

# Eco-friendly endoscopy: Innovations and practices for sustainable healthcare.

Hajar Mirzaei\*

Department of Medical Biotechnology, Shahrekord University of Medical Sciences, Iran

## Introduction

In recent years, the healthcare industry has been increasingly focusing on sustainability and environmental responsibility. One area where these efforts are particularly crucial is in medical procedures like endoscopy. Endoscopy, a vital diagnostic and therapeutic tool used in various medical specialties, presents both environmental challenges and opportunities for innovation. This article explores the concept of eco-friendly endoscopy, highlighting key innovations and practices that contribute to sustainable healthcare [1].

Traditional endoscopy procedures involve the use of single-use disposable instruments, chemicals for cleaning and disinfection, and significant energy consumption. These practices result in the generation of medical waste, water pollution from disinfectants, and greenhouse gas emissions from energy usage. As the demand for endoscopic procedures continues to rise globally, addressing the environmental footprint of endoscopy becomes imperative [2].

**Reusable Endoscopic Instruments:** One of the most significant shifts towards sustainability in endoscopy is the development and adoption of reusable endoscopic instruments. Reusable scopes and accessories not only reduce medical waste but also lower overall procedure costs in the long term [3].

**Green Cleaning and Disinfection Practices:** Healthcare facilities are increasingly embracing environmentally friendly cleaning and disinfection solutions. These include the use of non-toxic, biodegradable detergents and automated reprocessing systems that minimize water and chemical usage while ensuring high-level disinfection of endoscopic equipment [4].

**Energy-Efficient Endoscopy Suites:** Designing endoscopy suites with energy-efficient lighting, heating, ventilation, and air conditioning (HVAC) systems can significantly reduce energy consumption. Incorporating natural light, LED lighting and smart HVAC controls not only lowers operational costs but also decreases the facility's carbon footprint [5].

**Digitalization and Telemedicine:** The adoption of digital imaging systems and telemedicine platforms in endoscopy reduces the need for physical transportation of patients and medical staff, thereby cutting down on carbon emissions associated with travel [6].

**Biodegradable Materials and Packaging:** Manufacturers are exploring the use of biodegradable materials for endoscopic accessories and packaging, minimizing the environmental impact of disposable components [6-8].

**Inventory Management and Optimization:** Healthcare facilities can reduce waste and costs by implementing efficient inventory management systems for endoscopic supplies and accessories [7].

**Staff Education and Training:** Educating healthcare providers about eco-friendly practices and proper instrument handling, cleaning, and reprocessing techniques is essential for maintaining the integrity and effectiveness of reusable endoscopic equipment [8].

**Collaboration and Advocacy:** Collaboration between healthcare providers, manufacturers, policymakers, and environmental organizations is crucial for driving innovation and implementing sustainable practices across the endoscopy supply chain. Advocacy efforts can also raise awareness and promote policy changes to support eco-friendly initiatives in healthcare [9,10].

## Conclusion

Eco-friendly endoscopy represents a paradigm shift towards more sustainable healthcare practices. By embracing innovations such as reusable instruments, green cleaning technologies, energy-efficient infrastructure, and digitalization, healthcare facilities can minimize their environmental impact without compromising patient care. Adopting best practices and fostering collaboration within the healthcare community are essential steps towards building a more sustainable future for endoscopy and healthcare as a whole.

## Reference

1. Omura K, Nomura K, Aoki S, et al. Lacrimal sac exposure and a superior lateral anterior pedicle flap to improve outcomes of Draf type II and III procedures. In International Forum of Allergy & Rhinology 2018 Aug (Vol. 8, No. 8, pp. 955-958).
2. Qiu X, Yang J. Clinical study of cetuximab combined with radical radiotherapy in the treatment of locally advanced sinonasal squamous cell carcinoma. J BUON. 2018 Jul 1;23(4):1111-7.

\*Correspondence to: Hajar Mirzaei, Department of Medical Biotechnology, Shahrekord University of Medical Sciences, Iran. E-mail: mirzae.h@gmail.com

Received: 29-Dec-2023, Manuscript No. JGDD-24-127479; Editor assigned: 03-Jan-2024, Pre QC No. JGDD-24-127479(PQ); Reviewed: 15-Jan-2024, QC No. JGDD-24-127479;

Revised: 19-Jan-2024, Manuscript No. JGDD-24-127479(R); Published: 25-Jan-2024, DOI: 10.35841/jgdd-9.1.186

3. Homma A, Saheki M, Suzuki F, et al. Computer image-guided surgery for total maxillectomy. *European archives of oto-rhino-laryngology*. 2008;265:1521-6.
4. Hanazawa T, Yamasaki K, Chazono H, et al. Endoscopic contralateral transmaxillary approach for pterygoid process osteotomy in total maxillectomy: A technical case report. *Auris Nasus Larynx*. 2018;45(3):622-5.
5. Villaret AB, Yakirevitch A, Bizzoni A, et al. Endoscopic transnasal craniectomy in the management of selected sinonasal malignancies. *American journal of rhinology & allergy*. 2010;24(1):60-5.
6. Omura K, Nomura K, Aoki S, et al. Direct approach to the anterior and lateral part of the maxillary sinus with an endoscope. *Auris Nasus Larynx*. 2019;46(6):871-5.
7. Deganello A, Ferrari M, Paderno A, et al. Endoscopic-assisted maxillectomy: Operative technique and control of surgical margins. *Oral Oncology*. 2019;93:29-38.
8. Liu Z, Yu H, Wang D, et al. Combined transoral and endoscopic approach for total maxillectomy: a pioneering report. *Journal of Neurological Surgery Part B: Skull Base*. 2013:160-5.
9. Omura K, Nomura K, Aoki S, et al. Direct approach to the anterior and lateral part of the maxillary sinus with an endoscope. *Auris Nasus Larynx*. 2019;46(6):871-5.
10. Nakayama T, Asaka D, Okushi T, et al. Endoscopic medial maxillectomy with preservation of inferior turbinate and nasolacrimal duct. *American Journal of Rhinology & Allergy*. 2012;26(5):405-8.