

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ  
БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ  
КАФЕДРА ИНОСТРАННЫХ ЯЗЫКОВ

О. В. ЕМЕЛЬЯНОВА, Т. В. КОРБАЧЁВА

# ТЕСТОВЫЙ КОНТРОЛЬ ЧТЕНИЯ ДЛЯ СТУДЕНТОВ-СТОМАТОЛОГОВ

## READING COMPREHENSION TESTS FOR DENTISTS

Учебно-методическое пособие



Минск БГМУ 2008

УДК 811.111–052.63 (075.8)  
ББК 81.2 Англ – 923  
Е 60

Утверждено Научно-методическим советом университета в качестве  
учебно-методического пособия 26.03.2008 г., протокол № 7

Р е ц е н з е н т ы: доц. Е. Г. Бжоско; ст. преп. Т. Г. Новицкая

**Емельянова, О. В.**

Е 60 Тестовый контроль чтения для студентов-стоматологов = Reading  
comprehension tests for dentists : учеб.-метод. пособие / О. В. Емельянова,  
Т. В. Корбачёва. – Минск : БГМУ, 2008. – 92 с.

ISBN 978–985–462–853–0.

Издание состоит из трех частей: «Ротовая полость и здоровье», «Заболевания ротовой  
полости», «Современные технологии в стоматологии». Каждая часть включает тексты для  
чтения и тестовые задания на понимание прочитанного.

Предназначено для студентов 1 и 2 курсов стоматологического факультета, может быть  
использовано при работе с аспирантами и соискателями.

УДК 811.111–052.63 (075.8)  
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Учебное издание

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## **ТЕСТОВЫЙ КОНТРОЛЬ ЧТЕНИЯ ДЛЯ СТУДЕНТОВ-СТОМАТОЛОГОВ**

### **READING COMPREHENSION TESTS FOR DENTISTS**

Учебно-методическое пособие на английском языке

Ответственная за выпуск Н. М. Петрова  
В авторской редакции  
Компьютерный набор Т. В. Корбачёвой  
Компьютерная верстка Н. М. Федорцовой

Подписано в печать 27.03.08. Формат 60×84/16. Бумага писчая «Снегурочка».

Печать офсетная. Гарнитура «Times».

Усл. печ. л. 5,35. Уч.-изд. л. 4,63. Тираж 150 экз. Заказ 560.

Издатель и полиграфическое исполнение –

Белорусский государственный медицинский университет.

ЛИ № 02330/0133420 от 14.10.2004; ЛП № 02330/0131503 от 27.08.2004.

220030, г. Минск, Ленинградская, 6.

ISBN 978–985–462–853–0

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медицинский университет, 2008

## Предисловие

Данное издание предназначено для студентов-стоматологов 1 и 2 курсов медицинского вуза, продолжающих изучение английского языка, и направлено на совершенствование и оценку навыков смыслового восприятия письменных профессионально-ориентированных текстов.

Все тексты для чтения соответствуют по своей тематике и языковой сложности среднему уровню владения иностранным языком.

Тексты по чтению включают следующие виды заданий:

- 1) множественный выбор (Multiple Choice), с вариантами ответов, один из которых правильный;
- 2) вопросы (Open Test), акцентирующие внимание на ключевые детали текста.

Данное издание состоит из следующих тематических разделов:

- 1) «Зубы» (Teeth);
- 2) «Гигиена полости рта» (Oral Hygiene);
- 3) «Эстетическая стоматология» (Cosmetic Dentistry);
- 4) «Заболевания зубов» (Dental Diseases) и др.

В соответствии с требованиями Программы, время для ознакомления с текстом объемом 2200 знаков и более, а также выполнения тестовых заданий не должно превышать 30 минут.

Учебно-методическое пособие рассчитано на 28 часов аудиторной работы, а также может быть использовано для самостоятельной работы.

**RESPIRATORY DISEASES AND ORAL HEALTH**

The key to life is energy and the key to energy is breathing. We can go weeks without food, days without water but only a few minutes without air. Air gives us much more energy because when we inhale<sup>1</sup>, we pump in much more energy than when we digest food. Digestion is a complex process that supplies us with less than 6 % of the inner energy that we need. The rest of our inner energy comes from cell breathing. Lungs being the main organs of breathing are of great importance for our life and health and it is necessary to keep them functioning properly and smoothly.

Bacterial respiratory infections are thought to be acquired through aspiration (inhaling) of fine droplets from the mouth and throat into the lungs. These droplets contain germs that can breed and multiply within the lungs to cause damage. Recent research suggests that bacteria found in the throat, as well as bacteria found in the mouth, can be drawn into the lower respiratory tract. This can cause infections or worsen existing lung conditions. People with respiratory diseases, such as chronic obstructive pulmonary disease, typically suffer from reduced protective systems, making it difficult to eliminate bacteria from the lungs.

Scientists have found that bacteria that grow and reproduce in the oral cavity can be carried into the airways of the throat and lungs increasing the risk for respiratory diseases, such as pneumonia, and worsening chronic lung conditions, such as emphysema, especially in people with periodontal disease. This discovery leads researchers to believe that these respiratory bacteria can travel from the oral cavity into the lungs to cause infection.

Chronic obstructive pulmonary diseases (COPD) cause persistent obstruction of the airways. The main cause of this disease is thought to be long-term smoking. Chemicals from smoke or air pollution irritate the airways to cause obstruction. Further damage to the tissue and working function of the lungs can be prevented, but already damaged tissue cannot be restored — untreated or undetected COPD can result in irreversible damage. Scientists believe that through the aspiration process, bacteria can cause frequent attacks of infection in patients with COPD. Studies are now in progress to learn to what extent oral hygiene and periodontal disease may be associated with more frequent attacks of respiratory disease in COPD patients.

1. inhale — breath in

## TEST

### I True and False Statements

1. The idea of the article is that some lung diseases may induce periodontal ones.  
*a. True                      b. False*
2. The major part of our inner energy comes from digestion foods.  
*a. True                      b. False*
3. Bacteria that grow and multiply in the oral cavity have been found to be carried into the airways of the throat and lungs increasing the risk for respiratory diseases.  
*a. True                      b. False*

### II Multiple Choice Test

1. Lungs are the main organs of ... .  
*a. inhalation*  
*b. exhalation*  
*c. breathing*
2. How much time can we live without water?  
*a. some hours*  
*b. some days*  
*c. some weeks*
3. It is not true to the text that fine droplets inhaled from the mouth and throat into the lungs contain germs which ... .  
*a. may reverse existing lung conditions*  
*b. growing and reproducing within the lungs damage them*  
*c. may aggravate existing lung conditions*  
*d. cause infections*
4. People with periodontal disease are at a higher risk ... .  
*a. to eliminate bacteria from the lungs.*  
*b. to develop such respiratory diseases as pneumonia.*  
*c. to alleviate such chronic lung conditions as emphysema.*
5. The main cause of chronic obstructive pulmonary diseases is considered to be ... .  
*a. periodontal disease*  
*b. aspirated bacteria*  
*c. smoking*
6. Chronic obstructive pulmonary diseases is characterized by ... .  
*a. low-term irritation of the airways*  
*b. slight obstruction associated with frequent attacks of cough*  
*c. permanent obstruction*
7. The fact that oral hygiene and periodontal disease are associated with more frequent attacks of respiratory disease in COPD patients ... .  
*a. causes no doubt*  
*b. has already been proved*  
*c. is still to be proved*

8. What germs are more likely to increase the risk of respiratory diseases?
- germs of caries*
  - germs of plaque*
  - germs of periodontal diseases*

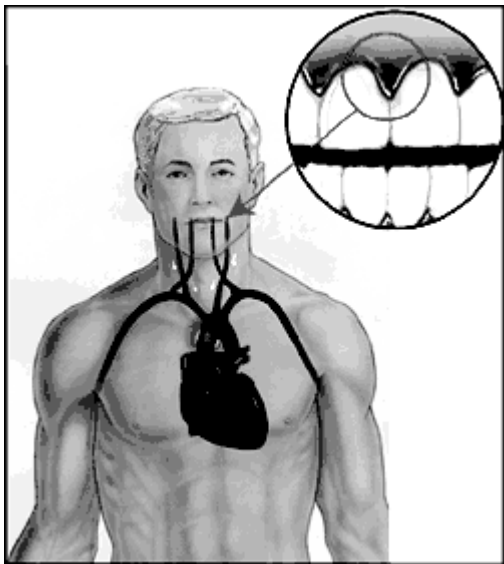
### III Answer the questions

- How do bacterial respiratory infections develop?
- What are the etiology and pathogenesis of COPD?
- Why are people with chronic lung conditions more susceptible to the germs from the oral cavity?

### IV Explain using information of the text

- Prove that healthy lungs are of great importance to our body and health.
- Explain how oral hygiene and periodontal disease are associated with respiratory diseases.

## PERIODONTAL DISEASE LINKED TO HEART DISEASE



Several theories exist to explain the link between periodontal disease and heart disease. One theory is that oral bacteria can affect the heart when they enter the blood stream, attaching to fatty plaques in the coronary arteries (heart blood vessels) and contributing to clot formation.

Coronary artery disease is characterized by a thickening of the walls of the coronary arteries due to the build-up of fatty proteins. Blood clots can obstruct normal blood flow, restricting the amount of nutrients and oxygen required for the heart to function properly. This may lead to heart attacks.

Another possibility is that the inflammation caused by periodontal disease increases plaque build up, which may contribute to swelling of the arteries.

Researchers have found that people with periodontal disease are almost twice as likely to suffer from coronary artery disease as those without periodontal disease.

Periodontal disease can also exacerbate<sup>1</sup> existing heart conditions. Patients at risk for infective endocarditis may require antibiotics prior to dental procedures.

Additional studies have pointed to a relationship between periodontal disease and stroke. In one study that looked at the causal relationship of oral infection as a risk factor for stroke, people diagnosed with acute

cerebrovascular ischemia were found more likely to have an oral infection when compared to those in the control group.

A study published in the *Journal of Periodontology* confirms recent findings that people with periodontal disease are at a greater risk of systemic diseases such as cardiovascular disease.

Researchers found diseased gums to release significantly higher levels of bacterial pro-inflammatory components, such as endotoxins, into the bloodstream in patients with severe periodontal disease compared to healthy patients. As a result, these harmful bacterial components in the blood could travel to other organs in the body, such as the heart, and cause harm.

The study is in line with recent findings by the University of Buffalo where researchers suggest periodontal disease may cause oral bacterial components to enter the bloodstream and trigger<sup>2</sup> the liver to make C-reactive proteins, which are a predictor for increased risk for cardiovascular disease.

Although there is still much research to be done to understand the link between periodontal disease and systemic diseases, such as cardiovascular, this data clearly stresses the importance of regular dental checkups to ensure a healthy, diseased-free mouth.

1. to exacerbate — обострять

2. to trigger — зд. заставлять, стимулировать

## TEST

### I True and False Statements

1. The idea of the text is that there is a relationship between periodontal and heart diseases.  
*a. True                      b. False*
2. Coronary artery disease is characterized by a thickening of the walls of the heart blood vessels due to the build-up of fatty proteins.  
*a. True                      b. False*
3. People with periodontal disease are at a three times higher risk to suffer from coronary artery disease as those without periodontal disease.  
*a. True                      b. False*

### II Multiple Choice Test

1. It is not mentioned in the text that oral bacteria can ...  
*a. contribute to clot formation in the coronary arteries.*  
*b. contribute to swelling of the arteries increasing plaque build up.*  
*c. increase the amount of nutrients and oxygen required for the heart to function properly.*
2. If a patient suffers from any heart disease periodontal disease can ... the condition.  
*a. aggravate*  
*b. improve*  
*c. alleviate*

3. Patients at risk for infective endocarditis may require ... .
  - a. special therapy
  - b. regular dental check-ups twice a year
  - c. antibiotic therapy prior to dental procedures
4. Performed studies ... a relationship between periodontal disease and stroke.
  - a. disapproved
  - b. showed
  - c. denied
5. People diagnosed with acute cerebrovascular ischemia often have ... .
  - a. a systemic infection
  - b. an oral infection
  - c. an acute infectious disease.
6. ... are bacterial pro-inflammatory components that once in the in the blood can travel to other organs in the body, such as the heart, and cause harm.
  - a. Plaque
  - b. Endotoxins
  - c. C-reactive proteins
7. Data reveals diseased gums ... .
  - a. to be caused by endotoxins
  - b. to pump high levels of harmful bacterial components into bloodstream
  - c. to be inflammatory markers in patients with periodontal disease
8. What group of patients has lower levels of endotoxins?
  - a. patients with severe periodontal diseases
  - b. patients with the healthy oral cavity

### III Answer the questions

1. What theories exist to explain the link between periodontal and heart diseases?
2. What are endotoxins and in what way do they affect the heart?
3. What are C-reactive proteins and what relationship exists between those and cardiovascular diseases?

### IV Explain using information of the text

1. What do you know about plaque in the oral cavity and in the cardiovascular system? Explain what they have in common and what they differ in.
2. Explain the idea of the picture accompanying the text.

## LOW DIETARY VITAMIN C CAN INCREASE RISK FOR PERIODONTAL DISEASE

As you know, a diet low in important nutrients can compromise<sup>1</sup> the body's immune system and make it harder for the body to fight off infection. Because periodontal disease is a serious infection, poor nutrition can worsen the condition of the gums.

Vitamins are all organic nutrients that are necessary in small amounts for normal metabolism and good health. Vitamins are not sources of energy as are carbohydrates, fats, and proteins. Instead, vitamins serve as chemical partners



for the enzymes involved in the body's metabolism, cell production, tissue repair, and other vital processes. Most vitamins must be provided by the diet or by supplements. Vitamin C is a water-soluble vitamin which is used by the body very quickly; excess amounts are eliminated in urine.



Researchers analyzed vitamin C intakes and periodontal disease indicators in 12,419 U.S. adults. They found that patients who consumed less than the recommended 60 mg per day (about one orange) were at nearly one-and-a-half times the risk of developing severe gingivitis as those who consumed three times the recommended dietary allowance for vitamin C (more than 180 mg).

The relationship between severe vitamin C deficiency and gum health has long been known. In the late 18th century, sailors away at sea ate limes to prevent their gums from bleeding. The relationship between vitamin C and periodontal disease is likely due to vitamin C's role in maintaining and repairing healthy connective tissue along with its antioxidant properties.

Antioxidants are scavengers<sup>2</sup> of particles known as oxygen-free radicals (also called oxidants). These chemically active particles are by-products of many of the body's normal chemical processes. Their numbers are increased by environmental assaults, such as smoking, chemicals, toxins and stress. In higher levels, oxidants can be very harmful.

Periodontal disease is an inflammatory disorder that increases tissue damage and loss. Since vitamin C is known as a powerful scavenger of reactive oxygen species, which form part of the body's antioxidant defense system, low levels of dietary vitamin C may compromise the body's ability to neutralize these tissue destructive oxidants.

Researchers also found that tobacco users especially had higher levels of periodontal disease if they also consumed lower levels of dietary vitamin C. Since oxidants from cigarette smoking lower vitamin C levels in the blood, smokers need higher levels of dietary vitamin C to help counteract smoke's oxidants.

It's also important to add that cigarette smoke contains numerous oxidants that can cause periodontal tissue damage regardless of vitamin C intake.

Diet plays an important role in the overall well-being of oral health. However, people need to keep in mind that vitamins, dietary supplements and good nutrition are not cures for periodontal disease. Patients must also brush and floss, and ask their dentist or periodontist about the state of their periodontal health to help prevent tooth loss.

1. to compromise — подвергать опасности

2. scavenger — сборщик мусора

## TEST

### I True and False Statements

1. The diet poor in nutritive substances is one of the factors which can affect the condition of the gums.  
*a. True                      b. False*
2. Vitamins as well as vitamin C are sources of energy necessary in small amounts for normal metabolism and good health.  
*a. True                      b. False*
3. It is unlikely to be any relationship between severe vitamin C deficiency and gum health.  
*a. True                      b. False*

### II Multiple Choice Test

1. Vitamins take part in ... .  
*a. the body's metabolism*  
*b. cell production*  
*c. tissue repair*  
*d. all of the above*
2. Vitamins are ... substances needed in small amounts for good health.  
*a. organic*  
*b. inorganic*
3. Vitamin C ... .  
*a. can be manufactured in the body from nondietary sources*  
*b. is stored in the liver and used up by the body very slowly*  
*c. can not be stored in the body and is used very quickly*
4. Vitamin C is known to ... .  
*a. be a powerful oxidant*  
*b. be a source of energy*  
*c. maintain and repair healthy connective tissue*
5. The recommended dose for vitamin C is ... .  
*a. not more than 60 mg per day*  
*b. not less than 60 mg per day*  
*c. more than 180 mg per day*
6. If vitamin C intake is low the body's antioxidant defense system may ... .  
*a. be able to neutralize tissue destructive oxidants*  
*b. fail to counteract oxidants*  
*c. improve the body's ability to increase tissue damage and loss*
7. Who needs a higher daily dose of vitamin C?  
*a. sailors*  
*b. smokers*  
*c. nonsmokers*
8. A study found that tobacco users who consume ... have slightly higher rates of periodontal disease.  
*a. more than the recommended dietary allowance for vitamin C*  
*b. less than the recommended dietary allowance for vitamin C*  
*c. exactly the recommended dietary allowance for vitamin C*

### III Answer the questions

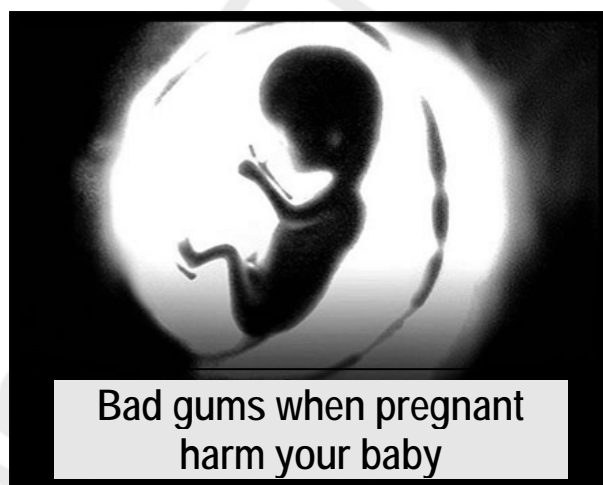
1. Why are smokers recommended to consume higher levels of dietary vitamin C?
2. What are oxidants and why is it necessary to neutralize them?
3. Why did sailors use to eat limes away at sea?

### IV Explain using information of the text

1. Dwell on the importance of vitamins in our diet.
2. Speak about the recommended dose for vitamin C.

## IMPORTANCE OF GOOD ORAL HEALTH IN PREGNANT WOMEN

You've probably heard a few old wives' tales about pregnancy, including «A tooth lost for every child». While it seems far-fetched, it actually is based loosely in fact. Teeth and gums are affected by pregnancy, just as other tissues in the body. You may not be aware that the health of mother's-to-be gums may also affect the health of her baby-to-be.



Studies have shown a relationship between periodontal disease and preterm, low birth weight babies. The women in the study had no other major risk factors for preterm birth, including genitourinary infections, tobacco use, and alcohol consumption.

The more of the mouth affected with periodontal disease, the more likely a woman is to deliver a premature baby. In fact, pregnant women with periodontal disease may be seven times more likely to have a baby that's born too early and too small. And some preliminary researches suggest that the risk for women who have generalized periodontal disease (meaning it affects at least 30 percent of their mouth) is even higher.

According to statistics, premature births have soared<sup>1</sup> to become the number one obstetric problem in the United States. Many premature babies come into the world with serious health problems. Those who survive may

suffer life-long consequences, from cerebral palsy and mental retardation to blindness.

Any infection, including periodontal infection, is cause for concern during pregnancy. Pre-existing periodontal disease or periodontal disease that increases in severity during pregnancy can also increase a woman's chances of a preterm low birth weight baby. The likely culprit<sup>2</sup> is a labour-inducing<sup>3</sup> chemical found in oral bacteria called prostaglandin. Very high levels of prostaglandin are found in women with severe cases of periodontal disease.

Beginning in the second or third month of pregnancy, about half of expectant mothers experience increased gingivitis also called pregnancy gingivitis that increases in severity throughout the eighth month. Significant progression of pregnancy gingivitis can lead to more severe periodontal infections. The increase in estrogen and progesterone levels during this time causes the gums to react differently to the bacteria in plaque. This reaction causes swelling, bleeding, redness or tenderness in the gum tissue.

The good news is women who treat their periodontal health prior to pregnancy decrease their chances of experiencing pregnancy gingivitis. Women should always take extra care of their oral health because their hormonal fluctuations can affect many tissues, including gum tissues.

Because periodontal disease is often «silent», many women don't know they have it, so a periodontal evaluation is definitely a good idea prior to becoming pregnant.

1. to soar — стремительно повышаться

2. culprit — виновный

3. labour-inducing — провоцирующий роды

## TEST

### I True and False Statements

1. There is a relationship between periodontal disease and preterm, low birth weight babies.  
*a. True                      b. False*
2. The less of the mouth affected with periodontal disease, the more likely a woman is to deliver a premature baby.  
*a. True                      b. False*
3. Women's hormonal fluctuations can affect many tissues, including gum tissues.  
*a. True                      b. False*

### II Multiple Choice Test

1. In what way may the poor state of expectant mother's gums affect the health of her future baby?  
*a. a baby is born with infections*  
*b. a baby is born too quickly*  
*c. a baby is born too early and too small*

2. How many times does the risk to have a preterm, low birth weight baby increase in women with periodontal disease?
  - a. 3 times
  - b. 7 times
  - c. 30 times
3. About ... of expectant mothers experience increased gingivitis also called pregnancy gingivitis that increases in severity throughout the eighth month.
  - a. 30 %
  - b. 50 %
  - c. 70 %
4. What causes significant progression of pregnancy gingivitis?
  - a. oral bacteria called prostaglandin
  - b. bad oral health
  - c. the increase in estrogen and progesterone levels during this time
5. Very high levels of prostaglandin ... .
  - a. are very common in pregnant women
  - b. are found in women with severe cases of periodontal disease
  - c. are not found in women with severe cases of periodontal disease
6. The increase in estrogen and progesterone levels during pregnancy causes ... .
  - a. the teeth to react differently to the bacteria in plaque
  - b. different inflammatory processes in the organism
  - c. the gums to react differently to the bacteria in plaque
7. Many premature babies ... .
  - a. are born with serious health problems
  - b. practically have no problems with their health
  - c. do not require a pediatrician control
8. The risk of premature birth is particularly high in women with generalized periodontal disease when it effects ... .
  - a. not more than one third of the mouth
  - b. one third of the mouth and more.

### III Answer the questions

1. Why are premature births dangerous?
2. What is prostaglandin? How is it related to periodontal disease?
3. What is pregnancy gingivitis? Is it possible to prevent it?

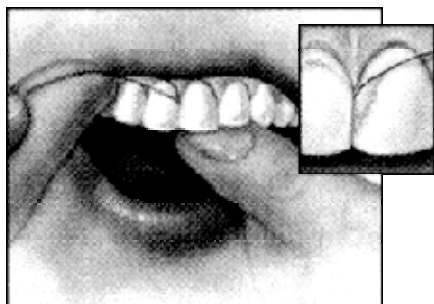
### IV Explain using information of the text

1. Explain the existing relationship between periodontal disease and preterm babies.
2. Explain the origin of the saying “A tooth lost for every child.”

### NEW STUDY DRIVES HOME THE IMPORTANCE OF TOOTH BRUSHING AND DENTAL FLOSSING

The list of excuses for not brushing or flossing is endless, but according to a new study published in the *Journal of Periodontology*, these are two tasks that should not be omitted from the daily hygiene routine.

Gingival bleeding and halitosis is often the first sign of poor oral hygiene that may eventually lead to further periodontal problems. A good way to prevent periodontal disease and tooth decay is through at-home oral hygiene care and routine dental visits.



Bad breath and bleeding gums can also occur in people who routinely brush their teeth and gums. Bleeding gums can be a sign of periodontal disease, and bad breath may be from certain bacteria that have built up in the mouth unreachable for a toothbrush.

Fifty-one sets of twins<sup>1</sup> between the ages of 12 and 21 years of age were examined for gingival bleeding and halitosis. Each set of twins was then divided into two groups. One group of twins manually brushed their teeth and tongue twice a day for two weeks. The second group of twins was given the same instructions in addition to using dental floss twice a day. After two weeks, the twins were examined again for gingival bleeding and halitosis.

Researchers found that tongue and tooth brushing in combination with dental flossing significantly decreased gingival bleeding by 38 percent after a two-week oral hygiene program. Halitosis, or bad breath, was also reduced. In the group that did not floss as part of their daily routine, gingival bleeding sites increased by almost four percent.

Twins were examined in this study because each individual set shares the same environmental factors such as dietary habits, health and life practices, thereby constituting a perfect case-control matched study.

Levi Spear Parmly, a dentist from New Orleans, is credited with inventing a legendary form of dental floss. He had been recommending that people should clean their teeth with silk floss since 1815.

Dental floss was still unavailable to the consumer until the Codman and Shurtleff company started producing human-usable unwaxed silk floss in 1882. In 1898, the Johnson & Johnson Corporation received the first patent for dental floss.

The adoption of floss was poor before World War II. It was around this time, however, that Dr. Charles C. Bass developed nylon floss. Nylon floss was found to be better than silk one because of its greater abrasion resistance and elasticity.

Dentists and dental hygienists urge the daily oral hygiene regimen of tooth brushing and flossing. Nearly all people brush their teeth. However, only about 12 percent of population floss daily, 39 percent floss less than daily, and 49 percent do not floss at all. Because most people do not floss daily, and since most people also do not floss properly, less-than-daily flossing and/or improper flossing can typically lead to bleeding gums.

1. twins — близнецы

## TEST

### I True and False Statements

1. Researchers found that gingival bleeding and halitosis were greatly increased after a two-week oral hygiene program of dental flossing and tooth brushing.  
*a. True                      b. False*
2. It is of great importance to exclude tooth brushing, mouth cleansing, and flossing from the daily hygiene routine to prevent periodontal diseases.  
*a. True                      b. False*
3. Bad breath may be caused by certain bacteria that have built up in the mouth and can not be removed by a toothbrush.  
*a. True                      b. False*

### II Multiple Choice Test

1. Flossing can prevent bad breath removing the bacterial build-up ... for a toothbrush.  
*a. incurable*  
*b. unreachable*  
*c. untreatable*
2. A two week oral hygiene program including tongue and tooth brushing in combination with dental flossing decreased gum bleeding by ... .  
*a. 21 %*  
*b. 38 %*  
*c. 51 %*
3. Flossing in combination with tooth brushing can ... gum disease, halitosis, and dental caries.  
*a. reveal*  
*b. relieve*  
*c. prevent*
4. In spite of the importance of flossing, only ... of the population perform this technique regularly.  
*a. 10 %*  
*b. 12 %*  
*c. 39 %*
5. The research in which twins took part showed that brushed but not flossed teeth increased gum bleeding sites by ... .  
*a. 4 %*  
*b. 12 %*  
*c. 38 %*
6. It is not mentioned in the article that it can typically lead to bleeding gums if ... .  
*a. people do not floss daily*  
*b. people choose the wrong type of a dental floss*  
*c. people floss improperly*

7. People have been recommended to floss their teeth since when?
  - a. World War II
  - b. 1815
  - c. 1882
8. What type of floss has greater abrasion resistance and elasticity?
  - a. unwaxed silk floss
  - b waxed silk floss
  - c. nylon floss

### III Answer the questions

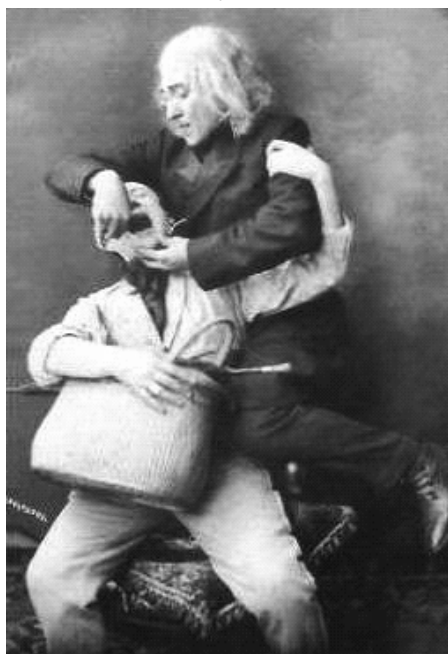
1. What dental problems can be prevented by flossing?
2. What experiment is described in the article and what are its findings?
3. Why were twins examined in that study?

### IV Explain using information of the text

1. Dwell on the importance of tooth brushing and dental flossing.
2. Dwell on the characteristics dental floss should possess.

## DENTISTRY HAS PROGRESSED SIGNIFICANTLY IN RECENT CENTURIES

By the 21<sup>st</sup> century the number of advances that have taken place in dentistry for infants, children, and teens has been enormous. The majority of people take for granted the high quality of dental health care they are exposed to in their daily lives.



Modern infection control methods, equipment and materials, and sophisticated diagnostic techniques have put us on the threshold<sup>1</sup> of a millennium in which generations of people may no longer remember what a cavity was! But it wasn't always this exciting.

As early as 3500 B.C.<sup>2</sup>, some Egyptian medical texts described gingivitis, toothaches, and other oral diseases. There have been ancient Egyptian skulls found that reveal evidence of early dental treatment to drain jaw infections and to stabilize teeth with gold wires.

During the Middle Ages and through the 19th century, dentistry was not a profession into itself, and often dental procedures were performed by barbers or general physicians. Barbers usually limited their practice to extracting teeth, which not only resulted in the alleviation of pain, but often cured a variety of ailments linked with chronic tooth infection.



Instruments used for dental extractions date back several centuries. In the 14th century, Guy de Chauliac\* invented the dental pelican (resembling a pelican's beak<sup>3</sup>) which was used through the late 18th century. The pelican was replaced by the dental key which, in turn, was replaced by modern forceps in the 20th century.

It wasn't until the year 1728 that the first accurate book on dental art and practice was published. Its author French physician Pierre Fauchard\*\* started dentistry science as we know it today, hence he was named «the father of modern dentistry». Fauchard introduced dental fillings as treatment for dental cavities. He stated that sugar derivate acids like tartaric acid were responsible for dental decay, and also suggested that tumors surrounding teeth gum in later stages of tooth decay appeared as an effect of it. Fauchard was the pioneer of dental prosthesis, he discovered many methods to replace the loss of teeth. He also introduced dental braces, he discovered that the teeth position could be corrected as the teeth would follow the pattern of the wires.

Not until the advent of dental colleges, combined with the technological advances of the late 19th century, did dental practice begin to make great strides<sup>4</sup> that have brought dental care from a repair-centered orientation treating toothaches and cavities to a profession focused on the prevention of oral disease and the preservation of teeth and gums.

Discoveries by outstanding European scientists like Louis Pasteur and Robert Koch contributed to the improvement of dental practice, even though the biologic causes of caries and gum diseases were not completely understood.

The application of x-rays for dental diagnosis and the introduction of laughing gas anesthesia were two key ingredients that have been dental major factors through recent years.

From these humble<sup>5</sup> beginnings has come a continual pattern of improvements that enable modern dental care to be comfortable, prevention-based, and cosmetically focused. Children today can expect a lifetime of excellent oral health and a positive, if not enthusiastic, attitude toward dental care. It's a whole new experience.

1. threshold — преддверие, начало

2. B.C. (before Christ) — до нашей эры

3. beak — клюв

4. to make great strides — делать большие успехи

5. humble — простой, скромный

\* **Guy de Chauliac** (c. 1300–1368), born in France, was the most eminent of surgeons during the European Middle Ages. He wrote the medical reference *Chirurgia magna* (1363).

\*\* **Pierre Fauchard** (1678–1761) was a significant French physician. He is widely known for his book *Le chirurgien dentiste*, «*The Surgeon Dentist*» (1728), where he described the basic oral anatomy and function, signs and symptoms of oral pathology, operative methods for removing decay and restoring teeth, periodontal disease (pyorrhea), orthodontics, replacement of missing teeth, and tooth transplantation. His book is said to be the first complete scientific description of dentistry. Fauchard's text was followed by others that continued to expand the knowledge of the dental profession throughout Europe.

## TEST

### I True and False Statements

1. The idea of the text is that the majority of people are not aware of advances that have taken place in dentistry lately.  
*a. True                      b. False*
2. In his book Dr. Pierre Fauchard who is regarded as «the Pioneer of Dentistry» offered information about the diagnosis and treatment of dental and oral diseases.  
*a. True                      b. False*
3. In the 14th century the dentists introduced into their practice pelicans' beaks, which were used through the late 18th century.  
*a. True                      b. False*

### II Multiple Choice Test

1. Barbers provided much of the dentistry offered to the general public ... .  
*a. as early as 3500 B.C. in ancient Egypt*  
*b. through the Middle Ages*  
*c. after the first dental instruments had been invented*
2. The first accurate book on dental art and practice was published ... .  
*a. before 1728*  
*b. in 1728*  
*c. after 1728*
3. Dr. Pierre Fauchard didn't say that ... .  
*a. braces should be used to correct teeth's position*  
*b. tumors surrounding teeth gum caused tooth decay to appear*  
*c. one of the causes of dental caries was sugar*
4. Dental practice began to make great progress ... .  
*a. after dental colleges had been organized*  
*b. after the technological advances of the late 19th century had taken place*  
*c. all of the above*  
*d. none of the above*
5. Who discovered various methods to replace the lost teeth?  
*a. Louis Pasteur*  
*b. Guy de Chauliac*  
*c. Robert Koch*  
*d. none of the above*
6. Who was the first to use wires to correct the teeth position?  
*a. ancient Egyptians*  
*b. Guy de Chauliac*  
*c. Pierre Fauchard*
7. Place the following dental instruments in the sequence as they were invented.  
*a. a dental key*  
*b. a dental pelican*  
*c. dental forceps*

8. It is not true to the fact that the technological advances enable modern dental care to be ... .
- comfortable*
  - cosmetically focused*
  - repair-centered*
  - prevention-based*

### **III Answer the questions**

1. What did the ancient Egyptians know about oral diseases and their treatment?
2. How did barbers cure some ailments linked with chronic tooth infection?
3. What has brought dental care from a repair-focused orientation (treating toothaches and cavities) to a prevention-based and cosmetic focus?

### **IV Explain using information of the text**

1. Explain why Dr. Pierre Fauchard is credited to be the «*father of modern dentistry*».
2. Explain in what way discoveries of Louis Pasteur and Robert Koch, an application of x-rays for dental diagnosis and introduction of anesthesia advanced the practice of dentistry.

## **WHAT IS SPORTS DENTISTRY**

The International Academy for Sports Dentistry gives the following definition: Sports Dentistry involves the prevention and treatment of orofacial athletic injuries and related oral diseases, as well as the collection and dissemination of information on dental athletic injuries and the encouragement of research in the prevention of such injuries. Dental injuries are the most common type of oral facial injuries sustained during participation in sports.

In sports, the challenge is to maximize the benefits of participation and to limit injuries. Sports dentistry has a major role to play in this area. Prevention and adequate preparation are the key elements in minimizing injuries that occur in sport. For sports dentistry the prevention of oral/facial trauma during sporting activities can be helped by many facets. Included are teaching proper skills, purchase and maintenance of appropriate equipment, safe playing areas and certainly the wearing and utilization of properly fitted protective equipment.

In some sports, injury prevention, through properly fitted mouthguards is considered essential. These are the contact sports of football, boxing and hockey. Other sports, traditionally classified as non contact sports, basketball, baseball, bicycle riding, soccer, wrestling, surfing and skateboarding also require properly fitted mouthguards, as dental injuries unfortunately, are a negative aspect of participation in these sports.

Treatment of oral/facial injuries, simple or complex, is to include not only treatment of injuries in the dental office, but also treatment at the site of injury, such as a basketball court or football or rugby field, where the dentist may not have the convenience of all the diagnostic tools available at their office. Knowledge and ability to do «on site» differential diagnosis is essential, without the use of radiographs, to determine the future treatment and prognosis of the injury.

Sports Dentistry also includes the need for recognition and referral guidelines to the proper medical personnel for non dental related injuries which may occur during a dental/facial injury. These injuries may include cerebral concussion, head and neck injuries, and drug use. For example, if a patient comes into the office for a broken or knocked out tooth, dentists must rule out the possibility of a head injury or concussion before treating the patient for the dental injury. If certain symptoms are present, such as persistent head aches or nausea, immediate referral to medical personnel is essential.

Smokeless tobacco should also be included and addressed under Sports Dentistry. Smokeless tobacco is often associated with certain sports, and the public should be educated on the dangerous properties and consequences of using smokeless tobacco.

It is not uncommon for dentists to recognize the symptoms of anorexia and bulimia through dental examination. Eating disorders are not as infrequent as one may think in female athletics. Woman's gymnastics, volleyball, and basketball are just a few sports where eating disorders have been documented in the medical/dental literature. Erosion patterns in the teeth, caused by gastric acids, often help dentists in the differential diagnosis of eating disorders. These patients need to be referred to the proper medical and psychological health professional.

## TEST

### I True and False Statements

1. Sports Dentistry deals with elimination of orofacial athletic injuries and related oral diseases as well as with their prevention.  
*a. True                      b. False*
2. To limit sports injuries means to minimize the benefits of participation.  
*a. True                      b. False*
3. Smoking tobacco is a kind of sports.  
*a. True                      b. False*

### II Multiple Choice Test

1. The key ingredients that are to minimize injuries that occur in sports are ...  
*a. the prevention of orofacial athletic injuries*  
*b. the collection and dissemination of information on dental athletic injuries*  
*c. the proper treatment of orofacial athletic injuries and related oral diseases*  
*d. Both a and c are correct*

2. What is not mentioned in the text as a helpful facet in the prevention of orofacial traumas during sporting activities?
  - a. utilization of properly fitted protective equipment
  - b. dissemination of information on dental athletic injuries
  - c. utilization of appropriate equipment
  - d. practicing sport activities in safe playing areas
3. ... require using a mouthguard.
  - a. non contact sports
  - b. contact sports
  - c. all of the above
4. To prevent injuries mouthguards are essential to be ... .
  - a. properly disinfected
  - b. properly fitted
  - c. properly inserted
5. Treatment of orofacial injuries ... .
  - a. is restricted by their treatment at the dental office
  - b. involves their treatment at the dental office as well as on the spot
  - c. must be performed at properly equipped dental surgeries.
6. In sports dentistry it is essential ... .
  - a. not to use radiographs
  - b. to have radiographs at the site of injury
  - c. to be able to make the correct diagnosis and prognosis of the injury without making radiography
7. Sports dentists are able to recognize eating disorders, ... .
  - a. which are quite often for male athletes
  - b. which are induced by dental injuries
  - c. female athletes suffering from them rather frequently
8. Erosion patterns in the teeth due to gastric acids ... .
  - a. signal dental troubles
  - b. signal eating disorders
  - c. are a symptom of malodour

### **III Answer the questions**

1. What does Sports Dentistry deal with and what are its main targets?
2. How do sports dentists deal with oral/facial injuries?
3. How can eating disorders affect oral health and be revealed by dentists?

### **IV Explain using information of the text**

1. Dwell on the measures of prevention of orofacial injuries.
2. Explain what a sports dentist must do if he or she reveals any non dental related injuries or symptoms of other disorders. Give examples.

## **WHAT CAUSES PERIODONTAL DISEASE**

Periodontal disease is marked by inflammatory injuries (called lesions) from calculus which is essentially bacterial overgrowth.

### ***Bacterial Causes***

In the healthy mouth, more than 350 species of microorganisms have been found. Periodontal infections are linked to fewer than 5 % of these species. Healthy and disease-causing bacteria can generally be grouped into two categories:

1. The harmless or helpful bacteria are usually known as gram positive aerobic bacteria.

2. In periodontal disease, the bacterial balance shifts over to gram negative anaerobic bacteria. Inflammatory disease and injury cannot develop without these bacteria. Among the bacteria most implicated in periodontal disease and bone loss are the following:

- Actinobacillus (A.) actinomycetemcomitans and Porphyromonas (P.) gingivalis. These two bacteria appear to be particularly likely to cause aggressive periodontal disease. A 2001 study suggests that the P. gingivalis produces enzymes which may be the specific destructive factors that disrupt the immune system and lead to subsequent periodontal connective tissue destruction.

- Bacteroides (B.) forsythus is also strongly linked to periodontal disease.

Other bacteria associated with periodontal disease are T. denticola, T. sokranskii and P. intermedia. These bacteria, together with P. gingivalis, are frequently present at the same sites, and are associated with deep periodontal pockets.

Some bacteria are related to gingivitis, but not plaque development. They include various streptococcal species.

### ***The Autoimmune and Inflammatory Response***

Evidence now suggests that periodontal disease may be an autoimmune disorder, in which immune factors in the body attack the person's own cells and tissue — in this case, those in the gum. It appears to work as follows:

The bacteria that form plaque and tartar release toxins that stimulate the immune system to overproduce powerful infection-fighting factors called cytokines.

Ordinarily, cytokines are important for healing. In excess, however, they can cause inflammation and severe damage. In excess, these cytokines overproduce an enzyme called collagenase, which breaks down proteins, including the connective tissue that holds teeth in place.

Studies suggest that this inflammatory response may have damaging effects not only in the gums but also in organs throughout the body, including the heart.

### ***Viral Causes***

Certain herpes viruses are known to cause gingivitis, some of them may play a role in the onset or progression of some types of periodontal disease, including aggressive and severe chronic periodontal disease.

Some experts hypothesize that these viruses may cause periodontal disease in different ways, including release of tissue-destructive cytokines, overgrowth of periodontal bacteria, suppressing immune factors, and initiation of other disease processes that lead to cell death.

## TEST

### I True and False Statements

1. All bacteria can generally be grouped into healthy and disease-causing.  
*a. True                      b. False*
2. In periodontal disease, the bacterial balance shifts over to gram positive aerobic bacteria.  
*a. True                      b. False*
3. Cytokines being always very harmful and causing inflammation and severe damage of tissues, it is necessary to eliminate them from the body.  
*a. True                      b. False*

### II Multiple Choice Test

1. A characteristic symptom of a periodontal disease is inflammatory ... from calculus.  
*a. structures*  
*b. lesions*  
*c. formations*
2. In the healthy mouth ... .  
*a. there are no bacteria at all*  
*b. we can find some bacteria*  
*c. more than 350 species of microorganisms have been found*
3. Periodontal infections are linked to about ... species of microorganisms.  
*a. 35*  
*b. 18*  
*c. 5*
4. The harmful disease-causing bacteria are usually known as ... .  
*a. gram positive aerobic bacteria*  
*b. gram negative anaerobic bacteria*
5. Some bacteria related to gingivitis ...  
*a. may cause vegetative neuroses.*  
*b. include various streptococcal species.*  
*c. may cause various complications.*
6. Evidence now suggests that some herpes viruses can... some types of periodontal diseases.  
*a. aggravate*  
*b. improve*  
*c. alleviate*
7. If cytokines overproduce an enzyme called collagenase, the latter breaks down proteins, including ... that holds teeth in place.  
*a. the mucous membrane*  
*b. the bone*  
*c. the connective tissue*

8. ... is the disease in which immune factors in the body attack the person's own cells and tissue.
- a. Oral cancer
  - b. Oral herpes
  - c. Periodontal disease

### **III Answer the questions**

1. What causes of periodontal diseases do you know?
2. What categories can healthy and disease-causing bacteria generally be grouped into? How do they effect the gums?
3. In what way can some viruses cause periodontal diseases?

### **IV Explain using information of the text**

1. Prove the association between some types of bacteria and oral health.
2. Explain the mechanism how the disrupted autoimmune system causes periodontal disorders.

## **WHO GETS PERIODONTAL DISEASE**

Although many conditions cause gum inflammation and ulcers, not all people develop periodontal disease. Certain factors put individuals at higher risk than others.

### ***Abnormal Oral Environment***

Lack of oral hygiene encourages bacterial build-up and plaque formation. The bacteria that cause periodontal disease thrive in acidic environments. Therefore, eating sugars and other foods that increase the acidity in the mouth increase bacterial counts.

Poorly contoured restorations (fillings or crowns) that provide traps for food debris and plaque can also contribute to its formation.

Abnormal tooth structure can increase the risk.

### ***Age***

Gingivitis, in varying degrees, is nearly a universal finding in children and adolescents. Healthy children, however, do not generally harbor two primary periodontal bacteria: *P. gingivalis* and *T. denticola*.

The disease is also uncommon in teenagers. According to one survey, only 1 % of 14 to 17 year olds have no any sign of actual periodontal disease.

As people age, the risk for periodontal disease increases. Over half of American adults have gingivitis surrounding three to four teeth and 30 % have significant periodontal disease surrounding an average of three to four teeth. In a study of people over 70 years old, 86 % had at least moderate periodontitis and over a quarter of them had lost their teeth.

### ***Female Hormones***

About three-quarters of periodontal office visits are made by women, even though women tend to take better care of their teeth than men do. Female



hormones affect the gums, and women are particularly susceptible to periodontal problems.

Hormone-influenced gingivitis appears in some adolescents and in some pregnant women. During pregnancy gum inflammation typically develops around the second month and reaches a peak in the eighth month. It usually resolves after delivery.

### ***Family Factors***

Periodontal disease often occurs in members of the same family. Studies have found that children of parents with periodontitis were 12 times more likely to have the bacteria thought to be responsible for causing plaque and, eventually, periodontal disease.

Not environment or poor hygiene, but genetic factors may play the critical role in half the cases of periodontal disease. Up to 30 % of the population may have some genetic susceptibility to periodontal disease. Early onset and rapidly progressive periodontal disease also have strong genetic components.

### ***Smoking***

A number of studies indicate that smoking and nicotine increase inflammation by reducing oxygen in gum tissue and triggering an over-production of immune factors called cytokines, which in excess are harmful to cells and tissue.

The risk of periodontal disease increases with the number of cigarettes smoked per day. Smoking cigars and pipes carries the same risks as smoking cigarettes. But once smokers quit, oral health begins to improve.

Second hand smoking also puts individuals at higher risk of periodontal diseases.

### ***Diseases Associated with Periodontal Disease***

Much evidence exists on the link between diabetes, osteoporosis, Crohn's disease, rheumatoid arthritis, leukemia and other cancers and periodontal disease.

Herpes virus is a common cause of gingivitis in children and has become increasingly common in adults.

HIV-associated gingivitis has been reported in 15 % to 50 % of patients with AIDS. Severe pain is characteristic, along with odour, spontaneous bleeding, ulcers, and swollen, bright red gums.

### ***Vitamin C Deficiencies***

Vitamin C helps the body repair and maintains connective tissue, and its antioxidant effects are important in the presence of tissue-destroying oxidants in periodontal disease. A large 2000 study found that people who consumed less than 60 mg of vitamin C were more likely to develop severe gingivitis than those who consumed more than 180 mg of vitamin C per day.

## TEST

### I True and False Statements

1. The younger is a person, the higher is the risk for periodontal disease.  
*a. True                      b. False*
2. Family factors influence the age a periodontal disease develops and its rapid progress.  
*a. True                      b. False*
3. Herpes virus is a common cause of gingivitis in patients with AIDS, characterized by pains, malodour, spontaneous bleeding and ulcers.  
*a. True                      b. False*

### II Multiple Choice Test

1. Poor oral hygiene ... bacterial build-up and plaque formation.  
*a. discourages*  
*b. stimulates*  
*c. slows down*
2. Acidic environments are ... for the bacteria that cause periodontal disease.  
*a. favourable*  
*b. unfavourable*  
*c. neutral*
3. What dental problem is more common in American adults?  
*a. gingivitis*  
*b. periodontal disease*
4. What sex is more susceptible to periodontal problems?  
*a. male*  
*b. female*
5. Up to ... of the population is likely to be genetically susceptible to periodontal disease.  
*a. 15 %*  
*b. 50 %*  
*c. 30 %*
6. Genetic factors appear to be ... poor oral environment.  
*a. not as potential as*  
*b. as potential as*  
*c. even more potential than*
7. The risk of periodontal disease ... to the number of cigarettes smoked per day.  
*a. is of an inverse proportion*  
*b. is of a direct proportion*
8. What carries lower risks of periodontal diseases?  
*a. smoking cigars*  
*b. smoking cigarettes*  
*c. smoking pipes*  
*d. none of the above*

### III Answer the questions

1. What factors put individuals at higher risk of periodontal diseases than others?
2. Why and when are women particularly susceptible to periodontal problems?
3. In what way does nicotine influence the gum tissue?

### IV Explain using information of the text

1. Speak about the link between bacterial build-up and plaque formation and eating sweets and candies.
2. Dwell on the dietary requirements to keep the gums healthy.

## TOBACCO USE IS HARMFUL TO ORAL HEALTH

It's a well known fact that tobacco use is linked with many serious illnesses such as cancer, lung disease and heart disease, as well as numerous other health problems. What smokers may not know is that tobacco users also are at increased risk for periodontal disease. In fact, recent studies have shown that tobacco use may be one of the most significant risk factors in the development and progression of periodontal disease.

How does smoking increase risk for periodontal disease? Smokers are more likely than non-smokers to have the following problems:

- calculus — plaque that hardens on the teeth;
- deep pockets between the teeth and gums;
- loss of the bone and tissue that support the teeth.

If the calculus is not removed during a professional cleaning, and it remains below the gum line, the bacteria in the calculus can destroy the gum tissue and cause the gums to pull away from the teeth. When this happens, periodontal pockets form and fill with disease-causing bacteria.

If left untreated, periodontal disease will progress. The pockets between the teeth and gums can grow deeper, allowing in more bacteria that destroy tissue and supporting bone. As a result, the gums may shrink away from the teeth making them look longer. Without treatment, teeth may become loose, painful and even fall out.

A number of studies indicate that smoking and nicotine increase inflammation by reducing oxygen in gum tissue and triggering an over-production of immune factors called cytokines, which in excess are harmful to cells and tissue.

Furthermore, when nicotine combines with oral bacteria, such as *P. gingivalis*, the effect produces even greater levels of cytokines and eventually leads to periodontal connective tissue breakdown. Studies suggest that smokers are 11 times more likely than nonsmokers to harbor the bacteria that cause periodontal disease and four times more likely to have advanced

periodontal disease. Fortunately, when smokers quit, their periodontal health gradually recovers to a state comparable to that of nonsmokers.

Research shows that smokers loose more teeth than non-smokers do. In fact, only about 20 percent of people over age 65 who have never smoked are toothless, while 41.3 percent of daily smokers over age 65 are toothless.

In addition, research shows that tobacco smoking impairs the outcome of surgical and non-surgical periodontal therapy, the chemicals in tobacco can slow down the healing process and make the treatment results less predictable.

In this study the relationship between tobacco smoking and the inflammatory response in smokers who consumed 10 to 20 cigarettes per day was investigated. What was found in tobacco smokers is that the body's defense mechanism was weakened, whereas the defense mechanism in non-smokers promoted a more favorable healing response.

Not just cigarettes, other tobacco products are also harmful to periodontal health. Smokeless tobacco also can cause gums to recede and increase the chance of losing the bone and fibres that hold the teeth in place.

And a study revealed that cigar and pipe smokers experience tooth loss and alveolar bone loss at rates equivalent to those of cigarette smokers.

Exposure to second-hand smoke is also associated with a 50 % to 60 % increased risk for developing periodontal disease, according to a 2001 study.

Researches also have found that the following problems occur more often in people who use tobacco products:

- oral cancer
- bad breath
- stained teeth
- tooth loss
- bone loss
- loss of taste
- less success with periodontal treatment
- less success with dental implants
- gum recession
- mouth sores
- facial wrinkling

Patients who want to quit smoking are urged to increase brushing and flossing their teeth and gums. It's suggested that the fresh clean feeling a person feels in the mouth after brushing and flossing may curb the urge to smoke. Ironically, these simple tips also help to prevent periodontal diseases.



## TEST

### I True and False Statements

1. Tobacco use has lately been considered one of the most potential risk factors in the development and progression of periodontal disease.  
*a. True                      b. False*
2. Smoking and nicotine reduce oxygen in gum tissue and in this way increase inflammation.  
*a. True                      b. False*
3. Only cigarette smoking can cause gums to recede and increase the chance of losing the bone and fibres that hold the teeth in place.  
*a. True                      b. False*

### II Multiple Choice Test

1. Excessive production of immune factors called cytokines are ... to cells and tissue.  
*a. beneficial*  
*b. harmful*  
*c. desirable*
2. Studies suggest that smokers are ...more likely to have advanced periodontal disease.  
*a. 4 times*  
*b. 11 times*  
*c. 20 times*
3. Periodontal health affected by smoking ....  
*a. may be reversible*  
*b. remains irreversible*
4. In one study over 40 % of smokers had lost ... by the age of 65.  
*a. a half of their teeth*  
*b. all their teeth*  
*c. only some teeth*
5. Pipe smokers experience tooth loss at a rate ... to cigarette smokers.  
*a. lower*  
*b. similar*  
*c. higher*
6. Tobacco smoking impairs the ... of periodontal therapy.  
*a. course of treatment*  
*b. choice*  
*c. outcome*
7. Tobacco smoking ... the body's defense mechanism.  
*a. improves*  
*b. doesn't change*  
*c. weakens*
8. Research shows that exposure to second-hand smoke ... .  
*a. also increases risk for developing periodontal disease*  
*b. doesn't increase risk for developing periodontal disease*

### III Answer the questions

1. What health problems often occur in smokers?
2. Who loses more teeth: smokers or nonsmokers? Why?
3. What do you know about cytokines?

### IV Explain using information of the text

1. Explain why bone loss occurs more often in people who use tobacco products.
2. Explain why it is recommendable to quit smoking.

## ORAL PIERCING

Oral piercing involving the tongue, lips or cheeks has become a popular practice. Many side effects, ranging from discomfort to serious health hazards, can result from these procedures. Anyone thinking about oral piercing should consider whether the benefits outweigh the risks.



### *Common Oral Piercing Sites*

Oral piercing sites include the tongue, the uvula (the soft tissue hanging at the back of the mouth), the lower and upper lips, the cheeks or even a combination of these sites. The tongue, being the most common area, is usually pierced in the middle, towards the tip. It may be pierced through its width, from right to left, or through its thickness.

Reasons for intra-oral piercing range from cosmetic, aesthetic, religious or cultural reasons to increased self-esteem sensation of pain.

### *How Oral Piercing is Done*

In tongue piercing, a needle is used to insert a piece of jewelry through the middle of the tongue. At first a temporary, oversized piece of jewelry is used to accommodate the swelling. After several weeks, a barbell is inserted into the hole and a ball is screwed onto the stem. If no complications arise, healing takes four to six weeks. In lip or cheek piercing healing time ranges from weeks to months. Oral piercing is frequently done by unlicensed practitioners who are often self trained. Infection control standards should be followed. These are: disposable<sup>1</sup> gloves, sterile or disposable instruments and sterilized jewelry. Surgical grade stainless steel, 14-karat gold or niobium oral jewelry is recommended. The device must be removable. Local anaesthetic (freezing) is generally not used.

A great deal of problems that may be encountered, including common symptoms: pain, swelling, infection due to large amounts of bacteria in the mouth, increased salivary flow, and redness due to the high blood flow to the tongue.

### ***Risk Factors Include:***

- Transmission of diseases such as Hepatitis, HIV, Herpes Simplex Virus, Tetanus.
- Prolonged bleeding if blood vessels are punctured.
- Hazard to the airway by swelling of the tongue or aspiration of the jewelry.
- Due to oral piercing the tongue may lose its sensitivity.
- Allergy to metals and galvanic currents.
- Loss of taste and numbness of the tongue.
- Constant irritation to the oral tissues, including gingival injury.
- Difficulty with mastication, speech and swallowing.
- Abrasion and fracture of the dentition and restorations.
- Damage to the pulp of the tooth.
- Obstruction of radiographs of the oral cavity and skull.

### ***Care and Maintenance***

During the 4–6 week healing period special care and maintenance is required. Refrain from talking too much for a few days after the piercing in order to release discomfort and swelling. Regular use of warm salt water or antiseptic mouthwash is recommended. Avoid smoking, alcoholic beverages, spicy foods. Intake of soft foods and vitamin supplements may facilitate tissue healing.

After the piercing site has healed, the device may be removed for a short period of time. Clean after every meal with a toothbrush and mouth rinse. Remove device and clean all surfaces. Avoid hard and sticky foods. Proper care should be taken during participation in strenuous sports and contact game.

It is important to have full knowledge of potential complications and continually monitor for possible infection. If complications occur see a health professional for treatment.

Dental professionals oppose the practice of oral piercing of any kind and consider it a public health hazard, seeing no any benefits of this practice. Why would anyone want to put him or herself at any risk of possibly becoming infected with the AIDS virus or Hepatitis B. That is the question you must ask yourself if are considering this procedure.

1. disposable — одноразового пользования

## **TEST**

### **I True and False Statements**

1. The practice of oral piercing has become widely spread nowadays.  
*a. True                      b. False*
2. Due to oral piercing the tongue may lose its sensitivity.  
*a. True                      b. False*

3. Piercing may be beneficial in some pathologic conditions as loss of taste or tongue morbidity.

- a. True                      b. False

## II Multiple Choice Test

1. Piercing is performed ... anaesthesia.

- a. under local  
b. under general  
c. without

2. What is the most common area of oral piercing?

- a. the uvula  
b. the cheeks  
c. the tongue

3. It is said in the article that complications can arise if piercing is done ... .

- a. by licensed practitioners  
b. without following infection control requirements  
c. without freezing

4. What is not mentioned in this article as a reason for oral piercing?

- a. anaesthetic reason  
b. religious reason  
c. cosmetic reason

5. In this article nothing is said that oral piercing can induce what problems?

- a. stomatological  
b. mental  
c. immunological

6. What is not mentioned in this article as a requirement that the device must fit to?

- a. shape  
b. material  
c. possibility to be removed  
d. size

7. Oral piercing presents hazard to the airways if ... .

- a. blood vessels are punched  
b. the airways swell  
c. the oral tissue become irritated

8. What is not mentioned in the article as a complication of oral piercing?

- a. transmission of infectious diseases  
b. development of oral cancer  
c. speech and mastication problems  
d. damage to the gingival, dentition and restorations

## III Answer the questions

1. What can be the reasons for oral piercing?

2. What are the requirements for oral devices?

3. What care is needed during healing period and after?

## IV Explain using information of the text

1. Dwell on pros and con of oral piercing.

2. Dwell on the problems that can be provoked by oral piercing.



## Part II ORAL DISEASES

### BRUXISM

If you wake up with dull headaches or vice-like pain<sup>1</sup>, you may be one of many people who clench<sup>2</sup> and grind their teeth at night. Many people are unaware they even have the disorder (called *bruxism*) because it often occurs at night during sleep. As your teeth are regularly being compressed, the enamel breaks down at the thinnest point of the tooth — the gum line. Your dentist can usually detect the signs of wear on your teeth.

#### ***Problems Caused by Bruxism***

Bruxism can either directly or indirectly cause many problems. Grinding can cause teeth to become painful or loose. Patients can literally grind away parts of their teeth, leaving them with worn surfaces or fractured enamel.

#### ***Causes of Bruxism***

More research is needed to determine the exact cause of bruxism, but it is thought that both emotional and physical factors are involved. Some of the contributing factors may be stress or sleep disorders, an abnormal bite or crooked or missing teeth.

#### ***Treatment of Bruxism***

There are a number of ways to treat bruxism. Your dentist will determine which single treatment or combination of treatments is right for you. When stress is the major cause of bruxism, people need to find ways to relax. People who have difficulty handling stress may need to seek help of a specialist or the dentist may prescribe muscle relaxants to relax jaw muscles. To help alleviate muscle pain, physical therapy may be needed.

Because it is thought that an abnormal bite may predispose a person to grinding, treatment may involve removing the «high spots» of a tooth. Another treatment involves wearing a plastic mouth guard at night to prevent tooth grinding. A bite plate is a removable plastic device which prevents teeth from coming together. In some cases, such as with an overbite, it may eventually improve the bite. A method used to treat the damage caused by more serious cases of grinding involves reshaping or reconstruction of the biting surfaces with crowns or inlays.

Grinding is a common occurrence among many people at some time or another. If you develop facial pain, fatigue or other problems, treatment may be needed.

1. vice-like pain — сдавливающая боль
2. to clench — стискивать зубы

## TEST

### I True and False Statements

1. Bruxism is unconsciously clenching of teeth often during sleep.  
*a. True                      b. False*
2. According to the text the exact cause of bruxism is well known.  
*a. True                      b. False*
3. Facial pain, fatigue, stress and other problems require special treatment.  
*a. True                      b. False*

### II Multiple Choice Test

1. The signs of wear on the teeth do not include ... .  
*a. worn surfaces.*  
*b. fractured enamel .*  
*c. discoloured enamel.*
2. What is not mentioned in the text as a contributing factor of bruxism?  
*a. mental disorders*  
*b. stress*  
*c. sleeping disorders*  
*d. malocclusion*
3. What problems can bruxism either directly or indirectly cause?  
*a. painful or loose teeth*  
*b. broken enamel.*  
*c. headaches.*  
*d. all of the above.*
4. Why are muscle relaxants prescribed to the patients suffering from bruxism?  
*a. It is a good way to relax for patients.*  
*b. It relaxes jaw muscles hence prevents tooth clenching.*  
*c. It helps handle stress.*
5. When does treatment of bruxism involve reshaping or reconstruction of the biting surfaces?  
*a. When the damage is extensive.*  
*b. When the enamel breaks down at the gum line.*  
*c. When this condition is irreversible.*
6. What devices are not used in case of bruxism?  
*a. a night mouth guard*  
*b. dental braces*  
*c. a bite plate*
7. A plastic mouth guard is worn at night in order to ... .  
*a. alleviate muscle pain.*  
*b. relax jaw muscles.*  
*c. prevent tooth grinding.*
8. How often do people suffer from bruxism?  
*a. seldom*  
*b. rarely*

*c. quite often*

### **III Answer the questions**

1. What is bruxism? What are its signs?
2. What parts of teeth are commonly damaged by clenching? Why?
3. What specialists may be involved in the process of treatment bruxism?

### **IV Explain using information of the text**

1. Speak on the problems caused by bruxism.
2. Explain how bruxism is to be treated.

## **CLEFT LIP AND PALATE**

As many as one in 700 babies are born with either a cleft palate or cleft lip. Cleft lip and palate are congenital abnormalities that affect the upper lip and the hard and soft palate of the mouth. Severity of the abnormalities may range from a small notch<sup>1</sup> in the lip to a complete fissure (groove) extending into the roof of the mouth and nose. These features may occur separately or together.

### ***Causes and Risk Factors***

Clefts begin to form at about the 6 weeks gestation<sup>2</sup> and are gaps in the palate, lip or gum. For reasons that are unknown, these parts which should join together do not do so in a small number of developing babies.

There are numerous causes for these birth defects, including mutant genes inherited from one or both parents, and such factors as drugs, viruses, or other toxins that can cause abnormalities in a developing fetus<sup>3</sup>. Some studies have suggested that smoking during pregnancy<sup>4</sup> is linked with the condition.

Risk factors include a family history of cleft lip or palate and presence of another birth defect.

As well as being disfiguring, these abnormalities can cause feeding difficulties, problems with speech development, misaligned teeth and ear infections.

### ***Treatment***

Treatment of cleft lip and palate requires a team approach and involves several specialties, including plastic surgeons, orthodontists, speech therapists, and others. Treatment may extend over a period of several years.

Surgery to close the cleft lip is usually performed at 3–9 months of age. Later surgery may be needed if there is extensive nasal involvement.

A cleft palate is usually closed within the first year of life to improve normal speech development. Until surgery, a prosthetic device is often fitted over the palate for feeding.

Continued follow-up may be needed with speech therapists and orthodontists.

### ***Expectations (prognosis)***

Although treatment may extend over several years and require several surgeries depending upon the involvement, most children affected by this disorder can achieve normal appearance, speech, and eating. However, there is usually some scarring<sup>5</sup> and the shape of baby's nose may be a little irregular. For some, speech problems may continue.

1. notch — выемка
2. gestation — созревание плода
3. fetus — утробный плод
4. pregnancy — беременность
5. scarring — шрам, след

## TEST

### I True and False Statements

1. Cleft lip and cleft palate are variations of a type of clefting congenital deformity caused by abnormal facial development during gestation.  
*a. True                      b. False*
2. Cleft lip and cleft palate can occur either together or separately.  
*a. True                      b. False*
3. A cleft lip or palate can be successfully treated with fitting a prosthetic device soon after birth.  
*a. True                      b. False*

### II Multiple Choice Test

1. A cleft can not affect...  
*a. the soft palate of the mouth.*  
*b. the lower lip.*  
*c. the hard palate of the mouth.*
2. What is not mentioned in the text as a cause of clefts?  
*a. a family history of cleft lip or palate*  
*b. viral diseases*  
*c. some drugs*  
*d. mother's undergoing oral surgery during pregnancy*
3. Because the lips and palate are both used in pronunciation, individuals with cleft usually need ...  
*a. a prolonged endodontic treatment*  
*b. multiple surgeries*  
*c. the aid of a speech therapist*
4. A cleft lip or palate can be treated with surgery ... .  
*a. just after birth*  
*b. within the first year of life*  
*c. at about 6 weeks of age*
5. Often a cleft can cause a number of related problems which do not include ... .  
*a. ear disease*

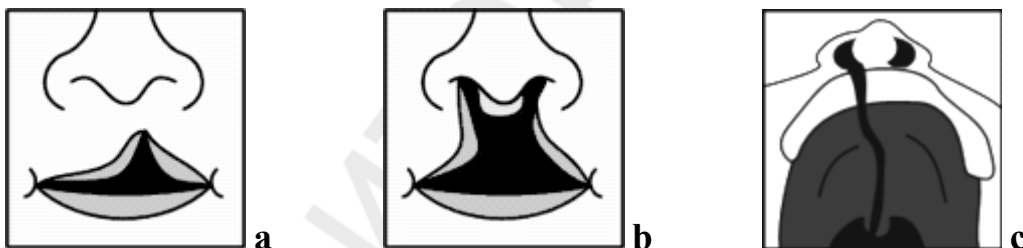
- b. crooked teeth
  - c. hearing difficulties
  - d. loss of speech
6. Babies born with a cleft palate ... .
    - a. are usually able to feed satisfactorily
    - b. will often have sucking difficulty
  7. Can clefts be accompanied by other birth defects?
    - a. yes
    - b. no
  8. Why do patients with clefts need help of plastic surgeons?
    - a. These deformities are disfiguring.
    - b. It is helpful for aligning teeth.
    - c. It will prevent some oral infections.

### III Answer the questions

1. What are clefts? What are their types?
2. What causes clefts?
3. What approach does treatment of cleft lip and palate require and what can its prognosis be?

### IV Explain using information of the text

1. How could you comment on the following colloquial saying: «If a pregnant woman eats rabbit, the baby will have a cleft lip»?
2. Look at the pictures and explain what types of abnormalities they present, what treatment can be applied and what specialists will be involved.



## HALITOSIS

*Halitosis*, *oral malodour* (scientific term), *breath odour*, or most commonly *bad breath* are terms used to describe noticeably unpleasant odours exhaled in breathing.

### **Types**

*Transient bad breath* is a very common temporary condition caused by such things as oral dryness, stress, hunger, eating certain foods such as garlic and onions, smoking or poor oral hygiene. Transient bad breath gradually disappears on its own, with the aid of brushing one's teeth, flossing, and rinsing with specialized mouthwash.

*Chronic bad breath* is a more serious and persistent condition in varying degrees. It can negatively impact the individual's personal and business relationships, leading to poor self-esteem<sup>1</sup> and increased stress.

### ***Causes***

Though the causes of breath odour are not entirely understood, most unpleasant odours are known to arise from food debris trapped in the mouth which is processed by normal mouth flora; there are over 600 types of bacteria found in the average mouth. Several dozen of these can cause trouble when allowed to flourish<sup>2</sup>. Large quantities of these bacteria are often found on the posterior of the tongue, where they are undisturbed by normal activity. The rough surface of the tongue dorsum provides an ideal habitat for anaerobic bacteria, which flourish under a continually-forming tongue coating of food debris, dead cells, and hundreds of thousands of bacteria, living and dead. When left on the tongue, the anaerobic respiration of such bacteria can yield an unpleasant smell.

Other causes of chronic bad breath may be periodontitis, helminthiasis (intestinal parasitic infections), diabetes, kidney and liver failure, sinusitis, tonsillitis, gastroesophageal reflux disorder, hormonal changes, and a wide variety of prescription drugs (especially when taken on a long-term basis).

### ***Treatment***

Currently, chronic halitosis is not very well understood or even recognized as a treatable condition by most physicians and dentists, so effective treatment is difficult to find. Some specialists believe that halitosis can be cured or greatly diminished<sup>3</sup> by improving the overall health of the digestive tract, especially the small and large intestines. This process usually requires a change in eating style, lifestyle, and diet.

Using most commercial breath-freshening mouthwashes or mints gives only temporary relief at best, since these products only mask mouth odours for a few minutes. These products contain antibacterials and also often 20 % alcohol or more, which is a drying agent and will worsen the problem.

Brushing after meals and flossing at least once daily is necessary to remove rotting food debris from between the teeth, especially at the gum line. Gently cleaning the tongue surface twice daily will reduce this primary source of breath odour.

Since dry mouth can increase bacterial build-up and cause or worsen bad breath, chewing sugarless gum can help with the production of saliva, and thereby help to reduce bad breath. Maintain water levels in the body by drinking several glasses of water a day.

Wheat<sup>4</sup> is a natural breath freshener when chewed slowly, and is easy to grow at home.

1. self-esteem — чувство собственного достоинства

2. to flourish — пышно расти, разрастаться

3. to diminish — уменьшать, ослаблять  
4. wheat — пшеница

## TEST

### I True and False Statements

1. Halitosis is either transient or persistent condition, the first one disappearing gradually on its own and the latter requiring specialized treatment.  
*a. True                      b. False*
2. Most commercial breath-freshening substances generally come in the form of a mouthwash.  
*a. True                      b. False*
3. According to the text, a growing number of over-the-counter mouthwash products that specifically target bad breath have proven to be effective for many patients.  
*a. True                      b. False*

### II Multiple Choice Test

1. Most physicians and dentists understand halitosis as ... .  
*a. a highly treatable condition*  
*b. a difficult to treat condition*  
*c. an untreatable condition*
2. Halitosis can not be caused by which of the following?  
*a. persistent overpopulation of certain types of oral bacteria.*  
*b. food debris itself trapped in the mouth.*  
*c. some systemic diseases.*
3. Why doesn't using mouthwashes give long term relief?  
*a. these products can be used in small quantities only.*  
*b. these products eliminate the cause of the problem.*  
*c. these products only mask mouth odours for a short period of time.*
4. Dry mouth syndrome will increase bad breath problems because ... .  
*a. it is not beneficial for bacterial build-up*  
*b. combats normal mouth flora*  
*c. increases bacterial build-up*
5. According to some specialists improving the overall health of the intestines... in case of oral malodour.  
*a. is useless*  
*b. will not give relief*  
*c. can be helpful*
6. It is necessary to treat chronic bad breath because ... .  
*a. it can negatively influence the individual's personal and business contacts*  
*b. it can lead to poor self-esteem and increase stress*  
*c. all of the above*
7. Where are large quantities of anaerobic bacteria causing halitosis found?  
*a. on the tongue apex*  
*b. on the tongue dorsum*  
*c. on the inner side of cheeks*

8. What is not mentioned in the article as a possible cause of halitosis?
- sinusitis and tonsillitis*
  - kidney and liver failure*
  - heart failure*
  - diabetes and hormonal changes.*

### III Answer the questions

- What is halitosis and what types of halitosis are distinguished?
- Is it easy to determine causes of halitosis? What can cause it?
- Why is it necessary to use a tongue brush, tongue scraper, or tongue cleaner and what effect do they give?

### IV Explain using information of the text

- Explain why brushing a small amount of antibacterial mouth rinse or tongue gel onto the tongue surface is considered to be beneficial in case of oral malodour.
- Some gums, toothpastes, sprays, and gels which combat dry mouth for several hours have recently been marketed over the counter. Say whether they are beneficial for patients with halitosis. Explain your answer.

## STOMATITIS

Stomatitis is an inflammation of the mucous lining of any of the structures in the mouth, which may involve the cheeks, gums, tongue, lips, and roof or floor of the mouth. The inflammation can be caused by conditions in the mouth itself, such as poor oral hygiene, poorly fitted dentures, or from mouth burns from hot food or drinks, or by conditions that affect the entire body, such as medications, allergic reactions, or infections. A form of stomatitis known as *stomatitis nicotina* can be caused by smoking cigars, cigarettes, and pipes, and is characterized by small red bumps<sup>1</sup> on the roof of the mouth. When it also involves an inflammation of the gingiva, it is called *gingivostomatitis*. Stomatitis can often be a symptom of systemic disease.

### *Symptoms and Signs*

Clinical signs vary widely according to the type of stomatitis present.

*Allergic stomatitis* is characterized by an intense, shiny erythema with slight swelling. Itching, dryness, or burning, often present, may be due to sensitivity to foods or to lipstick.

*Acute necrotizing ulcerative gingivitis (ANUG) or Vincent's infection* causes ulceronecrotic lesions of the interdental papillae that may extend to the marginal gingiva or produce painful ulcers of the mucous membranes. When associated with HIV infection, the ANUG rapidly becomes destructive.

*Candidiasis (thrush<sup>2</sup>)*, caused by *C. albicans*, is characterized by white, slightly raised patches<sup>3</sup> resembling milk curds<sup>4</sup> that when removed expose a hyperemic area that may bleed slightly. This is the pseudomembranous form.



The infection usually begins on the tongue and buccal mucosa and may spread to the palate, gums, tonsils, pharynx, larynx, GI tract, respiratory system, and skin. The mouth usually appears dry. Candidiasis is common in infants.

### **Diagnosis**

Establishing the cause may be difficult. The history may disclose a systemic disease, a dietary deficiency, or contact with irritants or allergens. Physical examination is obligatory, since it may reveal lesions of other mucous membranes.

Direct smears<sup>5</sup> and cultures from the lesions may disclose a pathogen. Blood count, bone marrow examination, gastric analysis, or other laboratory procedures may be indicated.

### **Treatment**

Underlying systemic disorders should be treated specifically. Meticulous<sup>6</sup> oral hygiene is always necessary.

- |                                     |  |
|-------------------------------------|--|
| 1. bump — опухоль, шишка            | 4. milk curd — свернувшееся молоко, творог |
| 2. thrush — молочница               | 5. smear — мазок                           |
| 3. patch — пятно неправильной формы | 6. meticulous — тщательный                 |

## **TEST**

### **I True and False Statements**

1. In stomatitis the mucous lining of cheeks, gums, tongue, lips or palets of the mouth become infected.  
*a. True                      b. False*
2. Stomatitis may be caused by infection, irritants and toxic agents, hypersensitivity or autoimmune conditions.  
*a. True                      b. False*
3. Stomatitis is not a disease itself, but a symptom of systemic disease.  
*a. True                      b. False*

### **II Multiple Choice Test**

1. Stomatitis nicotina can be caused by ...  
*a. nicotina acid insufficiency in the body.*  
*b. tobacco smoking.*  
*c. both of the above.*
2. If the gingiva is involved into the inflammatory process this condition is called ...  
*a. allergic stomatitis .*  
*b. thrush.*  
*c. gingivostomatitis.*
3. What type of stomatitis is known to be characterized by white patches resembling milk curds?  
*a. allergic stomatitis*  
*b. thrush*

- c. gingivostomatitis*
  - d. acute necrotizing ulcerative gingivitis*
4. What type of stomatitis is known to cause ulceronecrotic lesions of the interdental papillae or produce painful ulcers of the mucous membranes?
    - a. allergic stomatitis*
    - b. thrush*
    - c. gingivostomatitis*
    - d. acute necrotizing ulcerative gingivitis*
  5. What type of stomatitis is unlikely to develop in children?
    - a. allergic stomatitis*
    - b. thrush*
    - c. stomatitis nicotina*
  6. What type of stomatitis not only affects the structures in the mouth but may spread to the tonsils, pharynx, larynx, gastrointestinal tract, respiratory system, and skin?
    - a. allergic stomatitis*
    - b. thrush*
    - c. acute necrotizing ulcerative gingivitis*
  7. What type of stomatitis can be accompanied by itching, dryness or burning and is due to sensitivity to some foods.
    - a. allergic stomatitis*
    - b. thrush*
    - c. gingivostomatitis*
  8. What can reveal a pathogen?
    - a. physical examination*
    - b. smears and cultures from the lesions*
    - c. thorough questioning the patient*

### III Answer the questions

1. What are the causes of stomatitis? Why may it be difficult to establish them?
2. What types of stomatitis do you know?
3. Who can suffer from stomatitis?

### IV Explain using information of the text

1. Explain the difference between allergic stomatitis and candidiasis.
2. Dwell on the establishing the cause of stomatitis and its treatment.

## XEROSTOMIA

Xerostomia, more commonly known as dry mouth, is a symptom that often occurs when saliva production decreases or stops. It is not a disease, but can be a symptom of many other diseases and conditions.

Saliva lubricates<sup>1</sup> your mouth and helps you to swallow and taste food. Saliva also is a natural cavity fighter because it washes away food and plaque

from tooth surfaces, lowers acidity level in the mouth and remineralizes teeth. When saliva production decreases and you experience dry mouth, your teeth and gums are at increased risk of tooth decay. People with xerostomia are more likely to experience illnesses that affect the soft tissues of the mouth, including oral yeast<sup>2</sup> infections (thrush). In addition, your diet may be affected because you cannot taste food as you normally would.

### ***Causes***

Xerostomia may occur for several reasons.

- Dry mouth is a potential side effect of hundreds of drugs, including pain relievers, antidepressants and antihistamines. Because of the number and types of medications that many older people take, xerostomia has an especially high rate of occurrence among the elderly.

- Diseases such as diabetes, anemia, cystic fibrosis, rheumatoid arthritis, hypertension and HIV infection can be associated with dry mouth. Xerostomia also occurs with an autoimmune disease in which the body's antibodies attack the salivary and lacrimal (tear) glands. Some viral infections also affect saliva production and result in xerostomia.

- Any condition that leads to dehydration can also cause xerostomia. These conditions include fever, excessive sweating, vomiting, diarrhea, blood loss or loss of water through the skin resulting from burns.

- Xerostomia is a common side effect of radiation therapy to treat cancers in the head and neck.

- Surgical removal of the salivary glands.

### ***Symptoms***

Although xerostomia is a symptom in itself, it may occur with other associated symptoms, including:

- Frequent thirst
- Sores in mouth or at corners of lips
- Difficulty swallowing
- Impaired taste
- Bad breath
- Dry nasal passages and lips
- Increase in dental problems, such as cavities and periodontal disease
- Difficulty wearing dentures
- Recurrent yeast infections in the mouth, etc.

### ***Expected Duration***

Although the symptoms of xerostomia can be treated, the condition often remains a problem as long as its cause (medication, medical illness, dehydration) remains. The condition is permanent in cases in which the salivary glands have been removed or destroyed. Radiation therapy to treat cancer in

the head or neck also may permanently affect the ability of the salivary glands to produce saliva.

### ***Treatment***

The treatment of xerostomia is based on the severity of the problem and the cause of the dry mouth and focuses on three areas: relieving symptoms, preventing tooth decay and increasing the flow of saliva, if possible.

1. to lubricate — смачивать                      2. yeast — дрожжи

## **TEST**

### **I True and False Statements**

1. Xerostomia is a symptom, not a disease.  
*a. True                      b. False*
2. The condition can be either temporary or permanent.  
*a. True                      b. False*
3. Depending on the medical condition and diagnosis, a doctor may prescribe a drug that makes more saliva be released.  
*a. True                      b. False*

### **II Multiple Choice Test**

1. Xerostomia often occurs when ... .  
*a. lachrymal glands fail to fulfill their function*  
*b. salivary glands fail to fulfill their function*  
*c. one experiences increased gum and tooth decay rate*
2. Common causes of xerostomia do not include ... .  
*a. a side effect of medication*  
*b. a complication after giving anaesthesia*  
*c. dehydration*  
*d. radiation therapy and removal of the salivary glands*
3. What illnesses are people with xerostomia likely to experience?  
*a. yeast infection*  
*b. cavities*  
*c. periodontal disease*  
*d. all of the above*
4. What does not cause xerostomia?  
*a. taking some drugs such as pain killers and antidepressants*  
*b. diseases as diabetes, anemia, hypertension*  
*c. radiotherapy or removal of the salivary glands*  
*d. wearing fixed dentures*
5. A person with xerostomia cannot taste food as he normally does because ... .  
*a. increasing dental problems produce pain*  
*b. saliva washes away food from the mouth*  
*c. saliva, that helps to swallow and taste food, decreases or stops being produced*
6. What does not lead to dehydration?

- a. excessive sweating
  - b. diarrhea, vomiting or blood loss
  - c. aromotherapy
  - d. fever
7. Xerostomia is incurable if it is caused by ... .
- a. dehydration
  - b. medical illness
  - c. medication
  - d. destruction or removal of salivary glands
8. Xerostomia is a reversible condition ... .
- a. when the salivary glands have been removed or destroyed
  - b. when radiotherapy has permanently affected the ability of the salivary glands to produce saliva
  - c. when caused by medication or dehydration

### III Answer the questions

1. What are the functions of saliva in the mouth?
2. What problems can arise when saliva production decreases? Why?
3. What can cause xerostomia? What can be its symptoms?

### IV Explain using information of the text

1. Explain at what age medications are the most common cause of xerostomia and why.
2. Dwell on existing approaches to treatment of xerostomia.

## ORAL HERPES

Oral herpes is an infection caused by the herpes simplex virus (HSV). HSV is one of the most difficult viruses to control and has plagued mankind for thousands of years. The word «herpes» is derived from the Greek word «herpein», which means «to creep». It may be a reference to the unique characteristic pattern of all herpes viruses to travel up local nerves to the clusters<sup>1</sup> at the end (the dorsal root ganglia), where they remain in an inactive (latent) state for some indeterminate time. (Herpes simplex should not be confused with other herpes viruses, including human herpes virus 8, now believed to cause Kaposi's sarcoma, and herpes zoster, the virus responsible for shingles and chicken pox.)

### **Transmission**

Oral herpes is easily spread by direct exposure to saliva or even from droplets in breath. Skin to skin contact is sufficient to spread it. Transmission most often occurs through close personal contact, such as kissing or sharing common eating utensils.

*Incubation period:* For oral herpes, the amount of time between contact with the virus and the appearance of symptoms is 2–12 days. Most people average about 4 days.

Once HSV gains entry to a site in the body, the virus has a rather unique ability to proceed to **3 stages**.

*Primary infection:* The virus penetrates vulnerable cells in the lower layers of skin tissue and attempts to replicate itself in the cell nuclei.

If the primary (or initial) oral HSV infection causes symptoms, they can be very painful, particularly in small children. Blisters<sup>2</sup> form on the lips but may also erupt on the tongue. The blisters eventually rupture as painful open sores, develop a yellowish membrane before healing, and disappear within three to 14 days. Increased salivation and foul breath may be present. Rarely, the infection may be accompanied by difficulty in swallowing, chills, muscle pain, or hearing loss. In children, the infection usually occurs in the mouth; in adolescents, the primary infection is more apt to occur in the upper part of the throat and cause soreness.

The virus may not cause any sores and symptoms. This is called asymptomatic infection. Asymptomatic infection occurs twice as often as the disease with symptoms.

*Latency:* After the initial replication, the viral particles are carried from the skin through branches of nerve cells to clusters at the nerve-cell ends, the ganglia. Here, the virus persists in an inactive (latent) form, in which complete viral replication does not occur but both the host and the virus cells survive. Infection is not apparent during these periods.

*Recurrence:* When under certain stresses, emotional or physical, the virus may reactivate and cause new sores and symptoms. Between 20 % and 40 % of oral HSV infections recur within a year. Recurrences are usually much milder than primary infections and are known commonly as cold sores or fever blisters. They usually show up on the lower lip and rarely affect the gums or throat. Reactivation can be provoked within about three days of intense dental work, particularly root canal or tooth extraction.

1. cluster — пучок

2. blister — водяной пузырь

## TEST

### I True and False Statements

1. Oral herpes is an infection caused by the herpes simplex virus which is highly contagious.  
*a. True                      b. False*
2. From the infected site, the virus moves to a mass of nerve tissue in the spine called the dorsal root ganglion. There the virus reproduces again and becomes inactive.  
*a. True                      b. False*

3. Oral herpes is always accompanied by such symptoms as high temperature, increased salivation etc.  
a. True                      b. False

## II Multiple Choice Test

1. Incubation period of HSV is ... .  
a. 3–14 days  
b. 2–12 days  
c. 20 days
2. HSV infection lesions can be particularly painful ... .  
a. during the incubation period  
b. at the latency stage  
c. at the stage of primary infection
3. Oral herpes blisters disappear within ... .  
a. 3 to 14 days  
b. 4 days  
c. 20–40 days
4. Oral herpes infection is not ... during latent period.  
a. visible  
b. detectable  
c. painful
5. The virus may ... under certain conditions.  
a. replicate  
b. recur  
c. become latent
6. At what stage does oral herpes appear to have a more severe course?  
a. primary infection  
b. recurrence
7. What is not mentioned in the article as a common symptom of oral herpes?  
a. increased salivation  
b. muscle pain  
c. bad breathe
8. Which form of HSV is more rare?  
a. that with sores and symptoms  
b. that without sores and symptoms

## III Answer the questions

1. What stages does HSV proceed? Give their general characteristics.
2. Where can oral herpes blisters erupt and what symptoms can they be accompanied by?
3. How does the initial oral HSV infection develop?

## IV Explain using information of the text

1. Speak about the origin of the word «herpes».
2. Think about a complex of measures to prevent oral herpes transmission and reactivation.

## COLD SORES

Cold sores are caused by a member of the herpes virus family, called herpes simplex. They occur on the lip, or just above or below it, and are caught through close contact (for example, kissing) with someone who has a cold sore.

You can't catch cold sores from cups, flannels or towels.

### ***Common Cold Sore Triggers***

Infection usually occurs in childhood when someone's kissed by a family member who has a cold sore. The virus passes through the skin, travels up a nerve and hides in the nerve root until it's activated.

When the virus is activated, it travels back to the skin, causing a tingling<sup>1</sup> sensation. When the sore appears, it's itchy, painful and embarrassing because it's so noticeable.

After the first attack, some people never have another one; others get them occasionally, while some get them quite often.

Many things trigger attacks: colds and flu, menstrual periods, emotional upset, fatigue, bright sunlight and cold winds.

### ***Preventing recurrent cold sores***

- avoid sunlight and cold winds
- reduce stress
- eat a diet rich in vitamins A, C and E, zinc and iron

### ***Prevention***

Preventing recurrences involves avoiding those things known to trigger cold sores. So, make sure you always wear a lip balm containing UV protection and avoid sources of stress.

Eating a healthy, balanced diet that's rich in vitamins A, C and E, zinc and iron is also important to keep the immune system strong. Make sure you get enough garlic, too; it has antiviral properties and can be taken fresh or in capsule form.

Some people believe that the herb melissa, or lemon balm, is a good preventative. Make an infusion with some dried melissa leaves in boiling water, leave to cool, strain and store in a bottle. Apply it daily to the lips with cotton wool.

### ***Treatment***

Many people know when a cold sore is on its way because they feel a tingle. When this happens, applying a cream containing the drug acyclovir (available from chemists without prescription) may help to lessen the duration and severity of the attack.



Any pain caused by a cold sore can be eased by applying a cold compress of witch hazel to the affected area or by taking paracetamol.

It's important to always wash your hands after touching the cold sore and avoid putting your fingers near your eyes.

1. tingling — покалывание, пощипывание

## TEST

### I True and False Statements

1. Cold sore is a viral infection.  
*a. True                      b. False*
2. When the sore appears, it is nothing noticeable.  
*a. True                      b. False*
3. Cold sore recurrence never takes place.  
*a. True                      b. False*

### II Multiple Choice Test

1. What factors are not known to trigger cold sores?  
*a. colds and flus*  
*b. hot weather*  
*c. fatigue and stress*  
*d. menstrual periods*
2. To prevent catching cold sores it is essential ... .  
*a. to keep personal things clean*  
*b. to avoid close contact with someone who has a cold sore*  
*c. to drink melissa infusion daily*
3. Cold sore infection can occur ... .  
*a. in childhood when someone has used an infected towel or cup*  
*b. in winter and autumn*  
*c. in childhood through close contact with someone who has a cold sore.*
4. Cold sores do not cause ... .  
*a. pain*  
*b. fatigue*  
*c. itching*
5. To prevent cold sore recurrence one should avoid ... .  
*a. fresh food rich in vitamins and minerals*  
*b. applying creams and balms containing UV protection*  
*c. emotional upset, catching colds and flu*
6. It does not have any importance whether one washes his hands ... .  
*a. before touching the cold sores*  
*b. after touching the cold sores*  
*c. before touching somebody's eyes*
7. What is not mentioned in the article as a good cold sore preventative?  
*a. the herb melissa*  
*b. lemon balm*  
*c. witch hazel*
8. According to the article the drug acyclovir cannot ... .  
*a. prevent recurrence of cold sore*

*b. lessen the duration of the attack*

*c. lessen the severity of the attack*

### **III Answer the questions**

1. What can trigger attacks of cold sores?
2. What symptoms do cold sores have?
3. How does garlic prevent cold sore recurrence?

### **IV Explain using information of the text**

1. Explain how cold sore infection behaves once in the body.
2. Explain what measures can be taken to prevent catching cold sores or their recurrence.

## **CANKER SORES**

Canker sores, also known as aphthous stomatitis, are among the most common causes of sores in the mouth. From 30–85 % of the US population have them at some point in their lives.

### ***Causes***

No one knows what causes canker sores. The disease is suspected to result from a reaction of the immune system. Additional factors may include the following:

- bacterial infections;
- hormonal disorders;
- stress;
- trauma;
- heredity;
- food allergies or sensitivities (acidic foods such as pineapple);
- deficiencies of iron, folic acid, or vitamin B12.

Some studies have suggested an association with *Helicobacter pylori*, the same bacteria that cause peptic ulcers.

Recurrent canker sores have been associated with inflammatory bowel diseases, such as Crohn disease and ulcerative colitis. In these cases, the development of canker sores may signal a flare-up of the bowel disease.

Infection with the AIDS virus also has been associated with canker sores.

It is a common misconception that canker sores are a form of herpes infection. This is not the case.

### ***Symptoms***

Canker sores occur in several forms. They can involve any area of the mouth except for the gums, lips, and hard palate.

- Minor canker sores are oval and less than 10 mm across. They are very painful but clear up within 3–14 days.

- The major form consists of deep ulcers measuring greater than 1 cm. These ulcers have irregular margins and often last for 3–6 weeks. They tend to heal with extensive scarring.

- A third form of canker sores, termed «herpetiform», resembles herpes infections and consists of many small punched-out lesions, 1–3 mm in diameter. Clusters of these sores may merge together to form large irregular ulcers.

Canker sores commonly come back.

### ***Exams and Tests***

Canker sores are diagnosed by their typical appearance. No testing is needed in the majority of cases.

The doctor, however, must consider the possibility of herpes or fungal infections, trauma, or sores that will not heal that could signal cancer.

### ***Medical Treatment***

Although there is no cure for canker sores, treatment can decrease symptoms, reduce the likelihood that they will return, and prolong periods of remission.

- Applying certain steroid ointments directly to the sore is effective if those are used early in an attack. Their work may be related to their anti-inflammatory and anti-allergic effects. Typically, the paste is applied to the lesions 3 times daily.

- Tetracycline suspensions used as a mouthwash can relieve pain and accelerate healing.

- The doctor can prescribe an anaesthetic to numb the ulcers before meals, making it easier to eat, and at bedtime.

- The doctor may prescribe folic acid, iron, or vitamin B12 supplements, there being a deficiency in these. In such cases, it requires several months of therapy to improve. No benefit has been shown, however, from taking these vitamins if no deficiency is evident.

## **TEST**

### **I True and False Statements**

1. It is wrong to think that canker sores are a form of herpes infection.  
*a. True                      b. False*
2. The diet doesn't have any influence on the development of canker sores.  
*a. True                      b. False*
3. Canker sores commonly do not recur.  
*a. True                      b. False*

### **II Multiple Choice Test**

1. Nothing is said in the article that canker sores may be seen in people with ... .  
*a. HIV infection*  
*b. inflammatory bowel diseases*  
*c. pneumococcal infection*

2. Canker sores can involve ... .
  - a. any area of the mouth
  - b. gums, lips and hard palate
  - c. tongue and cheeks
3. What form of canker sores is very painful?
  - a. minor canker sores
  - b. major canker sores
  - c. herpetiform of canker sores
4. What form of canker sores looks like herpes virus lesions?
  - a. minor canker sores
  - b. major canker sores
  - c. herpetiform of canker sores
5. What form of canker sores heals within 3–14 days?
  - a. minor canker sores
  - b. major canker sores
  - c. herpetiform of canker sores
6. What form of canker sores heals forming scars?
  - a. minor canker sores
  - b. major canker sores
  - c. herpetiform of canker sores
7. Treatment for canker sores is ... .
  - a. systemic
  - b. symptomatic
8. Folic acid, iron, or vitamin B12 supplements may be prescribed ... .
  - a. in any case
  - b. when there is a deficiency in these
  - c. when a patient is under stress

### III Answer the questions

1. What causes canker sores and what are the symptoms?
2. Can canker sores signal any other not dental diseases?
3. Does any effective cure for canker sores exist?

### IV Explain using information of the text

1. Try to find some explanation to the fact that up to 85 % of the US population has canker sores at some point in their lives.
2. Say what would be your recommendations to prevent recurrence of canker sores.

## BROKEN OR KNOCKED-OUT TEETH

Dental injuries to the teeth commonly occur with falls, sports activities and multiple traumas such as an auto collision.

Toothache and jaw pain are common symptoms of dental injuries. Some people may complain of pain with chewing or with temperature changes.

Although a tooth may have broken off, loosened, fallen out, or been pushed into the gum line, other less common symptoms may be seen:

- isolated bleeding from the mouth;
- facial swelling;
- a change in the tooth colour (may take a long time to appear).

At first the doctor or dentist will take a history of events leading up to the injury. A focused examination of the face, neck, mouth, and the teeth follows. The doctor or dentist will look for damage to the jaw, salivary ducts and nerves, as well as to account for all missing teeth.

For a single tooth injury, a plain dental x-ray will be taken. A panoramic x-ray may also be taken to detect dental injuries. This image is taken as the device sweeps around the jaw in an arch and permits a thorough structural evaluation of the teeth, jaw, and soft tissue structures.

If a tooth is missing and is suspected to have been swallowed, a neck or chest x-ray may be taken to try to find it. The tooth may end up in the throat, lung, or stomach.

The Ellis classification is a way to grade or describe tooth fractures. The higher the number, the more serious the fracture.

- *An Ellis I fracture* solely involves the enamel. This is the proverbial «chipped tooth». It is usually painless and more a cosmetic problem than anything else.

- *An Ellis II fracture* extends through the enamel and stops at the dentin. Usually the tooth is sensitive to cold.

- *In an Ellis III fracture*, the injury extends through all 3 layers, exposing the pulp. Typically there is extreme pain, often accompanied with mild bleeding from the tooth itself.

For teeth that are just loose in their socket, treatment is simple. Avoid hard foods. Teeth with significant motion will need to be stabilized using wire, metal arch bars, or a plastic bond for 10–14 days.

For knocked out permanent teeth, the sooner the tooth is put back in its socket, the better its chances. The best chance for survival occurs if the tooth is reimplanted within 30 minutes. Once implanted, the tooth must be stabilized.

Broken teeth are managed according to their Ellis classification. For a minor chip (Ellis I), no acute treatment is necessary. This injury typically needs a cosmetic repair.

For the more significant tooth fractures (Ellis II and III), certain steps are employed to reduce infection, control pain, and reduce the chance of permanent damage to the pulp.

In Ellis II fractures, the exposed dentin is covered with calcium hydroxide, which provides a protective covering for nerves and blood vessels.

An Ellis III injury will need continued dental care. A pulpectomy may need to be performed. Immediate bonding is another option.

For adult teeth that are pushed into the gum line, no acute treatment is necessary if the tooth is stable and not likely to fall out. An X-ray will be needed to look for a fracture in or near the socket. In most cases, the tooth will push itself back out, returning to its normal position. The only exception occurs with a primary (baby) tooth. If it injures the developing adult tooth below it, permanent damage may occur, resulting in cosmetic disfigurement or loss of the permanent tooth.

In general, any time a tooth is struck, microscopic nerve or blood vessel damage may occur, even without apparent initial injury. The damage may show as a colour change over a period of days to months and lead to the death of the tooth.

## TEST

### I True and False Statements

1. Dental injuries include broken off, loosened, fallen out, or pushed into the gum line teeth.  
*a. True                      b. False*
2. Injury to teeth, especially permanent teeth, can be painful and serious.  
*a. True                      b. False*
3. Knowing causes of a dental injury doesn't appear to be important to treat them properly.  
*a. True                      b. False*

### II Multiple Choice Test

1. What is not considered to be a very common symptom of dental injuries?  
*a. loosened or fallen out teeth*  
*b. swellings of the face*  
*c. jaw pain*  
*d. displaced teeth*
2. What tooth fracture is more serious?  
*a. an Ellis I fracture*  
*b. an Ellis II fracture*  
*c. an Ellis III fracture*
3. What tooth fracture doesn't usually cause pain?  
*a. an Ellis I fracture*  
*b. an Ellis II fracture*  
*c. an Ellis III fracture*
4. A patient may complain of tenderness with chewing or with temperature changes in case of ... .  
*a. an Ellis I fracture*  
*b. an Ellis II fracture*  
*c. an Ellis III fracture*
5. If the pulp becomes exposed it is ... .  
*a. an Ellis I fracture*  
*b. an Ellis II fracture*  
*c. an Ellis III fracture*

6. What dental injury requires food restrictions?
  - a. *knocked out teeth*
  - b. *teeth loose in their socket*
  - c. *broken teeth*
  - d. *if a tooth is missing and is suspected to have been swallowed*
7. Is it of great importance how soon a knocked out tooth is implanted back in its socket?
  - a. *only when the tooth is permanent*
  - b. *it is always important*
  - c. *no*
8. Teeth pushed into the gum line present greater danger with ... .
  - a. *permanent teeth*
  - b. *primary teeth*

### III Answer the questions

1. What are the symptoms of dental injuries, and how should injured teeth be examined?
2. What symptom of the dental injury may take some time to become apparent? What can it result in?
3. What should special attention be paid to in case of a significant tooth fracture?

### IV Explain using information of the text

1. Explain why dental injuries of baby teeth present great danger.
2. Look at the picture. Use information of the text to classify the dental injury. Think of its possible symptoms and treatment.



## TOOTHACHE

### *Causes*

Toothache occurs from inflammation of the central portion of the tooth called pulp. The pulp contains nerve endings that are very sensitive to pain. Inflammation to the pulp or pulpitis may be caused by dental cavities, trauma, and infection. Pain sometimes originates from other areas and radiates<sup>1</sup> to the jaw, thus appearing to be tooth pain. The most common areas include the temporomandibular joint (TMJ), ear pain, and even occasional heart problems.

### *Symptoms*

Toothache and jaw pain are common complaints. There may be severe pain to pressure, or to hot or cold stimuli. The pain may persist for longer than 15 seconds after the stimulus is removed. As the area of inflammation increases, the pain becomes more severe. It may radiate to the cheek, the ear, or the jaw. Other signs and symptoms that may lead you to seek care include the following:

- pain with chewing;
- hot or cold sensitivity;
- bleeding or discharge from around a tooth or gums;
- swelling around a tooth or swelling of your jaw;
- injury or trauma to the area.

These signs and symptoms may sometimes be associated with dental decay or gum disease (periodontal disease). Dental decay or an area of redness around the tooth's gum line may point to the source of pain. If you tap an infected tooth, it may make the pain more intense. This sign may point to the problem tooth even if the tooth appears normal.

A toothache needs to be differentiated from other sources of pain in the face. Sinusitis, ear or throat pain, or a TMJ injury may be confused with toothache. Pain from a deeper structure (called referred pain) may be passed along the nerve and be felt in the jaw or tooth.

### ***Exams and Tests***

A medical history and physical exam will usually indicate the appropriate diagnosis. Sometimes X-rays called Panorex views (panoramic X-rays of the teeth and jaw) are taken. Occasionally lab<sup>2</sup> evaluation including ECG<sup>3</sup> tracings of the heart will assist the doctor.

### ***Medical Treatment***

At the dentist's office fillings, pulling teeth or other procedures may be performed as required. A tooth extraction will be the most likely procedure with a baby tooth. On permanent teeth if the problem is severe, root canals and crown procedures are generally performed.

An antibiotic will usually be prescribed if a fever or swelling of the jaw is present. Medical procedures are generally done in stages, with pain and infection being cared for immediately, and pain and infection being performed at a later time (weeks to months). In some cases, the doctor may try an injection around the tooth for pain control.

If causes other than the teeth or jaw are responsible for the pain, management will be according to the condition.

1. to radiate — радировать, отдавать                      2. lab — laboratory  
3. ECG — electrocardiogram

## **TEST**

### **I True and False Statements**

1. Toothache or tooth pain is caused when the nerve root of a tooth is irritated.  
a. *True*                      b. *False*
2. The larger the area of inflammation is, the more intense the pain becomes.  
a. *True*                      b. *False*



3. If the cause of toothache is something other than a dental or jaw problem, the doctor may prescribe medications directed to the problem.  
*a. True                      b. False*

## **II Multiple Choice Test**

1. Referred pain from what part of the body does not cause symptoms of toothache?  
*a. the jaw*  
*b. the heart*  
*c. the eye*  
*d. the ear*
2. Sometimes tooth pain may become more severe and radiate ... .  
*a. to the shoulder*  
*b. to the cheek, the ear, or the jaw*  
*c. to the back*
3. Nothing is said in the text that toothache can be accompanied by ... .  
*a. pain with chewing*  
*b. hot or cold sensitivity.*  
*c. hearing loss*  
*d. swelling around a tooth or swelling of your jaw.*
4. If pain originates from other area and radiates to the jaw, thus appearing to be tooth pain, it is called ... .  
*a. associated pain*  
*b. referred pain*  
*c. radiated pain*
5. What cannot pulpitis be caused by?  
*a. TMJ injury*  
*b. dental trauma*  
*c. dental cavity and infection*
6. Tapping can help the dentist reveal an infected tooth because ... .  
*a. it decreases the pain*  
*b. it reveals a deeper infection*  
*c. it makes the pain more intense*
7. High temperature and swelling in the gums or face require ... .  
*a. a tooth extraction*  
*b. antibiotic treatment*  
*c. a course of physiotherapy*
8. Toothache management must begin with ... .  
*a. pain and infection control*  
*b. reconstructive procedures*  
*c. injections around the tooth*

## **III Answer the questions**

1. How does toothache occur? What can it be confused with?
2. What signs may point to the source of pain?
3. What management does toothache require?

## **IV Explain using information of the text**

1. Explain why sometimes patients complaining of toothache are made an ECG examination.
2. Explain how the patient with toothache must be examined to make the appropriate diagnosis.

## WISDOM TEETH

**Wisdom teeth** (or **third molars**) are the final teeth to develop. Most of us have four wisdom teeth, one in each corner of the mouth. They usually emerge during our late teens or early twenties. They are commonly extracted when they affect other teeth. It is possible that wisdom teeth were useful when it was common for humans to lose several teeth to decay by the age when they appear.



They are generally thought to be called wisdom teeth because they appear so late — much later than the other teeth, at an age when people are supposedly wiser than as a child, when the other teeth erupt. The English *wisdom tooth* is derived from Latin *dens sapientiae*.

Occasionally, wisdom teeth become *entrapped* or *impacted* in the jawbone and cause crowding, displacement, decay, infection or gum disease.

Impacted wisdom teeth fall into one of several categories. *Mesioangular impaction* is the most common form (43 %), and means the tooth is angled forward, towards the front of the mouth. *Vertical impaction* (38 %) occurs when the formed tooth does not erupt fully through the gum line. *Distoangular impaction* (6 %) means the tooth is angled backward, towards the rear of the mouth. And finally, *horizontal impaction* (3 %) is the least common form, which occurs when the tooth is angled fully ninety degrees forward, growing into the roots of the second molar.

Impacted wisdom teeth may also be categorized on whether they are still completely encased in the jawbone. If it is completely encased in the jawbone, it is a *bony impaction*. If the wisdom tooth has erupted out of the jawbone but not through the gumline, it is called a *soft tissue impaction*.

Typically distoangular impactions are the easiest to extract in the maxilla and most difficult to extract in the mandible, while mesioangular impactions are the most difficult to extract in the maxilla and easiest to extract in the mandible.

Wisdom teeth are extracted for two general reasons: either the wisdom teeth have already become impacted, or the wisdom teeth could potentially become problematic if not extracted.

Potential problems caused by the presence of properly grown-in wisdom teeth include infections caused by food particles easily trapped in the jaw area

behind the wisdom teeth where regular brushing and flossing is difficult and not effective. Such infections may be frequent, and cause considerable pain and medical danger.

Another reason to have a wisdom tooth removed if the tooth has grown in improperly, causing the tongue to brush up against it. The tongue can tolerate it for a limited time, until it causes a painful sensation, to the point where the constant pain can numb the tongue affected, and the area around it (part of the lips, and the cheek).

Also, it is a wise choice to have them removed if undergoing extensive orthodontic work because once the teeth have come in they could inflict some damage on expensive straightening.

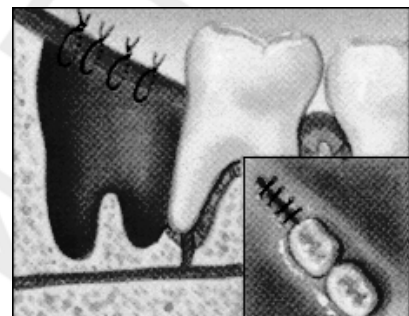
Wisdom tooth surgery is performed, usually under local anaesthesia.

**Procedure:**

An incision is made and the overlying bone is removed, exposing the crown of the impacted tooth.

The tooth is extracted whole, or surgically sectioned. The site is then closed with sutures.

The extraction of wisdom teeth can be a difficult surgical procedure, and should only be performed by dental professionals with proper training and experience performing such extractions. The precise reasons why an individual's wisdom teeth need to be extracted should be explained to them by their dentist, after an examination which almost certainly will need to include X-rays.



**TEST**

**I True and False Statements**

1. Wisdom teeth are generally thought to be called so, because people who have them appear to be cleverer than those without them.  
*a. True                      b. False*
2. Impacted wisdom teeth can grow in many different directions — horizontally, vertically, or at an angle.  
*a. True                      b. False*
3. A wisdom tooth is extracted to correct an actual problem or to prevent problems that may come up in the future.  
*a. True                      b. False*

**II Multiple Choice Test**

1. Wisdom teeth (or third molars) ...  
*a. develop for twenty hours.*  
*b. are the last teeth to be extracted.*  
*c. are the last teeth to erupt.*
2. The most rare form of impacted wisdom teeth is ...

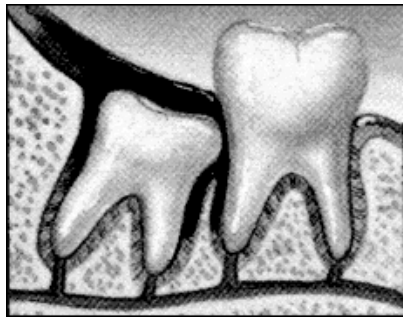
- a. mesioangular impaction*
  - b. vertical impaction*
  - c. distoangular impaction*
  - d. horizontal impaction*
3. What form of wisdom tooth impaction occurs more often?
    - a. mesioangular impaction*
    - b. vertical impaction*
    - c. distoangular impaction*
    - d. horizontal impaction*
  4. If the wisdom tooth has erupted neither through the gumline nor out of the jawbone ...
    - a. it is called a soft tissue impaction .*
    - b. it is called a bony impaction.*
  5. Soft tissue impaction means that ...
    - a. having erupted the tooth begins to irritate the soft tissue of the oral cavity.*
    - b. the tooth can not erupt through the gum.*
    - c. none of the above mentioned.*
  6. Problems that may be encountered with properly grown-in wisdom teeth include...
    - a. crowding and displacement*
    - b. decay, infection or gum disease*
    - c. all of the above mentioned*
  7. Presurgical procedures include ...
    - a. radiotherapy*
    - b. radiography*
    - c. tartar scaling*
    - d. none of the above*
  8. Infection can develop in case of ...
    - a. soft tissue impaction*
    - b. bony impaction*
    - c. fully erupted tooth*

### **III Answer the questions**

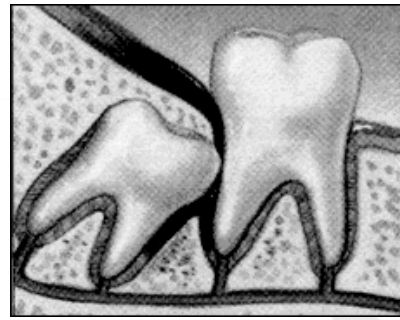
1. Why are third molars generally called wisdom teeth?
2. What problems can an erupted wisdom tooth cause, and how do they develop?
3. Why are wisdom teeth removed in case of extensive orthodontic treatment?

### **IV Explain using information of the text**

1. Some people, even dentists, consider wisdom teeth to be a nature's mistake. Use the facts of the text to explain their point of view.
2. Look at the pictures and decide what type of impaction they are and how they can be corrected.



A



B

## DENTAL DISEASE CAUSES OVERVIEW

Dental diseases are linked to microorganisms that produce toxic chemicals to destroy dental tissue. The oral cavity is full of different kinds of bacteria that use the resources in the mouth to survive. The bacteria have three classifications. They are either pathogenic, beneficial or neutral. When the oral cavity is dominated by pathogenic bacteria, there is dental disease. When the oral cavity is dominated by beneficial bacteria, there is good dental health. The neutrals, which make up over 90 % of the bacteria, follow whichever kind of bacteria dominates the environment. When there are no dominant bacteria, the oral cavity is ecologically balanced, which means that pathogens can not do damage. The two bacteria neutralize each other. When the balance is shifted or ecologically shifted toward the side of pathogenic bacteria, there becomes a good chance of dental disease. Treatment of dental disease includes reversing the balance to shift the environment to favour beneficial bacteria.

**Tooth decay:** Tooth decay is due to excess amount of acid. The disease is associated with sugar bugs. Sugar bugs are adult bacteria that thrive on white refined sugar. The key pathogen has been identified as *Streptococcus mutans*. Remains of white sugar sweets attach in between the teeth and in the grooves of the teeth. The sugar bugs attack the remaining particles because they have the enzymes to digest the white sugar to use for energy. The sugar bugs release by-products of strong acids that eat through the enamel of the teeth. The sugar bugs dominate the environment and influence other remaining bacteria to become allies<sup>1</sup> in decaying the teeth. The strong acids are not the right environment for enteric bacteria and they seem to disappear. They either die or they go back to being spores.

**Gingivitis:** Gingivitis occurs in a mild alkaline to mild acid environment. The main bacteria linked to the disease are pathogenic *enteric bacteria*. Pathogenic enteric bacteria are gram negative bacilli that are the main food pathogens. They release as by-products toxic fumes that destroy epithelial cells in the oral cavity. Enteric bacteria have thin cell walls so that the toxins cause acid bacteria to disappear. Acid bacteria have thick cell walls and the toxins of

enteric bacteria either cause them to die or revert back to a spore form. The spores of bacteria are found in all food substances. Enteric bacteria start to grow when the food starts to spoil digesting it for nutrients and energy. The symptoms of gingivitis show that the immune system is at work. The swelling and bleeding are due to the immune system sending the body scavengers to destroy the bacteria.

**Periodontal disease:** The oral environment is alkaline. The bacteria begin with the same bacteria that are associated with gingivitis, the enteric bacteria. As the environment becomes more alkaline, the enteric bacteria die or go back to their spore form. The new bacteria that grow may be a primitive spore form of what may be called plaque bacteria. Plaque bacteria grow to form crystals that attach to the teeth. The crystals destroy the ligaments that attach the bone to the teeth. This destruction process results in pockets. The pockets trap more food particles to keep the disease progressing. Eventually all the available minerals are used up and the plaque bacteria start to use the minerals from bone. Treatment for periodontal disease is scaling by the dentist and changing the oral environment to become more acid.

**Dental plaque** is a calcium carbonate and calcium phosphate crystal formation that occurs when the pH of saliva and blood in the oral cavity becomes too alkaline. The alkaline environment produces an electromagnetic field around plaque bacteria that attracts calcium to its surface. Calcium continues to build until the plaque bacteria become a magnet to attract other plaque bacteria to its cell wall. The plaque bacteria continue to pile on top of each other until they form a colony. The colony becomes a large magnet to deplete<sup>2</sup> all the calcium and phosphate in saliva and blood in the oral cavity. The body replenishes<sup>3</sup> the lost calcium and phosphate by removing them from the underlying bone that supports the teeth. The calcium and phosphate that attaches to the colony of plaque bacteria form a shell of calcium apatite crystal. The crystal is what is called dental plaque.

**Mouth odour:** Mouth odour, better known as bad breath or halitosis is due to enteric bacteria. The oral environment is mild alkaline to mild acid. The bacteria are found on the tongue, under the tongue and hiding in crevices under the gums. Food particles lodge under the gums and in between teeth where enteric bacteria digest the particles to release odours.

1. allies — союзники
2. to deplete — истощать
3. to replenish — пополнять

## TEST

### I True and False Statements

1. Toxic chemicals produced by microorganisms destroy dental tissue and so provoke dental diseases.  
a. True                      b. False
2. If the oral cavity is full of different kinds of bacteria dental diseases develop, but if the oral cavity is free from bacteria no disease will occur.  
a. True                      b. False
3. Plaque bacteria need minerals to form crystals that attach to the teeth, and when all the available minerals are used up the plaque bacteria start to use the minerals from bone.  
a. True                      b. False

## II Multiple Choice Test

1. What type of bacteria is the most numerous?  
a. *pathogenic bacteria*  
b. *beneficial bacteria*  
c. *neutral bacteria*
2. What dental disease is due to excess amount of acid?  
a. *tooth decay*  
b. *periodontal disease*  
c. *dental plaque*  
d. *mouth odour*
3. Remains of white sugar sweets attached in between the teeth and in the grooves of the teeth ... .  
a. *create the ecologically balanced environment*  
b. *serve as a resource for sugar bugs to digest them for nutrients and energy*  
c. *make sugar bugs disappear*
4. The sugar bugs dominating the oral environment influence other remaining bacteria in such a way that ... .  
a. *they either die or go back to being spores*  
b. *they seem to disappear*  
c. *they also begin decaying the teeth*
5. By-products released by pathogenic enteric bacteria ... .  
a. *eat through the enamel of the teeth*  
b. *form crystals that attach to the teeth*  
c. *destroy epithelial cells in the oral cavity*
6. Spoiled food particles are necessary for nutrition of ... .  
a. *streptococcus mutans, causative agents of tooth decay*  
b. *enteric bacteria, causative agents of gingivitis and mouth odour*  
c. *acid bacteria*
7. An electromagnetic field around plaque bacteria is formed when ... .  
a. *the oral environment is mild alkaline to mild acid*  
b. *the oral environment is mild alkaline*  
c. *the oral environment is very alkaline*
8. What dental disorder is not due to enteric bacteria?  
a. *tooth decay*  
b. *gingivitis*  
c. *mouth odour*

### **III Answer the questions**

1. How does tooth decay develop?
2. How do periodontal diseases develop?
3. What provokes bad breath and dental plaque?

### **IV Explain using information of the text**

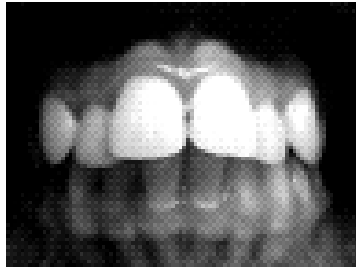
1. Speak about the association between microorganisms and dental diseases.
2. Dwell on treatment of dental diseases and its effects.

Репозиторий БГМУ

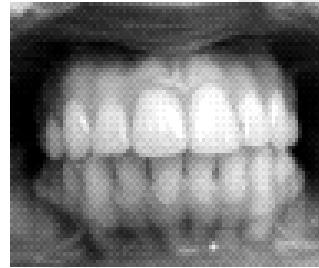


**DENTAL BRACES AND RETAINERS**

Throughout a lifetime, crooked, crowded teeth can cause health problems. Orthodontics is the science of the correction of irregular bite and/or the proper alignment of teeth. The success of this treatment depends on the accuracy of the diagnosis, carefully designed and correctly followed plan of treatment and precise placement of the corrective devices.



Before treatment

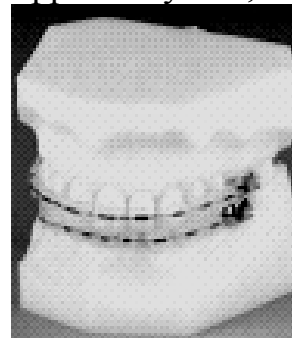
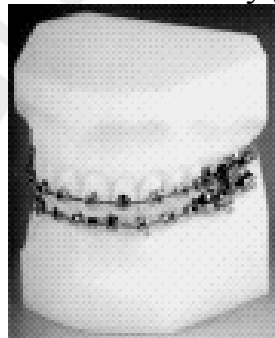


After treatment

Most people are mistaken in thinking that the bite can be corrected only in childhood or adolescence. This is not so — the bite of adults can be corrected as well. Principal orthodontic devices consist of various braces and bracket and removable appliances. The braces are detachable devices, which, depending on their design, can be worn either only at night or 24 hours a day. They can perform different functions, including changing the width of the palate, the shape of the jawbone, alignment of teeth etc.

The bracket system consists of a set of numerous small fasteners, which are attached to the teeth and have slots for a metal wire. Initially, the wire is bent to conform to the shape of the teeth. After the wire is attached to the teeth, it tries to return to its original shape, in this way forcing the teeth to align to a straight line. From time to time, the patient visits his dentist to change the wire. As a rule, a bracket system is «worn» for 1–2 years to achieve best results.

In the process of getting used to the bracket system, the outward appearance of the device becomes extremely important to the wearer. Besides selecting from a wide choice of various traditional metal brackets, a transparent sapphire bracket system, made of artificially grown sapphire crystals, is also offered.



Younger patients often find it fun choosing the colour of the device, ranging from transparent to multi-coloured. And if the child likes, it could contain a toy animal or toy car. This way, the device becomes a favourite decoration, and the child is more likely to take care of it and follow all the doctor's recommendations. That is how orthodontic treatment is made effective and fun.

Because of plaque patients with braces need to be vigilant about dental hygiene during teeth treatment. People may develop swollen gums, bad breath, scarred and discolored teeth, and even cavities, if plaque is left around braces and on teeth. Best way — to remove plaque regularly during treatment.

## TEST

### I True and False Statements

1. According to the text because children's jaws and teeth are still developing, orthodontics deals only with the young children or adolescents.  
a. True                      b. False
2. Orthodontic treatment is rather prolonged and can take several years.  
a. True                      b. False
3. Patients with braces can forget about paying special attention to keeping braces, teeth and gums clean during all period of teeth treatment.  
a. True                      b. False

### II Multiple Choice Test

1. What is mentioned in the article as a contributing factor of the successful orthodontic treatment?  
a. an accurate diagnosis  
b. a precise placement of the corrective device  
c. a correctly designed and strictly followed plan of treatment  
d. all of the above
2. What orthodontic device is detachable?  
a. bracket  
b. braces  
c. none of the above
3. It is not true to the fact that some braces can be worn ... .  
a. round the clock  
b. some days a week  
c. only at night
4. What device not always requires to be worn all day round?  
a. bracket  
b. braces
5. The bracket system does not include ... .  
a. small fasteners with slots  
b. a set of numerous removable appliances

- c. a metal wire*
6. What benefits does the sapphire bracket system have?
    - a. force on the teeth increases and they become aligned in a shorter period of time*
    - b. it can change the width of the palate*
    - c. it improves the outward appearance of the device*
  7. What can help make a child to follow all the doctor's recommendations?
    - a. he or she receives a toy animal or toy car*
    - b. dental braces can be somehow decorated*
    - c. nothing*
  8. Why may patients undergoing orthodontic treatment develop swollen gums, discolored teeth and cavities?
    - a. because they forget to remove devices at night*
    - b. because they do not visit their orthodontist regularly*
    - c. because they do not remove plaque properly during treatment*

### III Answer the questions

1. What are the targets of orthodontic treatment? What does its success depend on?
2. What types of orthodontic devices exist?
3. How must orthodontic devices be taken care of? Why?

### IV Explain using information of the text

1. Explain how aligning of the teeth to a straight line is achieved in the bracket system.
2. The outward appearance of the orthodontic device is very important to the wearer. Speak about the existing ways to please patients' demands.

## ORTHODONTIC TREATMENT BASED ON MODERN COMPUTER TECHNOLOGIES



For a long time doctors-orthodontists and patients dreamed of the opportunity to change the bite unnoticeably for people around. The latest trend in today's Dental Health Check is lingual bracket systems, which are adjusted on the inner (lingual) surface of teeth and not visible from the outside. In older lingual braces, large brackets often caused speech problems. Dentists also spend hours bending the wires by hand. And so that has always been a challenge to get over.

With the lingual braces, small, computer-designed brackets mold to fit each individual tooth. Robot technology, not the orthodontist, bends the custom wires which are changed less frequently than conventional wires.

A new method of Align-splint orthodontic treatment (Invisalign) for adults without brackets was developed. This method consists of change transparent splints, which repeat the teeth form, putting the teeth into position demand.



These «clear» treatment retainers are most suitable for mildly crowded orthodontic cases with good profile (less than 3 mm of crowding) that normally can be treated with removable retainers. Rotations of the posterior teeth tend to be difficult to resolve. Patient will need from 12 to 48 splints, depending on a kind of bite's anomaly and he must wear each splint during 2 weeks, about 22 hours a day.

The advantage of bite correction with Align-splint is that you don't feel uncomfortable when speaking or eating as they must be removed for eating. In addition, the aligners are marketed as being more comfortable than metal braces as they may not irritate the soft tissue of the mouth as much as traditional ones.

An orthodontist begins by taking dental impressions, X-rays and photographs of the patient's teeth. The impressions are put through a CT scan from which a computer creates a three-dimensional model. Technicians then individualize the teeth in the computer model and move them to their final position as prescribed by the orthodontist. Custom software then simulates the movement of the teeth in stages. The orthodontist reviews the simulation and approves the treatment. Once approved, a plastic resin aligner is manufactured for each stage of the computer simulation.

With Invisalign aligners and lingual braces, computer technology designs and makes the appliances. In many cases, this translates into more efficient and quicker treatment.

## TEST

### I True and False Statements

1. Unlike traditional dental appliances, most patients are actually motivated to wear lingual brackets and Invisalign aligners because they give their beneficial effect in a very short period of time.  
*a. True                      b. False*
2. Invisalign is a method of orthodontic therapy promoted as an «invisible» way of straightening teeth without using traditional braces.  
*a. True                      b. False*
3. Modern computer technologies give the opportunity to create and analyze models of jaws in 3D image.  
*a. True                      b. False*

### II Multiple Choice Test

1. Unlike the traditional bracket system lingual brackets ... .  
*a. can irritate the tongue*  
*b. are smaller and interfere less with speech*  
*c. are not visible from the outside*

2. Lingual brackets are unnoticeable because ... .
  - a. *the device is transparent*
  - b. *all the hardware hides behind the teeth*
  - c. *the device is very small*
3. Just as the name suggests, lingual braces are adjusted to ... .
  - a. *on the tongue*
  - b. *on the lingual surface of teeth*
4. According to the article the patient receives a new custom-fabricated Invisalign aligner ... .
  - a. *every two weeks*
  - b. *every twenty two days*
  - c. *each time the teeth shift*
5. Invisalign aligners are designed to ... particular teeth into place.
  - a. *graft*
  - b. *shift*
  - c. *replace*
6. Just as the name suggests, Invisalign aligners consist of ... plastic, allowing to conceal one's treatment from others.
  - a. *tooth-colored*
  - b. *flexible*
  - c. *clear*
7. One is a candidate for Invisalign treatment if ... .
  - a. *he or she has periodontal or gum problems*
  - b. *crowding or spacing is minimal*
  - c. *some complex movements have to be performed*
8. When must an Align-splint be removed?
  - a. *when sleeping*
  - b. *when eating*
  - c. *when speaking*

### **III Answer the questions**

1. What are the advantages of modern lingual bracket system over older ones?
2. What are the advantages of Invisalign aligners and lingual bracket systems over traditional ones?
3. What stages does production of Invisalign aligners consist of?

### **IV Explain using information of the text**

1. Explain how modern computer technologies are used in Orthodontics.
2. If you need to correct your bite which device would you choose: a lingual bracket system, Invisalign aligners or traditional ones. Explain your choice.

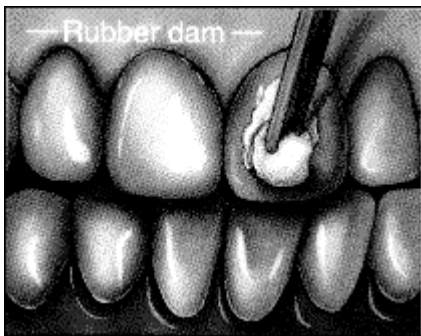
## **TOOTH BLEACHING**

Just as people have different skin and hair colour, people also have different tooth colour. Some teeth are more yellow, and some teeth yellow with aging. Natural tooth colour can be discoloured by a number of causes. The surface of the tooth can be stained by tobacco, certain foods and beverages

such as coffee, tea and berries, and by deposits of calculus or tartar. Discoloration of the tooth internally can result from aging, injury, excessive fluoride, certain illnesses and taking the antibiotic tetracycline during early childhood. Although bleaching successfully lightens most discolorations, certain types (such as those caused by tetracycline) are more difficult to remove.

### **Procedures**

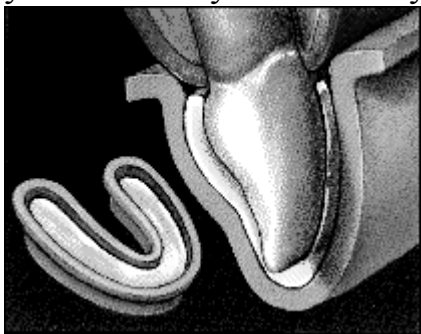
There are two types of bleaching procedures. Bleaching may be done completely in the dental office (known as *chairside bleaching*) or a system may be dispensed by the dentist for the patient to use at home (*nightguard bleaching*).



The procedure that is done in the dental office takes from 30 minutes to one hour per visit. It is not uncommon for the teeth to become slightly sensitive following bleaching treatments.

To protect the mouth, a gel-like substance is applied to the gums and a rubber «shield» is placed around the necks of the teeth. A chemical solution (the oxidizing agent) is then «painted» on the teeth. A special light may be used at five-minute intervals to help activate the agent.

With some chair-side techniques, you should avoid stain-causing beverages (such as tea and coffee) for several days after the procedure, because your teeth may more readily absorb stains at that time.



With nightguard bleaching, an impression for a model of your teeth is made, and a custom-fitted mouthguard is made. A bleaching agent in the form of a bleaching gel is then prescribed. The gel is placed in a mouthguard and worn up to two hours daily or at night for about two weeks. The amount of time the nightguard is worn and the duration may vary according to your

needs and your dentist's recommendations.

Your dentist will monitor the entire process of nightguard bleaching to assure its effectiveness and safety.

### **Restrictions**

Some people with certain dental conditions may not be good candidates for this type of bleaching. People with gum recession, for example, may have exposed root surfaces which are highly sensitive that could be further irritated by the ingredients in whiteners. In addition, these products are not recommended for habitual tobacco and alcohol users.

### ***Advantages of Bleaching***

The advantages of tooth bleaching over other procedures to whiten teeth are that it doesn't require any tooth structure to be removed and it is the most economical. Even teeth that have undergone root canal treatment can be easily whitened.

### ***Results***

To get the best results, teeth may be bleached a shade lighter than desired since they will tend to darken slightly with time. Most bleaching lasts one to three years, although in some situations it may be longer.

Over-the-counter products which are self-administered are not recommended. Although they may appear to cost less, bleaching treatments should only be done under the supervision of a dentist following a proper examination and diagnosis of the discoloured teeth.

## **TEST**

### **I True and False Statements**

1. Bleaching is a dental procedure of discoloration of certain types of tooth stains.  
*a. True                      b. False*
2. Bleaching can be performed either in the dental office by the dentist, or the patient can do that at home.  
*a. True                      b. False*
3. Bleaching have been proven to be a safe and effective stomatological procedure that can be indicated to any patient without restrictions.  
*a. True                      b. False*

### **II Multiple Choice Test**

1. The teeth can become slightly ... following bleaching treatment.  
*a. loose*  
*b. sensitive*  
*c. coloured*
2. A synonymic term for «tooth bleaching» is ... .  
*a. tooth cleaning*  
*b. tooth clenching*  
*c. tooth whitening*
3. According to the text tooth colour depends on ... .  
*a. skin colour*  
*b. hair colour*  
*c. non of the above*
4. Dentists do not recommend self-administered over-the-counter bleaching remedies because ... .  
*a. they are cheaper than chairside or nightguard bleaching*  
*b. they are not effective enough*  
*c. it should be done under the dentist's supervision only*

5. Bleaching which is done completely in the dental office is known as ... .
  - a. *chairside bleaching*
  - b. *nightguard bleaching*
  - c. *dentist-administered bleaching*
6. What is not mentioned in the text as a cause of tooth discoloration?
  - a. *aging*
  - b. *injury*
  - c. *certain illnesses during early childhood*
  - d. *excessive exposure to the sun light*
7. For what type of bleaching mouthgaourd is made?
  - a. *chairside bleaching*
  - b. *nightguard bleaching*
8. What type of tooth discoloration is rather difficult to remove?
  - a. *caused by aging*
  - b. *caused by certain foods and beverages*
  - c. *caused by tetracycline*
  - d. *none of the above*

### **III Answer the questions**

1. What factors contribute to tooth discolouration and staining?
2. What are the advantages of bleaching over other procedures to whiten teeth?
3. Why should patients avoid some types of beverages after the bleaching procedure has been over?

### **IV Explain using information of the text**

1. Explain what bleaching is. Speak about its purposes, existing procedures and advantages over other whitening procedures.
2. Use information from the text to explain why self-administered over-the-counter remedies are not recommended for bleaching.

## **DENTAL LASER OVERVIEW**

Since the 1960s, lasers have been used on teeth and gums and because of technological advancements, lasers are now used globally. Laser dental treatments ensure low-power, meaning the device is gentle on the mouth.

Laser dental treatment involves generating a beam<sup>1</sup> of light into the mouth. The light enables to eliminate infected areas with accuracy. Sterilizing the affected area, the beam of light also closes off blood vessels. In most cases, patients rarely need anesthesia.

### ***Benefits of Laser Dental Treatment***

- Less noise than drilling
- Faster healing process
- Decreased risk of infection
- Less need for anesthesia



- Less need for multiple dental appointments
- Decreased sensitivity

Most commonly used for removing old composite fillings and fumigating infected root canals, lasers can also be used for crown lengthening, bone shaping and oral surgery.

### ***Different Types of Dental Lasers Used***

Many different types of lasers are used in dentistry. The following lasers can be used in high powers, from a fraction of a watt to 25 watts or even more.

1) The Er:YAG<sup>2</sup> laser possesses the potential of replacing the drill. This laser is also used to alter pigmentation in the gingival tissues, providing the patient with pink gums. This laser is commonly used to prepare the patient for a cavity filling.

2) The Carbon Dioxide laser can be used to perform gingivectomy and to remove small tumors. As a laser that does not require local anesthesia, it poses no discomfort for the patient and is practically a bloodless procedure.

3) The Argon laser is used in minor surgery. Its gas laser releases blue-green light through a fiberoptic cable to a handpiece or microscope.

4) The Nd: YAG<sup>3</sup> is used in tissue retraction, endodontics and oral surgery. This laser usually does not require anesthesia. For procedures regarding the gingival pockets, your dentist will insert the fiber between the gingival tissue and the tooth to sterilize and stimulate the tissue, causing the gingival tissue to adhere to the neck.

5) The diode laser — introduced in the late 1990s — has been effective for oral surgery and endodontic treatment. This laser also helps treat oral cavity disease and corrects aesthetic flaws. As a compact laser, the diode is used for soft tissue procedures.

6) Low level lasers — less well-known — are smaller and less expensive. Sometimes referred to as «soft lasers» the therapy performed by these lasers is called «low level laser therapy». Low level lasers improve blood circulation and regenerate tissues.

1. a beam — луч

2. Er:YAG — Erbium: yttriumaluminum-garnet

3. Nd:YAG — Neodymium: yttriumaluminum-garnet

## **TEST**

### **I True and False Statements**

1. Laser dental treatments ensure high-power, meaning the device is gentle on the mouth.
  - a. True
  - b. False.
2. During dental laser treatment patients usually need anesthesia.
  - a. True
  - b. False.

3. For many intraoral soft tissue surgical procedures, the laser is a viable alternative to the scalpel.  
a. True                      b. False.

## II Multiple Choice Test

- When did lasers begin to be used in dentistry?  
a. long before 1960s  
b. in 1960  
c. not until the 1960s
- ... , the beam of light also closes off blood vessels.  
a. Sterilizing the oral cavity  
b. Sterilizing the whole area  
c. Sterilizing the affected area
- ... is used to alter pigmentation ... , providing the patient with pink gums.  
a. Er:YAG laser... in the gingival tissues  
b. Nd:YAG laser... in the gingival tissues  
c. Er:YAG laser... in the soft tissues
- What type of laser helps the dentist to remove small tumors?  
a. The Argon laser  
b. Nd:YAG  
c. The Carbon Dioxide laser
- Gas laser releases ... through a fiberoptic cable to a handpiece or microscope.  
a. bright-yellow light  
b. blue-green light  
c. a kind of light
- Nd:YAG is used in ... .  
a. gingivectomy  
b. preparation the patient for a cavity filling  
c. tissue retraction, endodontics and oral surgery.
- What laser corrects aesthetic flaws?  
a. The diode laser  
b. Low level lasers  
c. The Argon laser
- Low level lasers — ... — are smaller and less expensive.  
a. well-known  
b. less well-known  
c. the most popular ones

## III Answer the questions

- When can lasers be used?
- Where is the Argon laser used?
- How do you understand the term «low level laser therapy»?

## IV Explain using information of the text

- Dwell on the benefits of Laser Dental Treatment.
- Explain the diode laser using.

## CLINICAL APPLICATION OF DENTAL LASERS

### *Difference between Soft Tissue Laser and Hard Tissue Dental Laser*

Soft tissue lasers are used for intra-oral biopsy treatments. These treatments include removal of fibromas, wounds and oral papillomas. Soft tissue lasers can also be used to shave gum tissue and to help with root planning.

The soft tissue laser, celebrated as a useful addition to soft tissue therapies, enables the dentist to treat the patient with extreme accuracy. The light vaporizes matter, delivering a narrow beam and promising precision.

Hard tissue lasers are used to treat minor or average sized cavities, bone surgery, bone incision, bone shaping and crown lengthening. Combined with water spray and laser energy, water-containing tissue — such as the tooth structure — absorbs that energy.

Hard tissue lasers are predominantly used for caries removal, cavity preparation and laser etching.

### *Gum Contouring with Dental Lasers to fix Gummy Smiles*

Some people possess teeth that simply look too «short» for their gums, creating what is commonly called a «gummy» smile. Gum contouring can fix that problem by removing extra gum tissue to expose more of the crown of the tooth.

Using a diode laser, your dentist can accurately sculpt your gum line, crafting the right fraction between gum tissue and tooth surface. First, your dentist applies a local anaesthetic to the gums and removes the extra gum tissue. Then, your dentist will use the laser to reshape the edges of your gums that form a smile. The laser vaporizes and closes the excess gum tissue, avoiding cutting and bleeding.

Gum contouring generates a more balanced smile with an even gum line. When your gums are well-contoured, they look healthy, giving you a more attractive smile.

Gum contouring with the diode laser usually takes about 15 to 30 minutes if only a small quantity of tissue needs to be removed. For larger quantities, gum surgery called crown lengthening is required and is accomplished in one to two hours. This surgery involves a four to six week healing period.

Once your dentist reshapes your gum line, you can also receive porcelain veneers to further improve your appearance.

If your dentist trims too much gum tissue, the mouth may fail to heal properly, leading to swelling and more treatment.

## TEST

### I True and False Statements

1. There are two types of dental lasers: soft tissue and hard tissue lasers.  
*a. True                      b. False*
2. Soft tissue lasers are called so because they are made of soft substances, and hard tissue lasers receive their name from hard substances they are made of.  
*a. True                      b. False*
3. Gum contouring ranges in time depending on the quantity of tissue that needs to be removed.  
*a. True                      b. False*

### II Multiple Choice Test

1. Soft tissue lasers can not be used for what procedures?  
*a. removal of oral papillomas*  
*b. removal of fibromas*  
*c. bone shaping*  
*d. root planning*
2. Hard tissue lasers can not be used for what procedures?  
*a. shaving gum tissue*  
*b. incision and shaping of bone*  
*c. crown lengthening*  
*d. cavity preparation*
3. How do lasers work?  
*a. Lasers remove tissues mechanically, but enable dentists to do very precise work, being very tiny.*  
*b. Lasers vaporize tissues without any physical contact.*
4. What is commonly called a «gummy» smile?  
*a. when teeth are shorter than gums*  
*b. when teeth look too «small» for their gums*  
*c. when fraction between gum tissue and tooth surface is not right*
5. What does gum contouring consist in?  
*a. crowns are lengthened using bonding procedure, making gums look shorter*  
*b. some gum tissue is removed exposing more of the crown of the tooth*
6. When is crown lengthening required?  
*a. when a small quantity of tissue needs to be removed*  
*b. when a rather large quantity of tissue needs to be removed*  
*c. when a crown needs to be lengthen*
7. Which procedure is accomplished in a shorter period of time?  
*a. gum contouring*  
*b. crown lengthening*
8. The reshaped gums may fail to heal properly and swell if ... .  
*a. infection is introduced during surgery*  
*b. porcelain veneers are placed*  
*c. too much tissue is removed*

### III Answer the questions

1. How are lasers used in dentistry?
2. What is the difference between crown lengthening and gum contouring?
3. What complications may arise in case of gum contouring? Why?

### IV Explain using information of the text

1. Dwell on the benefits of dental lasers.
2. Explain how dental lasers help give a more attractive smile.

## DENTURES

Dentures can be defined as a set of artificial teeth, which are used when a patient has lost real teeth on the mandibular arch, the maxillary arch, or both.

Patients can become entirely edentulous (without teeth) due to severe malnutrition, genetic defects, ineffective oral hygiene or trauma.

Dentures can help give the edentulous patient better masticatory (chewing) abilities, as well as enhance their aesthetic appeal<sup>1</sup> by providing the illusion of having natural teeth, providing support for their lips and cheeks, and correcting the collapsed appearance commonly seen between the nose and the chin.

*Removable partial dentures* are for patients who are missing some of their teeth on a particular arch. *Fixed partial dentures*, better known as permanent bridges, are made from crowns that are fitted on the remaining teeth to act as abutments<sup>2</sup> and pontics<sup>3</sup> made from materials to resemble the missing teeth. Fixed bridges are more expensive than removable appliances but are more stable.

Conversely, *complete dentures or full dentures* are worn in patients who are missing all their teeth in an arch (i.e. the maxillary or mandibular arch).

**Problems** with dentures include the fact that patients are not used to having something in their mouth that is not food. The brain senses this appliance as «food» and sends messages to the salivary glands to produce more saliva and to secrete it at a higher rate. New dentures will also be the inevitable cause of sore spots as they rub and press on the mucosa. Gagging<sup>4</sup> is another problem encountered by some patients. At times, this may be due to a denture that is too loose fitting. At times, gagging may also be attributed to psychological denial of the denture and is the most difficult to treat since it is out of the dentist's control. Sometimes there could be a gingivitis under the full dentures, which is caused by accumulation of dental plaque.

Another problem with dentures is keeping them in place. There are three rules governing the existence of removable oral appliances: support, stability and retention.

**Support** is the principle that describes how well the underlying mucosa (oral tissues, including gums and the vestibules) keeps the denture from moving in the *vertical plane* towards the arch in question.

**Stability** is the principle that describes how well the denture base is prevented from moving in the *horizontal plane*, and thus from sliding side to side or front and back.

**Retention** is the principle that describes how well the denture is prevented from moving in the *vertical plane* in the opposite direction of insertion.

Some patients who believe they have «bad teeth» may think it is in their best interests to have all their teeth extracted and full dentures placed. However, statistics show that the majority of patients who actually receive this treatment later regret they did so. This is because full dentures have only 10 % of the chewing power of natural teeth, and it is difficult to get them fitted satisfactorily, particularly in the mandibular arch. Even if a patient retains one tooth, that will contribute to the denture's stability. However, retention of just one or two teeth in the upper jaw does not contribute much to the overall stability of a denture. It is thus advised that patients keep their natural teeth as long as possible, especially their lower teeth.

1. to enhance aesthetic appeal — добавить внешнюю привлекательность
2. abutment — опора
3. pontic — тело мостовидного протеза
4. gagging — рвотные позывы

## TEST

### I True and False Statements

1. Reasons for dentures are cosmetic, aesthetic and functional.  
*a. True                      b. False*
2. The majority of patients regret they did not replace their «bad teeth» by full dentures.  
*a. True                      b. False*
3. To keep the denture from moving in the vertical and horizontal plane is not enough to ensure its support, stability and retention.  
*a. True                      b. False*

### II Multiple-Choice Test

1. Dentures can be defined as ...  
*a. a set of teeth on the mandibular or/and maxillary arch.*  
*b. a set of artificial teeth which replace the natural ones on the mandibular or/and maxillary arch.*
2. The term «edentulous» means ...  
*a. with teeth.*  
*b. missing teeth.*  
*c. without teeth.*
3. What is not mention in the article as a cause of a complete tooth loss?  
*a. severe malnutrition*  
*b. effective oral hygiene*  
*c. genetic defects*  
*d. trauma*

4. What type of dentures is called permanent bridges?
  - a. *removable partial dentures*
  - b. *fixed partial dentures*
  - c. *complete dentures or full dentures*
5. Complete dentures or full dentures replace ...
  - a. *all the teeth in a dental arch.*
  - b. *some teeth missing in a dental arch.*
  - c. *none of the above*
6. What is not mentioned in the article as a problem associated with artificial dentures?
  - a. *excessive salivation*
  - b. *gingivitis*
  - c. *sore spots as dentures rub and press on the mucosa*
  - d. *mental disability*
7. What dentures have better stability?
  - a. *removable partial dentures*
  - b. *fixed partial dentures*
  - c. *complete dentures or full dentures*
8. It is true to the article that ... .
  - a. *only 10 % of people have full dentures.*
  - b. *only 10 % of full dentures are fitted satisfactorily.*
  - c. *full dentures fulfill their chewing functions only 10 % as good as natural teeth.*

### **III Answer the questions**

1. Why do people loose their teeth and even become entirely edentulous?
2. What are dentures, and what types of dentures exist?
3. What do the principles of stability, support and retention consist in?

### **IV Explain using information of the text**

1. Explain why such problems as excessive salivation, gingivitis, gagging and sore spots, associated with dentures, arise.
2. Use information of the article to prove that to keep natural teeth (at least some of them) as long as possible is very important.

## **WHO MAKES A GOOD CANDIDATE FOR IMPLANTS**

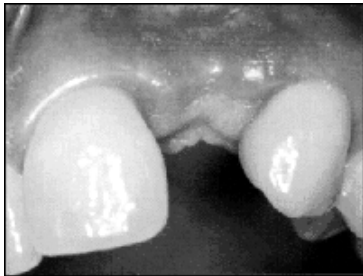
Tooth loss can have a far-reaching effect on your dental health and personal appearance. When you lose one or more teeth, your remaining teeth can drift out of position. This can lead to a change in the bite, the loss of additional teeth, decay and gum disease. Dental implants can be an effective method to replace one tooth or several teeth, providing their stable and secure replacement.

### ***How do dental implants work?***

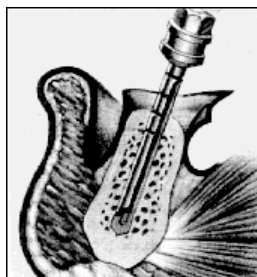
The oral cavity should be examined by both a restorative dentist and an oral surgeon before the decision to perform the dental implant procedure is made. The surgeon determines the jaws and gums condition while the dentist assesses the fit of the present dentures or the tooth gap. They may also take X-rays and/or computer images.

Factors which may affect the decision to use implants include diabetes and allergies, along with any medications the patient takes, alcohol and drug use, and smoking. Very few medical conditions actually rule out the use of dental implants. The health of the gums and oral tissues and the shape of the jaws are also important factors in the decision to use dental implants.

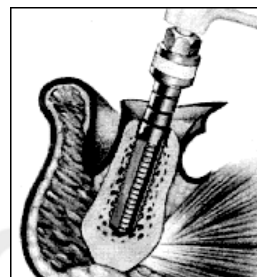
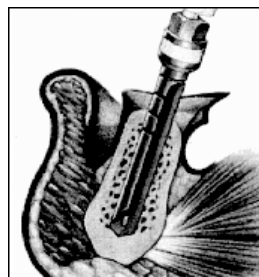
***Dental implantation is a three-stage process:***



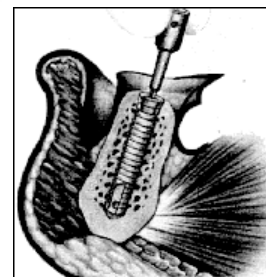
The first surgery places the implants under your gums, inside the jaw. You may be given a sedative as well as either general or local anaesthesia. After you are anesthetized, the surgeon will expose your jawbone and drill one or more precisely measured holes. When the bone grows in around the implants, they become firmly fixed. This is called biointegration or osseointegration. In order for osseointegration to occur, the implants must remain covered for four to six months.



Very gentle, low-speed drilling and extensive saline irrigation are used to minimize trauma to the delicate bone tissues.

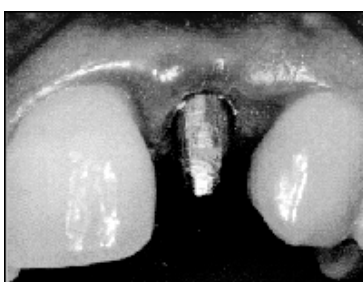


Threads are cut into the jaw bone.



The implant is placed and covered to heal.

After the healing period, a second, shorter surgery is performed to expose the implants and place abutments into the implant shafts<sup>1</sup>. The abutments will be used to hold the new teeth.



The second stage normally only requires a local anaesthetic. When the anaesthetic takes effect, the dentist makes an incision to expose the tops of the anchored fixtures. All tissue remnants are cleaned from fixtures, and the surgeon confirms that all implants have completely osseointegrated. Occasionally, an implant does not osseointegrate and must be removed.

The titanium posts (abutments) are attached with screws<sup>2</sup> to the implants. X-Rays are then taken to check the condition of the osseointegrated implants and to confirm the exact seating of the abutment posts.

Sometimes your old denture can be fitted with a soft liner to fit over the abutments. This may be done by either the dentist or surgeon. At other times, smooth caps are placed over the implants for comfort until the gums



have completely healed. The final abutments are placed into the implants a few weeks later.

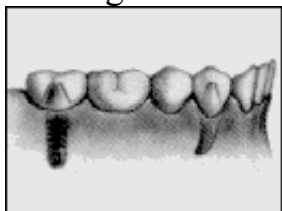


In the third and final phase, the restorative dentist creates and fits the replacement teeth to your mouth. This involves making impressions, bite registrations (aligning the teeth so that they come together correctly), bridge fittings and tooth and colour selection.

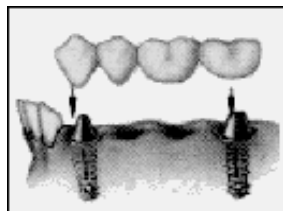
### ***What types of prostheses are available?***

A prosthesis can be *removable* or *fixed*, or a combination of both. Fixed means only the restorative dentist can take it out.

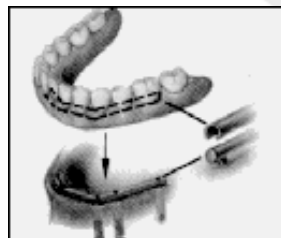
A removable prosthesis often replaces a full set of teeth. It attaches firmly to the abutments with a retaining device but can be taken out for ease of cleaning.



Replace a missing tooth



Support a bridge



Secure a removable denture



Secure a fixed denture

Your implant will function just as your original tooth did, and should be treated with the same care. Brush and floss at least twice a day, and for the first two weeks, avoid stain-causing foods such as coffee, tea, berries and other such items. Brush after every meal and snack during these first two weeks.

Before the tooth is in place, be sure to brush and floss the abutment(s) as well. Avoid chewing hard objects and sticky foods. With proper care, your implants will last you a lifetime.

1. shaft — стержень      2. screw — винт, шуруп

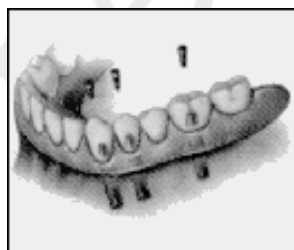
## **TEST**

### **I True and False Statements**

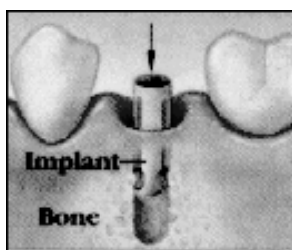
1. Placing implants is not a very painful procedure.  
a. True      b. False
2. Several specialists are involved into the dental implant process, an endocrinologist being usually among them.  
a. True      b. False
3. About half a year is needed for osseointegration to occur.  
a. True      b. False

## II Multiple Choice Test

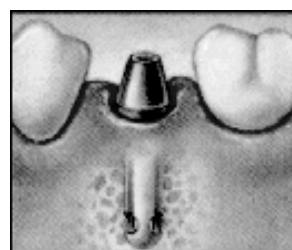
- Why are dental implants considered to be an effective method to replace one tooth or several teeth?
  - Several specialists are involved into the dental implant procedure.
  - Dental implants neither become decayed nor cause any gum diseases.
  - Dental implants provide a stable and secure replacement.
- What was not mentioned in the article as an important factor in the decision to use dental implants?
  - the health of the gums and oral tissues
  - the shape of the jaws
  - some medical conditions
  - the patient's age
- Having exposed a jawbone the surgeon ...
  - places an implant.
  - gives an injections of anaesthesia.
  - drills one or more precisely measured holes.
- What is called biointegration or osseointegration?
  - placing the implant into the jaw bone.
  - growth of the bone in around the implant.
  - drilling a precisely measured hole in the jaw bone.
- What is placed into the implant shaft?
  - a removable denture
  - a fixed denture
  - an abutment
- What phase involves making impressions and bite registrations?
  - when the titanium abutments are attached to the implants.
  - when the replacement teeth are fitted to the mouth.
  - when smooth caps are placed over the implants.
- The final abutments are placed into the implants ...
  - when the bone grows in around the implants and they become firmly fixed.
  - when the gums have completely healed after placing a provisional abutment.
  - when the colour of the replacement tooth have been selected.
- Match the pictures with the description of the stages of the dental implant procedure. Put them in the correct order.
  - The implant is uncovered and a metal post (the abutment) is attached to the anchor.
  - A mold is taken and an artificial tooth is made. One to two weeks later, the new tooth is completed and cemented to the abutment. Further appointments may be necessary for comfort and final bite adjustments.
  - This procedure is performed under anaesthesia, a metal anchor, or artificial root, is placed into the jawbone. Bone grows around the anchor. This takes about four to six months.



a



b



c

### III Answer the questions

1. What are the main stages of dental implantation process? How are they performed?
2. In what cases must an implant be removed?
3. Do implants require any special care?

### IV Explain using information of the text

1. Explain why lost teeth should be replaced.
2. Say what will be your prognosis for dental implants in a smoking patient suffering from diabetes.

## COSMETIC DENTISTRY

Cosmetic dentistry is a discipline within dentistry in which the primary focus is the modification of appearance of a patient's oral cavity and surrounding structures, in conjunction with the prevention and treatment of organic, structural, or functional oral diseases.

### *Materials*

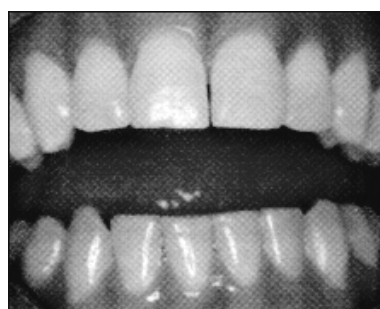
In the past, dental fillings and other tooth restorations were made of gold, amalgam and other metals — some of which were veneered with porcelain. Now, dental work can be made entirely of porcelain or composite materials that more closely mimic the appearance of natural tooth structure. These tooth colored materials are bonded to the underlying tooth structure with resin adhesives. Many dentists offer procedures to be cosmetic.

### *Treatments*

**Whitening**, or «tooth bleaching», is the most commonly prescribed cosmetic dental procedure. Bleaching lightens stains or discoloration and can be performed on living teeth or teeth that have undergone root canal treatment. While many whitening options are now available, dentist-supervised treatments remain the recommended procedures for lightening discoloured teeth.



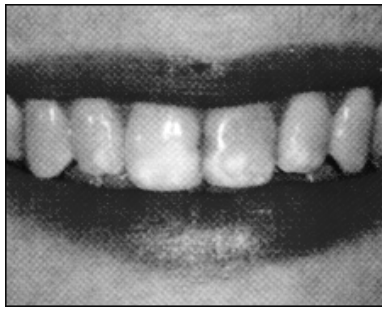
Before



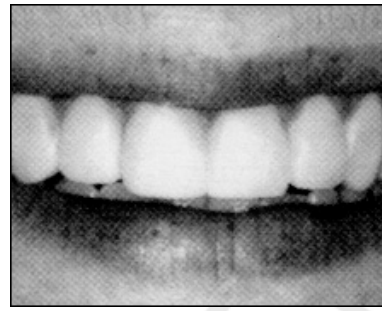
After

**Enamel shaping** removes parts of the contouring enamel to improve the appearance of the tooth. It may be used to correct a very small chip. The removed enamel is irreplaceable. It is also known as enameloplasty, odontoplasty, recontouring, reshaping, slenderizing, and stripping.

**Bonding** is an option for chipped or cracked teeth. It is a process in which an enamel-like dental composite material is applied to a tooth's surface, sculpted into shape, hardened, and then polished.

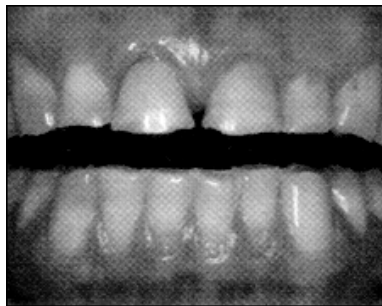


Before

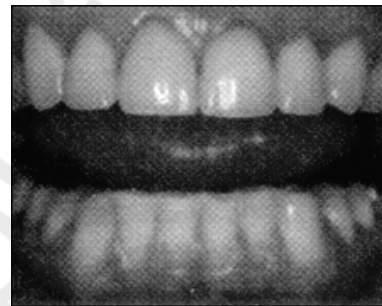


After

**Veneers**, ultra-thin, custom-made laminates that are bonded directly to the teeth, are an increasingly popular procedure. They are an option for closing gaps or disguising discolored teeth that did not respond well to whitening procedures.



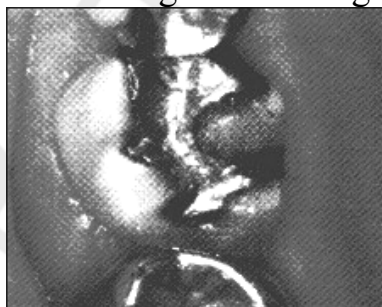
Before



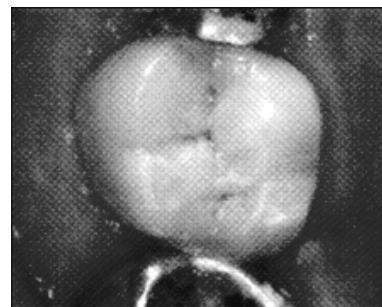
After

**Lumineers** — thin-contact lens placed over existing teeth without having to remove painful tooth structure — are growing in popularity with people and dentists. Traditional dental veneers are commonly placed over prepared teeth. This makes the cosmetic dentistry treatment with traditional veneers an irreversible procedure, meaning it is impossible to restore lost tooth structure, once it's gone.

**Inlays and onlays** are tooth-coloured restorations that are used on the chewing surfaces of the back teeth. They can be placed instead of silver fillings or to replace existing silver fillings.



Before



After



- b. the underlying tooth structure with resin adhesives*
- c. the chewing surfaces of the back teeth*
- 6. Teeth decorations and jewellery can be removed ... .
  - a. without tooth hurting*
  - b. with tooth hurting*
  - c. either without or with tooth hurting*
- 7. Teeth decorations can serve not only as a decoration but they can also ... .
  - a. hide teeth defects*
  - b. protect teeth from tartar*
  - c. be very fashionable*
- 8. What was very popular in ancient times in Maya and Aztec tribes?
  - a. tattoo*
  - b. piercing*
  - c. teeth decorations*

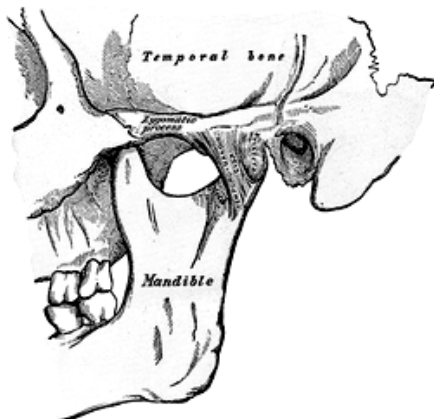
### III Answer the questions

1. What is the primary focus of cosmetic dentistry?
2. What materials are used in cosmetic dentistry? Characterise them.
3. What makes the cosmetic dentistry treatment an irreversible procedure?

### IV Explain using information of the text

1. Dwell on the dentists' suggestion to use cosmetic procedures.
2. Explain why people prefer teeth decorations to piercing and tattoo.

## NEUROMUSCULAR DENTISTRY



Neuromuscular dentistry is a form of dentistry that focuses on correcting misalignment of the jaw at the temporomandibular joint (TMJ). While conventional dentistry primarily concentrates on the teeth, gums, and bones, neuromuscular dentistry attempts to solve the root of the misalignment problem(s) by understanding the soft tissues, muscles, and nerves.

Temporomandibular joint disorder (TMJD or TMD), or TMJ syndrome, is an acute or chronic inflammation of the temporomandibular joint, which connects the lower jaw to the skull.

Signs and symptoms of temporomandibular joint disorder vary in their presentation and can be very complex. Due to the different anatomic structures involved, it is easy to group the symptoms accordingly into three categories: those of the muscles, the temporomandibular joints, and the teeth.

### Muscles

The two major observations concerning the muscles are pain and dysfunction. In TMD, the muscle pain is described as a «deep pain» and does not seem to be simply from overuse and fatigue. Instead, this pain is believed to be a result by mechanisms from the central nervous system.

The dysfunction involved is usually a restriction on mandibular movement upon opening of the mouth.

Additionally, the dysfunction of the muscles may cause the teeth to occlude with each other incorrectly. This condition is called an acute malocclusion and is the result of TMD, not the cause.

### **Temporomandibular joints**

The two major observations concerning the joints are pain and dysfunction. In a healthy joint, the surfaces in contact with one another do not have any receptors to transmit the feeling of pain. The pain therefore must originate from one of the surrounding soft tissues: the discal ligaments, the capsular ligaments, and the retrodiscal tissue.

Due to close proximity of the ear to the temporomandibular joint, TMJ pain can be expressed as ear pain.

The dysfunction involved is most often in regards to the relationship between the condyle of the mandible and the disc. The sounds produced by this dysfunction are usually described as a «click» or a «pop» when a single sound is heard. When there are multiple, rough sounds, it is described as «crepitation».

### **Teeth**

Disorders of the teeth can also be present in TMD patients. Tooth mobility can be caused by destruction of the supporting bone and by heavy forces being placed on teeth. Movement of the teeth affects how they contact one another when the mouth closes, and the overall relationship between the teeth, muscles, and joints can be altered. Pulpitis, inflammation of the dental pulp, is another symptom that may result.

Neuromuscular dentistry uses computer modeling of the patient's jaw movements and sonography of the TMJ to check for the extent of joint damage. Surface EMG's are used to verify pre-treatment conditions and if true rest is obtained by TENS. TENS (ultra-low frequency transcutaneous electrical neural stimulation) is used to locate «physiological rest» of the jaw muscles.

Once a physiologic rest position is found the doctor can determine the optimal positioning of the lower jaw to the upper jaw. An orthotic is commonly worn for 3–6 months (24 hours per day) to realign the jaw.

Neuromuscular dentistry has been very successful in reducing the symptoms of TMD. The success, well documented, is definitive treatment of TMJ as opposed to other treatments that are merely supportive treatments addressing symptoms of an underlying problem.

### **TEST**

## I True and False Statements

The anatomic structures affected in TMD are the muscles, the temporomandibular joints, and the teeth.

- a. True                      b. False

Temporomandibular joint disorder is an acute or chronic inflammation of the temporomandibular joint, which connects the lower jaw to the skull.

- a. True                      b. False

The two major observations concerning the joints are pain and bleeding.

- a. True                      b. False

## II Multiple Choice Test

1. ... attempts to solve the root of the misalignment problem(s) by understanding the soft tissues, muscles, and nerves.
  - a. *Cosmetic dentistry*
  - b. *Neuromuscular dentistry*
  - c. *Therapeutic dentistry*
2. Pain is believed to be a result... .
  - a. *of having been hit*
  - b. *of trauma*
  - c. *by mechanisms from the central nervous system*
3. Signs and symptoms of temporomandibular joint disorder ... in their presentation and ... .
  - a. *vary ... can be very complex .*
  - b. *stay the same ... but can be very complex .*
  - c. *vary ... .*
4. The dysfunction of the muscles may cause ... .
  - a. *bleeding*
  - b. *incorrect teeth occlusion*
  - c. *correct occlusion*
5. Due to close proximity of ... to the temporomandibular joint, TMJ pain can be expressed as ... .
  - a. *teeth... toothache*
  - b. *the ear... ear pain*
  - c. *nasal cavities... sinusitis*
6. The sounds produced by dysfunction are usually described as a «click» or a «pop» when ... heard.
  - a. *a single sound is*
  - b. *multiple sounds are*
  - c. *no sounds are*
7. ... can be caused by destruction of the supporting bone.
  - a. *Malocclusion*
  - b. *Toothache*
  - c. *Tooth mobility*
8. Neuromuscular dentistry has been very successful ... .



- a. nowadays
- b. in solving teeth and gum troubles
- c. in reducing the symptoms of TMD

### III Answer the questions

1. What are the neuromuscular dentistry foci?
2. What are the anatomic structures affected in TMD?
3. When can we use computer modeling of the patient's jaw movements and sonography of the TMJ?

### IV Explain using information of the text

1. Dwell on the condition, called acute malocclusion.
2. Explain what «TENS» means.

## MICROSCOPE-ENHANCED AESTHETIC DENTISTRY

One of America's best-known architects, Frank Lloyd Wright, once said, «The physician can bury his mistakes, but the architect can only advise his clients to plant vines». Recent dramatic changes in the practice of dentistry have placed dentists in a position that is now very similar to Wright's architect. Patients now «grade» their dentists on the aesthetic quality of their results, and the bar goes ever higher.

The majority of dentists practicing today were trained in dental school to restore teeth using amalgam and gold. Composite was only for anterior teeth, and porcelain was supported by a metal coping. Trying to «graft» aesthetic dentistry and bonded porcelain to this old tree of knowledge is often pointless. It is time to burn that tree down and plant a new one because everything just changed.

The microscope made quite a dramatic difference in the care of one of my patients. His distraught parents brought this 8-year-old boy to the office. His central incisors had been smashed (Figure 1) in a fall at a roller rink. In years past, I would have initiated endodontic therapy and begun post/composite buildups. But in today's practice, with the operating microscope at hand, I am able to do «much» less and accomplish «much more». Exquisite microscope-guided treatment of this case represented the pinnacle of health and aesthetics (Figure 2), but it did not involve porcelain or exotic composite layering.



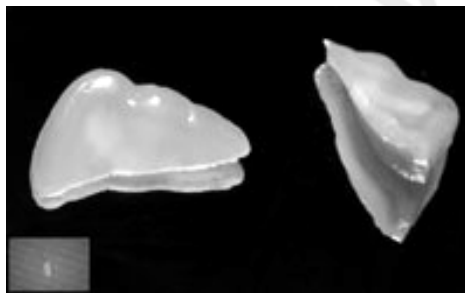
*Figure 1.* Devastating fractures at a young age can lead to a lifetime of embarrassment and re-treatments



*Figure 2.* Immediate postoperative result. Microscopic visualization allowed intimate union of the fragments to teeth

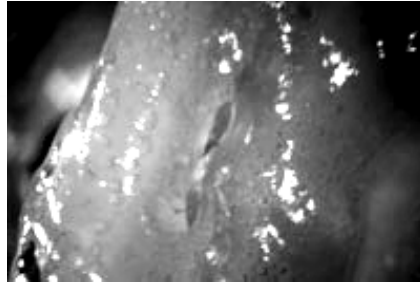
I began by asking the parents if they kept the boy's tooth fragments. Fortunately, they had picked them up (Figure 3) for his scrapbook. I administered anesthesia and placed a rubber dam. The pulp exposure was not bleeding when he arrived. Using the operating microscope, I next performed an absolute deplaquing of both teeth and fragments at 16x. I then examined the fragments from a variety of angles at 10x to verify fit and familiarize myself with their shapes. At this point I phoned Dr. John Khademi, a founding member of the Academy of Microscope Enhanced Dentistry, for advice. He was brief: «Leave the pulp!»

Next, I administered a brief application of sodium hypochlorite to tooth fragments, teeth, and exposed pulp. Then I gently shaved back the pulp at 24x — without causing any bleeding — in order to compensate for any swelling of the pulp that could impede full seating of the fragments and to create a little more space to seal the chamber. (My motto: «The seal is everything».) The next step was selective etching (Figure 4) of the enamel (20 seconds), the dentin (10 seconds), and the pulp (5 seconds). I then verified the absolute absence of weeping or hemorrhaging of pulp by observing for 30 seconds at 24x.



*Figure 3.* These tiny tooth fragments seem like so many fingernail clippings at magnification. At high magnification, their beauty and true worth can be appreciated

With the room lights off and an orange microscope filter on, I then began bonding just as I would a porcelain laminate. The orange filter afforded extended working time, which was a huge advantage over other approaches, particularly in this instance when it took several minutes to line up tooth fragments perfectly. I stayed at 24x, teasing and pumping the fragments into maximal interdigitation. The use of flowable composite permitted me to achieve a microscopically satisfying fit, while the microscope and orange filter relieved me of the misery of manipulating tiny fragments I could hardly see as I worried about premature polymerization from an operatory light. (I used flowable composite because most composites and composite cements are too viscous to allow consistently complete seating when viewed at high magnification). Final polish was simply a few light strokes with a brownie point at 16x. Over polishing is a concern.



*Figure 4.* Selective etching at 24x. Note how microscopic visualization allows ideal etchant control. We cannot afford pulpal hemorrhaging as a result of excessive contact with etchant

The outcome of this treatment was outstanding aesthetically and biologically, for nothing could be more natural than recycling the patient's own enamel. The best long-term aesthetic treatment in this case was to maintain the pulp for as long as possible. Pulpless teeth have been described as «a car without a driver». The proprioception of the pulp provides protection. An additional goal is to delay and minimize the inevitable darkening of a nonvital tooth. Frequent and regular follow-up visits with the patient have shown the root continuing to mature with vital pulp. It has been wonderful for me to have achieved such an excellent treatment result for this young man, a result that would not have been possible without the operating microscope.

## TEST

### I True and False statements

1. This article highlights the impact of the operating microscope in dentistry.  
*a. True                      b. False*
2. Composite was only for posterior teeth, and porcelain was supported by a metal coping.  
*a. True                      b. False*
3. Devastating fractures at a young age can lead to a lifetime of embarrassment and re-treatments .  
*a. True                      b. False*

### II Multiple Choice Test

1. ... made quite a dramatic difference in the care of many patients.  
*a. The composite using*  
*b. The microscope*  
*c. Anastasia*
2. Distraught parents brought an ... with ... to the office.  
*a. 8-year-old girl ... smashed incisors*  
*b. 8-year-old boy ... smashed incisors*  
*c. 8-year-old boy ... headache*

3. Firstly, the dentist administered ... and placed ... .
  - a. antibiotics ... sterile dressing.
  - b. necessary treatment ... a rubber dam .
  - c. anesthesia ... a rubber dam
4. Exquisite microscope-guided treatment ... or ... .
  - a. did involve porcelain layering
  - b. did not involve porcelain layering ... exotic composite layering
  - c. involved neither porcelain layering nor any other layering
5. Dr. John Khademi's advice was ... .
  - a. to shave the pulp gently
  - b. to leave the pulp
  - c. to be very careful with the patients
6. With ... , I then began bonding just as I would a porcelain laminate .
  - a. the room lights off
  - b. the room lights off and an orange microscope filter on
  - c. an orange microscope filter on
7. The use of ... permitted the dentist to achieve a microscopically satisfying fit.
  - a. special fluid
  - b. new equipment
  - c. flowable composite
8. Frequent and regular follow-up visits with the patient... .
  - a. are not necessary
  - b. have shown the root continuing to mature with vital pulp.
  - c. are very useful for everybody

### **III Answer the questions**

1. Why did the dentist use flowable composite?
2. What could be more natural than recycling the patient's own enamel?
3. What was the best long-term aesthetic treatment in this case?

### **IV Explain using information of the text**

1. Explain why it is important to shave the pulp without causing any bleeding.
2. Dwell on the importance of microscope using in difficult procedures.

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