**Medical Laser Procedures – Proper Use of Instruments**

*Purpose:* To ensure proper use of instruments to decrease the chance of a laser-induced fire or inadvertent eye or tissue damage from direct or reflected laser beam impact.

By definition, a Class 4 laser presents a hazard either from its direct beam or from its reflection off a shiny surface.

1. Instruments can be ebonized (also reduces glare) or anodized (matte-like finish) to decrease the risk of fire. Laser instruments should not be etched because the coating or surface will be disrupted, which may allow reflection from the disrupted surface.
2. Instruments (such as retractors) may be covered with wet towels or sponges to decrease the chance of laser reflection.
3. Stainless steel or rhodium mirrors used to purposely reflect the laser beam must be inspected regularly for cracks or damage that would decrease the reflective accuracy. The manufacturer’s instructions must be followed regarding the laser wattage limitations to prevent the mirror from cracking.
4. Glass rods should NOT be used during laser surgical intervention because of the shattering that can occur from the laser energy absorption and heat buildup. Metal rods should not be used because of the heat absorption and retention that can cause adjacent tissue damage. Teflon rods should not be used since they can melt and produce a toxic plume when struck by the laser beam.
5. Pyrex, quartz, or titanium rods can withstand laser impact and thus decrease the chance of laser reflection or damage to the rod material. Clear Pyrex or quartz rods will allow transmission of the argon and Nd: YAG beam so titanium rods should be used with these wavelengths.
6. A special laser-resistant endotracheal tube can be used that will withstand limited amounts of laser impact. These limitations should be communicated to the surgeon and laser team members. The ET tube cuff should be inflated with methylene blue tinted saline for immediate recognition if the cuff is penetrated by laser energy while the tinted solution can douse a flame. Moistened counted cotton pledgets are placed around the inserted ET tube to decrease the chance of penetration by the laser beam.
7. Plastic vaginal and rectal speculae should not be used as they can burn or melt when struck by the laser beam. Test the laser impact in the material if there is any question as to the durability and flammability of an instrument when it is used near the laser-tissue impact site.
8. Teeth protectors that are used during oral or airway laser procedures should be able to withstand the inadvertent impact by a laser beam.