

THE IRREGULAR ERUPTION OF PERMANENT TEETH

This report deals with chronological and locational irregularities in the dentition of permanent teeth. During the last four years I have observed this in a majority of children, of both pre-school and school age, examined in the orthodontic department and during visits to the nursery schools of Prague's 3rd district. The approximate number of children examined was 4000.

We learnt and we used to teach our students that the first permanent molars are cut first, then the central incisors, etc., always starting with the lower jaw. This was the proper order of eruption of the permanent teeth! Twenty or thirty years ago we were writing that the lower permanent incisors are cut first, and only then the first permanent molars. Valšík says that these are cases of the incisive type of child, and speaks of them being physically advanced. If the first permanent molars are cut first, he refers to the molar type. So far our investigation has indicated 50% occurrence — first molars or first incisors.

Later we spoke and wrote of eruption of the permanent teeth already beginning after the age of 5. I myself wrote of this in a report on the examination of 28 000 children in the nursery schools of one half of Prague in 1960. But during visits to nursery schools I was surprised to find that the eruption of the permanent teeth begins in some children even during the 5th year, and in others between the 6th and 7th. We might therefore assume an acceleration of the process of dentition on the one hand, and its retardation on the other. I arranged the children diagrammatically according to size and weight, but I cannot state that there was any correlation between the eruption of the first permanent teeth and body size and weight.

It would seem that clinically and practically it is not so important whether, e.g. the premolars and canines are cut at the same time as the lateral incisors, or the canines after the appearance of the second permanent molars, or whether this is the case in the two quadrants of the same jaw also, or even in both jaws. I refer to the problem because this is not only an anthropological peculiarity of development and growth, but from the clinical point of view probably a cause of vertical anomalies of the orofacial system. Since these are cases of anomalous development and growth, and this is a fundamental biological problem, the circumstances and causes must be analyzed, and the changes in structure and function of the orofacial system studied, including those of pathogenic mechanisms.

I fear this to be a widespread phenomenon, and therefore consider it fitting to publish my observations. Generally speaking we are dealing with the prospects of the retention of a full set of permanent teeth, well-spaced in the alveolar processes, and with the proper setting of the roots in their bone tissue. This is a condition of the future long-term functioning of the orofacial system, of mastication and of the articulation of speech-sounds with normal phonation. This is the functional aspect. From the clinical point of view the question arises whether this problem must be demonstrated, and whether it is necessary to examine a considerable proportion of the diminishing and foreshortening of the function of the orofacial system as being due to this very chronological and locational irregularity in the eruption of the permanent teeth. I think so, since this is more than likely a condition of jaw anomalies in a vertical direction, paradontic diseases, and changes in the structure of the lower face.

What are the conditions and causes of this biological phenomenon? Phylogenetically speaking this is a generative process, incorporated in the genetic code. There is anomalous development and growth of the facial skeleton in the right and left upper and lower jaws (leaving aside cleft palates). An example is the crowding of the teeth even

in deciduous dentition and as late as the sixth year of age — i.e. during a period of active growth of the child. There is delayed development and growth of the skeleton, i.e. of the passive part of the orofacial system, and also delayed development and growth of the orofacial muscles, the active or functional part. These are the conditions of development and growth which I have so far been able to establish in relation to the crowding of the deciduous, and especially of the permanent teeth.

Ontogenetically speaking there is anomalous development of the jaw superstructure — the alveolar processes — a lack of exercise of the orofacial muscles. This is a question of the transversal and ventrodorsal pressures of the orofacial muscles in so-called orthodontic — better said orthopaedic — anomalies, acting on the alveolar processes during the opening and functioning of the mouth, i.e. in speaking and eating („restriction of the oral orifice“). All these are the demonstrated and demonstrable, stable and labile conditions and causes of crowding. The stable ones are those of phylogenesis, the unconditional ones. The labile ones are those of ontogenesis, the conditional ones.

The labile conditions mostly concern the problem of the mechanical aspect of nutrition and that of masticating pressures. I remember that during my assistanship at the Anthropological Institute — i.e. some fifty years ago — when examining children in homes and in state and private schools, I considered dental crowding — where a permanent tooth was cut out of line, frontally or laterally in a lingual or palatal direction — to be a rarity. Our research in 1960 showed a 19% occurrence of such anomalous eruption, and the present figure is already 27%. In those days food was tough or even hard, while the need for mastication seems to be getting smaller and smaller today, and thus the need for the masticating pressures which bring about the development and growth of the jaws, particularly of the alveolar processes, and build up the orofacial muscles.

Today it is already impossible to think in terms of local anomalies. We must promote the investigation of the causes and pathogenesis of the general state of health of the child. Internal disorganization must be objectively noted. The correct approach to this problem is from life, from clinical experience, especially from experience contained in anthropological research on the health of a child living in a particular family, ethnical and working environment. These are the questions for research. We are dealing with the orofacial system, the permanent teeth, which are lost through disease — caries and paradontopathies — mainly on the basis of the irregular development and growth of this whole system. The question is also an economic one. So attention must be paid to the general state of health of the child from the very beginning, from the moment of birth.

Now there remain only the questions: does the quality of nutrition play a part? Is the pattern of daily life of the child, physically, mentally and socially, involved? Or are we to look at diseases which are often system diseases and at their quality, or should we look at the results of the tetracycline medicines of today? Why and when does the stabilization of the structures and shape of the orofacial system come about? Can it be considered as an anthropological characteristic?

Prof. Dr. F. Skatoud

REPORT ON THE 2nd INTERNATIONAL SCHOOL OF BIOLOGICAL ANTHROPOLOGY (ZAGREB, NOVEMBER 8-13, 1976)

The 2nd International School of Biological Anthropology, organized by the Yugoslav colleagues, took place in last November. In contrast to the 1st International School (Erice, Sicily, 1974) the programme of the Zagreb meeting

had a multi-disciplinary orientation involving both the medical and physiological sciences. The event took place under the auspices of the Institute for Medical Research and Occupational Health of the Yugoslav Academy of Sciences and Arts and its direct organizers were Professor Dr. Ratko Buzina, Professor Hubert Maver and Dr. Pavao Rudan.

The programme was divided into two main parts. The first dealt with *general problems of the development of man* — (biology of man, genetic aspects of growth control and some general problems connected with sociology).

General and basic problems of human genetics were tackled by B. Chiarelli from Turin, N. Wolanski from Warsaw in his carefully documented work dealt with the problems of genetic control of the growth and development of the human body. The paper was based on a correlation analysis of 24 somatotropically established characters in children between 9–15 years of age in relation to their parents. He proceeded in an analogous way also on studying some physiological, biochemical and psychomotoric indices. It appeared e.g. that the fat tissue is considerably influenced by external nutritional influences, greatly reducing the hereditary coefficients. It followed from the definition of some of the enzymes that malate dehydrogenase and aldolase have the closest genetic determination while alkaline phosphatase has the weakest determination. Lactate dehydrogenase occupied an intermediary position. Most enzymes showed a high degree of identity between children of 9–10 years and parents, and they were lower in children of 11–12 years. It was also very interesting that though the relations of blood pressure values were positive (not significantly), systolic blood pressure showed a lower degree of dependence than the diastolic one.

Some sociological and biological problems connected with the continuing urbanization process were tackled by G. Olivier from Paris. He compared certain anthropometric and functional indices of various Paris and rural population samples. He concluded e.g. that the average daily caloric consumption in the urban areas was 325 Kcal per day lower than in the rural areas, but the body-weight of adult women in the rural areas is 7–9 kg lower in the corresponding age-groups. The results clearly indicate that these differences are caused by different ways of life first of all by different physical load in the urban and rural population. He studied also a group of inhabitants of the metropolitan area, exposed to considerable civilization stresses. In these studies the anthropometric and functional indices did not differ from the group of the urban population. But on a direct question, whether the author followed in the group of metropolitan inhabitants also general health indices, such as mortality and morbidity-rates, i.e. factors clearly indicating whether this group of population was exposed to special hazards and perhaps require increased health care we were told that such indices had not been followed. I think that this situation would deserve a thorough analysis also in the Czechoslovak society.

The second group of problems had clinical orientation and it dealt with obesity. The Czechoslovak participants tackled some of the basic problems of the pathogenesis of obesity. We presented the results of our recent studies on the growth of fat tissues during the intrauterine life and during the early post-natal phase of development. It appears that the growth of fat tissue is caused both by the proliferation of cells and by the increase of their volume. The priority results of the work of our team concerning the utilization of energy in the skeletal muscle of the obese people and the results in the changes of the main lipogenic factor — the insulin — in obese people and its relations to the anthropometric indices and characteristics of the main body components arose considerable interest. Some evolutionary aspects on the development of the main body components — of fat and fat-free body mass — were tackled by J. Pařízková, especially with regards to functional capacity in children of different body-weights. The results of her many years of work in this sphere are of extraordinary value also in world context. — Durnin (Great

Britain) dealt with certain problems of energy connected with muscular activities. The studies of caloric consumption and body composition realized in 14 years-old children (repeated after seven years) in Glasgow showed a slight decline in the total caloric consumption (in 200 boys and 250 girls) and higher body-fat values — a clear indicator of a decrease in physical activities. His materials shows a very conspicuous decline of physical activities in obese men and women: slim women are e.g. physically active for 99 minutes daily, the obese ones only for 36 minutes per day.

Brook (Great Britain) did not attend the event. His paper dealt with the determination of the degree of genetic dependence of the amount of subcutaneous fat. He studied monozygous (MZ) and dizygous (DZ) twins. He found a higher degree of dependence in MZ than in DZ for the thickness of the skinfold above the triceps and also below the scapula. With an average of identical values the MZ twins showed a lower mutual difference of value than the DZ ones. The author concludes that obesity has clearcut genetic determination.

Besides these main papers there were also a series of short information concerning obesity. E.g. Sotter's team dealt with the changes of the STH after insulin caused by hypoglycemia — they found a lower response of STH levels with obese people. The increase of the STH was proportionate to the degree of hypoglycemia; in cases when identical drop was reached with obese people the STH values did not differ from the controls. Minica and P. Rudan presented the results of an epidemiological research in the Croatian Republic. They found that 57% of women and 40% of men have their body-weights above 110% BI, and body-weight above 130% was found in 9.1% of women and 2.3% of men (from a group of 1575 men and 1685 women). Plasaj et al. were studying the incidence of hyperlipoproteinemia in 151 patients with the infarctus of myocardium. Normal lipid values were found in 42.4%, increased in 57.6% (types IIa, IIb and IV), and no significant differences were found in the frequency ($t = 1.94$), development and prognosis i.e. with regards to the hyperlipoproteinemia.

Mikulič proved through the method of double blind tests the positive results reached in the reduction of body weight in obese people by using Mazindol (San-loz) anorectic agents and he underlined also the importance of physical activity in the therapy of obesity.

The panel discussion stressed the importance of obesity prevention. The number of obese children is systematically increasing as documented in the population of Yugoslavia and of the USA — this requires very energetic measures exactly in this period of life.

It followed, especially from the discussion of the Yugoslav partners, that there exist several projects aimed at limiting obesity already in childhood, combining the newest practical achievements in the fields of nutrition, physical activities, etc. through the use of mass-communication media, especially of TV and by developing sport activities. We are very interested in the results of this widely conceived approach to the regulation of energy intake and output in children.

The symposium proved that obesity is an important problem and it brought certain new results from the viewpoint of etiology, pathogenesis and therapy, showing certain approaches towards influencing the development of obesity in the society through prevention, namely in children, through the use of all available means of mass-communications.

The organization of the so-called International School of Biological Anthropology has great echo in the scientific circles. The forthcoming 3th International School of Biological Anthropology will take place on August 1977, again in Zagreb, Yugoslavia, and it will be followed by the 1st International Congress of European Anthropologists (September 1–3, 1977).

MUDr. R. Rath, IKEM Prague,
MUDr. J. Pařízková, VU FTVS,
Charles University, Prague