Effect of overusing laser

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In the field of medical science laser is one of the most significant discoveries in the present century. It includes a new inconceivable perspective in medical practice and biological research. A laser is a term that stands for the amplification of light by the stimulated emission of radiation. It is infrared radiation and an intense beam of light. there are many kinds of laser such as diode; laser, solid state laser, fiber laser, excimer laser and gas laser. All these types of laser share some common set of components. The laser has the following properties.

* Monochromatic: it is consists of only one wavelength. This means that it can be focused on the smaller area for a longer distance without a decrease in the laser beam power intensity
* Coherent: It means that laser emits coherent light and can be used in lithography and cutting.
* Collimated: In this laser follows the path which is narrow and for a greater distance.

Today the technology of laser has emerged from the operating room of hospitals and available in clinics, office practices, private enterprises without the appropriate and adequate benefits. The safety of laser is everyone's concern. A laser can be safe or hazardous as the knowledge and skills of users define how well its safety is managed. Proper laser safety management requires appropriate knowledge of standards, identification of risk and hazards, implementation of proper control measures and program audits to determine quality assurance.

The unprotected human eye is very sensitive to the laser radiation and it can be damaged permanently from reflected and direct beams (Joukar, Nammakie, & Niroomand-Oscuii, 2015). Due to the characteristics of tissue the area of the eye that is damaged by the laser is dependent on the incident laser beam wavelength. When the laser light is in the infrared and visible spectrum they will cause damage to the retina. These regions are usually defined as retinal hazard region. The overuse of laser can damage the eye. The conditions associated with the overuse of laser include cataract, squamous cell carcinoma, damage to the surface of the eye and any other irritation. The overuse of laser is associated with the retinal spots that can arise from burns and the severity of these is dependent on the laser beam size to which the eye was exposed. As larger beam cause greater damage.

Overuse of laser can have a damaging effect on different human organs,' thermal effects of laser occurs when the laser radiation is absorbed by the skin. Tissue reaction occurs that relates to the temperature elevation of the organism and the duration of the process of heating. If temperature rises to 41 degrees in the first ten minutes, then it can lead to cellular death. Another effect of the overuse of laser is that it can leads to irreversible necrosis without immediate destruction of tissue. In this process, the temperature of tissue rises between 50 and 100 degrees. In one second. This causes retraction and whitening of tissue, desiccation due to collagen and protein denaturation.

The overuse of a laser can lead to the photochemical reaction. These are basic changes that occur in skin cells when they are exposed to ultraviolet light. This type of photochemical reaction leads to a carcinogenic effect in the skin cells and represents the initial stage of cancerous tumors. The laser which emits light in an ultraviolet region is associated with the photochemical reaction. However, for the occurrence of photochemical reactions, exposure of greater than 10 seconds must be induced.

The overuse of laser is also associated with skin damage. Ultraviolet rays can penetrate at a different depth inside the skin. These rays are absorbed in the external layer that is epidermis. On the prolonged use, it can cause red blotches similar to the sunburn. These rays also cause many other skin diseases such as increased pigmentation, erythema, aging, light sensitization, and even skin cancer. These days laser hair removal is very common. The prolonged and overuse of this can lead to skin irritation, redness and swelling and change in the color of the skin. Other than this it can lead to crusting, scarring, blistering and any other changes in the texture of the skin (Farivar, Malekshahabi, & Shiari, 2014).

The cosmetic laser damages the skin to encourage it to recover soon. If the overuse of laser is done then it can make the skin more sensitive to exposure to sun and in turn cause sunburn. Ablation is another condition that is caused by the overuse of the laser. This condition occurs at a temperature greater than 100 degrees. In these elements which cell constitutes evaporate in a relatively short time. At the border necrosis, the coagulated area can be observed. Sometimes the overuse of laser can also lead to infections but it is not much common.

The laser can bring great benefits such as they are used in the treatment of cancer, diagnosing bone disease, smoothing skin but they should not be misused. Different types of laser such as argon laser, pulsed dye laser, and the copper vapor laser are used in the treatment of different diseases.(McBurney, 2002)

 If these are overused then many harmful effects such as eye damage, cancer, burn and scarring can occur. Many side effects that are associated with the prolonged use of a laser can be avoided by the use of appropriate procedure (Schindl, Schindl, Pernerstorfer-Schön, & Schindl, 2000).

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