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Critical view of aesthetic surgical tourism: A perioperative care perspective

Luis Fernando Álvarez^a, Felipe Urdaneta^{b,*}^a Sociedad Colombiana de Anestesia y Reanimación (SCARE), Bogotá, South America Colombia^b Department of Anesthesiology, University of Florida College of Medicine, Gainesville, FL, USA

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ABSTRACT

Medical tourism is a fast-growing, private-sector industry without an international regulatory framework or guidelines. As a result, legal and malpractice issues remain a concern. Aesthetic elective procedures are among the most commonly sought-after medical tourism procedures. These procedures should not be considered less risky than other surgeries. Complications associated with surgical tourism are underreported. The true incidence of severe complications and mortality associated with aesthetic procedures is unknown. The most common reported complications are infection-related, deep vein thrombosis, and pulmonary embolism. Ensuring that adequately trained healthcare personnel are always available and strengthening healthcare facilities' infrastructure should be a priority for medical and surgical tourism practices. The present narrative review provides insights from the perspective of perioperative healthcare providers on cosmetic/aesthetic elective procedures. The role of anesthesia professionals is crucial in ensuring patient safety, and major international organizations have developed guidelines to maintain and improve the quality of anesthesia care.

1. Introduction

"Remember everything is right until it's wrong. You'll know when it's wrong."

"You think so?"

"I'm quite sure. If you don't it doesn't matter. Nothing will matter then."

Ernest Hemingway, the Garden of Eden

Although there is no consensus on the definition, medical tourism is the practice of traveling outside the country of residency to access elective medical services or procedures [1]. While medical tourism has traditionally involved patients from low-income countries traveling to high-income ones for specialized care, there has been a growing trend of patients from affluent nations traveling to lower-income countries for medical services. The primary driver of this trend is the lower cost of procedures and services in destination countries [2,3]. Other advantages include the availability of health services, shorter waiting times, privacy, and circumvention of legal constraints in the country of origin [4]. The types of care that tourists pursue include cancer treatment, dental care, fertility, organ transplantation, stem cell injections, ophthalmologic care, and bariatric, orthopedic, and cosmetic-aesthetic procedures

[5]. Common destinations are Latin America (including Brazil), the Caribbean, Mexico, Japan, Turkey, Germany, Italy, Spain, Romania, India, Greece, and Thailand [6].

Medical tourism operates outside traditional regulatory constraints and is a private-sector endeavor free from an international regulatory framework [7]. While many medical tourists receive adequate care, language barriers, substandard medical and surgical practices, poor infection control, and outdated medical equipment in lower-income settings can increase risks. The medical community needs to become more aware of the implications of medical tourism. Appropriate education of healthcare professionals and adequate oversight of medical tourism practices should be one of the proposed goals for the immediate future.

This narrative review focuses on cosmetic/aesthetic elective procedures, which account for a significant portion of the surgical tourism industry. The basic principles also apply to other invasive procedures in medical-surgical tourism destinations. The term "aesthetic" over "cosmetic" is used, as it is broader and encompasses cosmetic and reconstructive procedures [8].

2. Economic factors

Medical tourism is a rapidly growing for-profit service and a

* Corresponding author. Department of Anesthesiology, University of Florida College of Medicine, Gainesville, FL, 32610, USA.

E-mail address: furdaneta@anest.ufl.edu (F. Urdaneta).

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multibillion-dollar industry. The global medical tourism market is estimated to be around US \$47 billion, with a potential reach of \$111.2 billion by 2029 and an estimated growth rate of 18.8 % in the next five years [9–11]. Every year, around 21 million patients (3%–4% of patients) travel outside their countries for medical treatment; by 2032, the number is expected to increase to 71 million [1,12,13].

The cost of travel, accommodations, food, time off work, and unanticipated expenses in case of an extended stay or if further treatment at home is needed must be considered. Patients who develop complications may require extensive follow-up and hospitalization, additional surgery, antibiotics, and wound care when they return home [14–18]. Financial consequences from other complications such as scarring, deformities, nerve damage, chronic pain, or psychological effects of aesthetic procedures need to be studied, as well as hidden risks, including medico-legal aspects of care [19].

3. Travel associated risks

Medical tourism involves crossing borders to a different country. Adhering to international travel recommendations is required. For instance, the U.S. State Department Traveler's Checklist and the National Health Services in the U.K. provide comprehensive guides for patients considering medical tourism [20,21]. Transportation plans should also be made in advance. While some patients may travel to their destination by car or train, most travelers will opt for air travel. Air travel increases the risk for patients with certain medical conditions and during recovery from surgical procedures. Air travel and surgery, alone and in combination, increase the risk of deep vein thrombosis (DVT) and pulmonary embolism (PE) [22,23]. Medical guidelines for air travel exist, and they are helpful resources for patients and healthcare providers [5,20].

Depending on the duration of the flight, patients will have to remain stationary for prolonged periods. Additionally, travel may be across time zones, affecting the timing of some medications. Patients may need to consider the comfort of traveling with compression garments and plan for wound care and dressing changes during prolonged flights [24].

4. Aesthetic surgical procedures

Surgical aesthetic tourism practices predominantly involve healthy, working-age patients, hoping to improve and rejuvenate their appearance [15,25,26]. Sixty percent of medical tourists seek aesthetic procedures, paying out of pocket and usually upfront [27]. Surgical "packages," including flight, hotel accommodations, meals, and even leisure activities, are commonly arranged by the destination surgical center or via a third-party travel concierge service. They are usually advertised via word of mouth or, more commonly, in social media and via the Internet [28]. Most online information regarding surgical tourism for prospective patients is unregulated and distributed by commercial providers [29]. The industry portrays aesthetic surgery as glamorous while minimizing the seriousness, invasiveness, and risks that are intrinsically present.

According to the International Society of Aesthetic Plastic Surgery (ISAPS) [30], the most common aesthetic procedures include.

- face and head procedures (eyelid, facelift, and rhinoplasty);
- breast (augmentation, reduction, implant removal);
- total body and extremities (abdominoplasty, liposuction, lower body lift); and
- injectables, facial rejuvenation, hair removal, and transplantation.

A common surgical tourism practice involves combining different procedures in different body areas, such as the "mommy makeover" or the 360 Liposuction and 360 Tummy Tuck procedures [31]. These combination procedures can be performed staged or all at once. Combined procedures take longer and may require patient position changes

(e.g., from a supine to a prone position) during the same procedure. Longer and more invasive procedures may be associated with increased adverse events [27,32,33].

5. Complications of aesthetic surgery

All surgical procedures carry inherent risks. Most complications from surgical tourism are not reported, and there are no formal studies for comparison. The absence of standardization and regulation in this industry makes it challenging to analyze medical tourism's epidemiological, economic, and ethical implications. Patients who choose to have elective aesthetic surgery abroad face many potential problems [18]. Complications may arise immediately, but many others can be delayed or chronic.

5.1. Acute complications

Data on acute complications from aesthetic procedures, such as blood loss, hematomas, pain, visceral and lung perforation, fat embolism syndrome, anesthesia-related issues, and mortality, are underreported, and what is available comes mainly from individual case reports or retrospective analysis. Recently, newer surgical procedures have garnered attention; for example, the medial thigh lift performed after significant weight loss is linked to a high risk of complications. The most frequent complications include seromas, wound opening, infection, hypertrophic scarring, scar infection, hematoma, and lymphedema. Reports indicate complication rates ranging from 42.7 % to 71 % [34, 35], with major complications occurring in around 15 % of cases [36]. One of the fastest-growing and most sought-after aesthetic surgical procedures performed in the world, the gluteal fat augmentation, also known as the Brazilian butt lift procedure (BBL), has been reported to be 16 times more deadly than other aesthetic procedures and is associated with a high incidence of microscopic and macroscopic fat embolism syndrome [37–39]. Fat embolism syndrome has also been reported with other aesthetic procedures such as liposuction, facial filler injections and grafting, maxillofacial, and body sculpture procedures [40–44].

5.1.1. Deep venous thrombosis and pulmonary embolism

Both DVT and PE are feared complications in aesthetic surgery [45]. Pulmonary embolism is a leading cause of postoperative mortality in aesthetic procedures and is responsible for up to 21 % of postoperative deaths [46]. The incidence of DVT and PE after liposuction is around 1 %. When patients undergo combination procedures, the risk increases [47,48]. There is no consensus on the best chemoprophylaxis approach to reduce the incidence of thromboembolism or the appropriate safe period for surgery before or after air travel with aesthetic procedures [49–51]. The duration of antithrombotic therapy should be tailored to the individual patient, and the specific procedure should be considered [52–54].

5.1.2. Surgical site infections

Inadequate infection-control practices can lead to wound and bloodstream infections, not infrequently with antibiotic-resistant organisms or pathogens such as mycobacteria [55,56]. Surgical site infections, superficial or deep, may progress to the formation of abscesses, necrotizing fasciitis, and full-blown sepsis [55–57].

In 2011, Melendez et al. reported that 80.4 % of American Society of Plastic Surgeons (ASPS) members had cared for a patient who had traveled abroad for an aesthetic procedure [58]. Of these, 51.6 % reported an increase in patients presenting with complications from surgical tourism, the most common of which were infections (at 31 %).

5.1.3. Severe complications and mortality

There is minimal information regarding severe, irreversible complications and mortality with aesthetic procedures performed during surgical tourism practices [59]. Most available data come from anecdotal

reports and isolated cases in the lay press [4,39,60–63]. The U.S. Centers for Disease Control (CDC) recently issued a warning regarding the deaths of U.S. citizens who undergo "cosmetic" procedures in the Dominican Republic, stating that since 2009, 93 U.S. citizens have died after surgery in the Dominican Republic, with the number of deaths increasing from 4.1 per year during 2009–2018 to 13 during 2019–2022 and a peak in of 17 in 2020 [60]. There is little oversight from local authorities in destination countries and no databases or information regarding the number of patients participating in surgical tourism practices.

It is important to note that mortality with aesthetic procedures is not exclusive to international travel or only occurs in underdeveloped countries, as reported in other developed tourist destinations such as Miami [64–66].

6. Anesthesia and perioperative-related factors

Information about adverse events related to sedation and anesthesia associated with surgical tourism remains understudied [67,68]. Anesthesia is an essential component of surgical care. While not responsible for the surgical procedure, anesthesia professionals can significantly impact patient outcomes by applying standards and guidelines and making patient safety their primary goal.

In 1992, the World Federation of Societies of Anesthesiologists (WFSA) developed the first international standards for the safe practice of anesthesia. All international societies and the World Health Organization (WHO) endorsed them, and anesthesia providers have adopted them in 150 countries [69,70]. The goal of these standards is to maintain and improve the quality of anesthesia care, not to replace any national standards that may already exist but rather to supplement them and allow different countries to evaluate their practices and procedures and compare them to international standards. The WFSA also developed an electronic Anesthesia Facility Assessment Tool to help regional and national healthcare administrators gather data about essential resources

and practices at each facility that is involved in providing general anesthesia, deep sedation, moderate sedation, or regional anesthesia, using three levels of recommendation: highly recommended, recommended, and suggested [71]. The level of "highly recommended" is the minimum standard of care, and if not met, the administration and conduct of anesthesia should be considered unsafe and unacceptable. The standards deal with the following items.

- professional/human factors,
- facilities and equipment,
- medications and intravenous fluids,
- monitoring, and
- conduct of anesthesia.

Fig. 1 details the highly recommended items for each category.

These minimal standards are applicable worldwide and cover all aspects of anesthesia practice that affect patient safety. Some anesthesia providers work with limited resources. In the original recommendations, lipid emulsion infusion was not mentioned. Still, if regional or neuraxial anesthesia is planned, it is recommended to have these solutions available, and therefore, they are included here [72].

The European Board of Anaesthesiology, along with the European Society of Anaesthesiology and Intensive Care (ESAIC), issued the "Helsinki Declaration on Patient Safety in Anaesthesiology" in 2010 [73], emphasizing the significant role of anesthesia providers concerning patient care (Fig. 2).

The Australian and New Zealand College of Anaesthetists (ANZCA) provides an overview of perioperative medicine, emphasizing the concept of the perioperative care team and the importance of shared decision-making between patients and healthcare professionals [74].

The American Society of Anaesthesiology (ASA) updated the Statement on Ambulatory Anesthesia and Surgery, encouraging all involved to become perioperative medicine leaders, promote quality care, apply

HIGHLY RECOMMENDED ITEMS -Mandatory

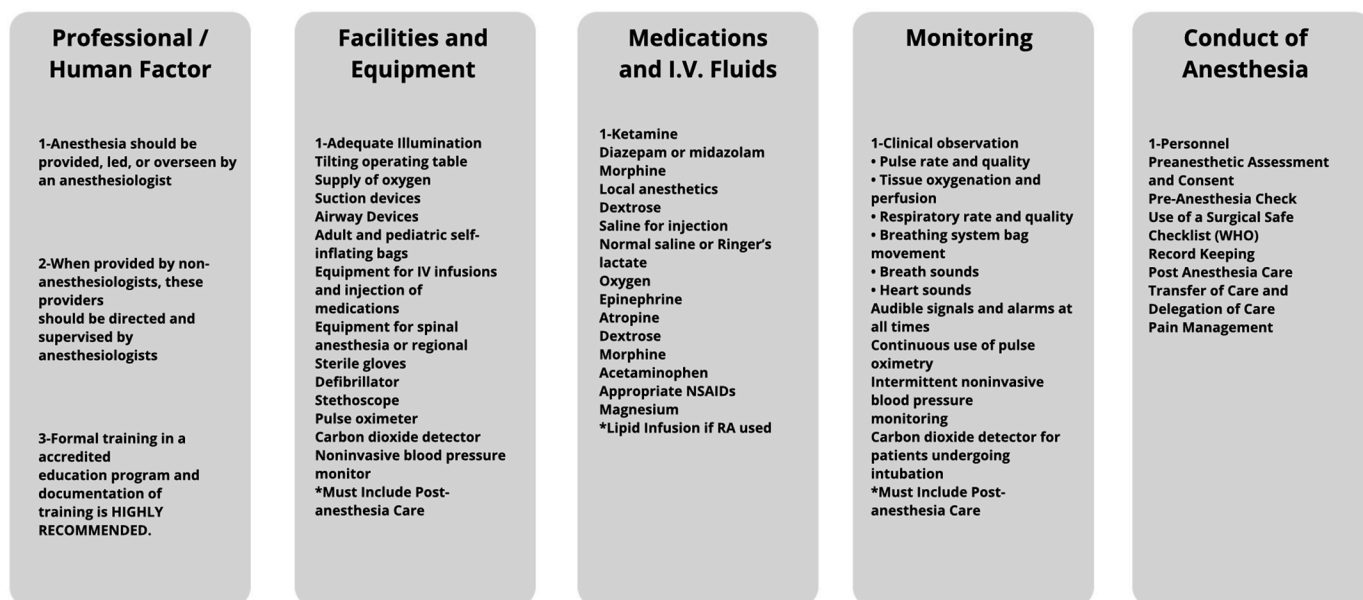


Fig. 1. WFSA Anesthesia Facility Assessment Tool: highly recommended items. Abbreviation: WFSA, World Federation of Societies of Anesthesiologists.

HELSINKI DECLARATION OF SAFETY IN ANESTHESIA

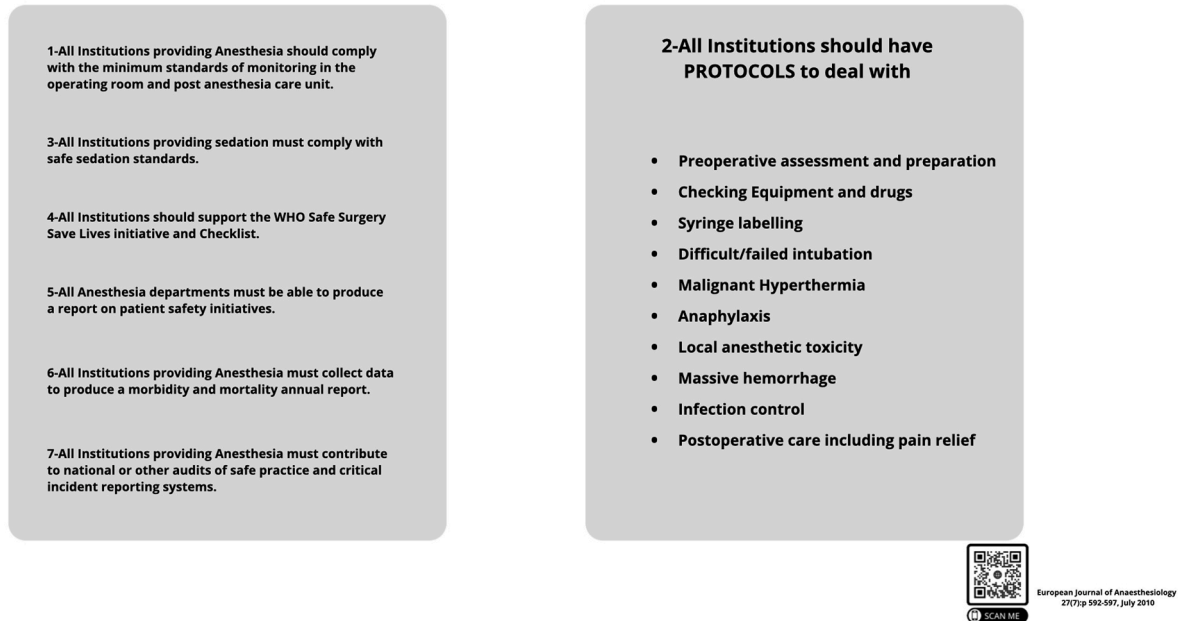


Fig. 2. ESAIC Helsinki Declaration on patient safety in anaesthesiology. Abbreviation: Esaic, European Society of anaesthesiology and intensive care.

standards, and encourage accreditation processes [75]. The ASA also established guidelines and standards regarding office-based anesthesia, which is vital given that many aesthetic procedures are performed as office-based procedures [75].

The WHO Safe Surgery Saves Lives Program, which includes the WHO Surgical Safety Checklist, is critical in minimizing the harm caused by complications during surgical procedures [76]. These safety practices reinforce teamwork and improve communication among perioperative team members. The Institute for Safety in Office-Based Surgery has adapted the checklist for aesthetic office-based procedures [77].

Readers are encouraged to review such documents and parameters and to exceed the recommendations set by the WHO, WFSA, and ASA but never practice below recommended standards of care.

7. Preanesthetic assessment

Most patients undergoing aesthetic procedures are healthy and seek medical help not to treat a disease or condition but to improve their appearance and self-esteem. Ideally, the preoperative evaluation should be performed promptly and with sufficient time. The assessment should be timely, thorough, and dynamic. Unfortunately, especially in surgical tourism practices, it may be carried out on the same day as the planned procedure, minutes before it starts. A complete history and detailed and oriented physical examination are required to determine the patient's physical condition, gather insight into their emotional state, and establish their ability to tolerate the procedure, including recovery. It is an ideal time for the patients and their families to get to know their providers, discuss concerns about anesthesia, and diminish anxiety.

Once the assessment has been performed, informed consent must be obtained and signed by the patient. Although beyond the scope of this review, the implications of informed consent, recourse tools, options, and legal support are limited when treatment is performed internationally [2].

8. Anesthetic techniques

Aesthetic surgical procedures are performed using different anesthetic techniques: local anesthesia with sedation, general anesthesia, a

combination of general and regional anesthesia, and even predominantly regional anesthesia either with a peripheral nerve block or neuraxial anesthesia (epidural, spinal, and combined spinal-epidural anesthesia) [78,79].

9. Sedation and general anesthesia

Adverse respiratory and hemodynamic events and airway management misadventures are commonly reported in operating and nonoperating room settings [80,81]. However, data on outpatient elective aesthetic procedures are unavailable. The objective of sedation is to keep a patient in a calm state to enable the surgeon to manage the surgical pain with frequent injections of local anesthetics and perform the procedure safely and comfortably. Patients undergoing deeper levels of sedation should have an adequate preoperative evaluation and have a trained provider with the skills and knowledge to recognize and treat airway complications; the ventilatory function should be monitored by clinical signs and with the use of a pulse oximeter and capnography unless precluded by the procedure [82].

General anesthesia can be used for aesthetic surgery if the patients have been thoroughly evaluated and optimized and the location meets all safety regulations. The ultimate goals of a general anesthetic are to ensure a smooth and rapid induction, control of the airway and ventilation, provide adequate operative conditions and positioning, hemodynamic stability, thermoregulation, amnesia, fast recovery, minimal side effects, control of nausea and vomiting, and proper control of postsurgical pain [83]. The use of general anesthesia is resource-intensive and is commonly perceived by the public as more invasive, riskier, and associated with a longer recovery time. Many aesthetic surgical tourist practices advertise "avoidance of general anesthesia" to attract more patients.

10. Regional anesthesia

Regional anesthesia maintains spontaneous ventilation and provides better pain control, allowing a decrease in the use of postoperative opioids and faster discharge from postanesthesia units, with less incidence of nausea and vomiting [84]. Neuraxial blocks commonly used for

aesthetic surgery are the single spinal, single or continuous epidural and combined spinal-epidural techniques [78,85]. Similarly, as in colorectal procedures and other high-risk surgeries, a combination of thoracic and lumbar epidural, as well as the use of cervical-thoracic and lumbar epidurals for combination procedures, are used, even though there are no literature reports on the safety of such practices [86–88]. The true incidence of complications of regional procedures, adverse events, failed blocks, postdural puncture headache, local anesthetic systemic toxicity, and circulatory and respiratory effects of high blocks are unknown [89]. Critical issues to consider are whether reusable or single-use equipment is used in the destination country or at the facility involved in such practices and if they follow the American Society of Regional Anesthesia (ASRA) guidelines on antithrombotic agents [90,91].

Two recent outbreaks of epidural iatrogenic fungal meningitis in patients undergoing regional anesthesia for tourism procedures in Mexico have raised warnings about the use of neuraxial techniques for aesthetic tourism procedures. In 2022, in the city of Durango, 41 of 80 patients died from fungal meningitis with drug-resistant *Fusarium Solani* [92]. In 2023, in Matamoros, 185 patients received epidural anesthesia for aesthetic surgery, resulting in 12 fatalities, 10 of which were confirmed to be fungal meningitis. Additionally, there were 11 suspected cases (symptoms consistent with meningitis, spinal tap results pending or unknown) and 14 probable cases (spinal tap results suggest meningitis, fungus not isolated) [93,94]. The cause was contamination of the anesthetic vials by the anesthesia professional who carried his medications from one center to another due to a lack of available dispensing pharmacies at the aesthetic medical centers [95].

11. Postprocedural recovery

Most aesthetic procedures are ambulatory and performed in a hospital, a surgical center, or an office-based procedure. However, in cases of unforeseen circumstances or complications, admission to a hospital with a higher level of care may be required. Once the patient has met discharge criteria from the postoperative recovery area, they are discharged from the surgical facility and, because of the nature of surgical tourism, not to the comfort of their home, but usually back to a hotel or other after-care facilities, known as "healing houses" [96]. These recovery facilities are not regulated and are staffed by a nurse or other medical professionals with varied experience and skills. In the postoperative period, there might be a need to perform wound checks and dressing changes, there might be issues with pain control or other emergencies that require immediate attention by the surgical team, and language barriers can be an issue. Establishing contact information and having a contingency plan in case of a medical emergency in the postoperative phase is essential but seldom done.

12. Healthcare provider and institutional accreditation

Strengthening the infrastructure in healthcare facilities participating in surgical tourism should be a priority; the goals should be to have adequately trained personnel with access to essential medical equipment, tools, and medications and adhere to a minimum set of standard policies and procedures to provide high-quality and effective patient care. There are no international guidelines on medical tourism practices. Every country has unique laws, accreditation standards, and administrative and legal procedures regarding healthcare. Adopting international accreditation standards could be an essential step in the growth of the medical tourism industry. While accreditation and credentialing do not guarantee outcomes, they signal that institutions and healthcare providers have the qualifications and expertise to deliver excellent care.

The Joint Commission International (JCI), an independent, not-for-profit organization and branch of the body responsible for accrediting hospitals in the United States, has been helping medical tourism evolve by promoting best practices in quality and safety worldwide and helping healthcare organizations improve performance and outcomes. More

than 1000 organizations in over 70 countries, including large hospitals and ambulatory and home care programs, have been recognized as JCI-accredited organizations [97]. Other known accreditation organizations worldwide are shown in Table 1.

13. Recommendations for patients participating in surgical tourism

As more patients travel abroad for medical treatment and procedures, educating and empowering them to differentiate between adequate, proper, and ethical medical care becomes essential. Medical tourists should research and inquire about the credentials and accreditations of the providers and facilities they plan to use. They should obtain information from established organizations such as JCI and discourage reliance on the Internet or social media as the only sources of information.

It is recommended that patients traveling abroad for medical care consult their local healthcare provider before the trip to discuss their health conditions, vaccinations, options, alternatives, and risks related to travel. Ideally, they should carry a copy of their medical records, a list of allergies, and prescriptions with enough doses for the duration of the trip and with precise dosing schedules. Plans for proper timing of air travel after surgery should be made in advance [5,6,20]. Plans for follow-up care should be made before undergoing a surgical procedure in a foreign country.

Patients should disclose all relevant information about any surgeries or medical treatments received abroad. Reminding patients to request copies of their medical records, preferably translated, is crucial so they can provide this information to their healthcare providers upon returning for follow-up care.

14. Professional association recommendations

Promoting the significance and visibility of medical tourism in medical school curricula, ensuring its inclusion as a core subject in national and international medical conferences and textbooks, and broadening its scope beyond aesthetic surgery could potentially increase awareness and stimulate public interest, especially amongst those considering traveling abroad for elective health care. Available online information from prominent medical associations exists but does not discriminate whether it is intended as a guide for patients or healthcare providers; many available documents have not been updated in years. See Table 2.

15. Conclusions

Medical tourism is a rapidly growing industry providing patients greater access to medical services and procedures. However, it is essential to recognize that this is a private-sector endeavor without an international regulatory framework. While legal and ethical risks exist,

Table 1
Worldwide accrediting organizations.

Organization	
The International Society for Quality in Health Care (ISQua EEA)	www.globalhealthcareaccreditation.com/healthcare-home
Medical Travel Quality Alliance	mtqua.org/medical-tourism-certification/
Temos International Healthcare Accreditation	www.temos-worldwide.com/medical-care.aspx
Accreditation Canada	accreditation.ca/
The Australian Council on Healthcare Standards	www.achsi.org/services/program-overview/accreditation
European Society for Quality in Healthcare	profound.eu.com/european-society-for-quality-in-healthcare-esqh/
Organizacao Nacional de Acreditacao (ONA)	https://www.ona.org.br/

Table 2
Professional association recommendations.

Organization	
The International Society of Aesthetic Plastic Surgery (ISAPS)	https://www.isaps.org/media/ruij2rcn/04112016-isaps-blog-traveling-for-cosmetic-surgery.pdf
The Aesthetic Society	www.theaestheticsociety.org/safety/articles/guidelines-having-plastic-surgery-abroad-part-1
The Aesthetic Society	www.theaestheticsociety.org/safety/articles/guidelines-plastic-surgery-abroad-part-2
American Medical Association (AMA)	www.medretreat.com/templates/UserFiles/Documents/Whitepapers/AMAGuidelines.pdf
American College of Surgeons (ACS)	www.facs.org/about-acs/statements/medical-and-surgical-tourism/
Centers for Disease Control (CDC)	wwwnc.cdc.gov/travel/page/medical-tourism
U.S. State Department	travel.state.gov/content/travel/en/international-travel/before-you-go/your-health-abroad.html
American Society of Anesthesiologists (ASA)	www.asahq.org/about-asa/newsroom/news-releases/2010/03/international-travel

focusing on ensuring the highest standards of care for all patients is crucial. Cosmetic/aesthetic procedures, the most commonly sought-after, require that healthcare professionals and facilities involved in medical tourism be strengthened to ensure patients receive the best possible care. Ensuring patient safety is of utmost importance for anesthesia professionals. International standards have been put in place to maintain and improve the quality of anesthesia care. When performing aesthetic procedures under anesthesia, it is crucial for professionals to not only follow these guidelines and standards but to exceed them if possible.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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