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i Szczękowo-Twarzowej Akademii Medycznej w Lublinie
II Zakład Radiologii Lekarskiej Akademii Medycznej w Lublinie
Department of Dental and Maxillofacial Radiology, Medical University of Lublin
II Department of Medical Radiology, Medical University of Lublin

T. KATARZYNA RÓŻYŁO, MAGDALENA JURKIEWICZ-MAZUREK, INGRID RÓŻYŁO-KALINOWSKA

Impacted maxillary canines - evaluation of reasons of occurrence and complications on the basis of own observations

Zatrzymane kły górne - ocena przyczyn występowania i powikłań na podstawie obserwacji własnych

The impacted canines are the teeth which after full formation stay in the maxillary bone despite the period of their physiological eruption that is between 11^{th} and 12^{th} year of life. The upper canines are the second teeth in frequency to be impacted after third molars. According to Blair et al. (1) they can be found in 1,5-2% of the population. It is believed that the impaction of the canines can be caused by many factors, both local and general (1, 8). However, it is the local factors that are thought to have the greatest importance (3, 6).

The detection of impacted teeth is based on clinical and radiological examination. In clinical examination the presence of an impacted tooth is suspected when it is not present in the dental arch and at the same time the alveolar process over the space in the arch is protruding. However, an unerupted tooth is often located too high in the bone to be detected on palpation. Moreover, the impacted canines are usually asymptomatic. That is the reason why they are frequently an accidental finding on a radiogram (6, 8).

The aim of the paper was the observation of prevalence and the causes of impaction of canines as well as determination of occurrence of complications in patients examined in the Department of Dental and Maxillofacial Radiology of the Medical University of Lublin in the years 1999-2000.

MATERIAL AND METHOD

There were examined radiological records of 557 people, 199 men and 358 women in the age from 12th year of life (that is the end of the period of physiological eruption of canines) to 79 years, on the average 34.3 years.

All the patients had dental intraoral X-rays of the region of the upper canine by means of digital radiography system Digora Soredex using the Planmeca Intra intraoral X-ray machine. All the radiographs were taken in the Department of Dental and Maxillofacial Radiology of the Medical University of Lublin.

On the analysed X-rays there was observed the prevalence of impacted upper canines as well as the inclination of the long axes of the impacted teeth, classified as oblique, horizontal and vertical. There were noted the causes and complications of impacted teeth.

In the studied material the impacted maxillary canines were detected in 28 patients (20 women and 8 men). The vertical inclination of the long axis of an impacted canine, which is the most beneficial for proper eruption as well as for orthodontic treatment [7], was found in 6 patients (Fig. 1). The horizontal inclination occurred only in 1 patient, in whom the long axis of the tooth was almost parallel to the margin of the alveolar process (Fig. 2). Most often there was observed the oblique inclination that was present in 21 examined persons (Fig. 3). In 6 patients the impacted teeth were located abnormally high in the maxillary bones, which was unfavourable for eruption of the teeth. In such case the incisal angle of the crown was located on the level of 1/3 of the apical part of neighbouring lateral incisor (Fig. 4).

An important factor in impaction of maxillary canine is the persistence of its primary predecessor that was observed in 12 cases. In 2 patients there was observed local crowding of teeth with rotation of lateral incisor. As far as the complications of impacted canines are concerned, in 1 patient it was found that the impacted tooth was the cause of a dentigerous cyst with inflammatory changes. Other complications connected with impacted maxillary canines were not observed.

DISCUSSION

The prevalence of impaction of maxillary canines in our material reached 5%. This result is slightly different from the contributions of other authors who observed impacted upper canines in maximum 2% of the population (1). This may be due to the fact that the patients examined in our Department are sent by the dentists in public and private dental offices who direct more difficult cases for treatment in the Medical University, in Hospital and Outpatient Clinics.

The impaction of teeth is caused by many factors. It is the local reasons that are most common such as previous trauma, a lack of space in the dental arch (dento-alveolar dis-

proportion), the presence of supernumerary teeth, dentigerous cysts, benign and malignant tumours, inflammatory processes of the bone, improper morphology of teeth, persisting primary teeth, reinclusion of a primary tooth, developmental disorders of the maxilla as well as rotation of neighbouring teeth (1, 3, 6, 8). Considerably smaller role in impaction of canines is played by systemic factors such as systemic diseases, genetic and hereditary factors, developmental disorders, gestosis, rickets, generalised diseases of skeletal system, infectious diseases of infancy (2, 6, 8).

Oliver et al. (5) in their papers point out to the reduction in size of the maxillary lateral incisor, shortening of its root, possibly hypoplasia of this tooth as a symptom accompanying the impaction of the adjacent canine. They also imply that a lack of lateral incisors or their peg-like form, early eruption of the lateral incisor or first premolar, may contribute to the impaction of a canine as incisors and premolars supply the guidance during the eruption of the canines.

In the studied population the reason of impaction of the maxillary canines was mostly improper (oblique or horizontal) inclination of the long axis of these teeth as well as persistence of unresorbed or partially resorbed primary canine. Also the high localisation of unerupted canines in the maxillary bone influenced their impaction as well as a local lack of space in the dental arch. We did not encounter the reduction of dimensions or hypoplasia of lateral incisor accompanying the impacted maxillary canine, which was suggested by other authors (5).

As the impacted canines can be the cause of many disorders such as anomalies of occlusion, dentigerous cysts, neuralgias, external resorption of neighbouring teeth, chronic sinusitis, early diagnosis is valuable in order to introduce treatment. Some authors also underline the influence of impacted teeth which can sustain inflammatory conditions in the bone, although they are not the direct reason of their evolution (4, 7).

In our own material we did not observe potential complications of impaction of maxillary canines other than secondary infection of dentigerous cyst. Also in none of the patients with impacted maxillary canines there was observed the ankylosis of the affected tooth.

CONCLUSIONS

1. The prevalence of impacted maxillary canines reaching 5% in the studied population may be caused by selection of the patients sent by practitioners for specialised treatment in the Medical University Clinics.

2. The impacted maxillary teeth were observed more often in women than in men.

3. Most often there was noted the oblique inclination of the long axis of the unerupted tooth, which is unfavourable for proper eruption or orthodontic treatment.

4. The impaction of the maxillary canines was also influenced by the high localisation in the maxillary bone as well as the lack of space in the dental arch.

REFERENCES

1. Blair G. S. et al.: Posttreatment assessment of surgically exposed and orthodontically aligned impacted maxillary canines. Am. J. Orthod. Dentofac. Orthop., 113, 329, 1998.
2. Cieślik T., et al.: Mnogie zęby zatrzymane. Czas. Stomat., 50, 761, 1997.
3. Karłowska J., Doniec-Zawidzka J.: Czynniki utrudniające doprowadzenie zatrzy-manych zębów przednich do płaszczyzny zgryzu. Czas. Stomat., 45, 52, 1992.
4. Klindelan J., Cook P.: The ectopic maxillary canine: a case report. Br. J. Orthod., Vol. 2525, 179, 1998.
5. Oliver G. et al.: Morphology of the maxillary lateral incisor in cases of unilateral impaction of the maxillary canine. Br. J. Orthod., 19, 9, 1989.
6. Różyło T. K.: Najczęstsze przyczyny występowania zębów zatrzymanych u dzieci. Przegl. Stomat. Wieku Rozw., 10, 42, 1995.
7. Sinha P. K., Nanda R. S.: Management of impacted maxillary canines using mandibular anchorage. Am. J. Orthod. Dentofac. Orthoped., 115, 254, 1999.
8. Strużak-Wysokińska M. et al.: Umiejscowienie zębów zatrzymanych w obrazie radiologicznym. Czas. Stomat., 43, 604, 1990.

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STRESZCZENIE

Celem pracy była obserwacja występowania i przyczyn zatrzymania górnych kłów, jak również określenie częstości występowania powikłań z nimi związanych u 557 pacjentów w wieku od 12 do 79 lat, badanych w Samodzielnej Pracowni Rentgenodiagnostyki Stomatologicznej i Szczękowo-Twarzowej Akademii Medycznej w Lublinie. Pacjentom wykonywano zdjęcia zębowe wewnątrzustne okolicy górnego kła techniką radiografii cyfrowej przy użyciu systemu Digora-Soredex. W badanym materiale zatrzymane kły stwierdzono u 28 osób (20 kobiet i 8 mężczyzn), tj. u 5% populacji. Najczęściej występowało skośne ustawienie osi długiej zatrzymanego kła (u 21 osób), poziome u jednej osoby, a u sześciu

ustawienie pionowe, najkorzystniejsze dla wyrżnięcia zęba lub ortodontycznego sprowadzenia go do łuku. U sześciu pacjentów stwierdzono niekorzystne dla wyrżnięcia zbyt wysokie położenie zęba w kości szczęki. W 12 przypadkach przyczyną zatrzymania kła był przetrwały ząb mleczny, a u 2 osób stwierdzono lokalne stłoczenie zębów. Jedynym zaobserwowanym w materiale powikłaniem była wtórnie zakażona torbiel zęba zatrzymanego. Wyższa niż według innych autorów częstość występowania zatrzymanych kłów górnych może wynikać z faktu, że do Pracowni zgłaszają się pacjenci kierowani przez lekarzy do leczenia trudniejszych przypadków w Zakładach i Klinikach Akademii Medycznej.

EXPLANATION TO FIGURES

Fig. 1. Almost vertical inclination of the long axis of the impacted maxillary canine. Present persistent partially resorbed primary canine. Locally lack of space in the dental arch.

Fig. 2. Horizontal inclination of the long axis of the impacted upper canine located almost parallelly to the margin of the alveolar process.

Fig. 3. Oblique inclination of the long axis of the impacted maxillary canine. Sufficient space in the dental arch, however, the persistent primary teeth impede the eruption of the permanent canine.

Fig. 4. Impacted upper canine with oblique long axis. The tooth abnormally high located with its incisal angle of the crown on the level of apical 1/3 of the root of the neighbouring lateral incisor.

Fig. 1

Fig. 2

Fig. 3

Fig. 4