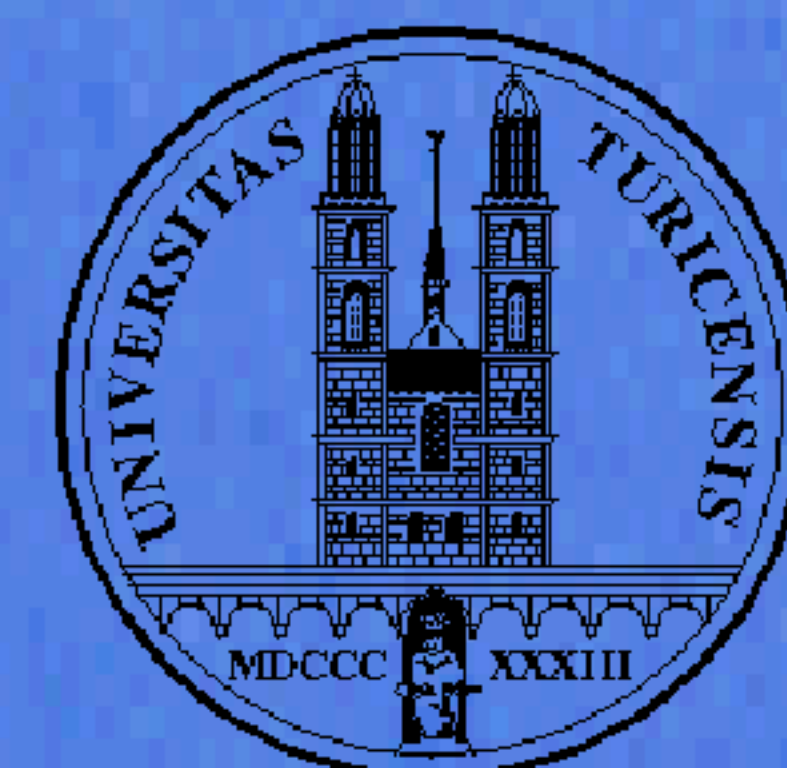


The Demirjian's Wisdom-Teeth Stages of Individuals about their 18th Birthday

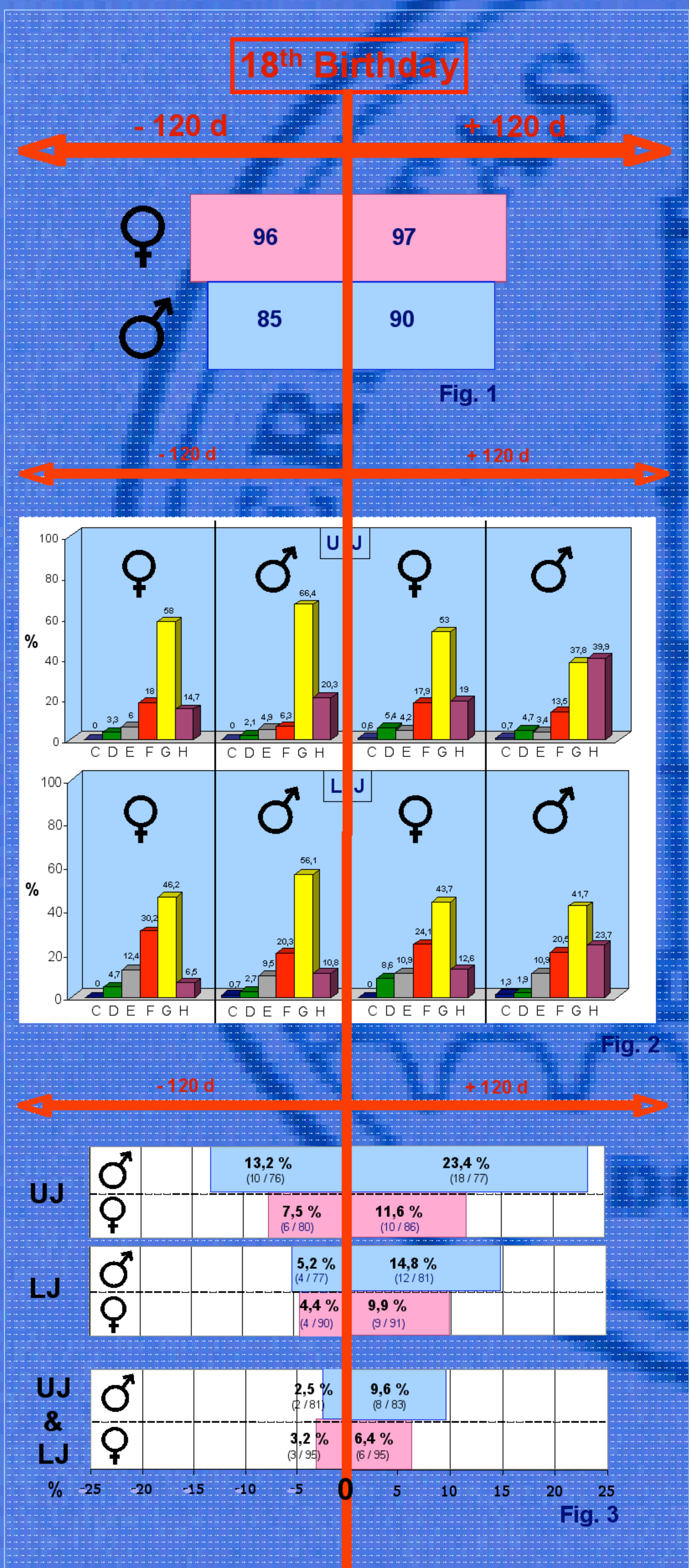
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INTRODUCTION: Forensic age estimation of living persons has become an established field of expertise in forensic medicine. Due to the increased rate of immigrants without valid identification documents, this examination has become increasingly important in the last few years. At the Institute of Legal Medicine of the University of Zurich we carry out this examination regularly since the year 1999. The most frequent question to answer is whether the examined person has already reached the age of 18 years. Age estimation must be based on the results of multiple different examinations. One of them is the radiological evaluation of the third molar mineralization. Like most examiners today, we also use the method devised by Demirjian et al., who classifies the wisdom-teeth mineralization in 8 stages (A - H).

AIM & METHODS: To get realistic data about the Demirjian's wisdom-teeth stages from individuals about their 18th birthday, we examined in a retrospective study 368 conventional orthopantomograms of persons at the age of 18 years up to +/- 120 days (175 males and 193 females), assembled from patient's files of different clinics of dentistry in Switzerland. Due to the retrospective character of the study without knowledge about the development circumstances of the involved individuals, we abstained from ethnical distinction. The most OPT's were of caucasians, especially swiss people or persons, who have grown up in Switzerland. Any person with at least one assessable third molar was included in the study. If there were third molars with multiple roots in different stages, the least developed root was scored.



RESULTS:

Of the 368 in this study included individuals, 181 (85 males and 96 females) belonged to the group of 18 years - 120 days, 187 (90 males and 97 females) to the group of 18 years + 120 days. So the groups were of equable size (Fig. 1). In the upper jaw were 88,8% (609/686) of the present third molars assessable, in the lower jaw 97,7% (647/662). The most common reasons for an impossible scoring of the present third molars were radiographic superimpositions or tilted teeth. This problem appeared more often in the upper jaw than in the lower jaw.

The percentage distribution distinguished in groups female/male, upper jaw/lower jaw and individuals 18 years +/- 120 days is illustrated in Fig. 2. Most of the individuals had uncompleted wisdom-teeth mineralization. The most common stage was G according to Demirjian's classification.

We relatively often found individuals with one to three completed wisdom-teeth root mineralization in both groups (over and under 18 years). By assessing only the upper jaw, we found 13,2% with completed root mineralization in the male group 18 years - 120 days, 23,4% in the male group 18 years + 120 days, 7,5% in the female group 18 years - 120 days and 11,6% in the female group + 120 days. By assessing only the lower jaw, there were 5,2% of the individuals with completed root mineralization of the third molar root in the male group 18 years - 120 days, 14,8% in the male group + 120 days, 4,4% in the female group - 120 days and 9,9% in the female group + 120 days (Fig. 3).

2,8% of the individuals (2,5% males and 3,2% females) in the group 18 years - 120 days showed a complete root formation of all four wisdom-teeth, whereas in the group 18 + 120 days 7,9% of the individuals (9,6% males and 6,4% females) showed a complete root formation of all four wisdom teeth (Fig.3). In this calculation were only individuals considered who had all four wisdom teeth or at least one wisdom-tooth with a development stage other than H according to Demirjian et al.

More detailed results of the study will be published soon.

CONCLUSIONS:

- The wisdom-teeth in the upper jaw show an earlier completion of the root mineralization than the wisdom teeth in the lower jaw.
- The assessment of the development of the wisdom-tooth roots is in the upper jaw more frequent infeasible than in the lower jaw.
- Most of the individuals had uncompleted wisdom-teeth mineralization. The most common development stage was G according to Demirjian.
- There is often a complete mineralization of some wisdom-teeth (one to three) but seldom a completed mineralization of all four wisdom-teeth in one individual, especially in the group under 18 years.
- A complete mineralization of all four wisdom-teeth indicates a high probability of an age over 18 years.
- However, a few individuals of an age under 18 years show already complete development of all four wisdom teeth.

LITERATURE:

- Demirjian A et al. (1973) „A new system of dental assessment“. Hum Biol 45
- Schmeling A et al. (2004) „Forensische Altersdiagnostik bei Jugendlichen und jungen Erwachsenen“. Dt Ärzteblatt 101
- Mesotten K et al. (2002) „Dental age estimation and third molars“. Forensic Sci Int 129
- Olze A et al. (2003) „Untersuchungen zum zeitlichen Verlauf der Weisheitszahnmineralisation bei einer deutschen Population“. Rechtsmedizin 13
- Olze A et al. (2005) „Validation of common classification systems for assessing the mineralization of third molars“. Int J Legal Med 119

ABBREVIATIONS:

- UJ: Upper Jaw
- LJ: Lower Jaw
- OPT: Orthopantomogram

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