

CLINICAL CASE

Dent. Med. Probl. 2009, 46, 4, 501–505
ISSN 1644-387X

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Iatrogenic Injury During Extraction of Lower Molar Teeth

Uraz jatrogenny podczas usuwania dolnych zębów trzonowych

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Abstract

The aim of the study is the assessment of iatrogenic complications occurring during extraction of mandibular molar teeth. Teeth extraction are sometimes accompanied by intra- and post-surgical complications and most frequently observed while third molars are extracted. The authors present seven cases of iatrogenic complications during extraction of mandibular molar teeth. Considering the risk of iatrogenic complications, extraction of third molar teeth in their bud stage is suggested because of fewer trauma incidents. Iatrogenic mandibular fractures are extremely rare and caused by medical errors (**Dent. Med. Probl. 2009, 46, 4, 501–505**).

Key words: tooth extraction, post-surgical complications, intra-surgical complications, medical errors.

Streszczenie

Najczęściej wykonywanymi zabiegami w gabinetach chirurgii stomatologicznej są ekstrakcje zębów, w tym głównie zębów częściowo zatrzymanych. Na podstawie doniesień z piśmiennictwa nierzadko dochodzi w tych przypadkach do powikłań śród- i pooperacyjnych, w tym złamań żuchwy lub przepchnięcia zęba do innej przestrzeni. Celem pracy jest ocena przyczyn jatrogennych powikłań podczas usuwania zębów trzonowych żuchwy. W pracy przedstawiono 7 przypadków jatrogennych powikłań podczas usuwania zębów trzonowych w żuchwie. Biorąc pod uwagę ryzyko jatrogennych powikłań, należałoby zlecać usuwanie trzecich zębów trzonowych w okresie związkowym, co wiąże się z mniejszą urazowością (**Dent. Med. Probl. 2009, 46, 4, 501–505**).

Słowa kluczowe: ekstrakcja zęba, powikłania pooperacyjne, powikłania śródoperacyjne, błędy lekarskie.

Teeth extractions are one of the most frequent dental procedures performed in offices of surgical dentistry. They are sometimes accompanied by intra- and post-surgical complications [1–3] and most frequently observed while third molars are extracted [4–6]. According to Baniwala [6], 58.89% complications arise during the procedure, and 41.12% in the post-surgical period [5]. According to Libers [acc. 7], during extraction of a third molar, iatrogenic mandibular fractures take place in 0.0049% cases. The complication risk is greater among males aged 40 and older, with full dentition [18]. Wagner noticed that it occurs more often on the left side of the mandible (70%). The cause of iatrogenic injury is using too much force in relation to the compressive strength of the bone. Woldenberg [9] observes more frequently late

mandibular fractures after third molars extraction, even in the third or fourth week after the procedure, and he recommends a soft diet in this period. He thinks that a surgical procedure weakens bone structure to such an extent that even a small injury may result in a pathological mandibular fracture.

Case Series

In 1997–2006, in Department of Craniomaxillofacial Surgery in Katowice, 6 patients with a iatrogenic mandibular fracture occurred during extraction of the third lower molar and 1 patient with a tooth pushed into the parapharyngeal space were hospitalised. 5 incidents took place in offices of conservative dentistry and 2 incidents in an

office of surgical dentistry. The complications were observed in 6 female patients (aged 28–58) and 1 male patient at the age of 37. The case of pushing a tooth into the parapharyngeal space was reported in an 18-year-old female patient. Four of the cases were observed during the surgical procedures and two were diagnosed after several months following the teeth extraction. One of the patients was not informed on the existing complication, and there was an attempt of hiding the fact by using osteosuture in ambulatory setting. Because of further complications, the patient was hospitalised in authors' department. It was the only case (among above-mentioned) presented to the medical court and it has not been finished yet. In five out of six cases of iatrogenic mandibular fractures, the hospitalized patients underwent osteosynthesis.

The analysis of pantomograms obtained before the extractions of the third molar teeth showed differences both in the degree of the teeth impaction and their position (slope) in relation to the plane of occlusion.

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Results

1. Female patient S. U. aged 18 (08/97c) – tooth 38, pushed into the parapharyngeal space by her local dentist. Trismus and cheek swelling on the admittance day. Hospital procedure – removal of the tooth from the parapharyngeal space (Fig. 1).

2. Female patient Sz. J. aged 38 (4425c) – admitted in December, 2005 with a mandibular fracture that had occurred in September during double extraction of the tooth 46. Pathological mobility in the area of the tooth 46. Fracture fissure revision with extraction of the tooth 45 and a standard lower splint use. Healing normal (Fig. 2).

3. Male patient K. R. aged 39 (07/26c) – admitted in December, 2006 with a mandibular fracture after the extraction of the tooth 46. He reported stable pain and swelling in the area of extraction. Since 1992 the patient had been dialysed due to renal insufficiency. Operated on single osteosynthesis in January, 2007. The bone destruction being a result of inflammation was reported. The treatment was supplemented by the use of standard splints with the intermaxillary elastic traction. Because of the general medical state and no approval of splints, intermaxillary immobilisation

was abandoned and replaced by plaster bandage (Fig. 3).

4. Female patient G. Z. aged 58 (3576c, 4022c) – admitted in January, 2005 with a iatrogenic fracture of the mandibular body, that had occurred during extraction of the impacted tooth 38. Suffering hypertension and duodenal ulcer. Restricted jaw opening and mobility of bone fragments in the 38 area were observed. Osteosynthesis under general anesthesia was performed. After procedure patient's denture and plaster bandage stabilized fractured mandible. The plate got fractured – removed in July, 2007 (Fig. 4).

5. Male patient M. P. aged 37 (07/137c) – admitted in February, 2007 with the mandibular fracture that had occurred during extraction of the impacted tooth 38 in an office of surgical dentistry. Ivy loop wiring was applied and the patient was admitted to the hospital. Osteosynthesis under general anesthesia was performed. No complications were observed. Ernst Ligature and plaster bandage stabilized mandible (Fig. 5).

6. Female patient M. M. aged 29 (07/687c) – admitted in November, 2007 with the mandibular fracture that had occurred during the extraction of the tooth 48 in a private dental office. Occasional bleeding and general asthenia were reported. Osteosynthesis was performed, no complications were observed (Fig. 6).

7. Female patient K. M. aged 41 (06/52c; 06/147c) – December, 2005; mandibular fracture occurred during extraction of the tooth 38 and removal of follicular odontoma in an office of surgical dentistry; the patient was not informed on the incident. The dentist used splints + elastic traction + osteosuture. The following-up appointment was after 7 days. Osteosuture was used. On the day of hospital admittance, trismus (degree III) and infiltration of soft tissues in the area were found. Bone fragments mobility was difficult to assess because of trismus. Hospital procedure involved osteosuture removal and injury revision. Healing was difficult. Rehabilitation was inefficient because of severe trismus (Fig. 7).

Discussion

In the literature, the most frequently reported complications related to extraction of molar teeth are as follows: alveolagia, oral-sinus communication, prolonged bleeding, pain, infections, nerve lesions and fractures of maxillary tuber or mandible. They are reported more often in women because of the menstrual cycle and in patients aged 25 and older when bone density gets higher,



Fig. 1. Pantomographic X-ray. Tooth 38 pushed into the parapharyngeal space

Ryc. 1. Zdjęcie pantomograficzne. Ząb 38 przepchany do przestrzeni przygardłowej



Fig. 2. Pantomographic X-ray. Patient with a mandibular fracture

Fig. 2. Zdjęcie pantomograficzne. Pacjent ze złamaniem żuchwy



Fig. 3. Pantomographic X-ray. Mandibular fracture after the extraction of the tooth 46

Fig. 3. Zdjęcie pantomograficzne. Pacjent ze złamaniem żuchwy po usunięciu zęba 46

development of roots is completed and technical problems get more serious within a patient's age [10–12]. Serious complications related to displacement of teeth to neighbouring areas or the maxillary sinus are also possible [13–16]. The reasons can be numerous: age, sex, degree of



Fig. 4. Pantomographic X-ray. Iatrogenic fracture of the mandibular body occurred during extraction of the impacted tooth 38

Fig. 4. Zdjęcie pantomograficzne. Jatrogenne złamanie trzonu żuchwy podczas usuwania zatrzymanego zęba 38

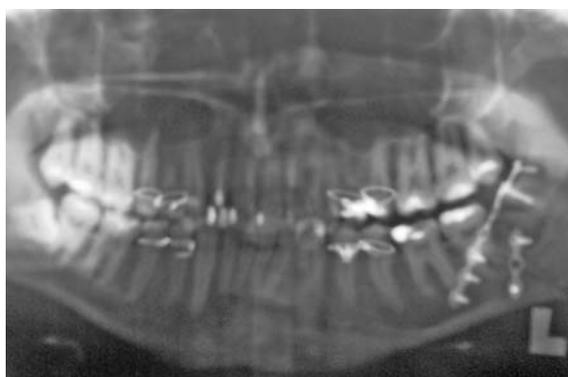


Fig. 5. Pantomographic X-ray. Mandibular fracture occurred during extraction of the impacted tooth 38

Fig. 5. Zdjęcie pantomograficzne. Złamanie żuchwy w czasie ekstrakcji zatrzymanego zęba 38



Fig. 6. Pantomographic X-ray. Mandibular fracture occurred during extraction of the tooth 48

Fig. 6. Zdjęcie pantomograficzne. Złamanie żuchwy podczas usuwania zębów

impaction, teeth relative density in maxilla and mandible, histories of infections and bone fractures, no soft diet in the post-surgical period and surgical techniques [9].

According to Blondeau [10], risk factors are tooth position and the degree of its impaction. In



Fig. 7. Cranial X-ray. Mandibular fracture during extraction of the tooth 38 and removal of follicular odontoma

Fig. 7. Zdjęcie czaszki. Złamanie żuchwy podczas usuwania zęba 38 wraz z zębiakiem

In his opinion, the greatest risk of complications occurs in classes IC, IIC and IIIC (Pell&Gregory Classification). The classification determines a position of the impacted tooth and its influence on the level of difficulty in tooth extraction and the risk of complications. Most of the complications relate to the high degree of the tooth impaction. Class C of the above-mentioned classification is related to the neurological problems after extraction, i.e. nerve lesions which result in paresthesia. Most frequently damaged nerves during extraction are the inferior alveolar nerve [17] and the lingual nerve [10, 18]. In the literature, the occurrence of the inferior alveolar nerve paresthesia is determined as 0.4–8.4% [19, 20], with no distinction between temporary and permanent paresthesia. Neuroanastomosis should be performed as quickly as possible (within 3 months following the rupture). Otherwise, hyposthesia develops [21]. Zech and Stegeng's studies revealed that even the fragments of the remaining root may cause the lower lip hyposthesia, especially if the roots are located near the mandibular canal [22]. Also, complica-

tions may occur if the operator's field of vision is not sufficient and results in difficulties in searching for the root fragments. Nerve lesions can also cause neurophatic pain. The risk of such serious complications make it necessary to analyse thoroughly all the radiograms and pay attention to the roots' configuration and their position in relation to the mandibular canal [3]. Statistically, the risk of nerve lesions is greater in the lingual split extraction technique than in the osteotomy technique [24].

Another serious complication is the fracture of the maxillary tuber and the body or ramus of the mandible. Maxillary tuber fractures usually occur during extraction, while fractures of the mandible take place both during and after the surgical procedure. The first week after the procedure is extremely risky [7]. The main risk factor seems to be the advanced age connected with the full dentition of a patient. According to Krimmel [25], the degree of tooth impaction in the bone appears to be less important. However, according to other authors, the degree of impaction is as important as sex, relative bone density, previous infections and bone fractures as well as the soft diet in the early post-surgical period [9].

Most of these serious complications can be avoided if a necessary skin flap is separated and the appropriate extraction technique is applied [14]. Also, an accurate assessment of the tooth prior to extraction, the use of the appropriate instruments and the operator's attention seem to be important. The analysis of presented cases shows that the procedural technique and the operator's skills are far more important than the degree of impaction or the position of a tooth. In view of these rare complications, extraction of these teeth in their bud stage period is worth considering, following Colmenero's suggestion [26].

Iatrogenic mandibular fractures are extremely rare and caused by medical errors. Extraction of the third teeth in their bud stage should be recommended.

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Received: 23.09.2009
Revised: 26.10.2009
Accepted: 28.10.2009

Wpłynęło do Redakcji: 23.09.2009 r.
Po recenzji: 26.10.2009 r.
Zaakceptowano do druku: 28.10.2009 r.