

## CLASSIFICATIONS OF MANDIBULAR FRACTURES-REVIEW

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### ABSTRACT

The author makes a brief review of the most familiar classifications of mandibular fractures. It shows that the base of these classifications are the categories connected with anatomical localization of the fractures.

It is pointed out the necessity of a classification which includes very well defined categories. These categories should be visualized radiologically and should be used easily by doctors with different specialties. The classification of mandibular fractures should be handy for the daily work in Emergency Departments.

**Key words:** mandibular fracture, classification

There are a lot of classifications concerning mandibular fractures. One of the most famous and utilized in clinical practice is the classification of R.Dingman and P.Natvig from 1969. /1/

According to them fractures are systematized in several categories:

A. According to the direction of the fracture /horizontal,vertical/ and whether it is favourable or not for treatment

B. According to the severity of the fracture:simple /closed/ and compound /towards the oral cavity or the skin/

C. According to the type of fracture : greenstick fracture, complex fracture, comminuted fracture, impacted fracture and depressed fracture

D. According to the presence or absence of the teeth in the jaws /dentulous, partially edentulous, edentulous/.

E. According to the location:

1. Region of symphysis
2. Canine region
3. Region of body
4. Region of angle
5. Region of ramus
6. Region of condylar process
7. Region of coronoid process

A classification of fractures according to location is simple and correlates anatomic and clinical nomenclature.

According to D. Kelly and W. Harrigan /5/ mandibular fractures were arbitrarily divided into six categories for simplification in classification. They are the same as in the above mentioned except the canine region.

We found that the base of this classification contains information not only for the anatomical localization of fractures; it reveals whether they are simple or compound; with or without dislocation; the number and dislocation of the fragments.

Classification of fractures according to the anatomical locations /similar to "E" of Dingman's classification / is the base of the classification of D.Sinn, S.Hill and S.Watson /8/. Fractures are presented in 7 categories:

1. Condylar fractures/intracapsular/
2. Subcondilar fractures
3. Coronoidal fractures
4. Fractures of mandibular ramus
5. Fractures of mandibular angle /open through third molar socket/
6. Fractures of mandibular body /open through tooth socket/
7. Fractures of symphysis.

It is essential that correct nomenclature have to be utilized in describing the different regions of the mandible that are involved by fracture.

The authors point out that mandibular fractures from a descriptive standpoint should be classified by location and by whether they are open or closed,displaced or non-displaced; complete or incomplete and linear or comminuted.

A. Pogrel and L.Kaban /7/ classified mandibular fractures in 5 groups according to the site of injury too:

1. Condylar fractures
2. Ramus fractures
3. Angle fractures
4. Body fracture
5. Fractures of symphysis and parasymphysis

Mandibular fractures are also classified as simple or comminuted and closed and compound. Fractures involving teeth are always compound as the periodontal ligament space is open in the oral cavity.

First attempt for unified and standart classification of mandibular fractures is so called formula of fracture of A. Gratz /2/. It consists of alphanumeric symbols analogic to TNM classification of tumours. The author mentions the following categories:

- F-fracture
- L-localization
- S- soft tissues injuries
- A- associated maxillo-facial injuries
- O- occlusal disorders

This classification is not complete, because some very important criteria such as dislocation of fragments, tooth in a fracture line are missing.

According to WHO/1997, 2003//3/ the international classification of mandibular fractures is:

- S 02.6 - Fractura mandibulae
- S 02.60 - Fractura processus alveolaris
- S 02.61 - Fractura corpus mandibulae
- S 06.62 - Fractura processus articularis/condylaris/
- S 06.63 - Fractura processus muscularis /coronoideus/
- S 02.64 - Fractura ramus mandibulae
- S 02.05 - Fractura symphysis
- S 02.66 - Fractura angulus mandibulae
- S 02.67 - Fracturae mandibulae multiplex
- S 02.68 - Unspecified mandibular fractures

The term “unspecified mandibular fractures” having in mind the contemporary apparatus is not correct.

The most popular classification of mandibular fractures in Russian stomatological practice is the classification of Kabakov and Malishev/4/. According to them fractures are systemized as following:

1. According to localization:
  - a. mandibular body/with or without teeth in fracture line/
  - b. mandibular ramus with its processes
2. According to the character: with or without dislocation
3. According to the number: single, double, multiple, unilateral, bilateral

The authors themselves found this classification incomplete and inexhaustible.

A new classification of mandibular fractures is suggested by A.Pankratov and T.Robustova /6/. They suggest a formula for mandibular fractures in 8 categories with alphanumeric marks. They underline that in comparison with fractures of the upper and middle zones of the face, mandibular injuries are characterized by typical location and configuration. That's why they use letteral and numerical symbols in formulation the diagnosis. These symbols characterize the line of fracture, involved teeth, presence /or absence/ of dislocated fragments, occlusive disorders, combined injuries, status of soft tissues, presence of inflammation in the fracture line and its severity. These symbols are:

F-/fracture/: from Fo to F4 and includes: incomplete, simple, double and multiple fractures

T- /tooth/: To, T1, T2/T2 c, T2 pu, T2 pe, T2pa - in-

cludes information concerning tooth-periodontal or parodontal changes of tooth in the fracture line

L - /localisation/: from L1 to L8- and includes the following regions: L1 - incisivum L2 - caninum L3 - praemolares – molares; L4 - angulus mandibulae L5 - ramus mandibulae; L6 - proc.condylaris; L7 - proc. muscularis /coronoideus/; L8 – proc.alveolaris

D - /dislocatio/: Do, D1, D2-with luxatio

O - /occlusion/: Oo, O1, O2 – with or without occlusal changes /including classification of bone atrophy of the mandible/ O2-aI, O2-aII, O2-aIII; a I, II, III mark the bone atrophy of mandible/

S - /soft tissue/: So-closed mandibular fracture, S1-open mandibular fracture /communication with oral cavity/, S2-open combined with skin injuries, S3-intra and extraoral opened fractures, S4- open fracture with soft tissue formations

I - / infectio/: Io, I1, I2 – with or without inflammatory changes/abscessus and flegmonas/

A - /associated/: A0, A1 – combined or not

It is obvious that this classification is too detailed, loaded and inconvenient. It contains a lot of information for clinical symptoms which can't be presented by means of X ray study. At the other hand looking at this formula it is not clear whether the fracture is left sided or right sided, whether it is single or multiple.

#### COMMENT:

The review shows that the present classifications are not enough comprehensive. They have some lapses and some faults. For example they include a lot of categories with unclear content and subjective assesment. Most of them can not be objectified by X-ray methods.

Actually the work in Emergency Departments shows a necessity of one radiological classification of mandibular fractures that should include too clear and precisely defined categories which can be objectified by X-ray methods.

This radiological classification should contain clearly visualized objective information. Data of this classification must faultlessly be used by all specialists from different disciplines working in Emergency Departments-traumatologists, neurosurgeons, maxillo-facial surgeons etc.

And that is necessary in order to avoid subjective evaluations.

Maxillo-facial traumatological practice requires information, based on a working X-ray classification /formula/ to be so obvious and so precise in order to help the surgeon about the exact diagnose of mandibular fractures and their treatment.

It seems that one contemporary radiological classification of mandibular fractures should resemble TNM formula for tumours. And that would be the aim of further researches.

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## CYSTIC LESION OF THE MAXILLA - CASE REPORT

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### ABSTRACT

The authors submit a theme concerning a radiolucent lesion of the maxilla. They emphasize on the fact that the clinical and radiological features are difficult to differentiate extensive cyst lesion from those of other odontogenic or non odontogenic benign tumor arising in the upper jaw. The correct diagnose is very difficult and is possible only after histological examination.

They present a case with a large cystic lesion of the maxilla hystologically proved as keratocyst.

**Key words:** keratocyst, radiolucency, maxilla

Cystic lesions of the maxilla could be unilocular or multilocular, usually with well-defined sclerotic borders. Differential diagnosis should be made with all bone lesions with radiolucency. They are two big groups-cysts and tumours.

The odontogenic keratocyst is the third most common cyst of the jaws, after the follicular and radicular cysts. Keratocyst most commonly occurs as single lesion in the jaw of otherwise healthy persons more frequently in the mandible than in maxilla. /1,3,7/.

According to Pippi et al. /5/ keratocysts were twice as frequent in women than in men. According to R. Brannon /2/ and St. Vincent /7/ the lesion has a slight predilection for males.

It is twice frequent in the mandible as in the maxilla and the most common sites were maxillary third molar region and maxillary cuspid area. The odontogenic keratocyst comprises 10.5% of the total cysts./2/

Radiographically the keratocyst did not appear to

have a reliable characteristic feature to distinguish it from other radiolucent lesions of jaws. Their appearance could be unilocular, bilocular and multilocular, frequently bordered by a thin sclerotic border of bone and their periphery loculated. They can masquerade as any radiolucent lesion in jaws, but because of their frequent large size, multilocular appearance and clinical behaviour they are often misinterpreted as ameloblastoma. Keratocysts are characterized by a high recurrence rate. /4,6,8,9/

### CASE REPORT

A 37 years old woman came to the Oral Surgery Clinic with a facial assymetry caused by a swelling of the left part of the maxilla. She noticed a painless gradually enlarged swelling in this area 2 months ago. The last week a pain appeared; it was constant, pulsating, localized in the region of the left maxillary sinus.

Extraoral examination: a facial assymetry due to a persistent swelling in the region of the left maxilla.

Intraoral examination revealed an expansion of the distal area of the left maxilla, extending towards the buccogingival sulcus. The swelling was slightly painful to palpation and with a bone thickness. The overlying mucosa was intact, normal in colour, non connected with the bone. The missing teeth in the left part of the maxilla were restored 10 years ago.

Lab examinations didn't show deviation from normal ranges.

X-ray examination:

- A panoramic radiograph /Fig. 1/ shows an ovoid well demarkated with osteosclerotic border radiolucent lesion on the left maxilla extending from 21 up to 27 and