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CONTACT LENS SAFETY AMONG YOUTH: COMMON MISTAKES AND PREVENTION

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Abstract: This article provides information about contact lens safety among young people, common mistakes, and preventive measures. The widespread use of contact lenses among modern youth and the reasons for their usage are discussed. The study analyzes eye infections, dryness, and other health problems that arise from improper use of lenses. In addition, types of contact lenses and their importance are also described. Furthermore, preventive measures such as following hygiene rules, monitoring usage duration, avoiding contact with water, and regular eye examinations are explained in detail. The article is aimed at increasing awareness of safe contact lens use and maintaining eye health among young people.

Keywords: Contact lenses, optical device, optical correction, Leonardo da Vinci, colored and decorative lenses, myopia, hyperopia, astigmatism, presbyopia, hypoxia.

Introduction: Contact lenses are a widely used visual aid among modern youth. They improve vision, allow engagement in sports, enhance aesthetic appearance, and improve quality of life. At the same time, improper use can cause serious harm to eye health. Identifying the most common mistakes among young people and preventing them is important for strengthening preventive measures.

Contact lenses are optical devices placed directly on the cornea of the eye and are mainly used to correct vision impairments. They are used in the treatment of myopia,

hyperopia, astigmatism, and presbyopia. In addition, contact lenses are also used to change eye color, protect the eye surface, or for medical purposes. According to specialists, approximately 125 million people worldwide use contact lenses, more than 40% of whom are young people aged 12–25. About 90% of first-time users are under the age of 35. Contact lenses, like eyeglasses, refract light and direct it onto the retina, thereby improving vision.

The idea of optical correction was first proposed in 1508 by Leonardo da Vinci. He demonstrated that vision could be improved using water-filled glass spheres. In 1637, René Descartes created a design for an optical device, which was later improved by Thomas Young. In 1888, Adolf Gaston Eugene Fick described the first glass contact lens, and in 1889, August Müller introduced it into medical practice.

In the 1960s, contact lenses were made from PMMA (rigid organic glass), which caused a sensation of a foreign body in the eye and limited oxygen permeability. In the same period, Otto Wichterle created soft lenses made of hydrophilic polymer HEMA. Due to its ability to absorb water, this material made lenses soft and elastic. In 1971, Bausch+Lomb received FDA approval for soft contact lenses. In 1998, Ciba Vision developed silicone hydrogel contact lenses, and in 2012, Alcon introduced water-gradient Dailies Total1 lenses.

Types of Contact Lenses

Contact lenses are classified according to material, wearing and replacement schedule, optical design, and transparency. They are divided into two main groups:

1. Soft contact lenses – used by 90% of users worldwide. Mainly hydrogel and silicone hydrogel lenses are available.

2. Rigid contact lenses – used in conditions such as high astigmatism or keratoconus. Modern rigid lenses are made of silicone-based materials and have high gas permeability.

Colored and Decorative Lenses

Colored lenses are used to change eye color or enhance the natural color. Vision is not impaired due to the transparent center. Decorative lenses are used in theater, cinema, or carnival events and have various colors and patterns.

Main Parameters

Contact lenses are characterized by the following parameters: material, base curve radius, diameter, optical power, cylinder axis, lens thickness, wearing mode, and replacement frequency. The wearing mode includes daily use or extended wear, as well as continuous overnight use.

Optical Design

• Spherical lenses – for myopia and hyperopia

• Toric lenses – for astigmatism

• Multifocal lenses – for presbyopia

Complications

Improper use of contact lenses can lead to infectious diseases, allergic reactions, oxygen deficiency (hypoxia), and mechanical damage to the cornea. Failure to follow hygiene rules increases the risk of infection.

Care Products

Solutions are used for cleaning, disinfecting, and moisturizing contact lenses. These include multipurpose solutions, peroxide solutions, and enzymatic cleaning agents. Proper care plays an important role in maintaining both lens quality and eye health.

Common Mistakes

a) Failure to follow hygiene rules

• Not using special solutions for cleaning and storing lenses

• Wearing lenses without washing hands or with wet hands

• Using contact lenses for several days or even weeks without replacement

Result: increased risk of eye infections, conjunctivitis, and keratitis

b) Ignoring time limits

• Reusing daily disposable lenses

• Wearing lenses continuously for long periods (during sleep or more than 12–16 hours per day)

Result: oxygen deficiency, eye dryness, and damage

c) Contact with water

• Washing lenses with water or wearing them in water environments such as showers

Result: development of infections such as Acanthamoeba

d) Ignoring eye inflammation

• Continuing to wear lenses despite redness, pain, swelling, or visual difficulties

Result: severe infections and risk of vision loss

e) Using improperly fitted lenses

• Choosing lenses without a doctor's or optometrist's recommendation

• Ignoring eye measurements and optical power

Result: eye damage, dryness, and visual fatigue

3. Preventive Measures

a) Following proper hygiene rules

• Always wear lenses with clean hands

• Use fresh solution each time and regularly disinfect the storage case

b) Monitoring usage duration

• Use daily disposable lenses only once

• Replace lenses according to manufacturer and doctor recommendations

c) Protection from water

• Do not use lenses in the shower, sauna, or swimming pool

• If lenses come into contact with water, replace them immediately

d) Regular eye check-ups

• Remove lenses immediately if redness, inflammation, or vision problems occur and consult a doctor

• Visit an optometrist or ophthalmologist at least 1–2 times per year

e) Proper fitting

• Select lenses based on eye measurements, optical power, and type with a specialist

• Choose lens type according to lifestyle and oxygen needs of the eye

Conclusion: Contact lenses are a convenient visual aid for young people, but improper use can cause serious harm to eye health. Following hygiene rules, monitoring usage duration, and regular eye examinations are essential parts of prevention. Cooperation between parents, schools, and healthcare professionals is necessary to increase awareness among youth. Young people should not choose lenses based on recommendations from friends or social media. Special sports lenses should be used during physical activity. Artificial tears and regular breaks help reduce eye strain and dryness.

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