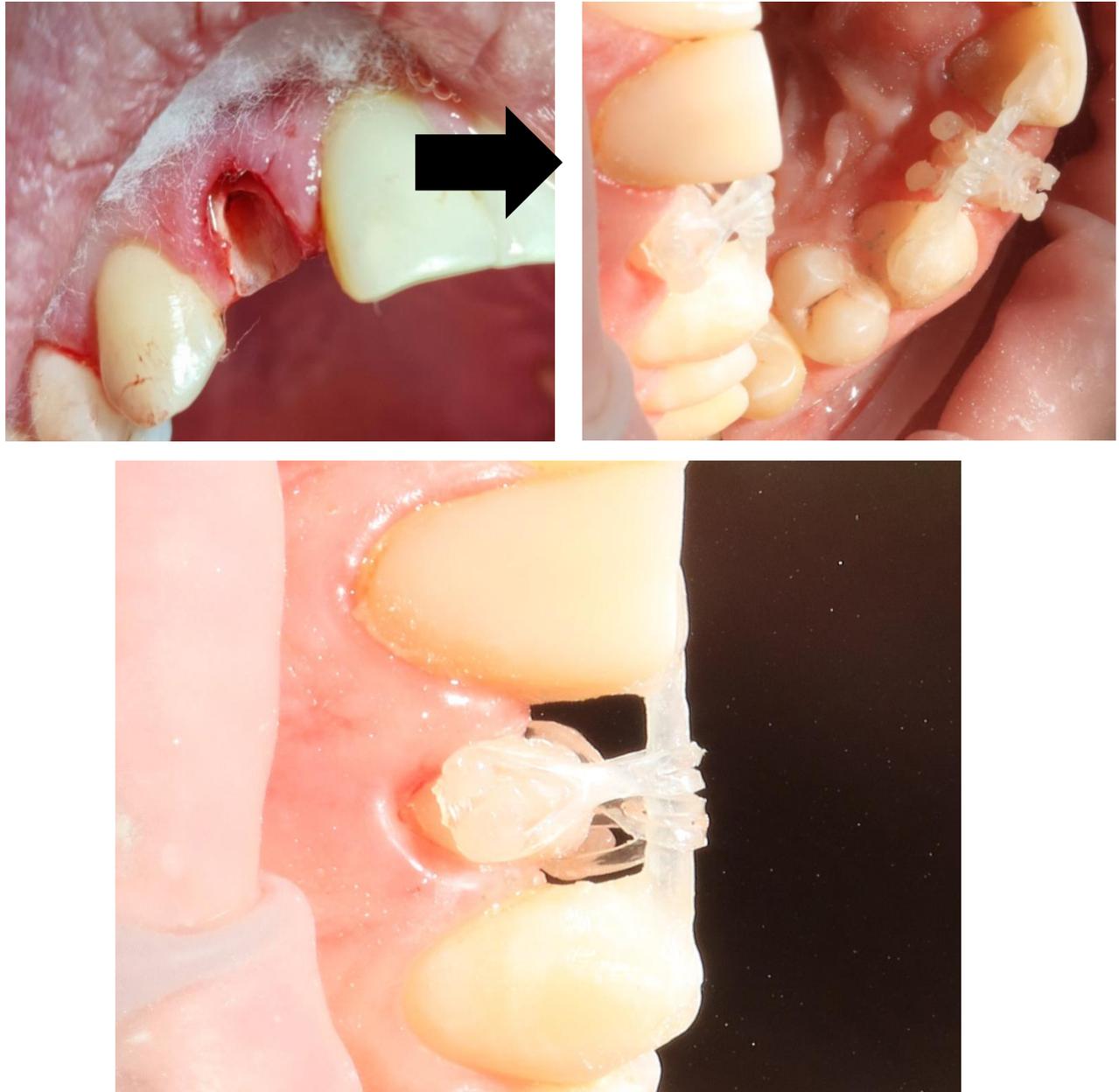


Image – 3. Clinical application of the “Forced-extrusion” method

The results obtained were observed after 2 months, as a result of which it was established that the soft tissues around the teeth in the 1st group of patients were in a stable state. Patients in the control group with dental implants have a satisfactory condition of the dental lining, but a certain decrease in the volume of the soft tissue biotype around the tooth is observed, which affects the aesthetics of the frontal teeth.

In the remaining 10 patients in the control group, i.e., those who were restored by extrusion, thickening of the biotype of soft tissues around the teeth was observed compared to the initial state. This primarily ensures the long-term functional service of the tooth and achieves a high aesthetic result.



Image - 4. Temporary orthopedic construction Image – 5. Permanent orthopedic construction

Conclusion. The use of the "Forced-extrusion" method in the restoration of post-traumatic teeth in the presence of special indications, as well as the use of this method in combination with the B.O.P.T. technique in the next stage, which is considered an

orthopedic stage, ensures not only the preservation of the teeth to be removed, but also the achievement of optimal results for both functional and aesthetic purposes.

References:

1. [Forced Orthodontic Extrusion to Restore the Unrestorable: A Proof of Concept.](#)
Bruhnke M, Krastl G, Neumeyer S, Beuer F, Herklotz I, Naumann M.
Int J Periodontics Restorative Dent. 2023 Sep-Oct;43(5):560-569. doi:
10.11607/prd.6155.PMID: 37733468
2. [Tooth preservation of deeply destroyed teeth by forced orthodontic extrusion: A case series.](#)
Bruhnke M, Bitter K, Beuer F, Böse MWH, Neumeyer S, Naumann M.
Quintessence Int. 2022 May 11;53(6):522-531. doi:
10.3290/j.qi.b2644901.PMID: 35119237
3. [Clinical outcomes of the biologically oriented preparation technique \(BOPT\) in fixed dental prostheses: A systematic review.](#)
Abad-Coronel C, Villacís Manosalvas J, Palacio Sarmiento C, Esquivel J,
Loi I, Pradíes G.J Prosthet Dent. 2022 Sep 30:S0022-3913(22)00488-7. doi:
10.1016/j.prosdent.2022.07.010. Online ahead of print.
4. [Bonding of Core Build-Up Composites with Glass Fiber-Reinforced Posts.](#)
Fragkouli M, Tzoutzas I, Eliades G.
Dent J (Basel). 2019 Nov 5;7(4):105. doi: 10.3390/dj7040105.
5. [Clinical applications of polytetrafluoroethylene \(PTFE\) tape in restorative dentistry.](#)
Sattar MM, Patel M, Alani A.Br Dent J. 2017 Feb 10;222(3):151-158. doi:
10.1038/sj.bdj.2017.110.
6. [EFFICACY OF HEMOSTATIC AGENTS IN ENDODONTIC SURGERY: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS.](#)

Khater AGA, Al-Hamed FS, Safwat EM, Hamouda MMA, Shehata MSA,
Scarano A.J Evid Based Dent Pract. 2021 Sep;21(3):101540. doi:
10.1016/j.jebdp.2021.101540. Epub 2021 Mar 26.