

CASE REPORT

Fusion of the 2nd maxillary molar with the impacted 3rd molar

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Abstract: *Subject matter:* The dentist has to deal with complicated cases of fused molars, which are rather rare and morphologically very varied. A wrong or incomplete diagnosis can considerably complicate a planned therapy. *Case report:* The authors describe a case of apical periodontal complication of fused teeth that had to be removed surgically. The upper 2nd molar fused with the impacted 3rd molar and was diagnosed for extraction. *Conclusion:* Even a careful diagnostic procedure and X-ray image sometimes may not indicate the exact location and mutual position of the fused teeth. The authors make us aware of the possible occurrence of fused roots, and the necessity to inform the patient ahead of time about the course of endodontic or surgical interventions, possible complications and their removal. They describe the positive influence of PRP (platelet rich plasma) in wound healing. In order to establish the exact indication and therapy, they emphasize the importance of using CT imaging diagnostics or a 3D-CT examination (Fig. 7, Ref. 15). Full Text in PDF www.elis.sk.
Key words: impacted tooth, platelet-rich plasma (PRP), tooth anomalies, tooth fusion.

There are various developmental anomalies in the shape and number of a person's teeth. A very interesting group of these anomalies is the fusion of neighboring teeth. This arises either through the union of two normally separated tooth germs or the union of a normal tooth bud to a supernumerary tooth germ. According to the form of fusion, these anomalies can be divided into the complete ones (fused in dentine, often with one common pulp chamber) and incomplete ones (fused in cementum) (6). In scientific literature, several types of fusion are described. Concrescence is a term describing the fusion of teeth in cementum. A possible cause of its development is seen in the physical and chemical processes between roots of corresponding teeth. A fusion, which is the union of two tooth germs, often occurs with a common pulp chamber or root canals. One possible cause of this can be the close contact and mutual pressure of two neighboring tooth germs. It is more prevalent in primary dentition. Gemination is characterized by the development of a doubled tooth crown and differentiating between gemination and fusion is sometimes very difficult.

Case report and methods

A 53-year-old patient was sent to our medical institution by his treating dentist due to pains in the maxillary area on the left with a request to extract an impacted third upper molar. The patient had a lateral metal-ceramic bridge implanted one and half years before. At the time of our examination, the patient had orally been taking antibiotics (Clindamycin) for four days with a dosage of 300 g every 8 hours. On examination, increased tenderness when tapping

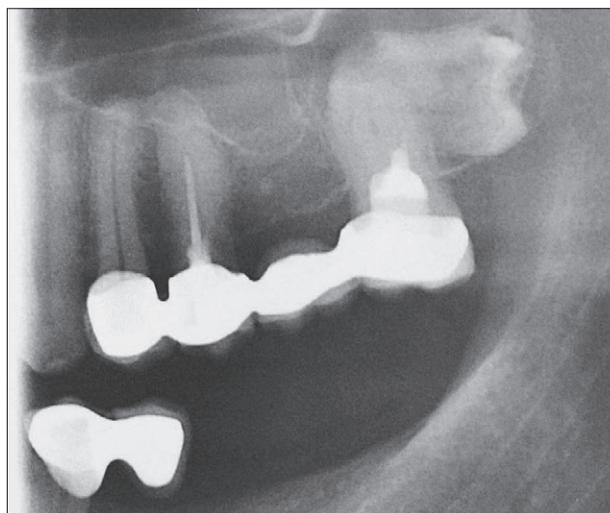


Fig. 1. A section of an OPG image (fusion of an impacted upper 3rd molar with roots of the 2nd molar and apical periodontitis are visible) (photo: Eurodent medima).

in the area of the pillar tooth, i.e. the 2nd molar, was confirmed. The patient had no swelling. Palpation revealed painful vestibulum oris in the area of the roots of the 2nd molar. An X-ray image confirmed diagnosis of apical periodontitis and a fusion of roots of the impacted 3rd molar with roots of the 2nd molar – the pillar molar (Fig. 1). Extraction of both afflicted teeth was indicated. Before operation, 10 ml of venous blood was taken from the patient to prepare platelet-rich plasma (PRP). A bridge had to be cut. During local anesthesia (Articain with Adrenalin, 4 ml into the area of tuber maxillae and n. palatinus major) two cuts were performed: a vertical section from the mesial side of the 2nd molar vertically into the vestibule and a top section from the 2nd molar distally, and the

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Figs 2 and 3. Extracted fused teeth after cleaning (2nd maxillary molar with impacted 3rd molar) (photo: Eurodent medima).



Fig. 5. Healing of the wound (three days after operation) (photo: Eurodent medima).



Fig. 4. Swelling three days after operation (photo: Eurodent medima).



Fig. 6. OPG image with the 3rd mandibular molar fused with a supernumerary tooth (photo: Eurodent medima).

gingiva – the mucoperiost was uncovered. The vestibular cortex of the bone over the roots was inflamed. The impacted third molar was overlapped at the top by a thin cortical layer of the bone. Carefully we started with subluxation of the second molar. This phase of extraction was successful and the tooth was luxated (disjointed) in the alveolus, but the attempt to extract it failed. Using a bone cutter we removed the cortical layer of the bone over the crown of the impacted tooth. Further attempts to remove the impacted third molar indicated simultaneous movement of both teeth in the bone. We had to extend the osteotomy around the crown of the impacted third molar and to extract both teeth simultaneously in one block. The second and third molars were fused together with interlocked roots, and formed one complex (Figs 2 and 3). After extraction, the wound was carefully treated. A negative Valsalva maneuver and a probe did not indicate the presence of oro-antral communication. Having completed a thorough excochleation of the bone, we rinsed the wound with physiological solution and filled it with absorptive fibrinous foam with PRP. The wound was subsequently sutured with individual Vicryl (pyloglactin 910) sutures of the size 4/0. After the



Fig. 5. Healing of the wound (three days after operation) (photo: Eurodent medima).

operation, the patient continued taking antibiotics (Clindamycin) of the same dosage, i.e. 300 mg every 8 hours. The postoperative healing course was successful, without any considerable swelling. Analgesic medication was necessary only for the first two days after operation (non-steroidal antiphlogistic and antirheumatic Ibuprofen 400 mg every 8 hours) (Figs 4 and 5).



Fig. 7. Finding from the OPG image (Fig. 6) and its state in the oral cavity (photo: Eurodent medima).

Discussion

Tooth fusion is a relatively infrequent anomaly, though an insufficient diagnostics can considerably complicate the course of therapy. Gernhofer describes the presence of fusion of second and third molars in the jaw randomly detected during operation. He advises other dentists to consider this possibility when X-ray diagnostics are unclear and also the need to inform the patient before surgery (8). His case report had an identical course as the case we have described. Badjate and Cariappa draw our attention to the possible occurrence of this anomaly, which can complicate endodontic treatment, orthodontic as well as prosthetic diagnostics and therapy planning. It can have even legal consequences (3). Ferreira et al refer to imaging diagnostics in unclear cases from orthopantomograms (OPGs) and intraoral projections. In such cases, they emphasize the necessity of supplementing the diagnostics with CT and 3D-CT imaging methods (7). Gunduz et al describe the rare anomaly of the fusion of the third mandibular molar with a supernumerary molar. These anomalies occur more often in the maxilla (9). In a group of our patients, this anomaly was also detected, but in the mandible (Figs 6 and 7).

Conte, Lombardi and Linfant describe a union of tooth germs of two neighboring teeth resulting in the fusion of teeth with a common pulp chamber. In the majority of such cases it refers to union of the third molar with the supernumerary tooth. They state that the incidence of this anomaly in the population is less than 1 per cent (4). Romito describes a tooth fusion as a connection in cementum but not in dentine. The occurrence of this anomaly is higher in the maxilla. He urges dentists to consider this possible anomaly before planning therapy (15). Hernandez-Guisado distinguishes between fusion, gemination, concrescence, coalescence and ankylosis. Gemination occurs more often in frontal teeth with a prevalence of 0.5 % (10). Hou states the occurrence of tooth fusion mainly in preliminary dentition and considers the occurrence of this anomaly in permanent dentition to be rare. He deals with a very rare fusion: the third upper molar with a supernumerary fourth molar (13). Nunes describes a rare occurrence of bilateral fusion of mandibular second

molars with supernumerary teeth and their endodontic therapy (14). The positive influence of PRP on post-operational wound healing in the oral cavity is described by many authors (1, 2, 5, 11, 12).

Conclusion

In planning a tooth extraction, in even such unexpected and very rare cases as described in our case report, it is necessary to be aware of possible complications. A careful endodontic therapy of a tooth fused with an impacted 3rd molar is very questionable. In such a case, a complete X-ray diagnosis based on a CT or a 3D-CT examination is required. Any further prosthetic use of the handicapped pillar tooth is usually not possible. In similar surgical interventions that are very unpleasant for the patients, the use of PRP is highly recommended. Its effects positively influence the post-operative swelling, reduce pains, and greatly speed up the healing of the wound's soft tissues.

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Received June 27, 2011.

Accepted June 26, 2012.