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VITAL TREATMENT APPROACHES IN YOUNG PERMANENT TEETH WITH COMPLICATED CROWN FRACTURE: CASE SERIES

KOMPLİKE KRON KIRIĞI GÖRÜLEN GENÇ DAİMİ DİŞLERDE VİTAL TEDAVİ YAKLAŞIMLARI: OLGU SERİSİ

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Abstract

Purpose-Subject: Crown fractures involving enamel, dentin, and pulp tissue are called complicated crown fractures. Especially in anterior region injuries, it is extremely important to bond the broken part or to make an ideal restoration to prevent loss of aesthetics and function. In such injuries, it is primarily aimed to protect the vitality of the tooth while determining the treatment option, especially for teeth with incomplete root development. Method: Patients were applied to our clinic due to tooth fracture. In these cases, a partial pulpotomy treatment approach was followed to restore the functional and aesthetic loss caused by trauma and to protect the vitality of the teeth. Results: It was observed that vitality was preserved and root development continued in the teeth of the patients whose regular controls were continued. Conclusion: Partial amputation is recommended as an early treatment option for complicated crown fractures. With the correct treatment method performed on time, both the vitality of the teeth has been maintained and aesthetics and function have been restored.

Keywords: *Young permanent teeth, Complicated crown fracture, Vital treatment approaches.*

Özet

Amaç-Konu: Mine, dentin ve pulpa dokusunu içeren kron kırıkları, komplike kron kırığı olarak adlandırılır. Özellikle ön bölge yaralanmalarında estetik ve fonksiyon kaybını önlemek için kırık parçanın yapıştırılması veya ideal bir restorasyon yapılması son derece önemlidir. Bu tür yaralanmalarda, özellikle kök gelişimi tamamlanmamış dişlerde tedavi seçeneği belirlenirken dişin vitalitesinin korunması öncelikli olarak amaçlanmaktadır. Yöntem: Hastalar kliniğimize diş kırığı sebebi ile başvurmuştur. Bu olgularda travma sonucu meydana gelen fonksiyon ve estetik kaybın geri kazandırılabilmesi ve dişlerin vitalitelerinin korunması adına parsiyel pulpatomi tedavi yaklaşımı izlenmiştir. Bulgular: Düzenli kontrolleri devam eden hastaların travma geçiren dişlerinde dişlerin canlılığının korunduğu ve kök gelişimlerinin devam ettiği izlenmiştir. Sonuç: Komplike kron kırıklarında erken dönem tedavi seçeneği olarak parsiyel amputasyon önerilmektedir. Zamanında yapılan doğru tedavi yöntemi ile hem dişlerin canlılığı devam etmiş hem de estetik ve fonksiyon geri kazandırılmıştır.

Anahtar Kelimeler: *Genç daimi dişler, Komplike kron kırığı, Vital tedavi yaklaşımları.*

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OVERVIEW / GENEL BAKIŞ

Crown fractures that include pulp tissue, as well as enamel and dentin tissue, are called complicated crown fractures. (1,2) If the force coming from the trauma comes directly to the tooth, it may result in the displacement of the tooth as a result of crown fracture, soft tissue injuries, or the involvement of the alveolar socket where the tooth is located. In complicated crown fractures; Depending on the condition of the tooth and the process after trauma, direct capping, amputation (partial or total), or root canal treatment are the treatment options. (3,4) While deciding which treatment option will be applied, the size of the opened pulp, the developmental stage of the tooth, the time elapsed after trauma and the restorability of the tooth, and the findings obtained as a result of the radiographic and clinical examination are very important. (1,3,5,11)

In 1978, Cvek reported that partial amputation (Cvek Amputation) could be preferred as an alternative to cervical amputation in complicated crown fractures. (5,6,7) Unlike total amputation, this treatment method involves the removal of 2 mm deep superficial pulp tissue, which is thought to be infected, not the entire cervical crown pulp. (5,6,7) In this way, it is aimed to keep the remaining crown pulp vital by covering it with the newly formed repair dentin barrier. (7) Especially in anterior region injuries, it is extremely important to bond the broken part or make an ideal restoration to prevent loss of aesthetics and function. In such traumas, it is primarily aimed to preserve the vitality of the tooth while determining the appropriate treatment option for immature permanent teeth. (3,7) By preserving vitality in teeth with incomplete root maturation; Physiological root tip closure, sufficient root dentin thickness, and ideal crown-root ratio of the tooth are ensured. (3,4) In the treatment of crown fractures, if the broken piece is present and suitable for re-gluing to the tooth, it is preferred that the permanent restoration be done by using this piece. (8,9) In addition to being easier and cheaper than other restoration methods, this treatment causes less material loss, provides higher wear resistance of the tooth compared to traditional resin composite restorations, and a more natural aesthetic result is obtained. (9) In permanent teeth that have not completed their development, it is aimed to maintain the physiological root development by making all necessary efforts to preserve the vitality of the pulp.

Case 1:

A 9-year-old female patient applied to our clinic with the complaint of a tooth fracture as a result of an accident the day before. No mobility, spontaneous pain, percussion, or palpation sensitivity were detected in the involved tooth. As a result of an intraoral examination, a complicated crown fracture was detected in tooth 21. The patient informed us that the broken part of the tooth could not be found at the crime scene. After the radiological examination, it was observed that the

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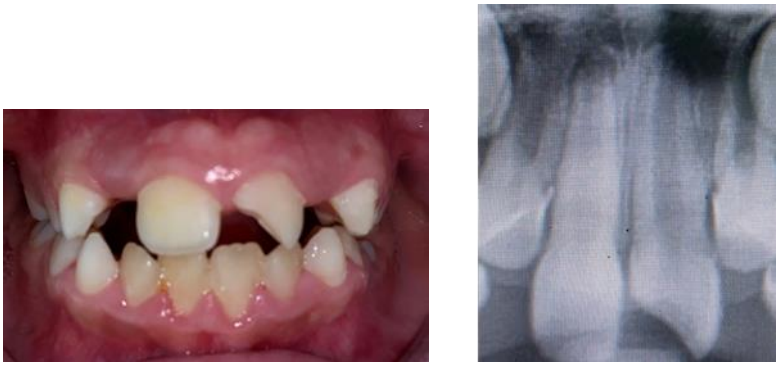
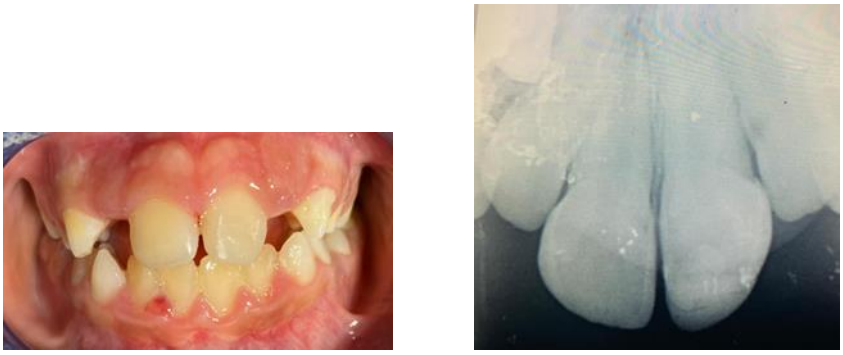
root development of the upper central teeth had not yet been completed, and partial amputation was deemed appropriate considering the time elapsed after the trauma.



Case 1: Preoperative intraoral and radiograph images

After local anesthesia, isolation was achieved with a rubber dam. The exposure area in the tooth was enlarged to a depth of 2 mm under water cooling using a diamond round bur. Bleeding in the area was controlled within 2 minutes with 5% sodium hypochlorite and bleeding was controlled with sterile cotton pellets. After the bleeding control, Angelus-MTA powder mixed with distilled water was placed in the exposure area with a thickness of 2 mm. After temporary closure of the cavity with glass ionomer cement, permanent restoration of the tooth was performed. No pathology was found in the patient's 1st, 3rd and 6th month controls and a positive response was obtained in the vitality tests. The patient's controls still continue.



Case 1: Intraoral and radiograph images of the postoperative 1st month

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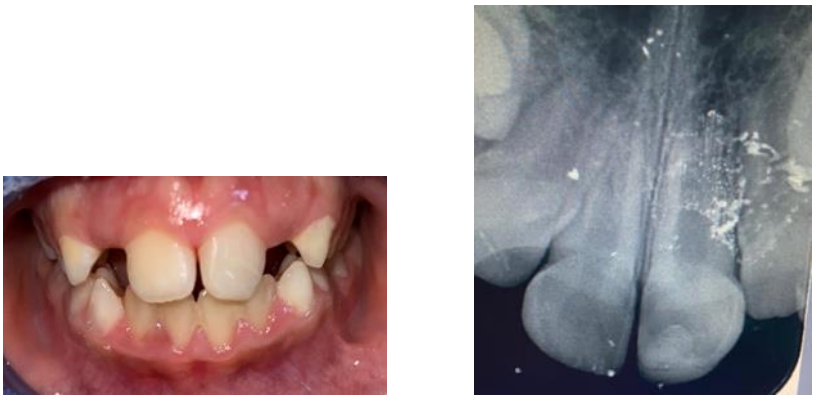

Case 1: Intraoral and radiograph images of the postoperative 6th month

Case 2:

A 9-year-old male patient was admitted to our clinic with a tooth fracture due to trauma he had 2.5 hours ago. In the anamnesis taken from the patient who did not have any systemic disease, it was learned that he fell and hit his teeth 2.5 hours ago while running. In the intraoral examination, an uncomplicated crown fracture was detected in tooth 11 and a complicated crown fracture in tooth 21. The patient brought the broken tooth piece with him, which he had kept in a dry environment. No mobility, spontaneous pain, percussion, or palpation sensitivity were detected in the involved teeth. On the radiographic examination, it was seen that the root tip formations of the related teeth were completed, but no periapical pathology or alveolar bone fracture was detected.

Case 2: Preoperative intraoral and radiograph images

It was decided to apply vital pulp therapy. After the application of local anesthesia, the teeth were isolated with a cotton roll and saliva ejector. The exposure area of tooth 21 was amputated at a depth of 2 mm under water cooling using a diamond bur. Bleeding control was achieved with a cotton pellet soaked in sodium hypochlorite. After bleeding control, Angelus-MTA powder mixed with distilled water was placed in the exposure area and covered with glass ionomer cement. To increase the

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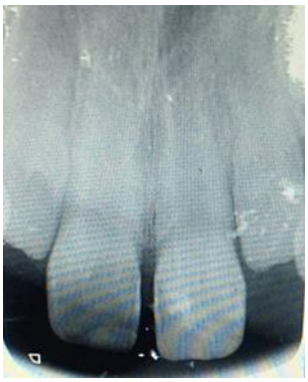
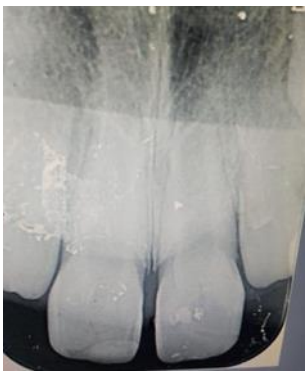
retention of the fractured part of tooth 21, a small sterile diamond round bur was drilled into the dentin part of the fractured part with a retention groove. Then, the broken fragment and the rest of the tooth were roughened with 37% orthophosphoric acid for 15 seconds. Then, an adhesive system was applied to the washed and dried tooth surface. The retentive areas were filled with flowable composite resin and the broken piece was placed in place, and the excess composite resin material was polymerized after cleaning. Afterward, the finishing and polishing processes were completed with composite finishing discs. After the treatment, the patient was checked at 1, 3, and 6 months, no pathology was found in either tooth clinically or radiographically, and the vitality of the related teeth was observed to continue.

Case 2: Intraoral and radiograph images of the postoperative 1st month

Case 2: Intraoral and radiograph images of the postoperative 6th month.

SUMMARY / SONUÇ

Partial amputation was recommended by Cvek as a treatment option for complicated crown fractures in the treatment of complicated crown fractures with or without root tip. While the permanent restoration of traumatized teeth is performed, if the broken part of the tooth is present and can be

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used in the restoration, it is preferred to bond it back to the tooth. (9,10) In these cases, it was aimed to maintain the maturation of teeth with open apex treated with partial amputation while maintaining their vitality. In the 1st, 3rd, and 6th month controls of the patients, it was observed that the vitality of the teeth continued and no pathology was observed.

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