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# INCIDENCE AND TREATMENT OF COMPLICATIONS IN PATIENTS WHO HAD THIRD MOLARS OR OTHER TEETH *EXTRACTED*

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**Abstract:**

*There are several complications while removing the third molars through surgery. This study objective was to assess the complication's incidence following extraction risk factors, specifically associated with third molars. This reflective research comprised 463 patients with the mandibular extraction of third molar (these all patients served by one surgeon) for the period from 2001 to 2011. In all mandibular, there was an extraction of the third molar. Average patient's age was ± 29 years, the median was 26 while the overall range of age was from 13 to 75 years. It was strictly assured that record of patients was only obtained for medical research purpose.*

*Postsurgical complications' prevalence was generally 17%, accordingly, dry sockets represented the 11.6% (which was highest) incidence. Partially obstructed teeth represented the incidence highest complications of 67.3%. Correlation of cigarette smoking, with dry sockets and increased complications, prevalence on the left side was 62.8%.*

*The main reasons for the increase in complications after third molar mandibular extraction were cigarette smoking, age, impaction level and side of extraction.*

**Keywords:** *Dry Sockets, mandible, cigarette smoking, tooth impaction, partially impacted*

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## 1.0 INTRODUCTION:

Highly known and prominent complication after impacted teeth surgical removal is DS (dry socket; alveolar osteitis). Some other complication after surgery comprises pain, trismus paresthesia of lingual nerves (either permanent or temporary), swelling, hemorrhaging and infection (Ahmed and Speculand, 2011).

Many factors are linked behind these complications; such as techniques of surgery, in surgery unsuitable irrigation, the experience of the surgeon, age, trauma amount during surgery and CS (cigarette smoking) and preoperative infection. Characterization and identification of risk factors can support to minimize the abovementioned complications. This reflective study purpose was to assess the complication's incidence which is specifically associated with the mandibular third molars extraction (AKYOL and KEÇECİOĞLU, 2018).

## 2.0 METHODS AND MATERIALS:

A reflective research was directed on those patients who experienced the extraction of the third molar which had proper documentation. A single surgeon treated all patients, ("data gathered from Schwartz Arad Surgical Centre") from 2001 till 2011. A proper agreement has been signed by all 463 participants before starting treatment and screening period.


**Figs 1a to 1c** Three cases depicting impaction of third and second molars.

(Source: Miclotte et al., 2018)

*2.1Data Collection and Measurement Method*

All required medical information about patients like medication, habits of smoking, general health and demographic information of patients (age and gender) were gained from their prescribed medical records, complication types, extraction side and smoking status. There are four different groups of patients as per the third molar development and their biologic status.

Group A, 18 years of age

Group B, 19 – 26 years of age, root development completion

Group C, 27 – 35, healthy adults and finally

Group D, > 36 years, the presence of the third molar over ten years period (Miclotte et al., 2018).

Complications comprised dry sockets (these dry sockets have been diagnosed on the accepted criteria basis), hematoma (pain level not analyzed), and inflammation, injury or never injury (numbness of tongue) and numbness of chin with mouth opening disturbance. Position and level of impaction were calculated while in the use of pre-operative CT (computed tomography) scans. The impacted tooth's positions were distoangular, mesioangular, linguoangular, horizontal, buccoangular, and vertical and inverted. The impaction level was sorted as per the Pell and Gregory, with a slight alteration, partially impacted, fully erupted and fully impacted (Ghaeminia, 2013).

*2.2Indication*

Tooth extraction indications were basically based on the AAOMS ("American Association of Oral and Maxillofacial Surgeons") endorsement.

These indications are operculitis, pericoronitis, bone loss, periodontal ligament damage, and contiguous tooth resorption and caries.

As shown in Figure 1, impaction of adjacent second and third molar is also an indication and finally radiolucency basically caused by impacted tooth (Apparaju et al., 2017).

*2.3Surgery*

One hour before extraction patient administrated to use prophylactic antibiotics (600mg clindamycin, in case of penicillin-sensitive patients or 1g amoxicillin) and 8mg dexamethasone. Before extraction, rinsing need to be done with 0.5% chlorhexidine and an appropriate and standard protocol required to perform the extraction. Instantaneously following the extraction every surgical site was properly irrigated with the use of sterile saline properly suctioned and stitched. Amoxicillin 1.5 grams oral antibiotics, for five days, should prescribe to patients and if patients are

penicillin sensitive the 1.2 mg clindamycin suggest for four days. After extraction rinsing with 0.25% needs to continue two times in a day for 10 days (Apparaju et al., 2017).

*2.4Statistical Analysis*

In this study, the statistical assessment was performed by SPSS. Chi-square with independent *t*-test assessment was utilized while testing the link between complication type and age respectively. We use the *logit link function* for impaction level, similarly, logistic regressions also organized for contribution test of multiple risk factors while checking the complication's potential and the level of significance was set at 0.05 (Anyanechi and Saheeb, 2016).

## 3.0RESULTS:

As shown in Table 1, indications for mandibular third molars removal are mentioned. Within the period of 2001-2011, 1038 total third molars were removed. Patients with the ratio of 92.6% the removed teeth were mandibular, this communicates that all further assessments will significantly mention to third molars of mandibular. From total 44.5% patients were male while 55.5% were female, with 13 to 75 years range of age, while 29±11.30 years as mean, median as 26 years (Anand and Patil, 2012).

Postsurgical complication prevalence was measured as 16.9%. The categories and ratios of complications are a hematoma, pain, and inflammation 1.9%, dry sockets 11.6%, lip and chin temporary numbness is 0.6%, tongue temporary numbness is 2.1%, permanent numbness is 0.0%, mouth opening problem is 0.3% and some other is 0.45%. It was also considered that complication resolved after four or five visits. While in 70% or more number of patients complication was settled after 2 visits (AKYOL and KEÇECİOĞLU, 2018).

*3.1Age and Gender*

As shown in Table 2 and Table 3, there is age and gender allocations of patients have or not have any complications.

**Table 1** Mandibular third molar extraction indications

| Indications | Prevalence (%) |
|---|---|
| Pericoronitis, operculitis, etc | 52.0 |
| Radiolucency | 40.9 |
| Impaction of adjacent tooth | 5.6 |
| Restorative reasons | 1.5 |

**Table 2** Gender distribution (%) of patients with or without complications

| | Males | Females |
|---|---|---|
| Cases without complications | 44.5 | 55.5 |
| Cases with complications | 46.7 | 53.3 |

(Source: Miclotte et al., 2018)

*3.2Tooth impaction degree*

All those cases, which are resultant in complication concerned particularly have higher percentage of fully or partially impacted teeth. Such as impacted fully with 29.2%, impacted partially with 67.3% and erupted fully with 3.5% (X2= 12.135, P=0.002). As shown in Table 4 the impaction level effect was additionally tested through injury of nerve. Accordingly, from overall teeth extracted the ratio 2.7% has passed the injury of nerve (as chin, tongue, and lip), while nobody had constant numbness. Table 4 also demonstrates the particular injury of never incidence (which is measured by complications) with tooth impaction lever regard (Ahmed and Speculand, 2011).

*3.3Cigarette Smoking*

Out of all patients, 120 were cigarette addicted and from those 120 patients, 33% had different complications (X2=17.221, P= .000). As per Figure 2 shows, there is the smoking habit distribution with complications or without complications and the additional link between the potential of growing complications and smoking also shown there. This

association has been measured by logistic regression analysis with OR (Odds Ratio = 3.07, P=.000) LL lower limit = 1.704 and UL upper limit = 5.521. This represents a higher probability of growing postsurgical smoker's complication (Anand and Patil, 2012).

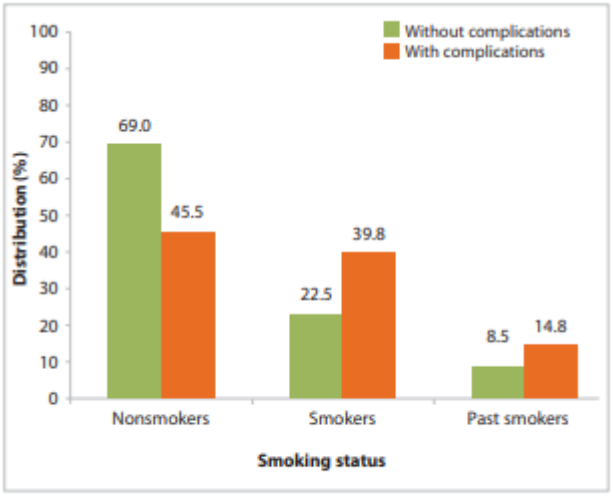


**Fig 2** Smoking distribution (%) among cases with and without complications.

**Table 3** Age distribution (%) of patients with or without complications ($t = 1.986$, $P = .048$); the model successfully classified 80.8% percent of cases ($X^2 = 18.036$, $P = .001$)

| | 10–18 years | 19–26 years | 27–35 years | > 36 years |
|---|---|---|---|---|
| Cases without complications | 10.2 | 41.8 | 28.6 | 19.5 |
| Cases with complications | 4.8 | 41.9 | 30.5 | 22.9 |

**Table 4** Effect (%) of tooth impaction on nerve injury incidence (not significant)

| | Fully impacted | Partially impacted | Fully erupted |
|---|---|---|---|
| Transient numbness in chin and/or lip | 9.7 | 1.4 | 0.0 |
| Transient numbness in tongue | 9.7 | 14.9 | 0.0 |
| Permanent numbness | 0.0 | 0.0 | 0.0 |

(Source: Miclotte et al., 2018)

*3.4Extraction Side*

According to details left side was highly disposed to a complication with the ratio of 62.8% as compared with 37.2% of right (X2=10.82, P=.040). The left side was more prone to complications: 62.8%, compared to 37.2% on the right side (X2 = 10.82, P = .010) (Ghaeminia, 2013).

*3.5Contraceptives*

According to the study, the contraceptive oral use was same in female patients with 8% of complication as compared with those female patients who have no complications (9.4%); X2 = 0.090, P=.765 (Swift and Nelson, 2012).

**4.0DISCUSSION:**

In this reflective research, the rate of total complication regarding third molar removal was measure 16.9%. There is an important component that postoperative complication influence is the impaction degree; as somewhat obstructed teeth demonstrated the larger level of complications. On the contrary in the reported complication incidence, which is basically linked with the impaction level? It is also observed that in subsequently erupted teeth there is a high level of danger of infections. Accordingly, the advanced bacterial load may also be the increased incidence dry socket reason. Other researchers' work also supports this assumption, who reported the dry socket incidence, specifically, in the infection presence as 21.9% as compared with those who have no infection presence with the rate of 7.1% (Miclotte et al., 2018).

Furthermore, antibacterial agents like 0.2%, (chlorhexidine) gel mitigate the alveolar osteitis risk up to 62% following third molar mandibular extraction, counseling that infection is the main

contributor in this regard. A specific reason for the dry socket is blood clot resolution and alveolar bone exposure. It is also analyzed that those bacteria which are present always consider helpful for the activation of plasminogen trial (Zawawi and Melis, 2014).

The plasminogen tempted fibrinolysis and if there is an upsurge in fibrinolysis action then it will endorse premature intra-alveolar blood clot loss which may form after removal. It is also obvious that most infections are healed with the help of antibiotics, access tissue removals and with oral rinsing. Administration of those antibiotics was systematically granted in this research, specifically for aerobic bacteria, the complication of impacted teeth data suggest that any kind of antibiotics must be selected in specific for anaerobic bacteria like metronidazole which is particularly best for the treatment of anaerobic infections. If we study the previous researches, anaerobes surpassed the aerobic flora, 72% equivalent of total isolated bacteria in multiple mouthparts (Apparaju et al., 2017).

It is observed clearly in this research that since dry socket's higher incidence mostly included in anaerobic bacteria and also handling the antimicrobials anaerobes targeting may minimize the post-operational dry socket. Futuristic research also requires understanding the probable positive effect while using metronidazole as the prevention of dry socket. Multiple studies have suggested that dry socket incidence following the extraction of impacted third molars mandibular as 5% to 30%. The dry socket incidence of third molar surgery promptly larger in mandible as compared with maxilla and in this research, the rate of incidence was 11.6% which is in range (Andreasen, 2010).

According to researches, dry socket complications are basically age dependent. Though the described peak age may vary as some reports advised 20 to 40 years and consider it a peak age of the incidence of dry socket. Accordingly, the lesser rate of complication was also analyzed in the age group of 10 to 18 (with the ratio of 4.8%), while in the >36 group of age the rate of complications was higher than before (Anyanechi and Saheeb, 2016).

The reasoning is associated to increase the brittleness and hardness of bone, complete root formation, and surgical complications. Though the dry socket mechanism requires to be analyzed, evidence advises that there is an interaction between age and excessive local trauma, which is responsible for these criteria. Third molar removals are basically linked with inferior alveolar and lingual nerve injuries. The closeness of the third molar cortical plate to the lingual never and its mutable anatomy are best risk components to be understood in the removal of third molars. Transient lingual incidence, which also called inferior alveolar injury of nerve ranges from one percent to twenty-three percent. In this research, temporary nerve numbness incidence was at the ratio of 2.7%. Somewhat obstructed teeth had larger postoperative lingual numbness (with the rate of 14.9%) incidence which is compared with fully obstructed teeth at the rate of 9.7% (Andreasen, 2010).

As observed in this research, CS is basically a prominent factor of risk in complication happening, particularly dry socket, afterward of extraction of the third molar. CS effect may be due to an important decrease in extracted socket filling specifically with a blood clot. In this research, it is obvious, as statistical assessments represented that patients of CS had a higher potential (more than 2.78 times) of the dry socket as compared to other complications, this vision also supported by several researchers that CS increases the third molar removal incidence complications. Besides the skills of the surgeon, extraction difficulty may affect the complication's incidence. In this study, more complications showed on the left side as compared with the right side. The surgeon (DSA) dominant hand is right, similarly, it may also acceptable to assume that there is a high number of right-handed surgeons. However, the left side extractions may be more complicated to perform and visualize, so it may account for the rate of complication higher (Apparaju et al., 2017).

## 5.0CONCLUSION:

As per the present research, degree of impaction, surgery side, smoking status, gender and age influence the growth of those complications which appears after operating in the mandibular extraction of the third molar. It is recommended, on the basis of this study, that once the decision to remove the mandibular third molar has been made then the surgery must be accomplished before root development cessation. The treatment of partially erupted teeth must be based on anaerobic antibiotics to minimize the rate of infection. Furthermore, it is also observed, and a logical point, that all needed third molar removal should perform at the same time duration.

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