

What is the study about?

Urologists who perform endoscopic laser surgeries may be prone to several ophthalmic complications like dry eyes, irritation, congestion and tiredness. This study was designed to understand the incidence of ophthalmic issues among laser surgeons and correlate it with the amount and duration of laser use. A google form survey was conducted to understand this occupational hazard.

RESEARCH PROBLEM

Despite the increasing use of lasers in urological surgeries, the potential ocular health risks faced by surgeons remain inadequately understood. There is a significant gap in knowledge regarding the prevalence, severity, and contributing factors of ophthalmic symptoms among urologists exposed to laser radiation.

RESEARCH OBJECTIVES

- **Primary Objective**

To identify the prevalence and severity of ophthalmic symptoms among urologists performing laser surgeries

- **Specific Objectives**

1. To determine the association between the frequency and duration of laser use during the endourological procedures and the incidence of ophthalmic symptoms.
 2. To assess the factors that could be associated with the ophthalmic issues in the laser surgeons.
 3. To assess the impact of protective equipment use on the development of ophthalmic symptoms among urologists
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ABSTRACT

- ***Introduction & Objective :***

Over the last three decades, the use of lasers in endourology has grown exponentially. Advancement of equipment and improved surgeon's skills makes minimally invasive

laser treatments as an alternative to traditional surgical options for stone disease, benign prostatic hyperplasia (BPH) and urothelial cancers. Although direct laser injury to the eyes has not been reported, bothering ophthalmic symptoms can occur due to the high-speed prolonged procedures and bright lights of the lasers and the monitors.

- **Methods :**

An online survey was conducted to assess the ophthalmic health risks in urologists regularly performing laser surgeries. An attempt was made to link the ophthalmic issues with the type of laser, the procedure, associated co-morbidities and the effectiveness of protective eyewear. This cross-sectional survey was conducted among 302 urologists with varying levels of experience in laser surgeries. Participants provided information on their demographic background, types and frequency of laser used, procedures performed, history of preexisting ophthalmic issues, and habits related to protective eyewear use. Data on the prevalence of ocular symptoms and experiences of discomfort with protective eyewear were also collected.

- **Results :**

Among the surveyed urologists about 56% experienced ocular symptoms like dry eyes, eye fatigue, blurred vision, headache, redness or irritation, watering of eyes and difficulty in focusing. Among them 16.6% had significant symptoms that needed professional help and 6.7% found these symptoms interfering with their ability to perform the surgical procedures. About 20% regularly used artificial tear drops to reduce the symptoms. These symptoms did not correlate with type of laser and the amount of power used or the duration of the procedure. Interestingly the symptoms were more common during laser lithotripsy than laser prostatectomy. The symptoms were higher in the older population (>50 years) and those with associated diabetes mellitus. Most urologists did not regularly use protective eyewear, with many expressing dissatisfaction with available options and claiming discomfort while wearing them. Those who reported higher usage of protective eyewear noticed fewer symptoms, showing a protective benefit regardless of usability concerns.

- **Conclusions :**

Ophthalmic issues are common in urologists conducting laser surgeries. The possibility increases with increasing age and associated diabetes. Awareness and care is important in reducing this professional hazard. Intermittent blinking breaks during surgery and use of artificial eye drops can reduce the symptoms. Although there is a marginal benefit of using protective eyewear, there is a need for larger studies to develop comfortable and effective protective solutions.

WORKING SECTION

Methods

- ***Study Design:***

This study was designed as a **cross-sectional survey** to evaluate ophthalmic health risks among urologists who routinely perform laser-based endourological procedures. This survey was conducted online and circulated nationally via urological societies, institutional mailing lists, and medical conferences commonly attended by practicing urologists.

- ***Participants & Inclusion Criteria:***

A total of **339 practicing urologists** participated in the study. Inclusion criteria were : Urologists in active clinical practice involving **laser-based urological surgeries**, such as laser lithotripsy or laser prostatectomy and were willing to participate voluntarily and complete the full survey and consented to anonymized data analysis. No restrictions were placed based on geographic location, type of institution, or years of experience, provided the participants were actively engaged in laser endourological surgeries.

- ***Survey Instrument:***

A structured, self-administered questionnaire [Appendix A] was developed and reviewed by a panel of practicing urologists. The survey was developed using Google Forms. The survey was divided into the following sections: Demographics, Any associated co-morbidities, Laser Radiation Exposure, Ocular Symptoms, Protective Equipment Use. Responses were collected over a 3-month period from October to December 2024.

- ***Data Collection & Analysis :***

Responses were anonymized and compiled using Microsoft Excel. Descriptive statistics were calculated to determine the prevalence of specific ocular symptoms. Subgroup analyses were performed to assess associations between the symptom severity and cumulative duration of laser exposure, the type of laser or procedure, presence of co-morbidities and protective eyewear use.

Results

- **Participant Demographics :**

A total of **339 urologists** participated in the survey. Participants represented a wide range of experience levels, with a balanced distribution across academic, government, and private practice settings. A notable proportion of respondents were over the age of 50, and reported a history of diabetes mellitus, a factor examined for its correlation with ophthalmic symptoms. The most performed laser procedures were **laser lithotripsy** and **laser prostatectomy**, using Holmium:YAG or Thulium lasers. While a wide variation in laser types and procedural duration existed, the majority of respondents reported performing **multiple laser surgeries per week**.

- **Prevalence of Ophthalmic Symptoms :**

Among all respondents: **56%** reported experiencing **at least one ocular symptom**, including: eye fatigue, dry eyes, blurred vision, headaches, redness or irritation, watering of eyes and difficulty in focusing. Of those who reported symptoms: **16.6%** sought **professional medical help** for persistent or worsening symptoms and **6.7%** stated that these symptoms **interfered with their ability to perform surgical procedures**. Among them **20%** used **artificial tear drops** regularly to manage discomfort.

- **Correlations of Ocular Symptoms :**

No significant associations were found between ocular symptoms and the **type of laser used and duration of individual procedures**. However **laser lithotripsy** was more frequently associated with symptoms compared to laser prostatectomy. Urologists aged **>50 years** reported symptoms more frequently. Those with **diabetes mellitus** had a higher prevalence of **dry eyes and focusing difficulties**.

- **Protective Eyewear Usage :**

Despite the availability of protective eyewear, the majority of respondents reported **inconsistent use**, citing discomfort, fogging, restricted field of view, or lack of habit. Those who **consistently used protective eyewear** reported **lower rates of eye fatigue and headaches**, indicating a **protective trend** despite widespread dissatisfaction with current options.