

Oral and Dental Hygiene (Contd.)

By

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The most marked reduction was owing to the sugar ration and by the middle of the War, sweets, jams, sugar and cakes disappeared completely from the market in Norway. As soon as they appeared again, the caries incidence began to show an increase. Similar investigations were carried out in Finland and they show the same results. Roughage in the form of hard and fibrous food, is absolutely essential for the natural cleansing of the teeth and gums during the process of mastication, but as so-called civilization has progressed, our food has become softer by choice and by cooking, to the detriment of the teeth, gums and jaws.

It would now appear that the prevention of dental caries should be possible in three ways. First is to alter or reduce the refined carbohydrate intake; second is by overcoming the bacteria and third by increasing the quality of teeth, thereby increasing their resistance to destruction—by chemicals, diet and oral prophylaxis.

(I) **Sugar:** Sugar and starches, which we call carbohydrates, are used by the body to obtain energy for muscular activity. Excessive amount of carbohydrate, principally sugar, above the needs of the person may actually be harmful. The relation of sugar and tooth decay has been well established. Dental scientists have shown that the acid forming bacteria which attack the tooth enamel require a food which can be quickly broken down to form these acids. Sugar upon the tooth surface can be turned into acids with remarkable rapidity by certain bacteria which are always present in the mouth. The saliva of the average person with the help of alkaline foods

eaten at meal-time can neutralize the acids produced at meal-time; so that caries does not result. But if a person nibbles on candies, cakes and other sweets 5 to 6 times a day between meals, the number of caries attacks during the day are multiplied enormously and increase by 5 or 6 times, so that saliva can no longer cope with the acids. The sweets stick to the teeth for comparatively longer periods of time. They are not brushed off by other foods such as vegetables or fruits, as does sugar eaten during meal-time. Greater use of sweet fruits in place of sweets will help eliminate the desire of craving for sugar in the diet. I would go so far as to suggest that if all the sweetshops were prohibited by law, then, dental surgeons work with children would largely disappear. There is a fallacy that glucose is better than sugar. Glucose is directly and easily fermentable in the mouth into acid, whereas the other types of sugar have to go through much more complicated process in the mouth to produce acid. Therefore, glucose sweets constitute a greater damage than ordinary sugar. It becomes a crime when as prizes for competitions or contests children are awarded bags of candies to enjoy themselves. This is a kind of ignorance that ought to be counteracted. The diet of man has changed considerably and has been getting softer and softer, while his dentition has remained practically unaltered. Therefore, after every meal there must be a certain amount of stagnation about teeth, which may lead to dental disease. If sweets or cakes must be eaten, then, rinse the mouth immediately to save stagnation.

(II) **Overcoming Bacteria:** If we call to mind some of the commonest diseases, it is obvious that those

caused by bacteria are among the most rapidly cured. We can create an immunity, as for example against diphtheria and small-pox; with antisera we can control, among other things, tetanus and gas gangrene; with chemiotherapy we can overcome a great many bacterial infections, and with a large number of powerful antiseptics we can totally eliminate bacteria for a short period on any part of the surface of the body. Yet, despite these various methods, there is none effective against caries. We are in fact up against the old problem—the particular nature of the structure of the teeth and the hardness of the tooth structure is the only defence against fermentable acids produced. A topical application of Sodium Fluoride has now been advocated to increase the hardness of the enamel in erupting teeth. Dental caries is the result of bacterial attack on the surface of the erupted teeth. Dental decay does not affect the enamel of the teeth developing within the jaw. Since the erupted adult tooth cannot get any more calcium from the blood, caries is not related to the amount of calcium in the diet. If bacteria are acid producers, then, decay will occur on the necks of the teeth as in acidic mouths. If the bacteria are proteolytic rather than acidogenic (as they are during middle age), then, inflammation of the gums and a foul odour of the mouth may result. It has been recently discovered that Chlorophyll tablets will remove foul odour from the mouth as well as body odour.

It was discovered in Sodium Fluoride bearing areas like Colorado, Texas, U.S.A., and the Kangra Valley in India, that people suffered from very little caries, but the teeth were etched and pitted due to excessive amounts of Sodium Fluoride in the water. Research led to the topical application of Sodium Fluoride and mixing it in very small quantities in the water supply of cities. Great stress has recently been laid on the

topical application of Sodium Fluoride which scientific investigations have found reduce dental decay by 40 per cent. It consists of cleaning, polishing and drying the teeth and applying a solution of 2 per cent Sodium Fluoride on the teeth for a period of five minutes twice a week for three weeks during the ages of 3, 7, 10 and 13. It should be applied every three months or four times a year at intervals of three years. The initial application should be made at three years of age to protect the deciduous teeth, seven years of age to protect incisors and molars and ten years of age for the cuspids and bicuspid and finally 13 years for the second molars.

(III) Diet. Now we come to diet. The cells that form the teeth and bone need calcium to construct sound and healthy teeth and bones. The enamel of the teeth develop within the jaws over a long period of time from about six months to about 8 years of age. The child and mother must have an adequate nutrition rich in proteins, vitamins and mineral salts for it is from these substances that sound teeth are made. During this time, an adequate intake of calcium is necessary for the proper calcification of the enamel. If the intake is inadequate, it may produce a defective enamel which is mottled (poorly calcified) or pitted (hypo-plastic). Once the teeth are completely formed in the mouth they do not need more calcium nor can they acquire any. Bone, on the other hand, is always forming and calcifying even in the adult and need calcium throughout life. There is no intimate relationship existing between the quality of the diet and the development of malocclusion of the teeth. Relation of the diet to periodontal disease and to dental caries has been clearly established. Periodontal disease or pyorrhoea is the disease of the gums and the alveolar bone. Healthy gums and healthy bone, to support the teeth require proper local care and

good diet. In Vitamin C deficiency the gingiva becomes swollen and bleeds easily. If the deficiency is continued for a long time, the alveolar bone may be destroyed, so that the teeth loosen and fall out. In Niacine deficiency (Pellagra), the gingiva becomes infected, raw and painful. Therefore, the gums and bones need proper nourishment even if the teeth have erupted.

We must have a clear understanding of the role of diet in preventing dental diseases. The physical character of food plays an important role in keeping the mouth naturally clean and in providing the teeth and the muscles of the mastication, the exercise which they need. A person, who does not exercise over a long period of time, soon finds his muscles flabby and his circulation poor. Normal cleansing of the mouth is accomplished by well-chewed fibrous or granular foods. Foods which require thorough mastication during which they literally sweep over teeth, between the teeth and over all the soft tissues, cleansing and stimulating them, are called detergent foods. Examples of detergent foods are fruits such as apples and oranges, uncooked vegetables such as carrots, raddish, salad and celery. Refined foods such as cheese, white bread, jams or cooked potatoes and oatmeal tend to impact between the teeth and cling to their surfaces. Eat detergent food such as citrus fruit and raw vegetables, which are nature's tooth-brushes. Milk and curds are necessary for creating growing bone and growing teeth. Raw milk from a healthy uninfected cow is the next best to human milk. Pasteurisation and boiling destroys the vitamins. A good diet is necessary for good health of the tissues of the mouth. Defective calcification of the teeth during their development is due to lack of Vitamins D, C and A, and an insufficient supply of calcium and phosphorus. Therefore, these should be included in a growing child's diet.

Mrs. Mellenby's research has indicated that an adequate Vitamin C intake is an important factor in the perfection of dental structural development and the prevention of dental decay. Vitamin D, apparently, influences the absorption of calcium and phosphorus and Vitamin C seems to regulate their deposition in bony and dental structures during their growth. Sugary foods are usually without fibrous element; therefore, sweet biscuits and cakes, bread and marmalade, jams, puddings, chocolates and sweets of all kinds are not to be eaten except when followed by fibrous foods of a cleansing kind such as fish, meat, bacon, poultry, uncooked vegetables, lettuce, cress, raddish, celery and fresh fruits. Essential daily food for adequate daily nutrition for children should consist of:

- Milk & Curds : One to two pints daily.
- Vegetables : One cup daily, half at noon and half at night.
- Fruits : Minimum of one orange and tomato plus other fruit.
- Eggs : 1 or 2 daily.
- Meat : One portion daily, which may consist of meat, fish, chicken or liver.
- Butter : 3 to 6 spoonfuls daily.
- Cod Liver Oil : One tea spoonful.

In choosing fruits or vegetables, care should be taken that they are rich in Vitamin C, and Vitamin A. The minerals that are essential in nutrition are : Sodium, which is found in common salt, fruits and vegetables ; Potassium found in cereals and vegetables ; Magnesium found in muscle tissues, cereals and seeds ; Chlorine, found in common salt ; Sulphur in proteins ; Calcium in milk, curds, eggs, nuts and cheese ; Iron in eggs, meat, spinach, whole

grains; Iodine in sea foods, and copper which is found in nuts, legumes, cereals and dried fruits. Look at the fine teeth our villagers have because they eat whole wheat, unrefined and coarse bread of maize, gram or wheat, milk, raw vegetables and fruits, chew sugarcane and gram, and nuts.

(IV) Oral Hygiene and Prophylaxis: Primitive man's mouth was certainly not bacteriologically sterilized and there is no place in our treatment today for any attempt to render the mouth sterile as this is for all practical purposes an impossible task. Modern man has badly abused his food by over-refining or over-cooking until it is no longer detergent. He must, therefore, have recourse to artificial means such as tooth-brush, mouth washes and chemicals to supplement the cleansing process. You should, therefore, brush your teeth after every meal and before going to bed, and if you cannot do that at least brush your teeth twice daily and thoroughly rinse your mouth with ordinary water immediately after eating. This will reduce decay. To keep the teeth clean, the tooth-brush is the obvious method of choice, but is not completely effective in preventing decay. The Charter's method of brushing the teeth is considered the best. Brush the upper teeth downwards and lower teeth upwards and the surfaces across. The teeth must have been brushed clean of all debris. The commonest and the best form of tooth powder is one part of common salt with three parts of soda bicarb and is as good as any other tooth-paste or tooth-powder in the market. Tooth-pastes that are available, are merely cleansing agents and have no bacterial immunity. The search for some agents to add to dentifrices has been going on for some time and Vitamin K, urea, penicillin, diabasic ammonium phosphate, chlorophyll, carbamide and enzymes which are believed to have a bacteriacidal action, have been used with some success, but much investi-

gation is still necessary. There is still much to be done on the bacteria of caries and its control. A tooth-powder or paste is not intended to mitigate the oral cavity. Its sole purpose is to assist the brush in conjunction with a suitable mouth-wash, in the mechanical removal of debris from the teeth by its emulsifying properties and by its very mild abrasive action. The selection of a suitable tooth-brush is a matter of great importance. One should select a small brush with a soft and slightly curved handle so that it can readily rotate in the hand. Bristles should be moderately stiff and set firmly and yet be firm enough to allow easy cleansing. After use of the brush, it should be thoroughly washed and allowed to dry in the open air or sunshine. The family tooth-brush has no place in the modern bath-room. You should brush and massage the gums with your fingers after brushing the teeth. Proper daily maintenance and care of the gingiva is, therefore, essential to the health of the teeth. Soft quill tooth-picks or dental floss should be used after meals to remove any food particles that may have remained in-between. Rinsing the mouth with plain or salt water at different intervals of the day, specially after meals, helps considerably. Beneficial effects are also obtained by such mild alkaline salts as diluted lime water or a weak boric solution with a little quantity of hydrogen peroxide. Alkaline tooth-pastes and mouth-washes are the best. Removal of tartar, which is a natural deposit against the teeth, is recommended every six months. There is a heavier deposit in acidic mouths due to the acidity of the saliva. A simple test by litmus paper will indicate its acidity. Acidic and ropy, stringy saliva is conducive to dental caries. Frequently rinsing with alkaline mouth-washes will help to reduce decay and keep the mouth alkaline. It has been suggested that to overcome acidity of the mouth, before

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