

## CLINICAL CASE OF IATROGENIC INTRAOPERATIVE MANDIBULAR FRACTURE ASSOCIATED WITH THE THIRD MOLAR REMOVAL

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### Abstract

An iatrogenic mandibular fracture that associated with the mandibular third molar removal is quite rare but a very serious intraoperative complication. An iatrogenic fracture occurred during the extraction of 48 tooth in 68-years female patient was considered in this case. The main problems in the diagnosis of intraoperative mandibular fractures were analyzed. The result of the iatrogenic fracture treatment with using conservative management, antibiotics and non-steroidal anti-inflammatory therapy, oral antiseptic irrigation with the subsequent delayed extraction of the tooth in the fracture line after its consolidation was given.

**Key words:** extraction of mandibular third molar, complication, mandibular fracture, consolidation

The mandibular third molar (MTM) impaction and dystopia are widespread among the population and the frequency of its detection ranges from 35 to 50 %. On account of the variety of anatomical and physiological features, the indications for the wisdom teeth removal are much more than the indications for its preservation [1]. According to the data from various authors, the third molars extraction are recommended over than in 40 % cases. Due to the prevalence of such pathology, the operation of atypical wisdom tooth removal is gradually becoming an ordinary and widespread surgical intervention.

An iatrogenic mandibular fractures (MF) that occur during the MTM removal is quite rare

but a very serious intraoperative complications with a reported incidence from 0.0033 % to 0.0049 % [2,4]. The numerous general and local factors play a part in the development of this complication: patients age 36–60 years, osteoporosis, bone atrophy, tooth ankylosis, position (mesioangular, vertical, horizontal and distoangular teeth respectively) and the depth of the unerupted tooth, preoperative infections associated with the impacted tooth [3,4,5]. Also medical errors associated with the absence of surgical treatment planning, inadequate use of a partial alveolo-osteotomy around the crown of impacted tooth (as uncontrolled removal of bone around the unerupted tooth, and vice versa, insufficient

bone preparation for the removal of tooth extraction and atypical removal by elevator without preparation of bone tissue, failure or excessive partitioning of the tooth etc.) play a part. As well among the widespread mistakes are excessive efforts, incorrect operation with removal instrumentarium.

Thus, despite the rarity of iatrogenic MF during removal of the MTM, this complication is possible and serious.

Traditionally for the management of the MF use treated by closed reduction/intermaxillary fixation (IMF), open reduction and internal fixation (ORIF), ORIF + IMF with soft diet and slim bandage [4].

#### Case description

An iatrogenic fracture occurred during the extraction of a 48 tooth in 68-years female patient. DS: impaction and dystopia of 48 tooth (mesioangular). Anamnesis: several episodes of preoperative infections associated with the impacted tooth exacerbation.

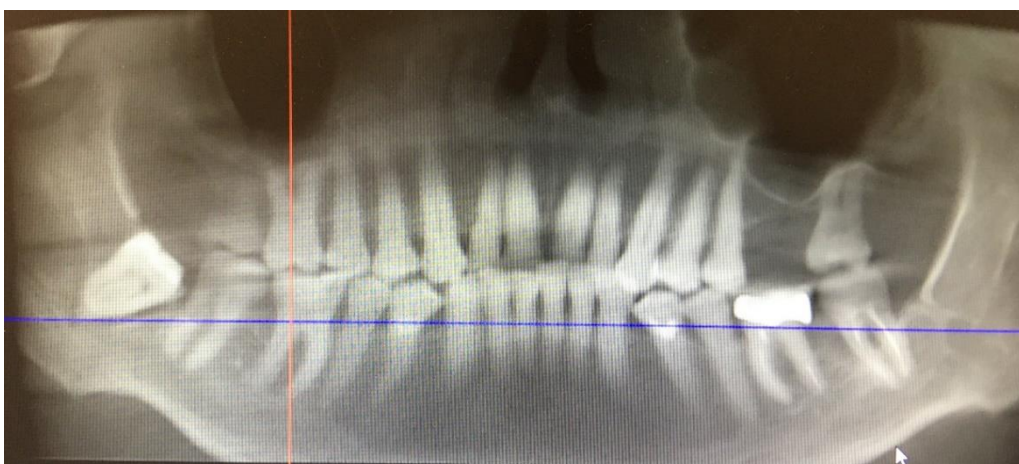
The operation was performed on February 2<sup>nd</sup>, 2021 on an ambulatory basis in dentist's surgery under local nerve block anesthesia.

Anesthesia was sufficient; the patient had no pain during the operation.

Atypical removal was performed with separation of the mucoperiosteal flap.

After a partial alveolo-osteotomy around the TMT crown, an attempt was made to atypical removal using a direct elevator. During the execution of this stage, there was a "cracking" sound from the jaw, clearly defined by both doctor and patient. It was not established malocclusion when monitoring mouth closure. Bimanual palpation revealed a tight, unexpressed mobility of fragments in the area of right mandibular angle.

The extraction was not completed and X-ray on «Planmeca – Pro-One» for the verification diagnosis mandibular fracture was conducted. Our attention was drawn to the fact that on the orthopantomogram (OPG) the fracture line was poorly visualized, in the form of a thin line less than 1 mm, displacement of fragments was not determined. The only sign of fracture in such projection of X-ray was significant (2 mm) expansion of the periodontal gap in the region of the medial root of 48 tooth



**Fig. 1.** The OPG of patient P., 68 years, Ds: iatrogenic intraoperative mandibular fracture associated with the 48 tooth removal. The significant (2 mm) expansion of the periodontal gap in the region of the medial root of 48 tooth is observed.

However, on the 3-D reconstruction the line of comminuted mandibular fracture in the right-angle region, 48 tooth in the fracture line were well visualized.



**Fig. 2.** The 3-D reconstruction in program Romexis Viewer at computer tomography (CT) of patient P., 68 years. Ds: iatrogenic intraoperative mandibular fracture associated with the 48 tooth. The line of comminuted mandibular fracture in the right-angle region, 48 tooth in the fracture line were well visualized.

It was decided to refuse from 48th tooth extraction and to postpone it in time, until the fracture consolidation. The mucoperiosteal flap was returned to its place and fixed with sutures.

Considering the absence of a significant displacement of fragments, preservation of occlusion and unexpressed mobility of fragments, it was decided to conservatively treat the mandibular fracture with sling bandage and soft diet for a term of 3 weeks.

For the prevention of inflammatory complications, a five-day course of antibiotics and non-steroidal anti-inflammatory therapy, oral antiseptic irrigation was prescribed. Control examinations were carried out on the 2nd, 3rd, 5th, 7th, 12th and 21st days.

The correction of sling bandage is required, especially in the first week, which was associated with the transformation of postoperative edema. The postoperative

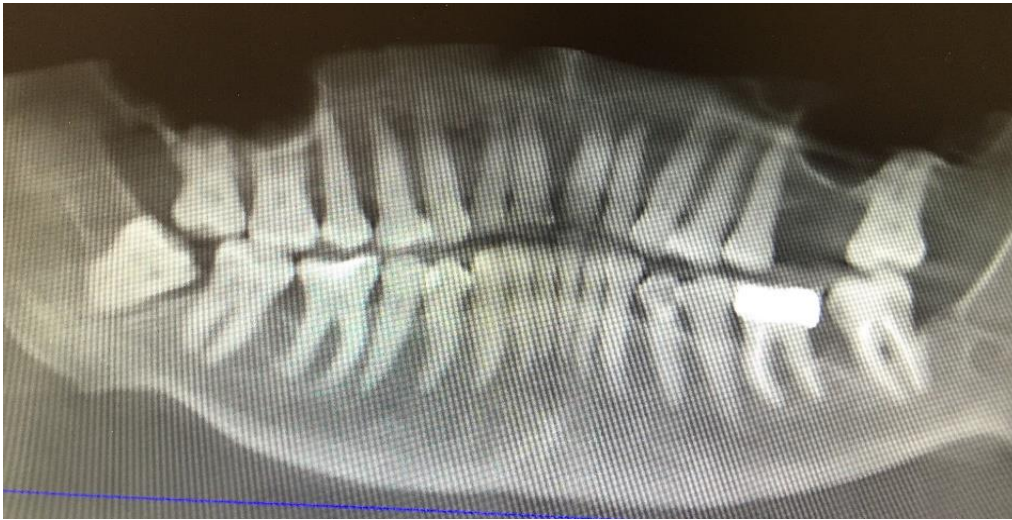
period was unremarkable, the wound in the mouth healed by primary intention, the sutures were removed on the 7th day.

At the follow-up examination almost in 6 months (July 22<sup>nd</sup>, 2021), the female patient had any complaints, her face was symmetrical, opening of mouth was not limited, and the bite was normal.

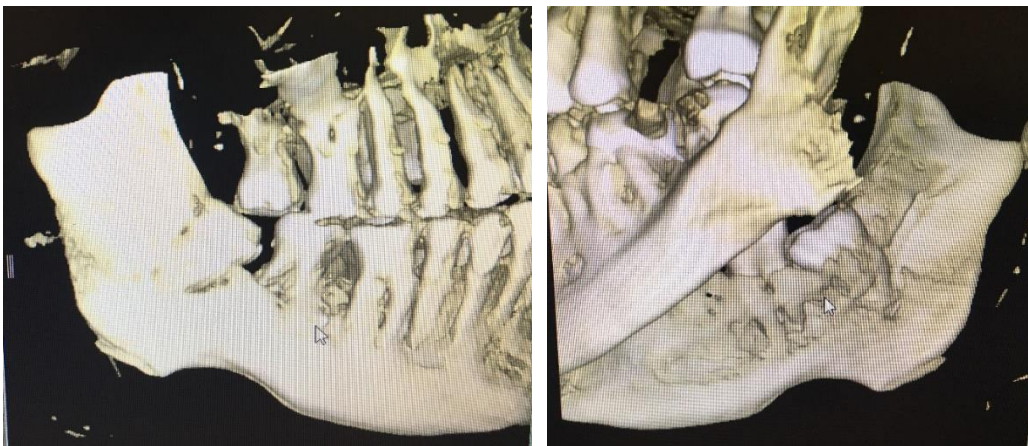
During the bimanual palpation the mandible was stable, symptom of indirect load was negative.

Control CT showed complete consolidation of the mandibular fragments, which was especially seen in the analysis of 3-D reconstruction in program Romexis Viewer: the fracture line was not visualized from both the vestibular and lingual sides of mandible.

However, on OPG, which was not so informative in the primary diagnosis of MF, on the contrary, progression of the periodontal gap expansion on to 3mm was revealed.



**Fig. 4.** The OPG of patient P., 68 years, in 6 months after iatrogenic mandibular fracture associated with the 48 tooth removal: progression of the periodontal gap expansion in the region of the medial root of 48 tooth on to 3mm.



**Fig. 5.** The 3-D reconstruction in program Romexis Viewer at CT of patient P., 68 years, in 6 months after associated with the 48 tooth removal. The line of comminuted mandibular fracture in the right-angle region due to complete consolidation of fragments was not visualized.

The stability of the consolidated fragments allowed for a delayed atypical extraction of the 48 tooth in 6 months after an iatrogenic fracture of the mandible associated with the 48 tooth removal.

The extraction was performed in compliance with all the rules of sparing surgeons.

## Discussions

Thus, mandibular fracture as an iatrogenic complication of the wisdom tooth extraction is a serious problem.

A temporary refusal to remove after the intraoperative fractures was due to the initial clinical situation in this case when the unremoved tooth is a factor of the fragments stabilization and kept them from displacement. Indirect confirmation of which were absence of a significant fragments displacement, preservation of occlusion and

unexpressed mobility of fragments, resulting in conservatively treatment with sling bandage and soft diet for a term of 3 weeks. The main task of the postoperative period was the prevention of inflammatory complications. However, further delayed MTM removal was necessary and was carried out after the fragment's consolidation (in 6 months).

### Conclusions

Diagnosis of intraoperative fractures at atypical MTM removal can be difficult, which is associated with the deficiency of symptoms (absence of malocclusion, significant mobility of fragments, when unextracted tooth retains its stability etc.). The use of CT has advantages for the early diagnosis of this type

complication and gives better visualization of the fracture line than OPG.

In the absence of a significant displacement of fragments, preservation of occlusion and unexpressed mobility of fragments, it is permissible to postpone traumatic removal until the fracture consolidation. For the fracture's treatment can be used conservative management with sling bandage and soft diet for a term of 3 weeks, antibiotics and non-steroidal anti-inflammatory therapy, oral antiseptic irrigation.

### Conflicts of Interest

The authors declare that they do not have any conflicts of interest regarding the publication of this paper.

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