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| RESEARCH ARTICLE

Photography in Aesthetic Surgery: ethical, scientific, and mediatic issues- A Literature Review

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| ABSTRACT
Photography has become a cornerstone of aesthetic surgery practice. An essential tool for clinical documentation, it has also evolved, in the digital era, into a vector for medical communication, professional education, and, at times, commercial promotion. This literature review critically and comprehensively analyses the multiple dimensions of medical photography in aesthetic surgery: historical background, legal and ethical framework, scientific applications, mediatic implications, and technical standards of good practice. It draws on data from the international literature, enriched by the specificities of the Moroccan context. The findings highlight the imperative for a rigorous, standardised, and ethically irreproachable photographic practice, grounded in informed patient consent, protection of personal health data, and respect for human dignity. When properly applied, photography is a major clinical and scientific asset for the practitioner; when poorly managed, it exposes both physician and patient to significant medico-legal and ethical risks.

| KEYWORDS

Medical photography, aesthetic surgery, medical ethics, legal framework, social media, photographic standardisation, informed consent, health data

| ARTICLE INFORMATION

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Introduction

In the digital era, social media platforms have become one of the primary sources of health information for the general public, owing to their accessibility, popularity, and ease of use. They have profoundly reshaped communication across many fields — and plastic and aesthetic surgery, a discipline intrinsically tied to body image, has embraced these digital tools with particular intensity.

This growing digital exposure has been accompanied by a massive increase in clinical photography — especially before-and-after images — which now play a fundamental role in morphological assessment, medical documentation, communication, and the promotion of surgical procedures. While this evolution offers undeniable advantages in terms of therapeutic monitoring and knowledge sharing, it also raises major ethical, deontological, and legal issues that warrant rigorous analysis [1].

From a medical standpoint, photography is a valuable tool for diagnosis, surgical planning, post-operative follow-up, and clinical research. It enables objective visualisation of morphological changes induced by surgery, structured archiving of medical records, and the transmission of knowledge within the scientific community. However, the uncontrolled dissemination of clinical images through publicly accessible digital platforms is not without consequences: trivialisation of surgical procedures, growing aesthetic pressure on younger generations, potential violations of patient privacy, and commercial exploitation [2].

A notable sociological trend has emerged in recent years: according to the International Master Course on Aging Science (IMCAS), individuals aged 18 to 34 now undergo aesthetic surgery at higher rates than previous generations. Generation Z, highly connected and strongly influenced by visual standards propagated online, is particularly affected by the pursuit of conformity to digitally mediated beauty norms [3].

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Given these observations, a clear and current frame of reference is urgently needed. This literature review offers a comprehensive and critical analysis of the use of photography in aesthetic surgery. After tracing the historical evolution of the discipline and its relationship with the image, we successively address the legal and ethical framework, scientific applications, mediatic implications, technical standards illustrated by diagrams, and the prospects offered by emerging technologies.

Historical Background [4-11]

From Antiquity to Modern Surgery

Plastic and aesthetic surgery is an ancient discipline whose origins can be traced back to Antiquity. The earliest reconstructive procedures are documented in Egyptian and Indian civilisations, with nasal repair techniques described in the Sushruta Samhita (circa 600 BC). It was not until the 19th century, however, that modern plastic surgery truly flourished, driven by major advances in anaesthesia, asepsis, and operative techniques.

The 20th century marked a decisive turning point: both World Wars necessitated the development of large-scale reconstructive surgery for the management of severe facial trauma. It was also during this period that aesthetic surgery — distinct from reconstructive surgery — began to address requests for physical appearance modification for non-therapeutic purposes, inaugurating a new medical era centred on body image.

The Birth and Evolution of Medical Photography

Medical photography emerged in the late 19th century, in parallel with the development of photography as a technology. Surgeons quickly recognised the value of this tool for documenting clinical cases, comparing pre- and post-operative results, and building structured archives. In aesthetic surgery, where body image lies at the heart of clinical practice, photography progressively established itself as an indispensable component of the medical act.

The advent of the digital era in the late 20th century revolutionised photographic practice: digital cameras replaced film, image-processing software became widely accessible, and three-dimensional photography began to emerge. These innovations enabled better standardisation of clinical images, improved reproducibility of views, and unprecedented storage and archiving capacity.

The Rise of Social Media and Its Implications

The early 21st century saw the appearance of the first plastic surgery websites, accompanied by photo galleries intended to illustrate surgical outcomes. This trend accelerated with the rise of social media in the 2010s. Platforms such as Instagram, YouTube, and TikTok became showcases for certain practitioners, who posted photographs and videos of their procedures, blurring the boundary between medical communication, marketing, and advertising.

Photography in aesthetic surgery has thus undergone a transformation parallel to that of the discipline itself: initially a scientific and medical tool, it has progressively become a vehicle for image, communication, and sometimes the commodification of care — raising the ethical, legal, and deontological questions that the following sections address.

Legal and Ethical Framework [12-14]

Legal Foundations

Medical photography is governed by several legislative texts whose common purpose is to ensure respect for privacy, the right to one's image, and the security of health data. In any modern legal system, a photograph of a patient constitutes personal data subject to data protection law.

In Moroccan law, Law No. 09-08 on the protection of individuals with regard to the processing of personal data, enacted in 2009, is the primary reference text. It requires, among other things, the collection of the patient's explicit consent prior to any photography and, all the more so, prior to any dissemination. Similar legislation has been adopted internationally — the European General Data Protection Regulation (GDPR) being the most comprehensive example — underscoring the universal nature of these requirements.

Informed Consent: The Cornerstone

Patient consent is the sine qua non of any photographic use in medicine. This consent must be freely given, informed, specific, and documented in writing. It must explicitly specify the intended uses: strictly medical use for the patient's record, scientific use for conferences or publications, or communicational use for a website or social media. Any use inconsistent with the consent initially obtained constitutes a violation of the patient's fundamental rights and may give rise to legal and disciplinary sanctions.

Since most patients lack in-depth medical knowledge, a purely verbal explanation of the photographic implications may prove insufficient. Incorporating a visual support into the consent procedure — illustrating the types of images taken, their storage conditions, and possible uses — enhances the clarity of the information provided and the legal validity of the consent itself.

Anonymisation, Storage, and Confidentiality

Medical photographs stored digitally are considered elements of the medical record and must be retained in accordance with prevailing security and confidentiality standards. They may not be transmitted to third parties without the patient's written authorisation. Anonymisation of images — by obscuring the face or identifying features — constitutes a minimum precaution, though not always sufficient, since certain body regions may remain identifiable.

Dedicated software for the secure management of medical photographs now allows structured archiving, access rights management, and use tracking. Their progressive adoption by practitioners represents a significant step forward in the security of health photographic data.

Deontological Obligations

Beyond the legal framework, three fundamental deontological obligations apply to all practitioners. First, respect for medical confidentiality: a photograph constitutes medical data in its own right, and its dissemination without appropriate precautions amounts to a breach of confidentiality. Second, restraint in communication: the Moroccan Code of Medical Ethics prohibits any disguised advertising or self-promotion through images. Third, honesty of information: images must not be retouched or enhanced in ways that create unrealistic expectations in patients, on pain of exposing the practitioner to liability claims for defective consent.

Risks Associated with Uncontrolled Digital Dissemination

The uncontrolled dissemination of clinical images on digital platforms exposes practitioners to several documented risks: disguised advertising with visual manipulation through retouching or flattering lighting; breach of patient intimacy even when the face is masked; and the generation of social pressure through idealised representations of the body. Any photographic publication of a patient must be governed by precise, time-limited consent and accompanied by rigorous anonymisation.

Scientific Applications of Photography [11,15,16]

Photography as a Diagnostic Tool

Facial and anatomical photography must be regarded as a diagnostic tool in its own right, on a par with radiography or ultrasound. During the initial consultation, many clinical elements may be underappreciated under time pressure. Photography affords the opportunity to analyse the patient's morphological status in their absence, without time constraints, and with an objectivity that real-time consultation does not always allow.

Pre-operative facial photographic analysis enables evaluation of symmetry, proportions of the facial thirds, contours, and volumes using validated anthropometric methods — Bell's proportions, Achard and Blanc's sectors, Holdaway's criteria, and Ricketts' E-line. These landmarks, illustrated in Figure 3 below, provide the basis for objectifying surgical indications and planning procedures with precision.

Photography as a Therapeutic and Follow-Up Tool

Photographs should be obtained at each significant stage of treatment to document patient progress. This photographic follow-up enables monitoring of soft tissue healing, assessment of prosthetic material integration, surveillance of graft evolution, and verification of post-operative recovery.

Pre- and post-operative photographs constitute the central element of outcome assessment. They provide both quantitative and qualitative visual evaluation of anatomical changes induced by surgery — symmetry, volumes, contours, scars — and facilitate comparison over time, sometimes spanning several months or years. They also reinforce communication with the patient by objectifying changes and consolidating therapeutic adherence.

Photography as an Educational and Research Tool

Photographic archiving of clinical cases is a valuable resource for continuing medical education. It facilitates self-assessment, allowing the practitioner to review their outcomes with an objectivity difficult to maintain in real time. For example, analysis of an immediate post-operative photograph may reveal excessive suture tension or a misalignment that escaped attention during the procedure. This reflective practice is a powerful driver of professional development.

In the context of scientific publications, rigorous photographic documentation is indispensable. Specialist journals systematically require high-quality images to illustrate reported cases. In research, photographs serve as a basis for measurement via image analysis or digital anthropometry software, enabling quantification of outcomes and their submission to statistical analysis.

Objectivity, Reproducibility, and Limitations

To retain its scientific value, medical photography must meet strict criteria of objectivity and reproducibility. Standardisation of views is imperative: constant angles, identical lighting, same focal length, uniform neutral background, and neutral patient expression. These technical conditions must remain rigorously constant between sessions to allow valid comparison.

Despite these precautions, biases remain possible. Technical variability — altered lighting, a slightly different angle, a camera with different resolution — may produce a misleadingly flattering or unfavourable image. The use of filters or digital retouching, even minimal, undermines the scientific value of the image. A rigorous approach, adhering to principles of neutrality, reproducibility, and traceability, is therefore imperative.

Mediatic Issues and Social Impact [17]

Negative Impacts of Social Media

Prolonged exposure to idealised images on social media generates a detrimental social comparison phenomenon, contributing to body dissatisfaction and the emergence of surgical requests motivated not by medical necessity but by the pursuit of conformity to online visual standards. This phenomenon is particularly pronounced among adolescents and young adults.
At the collective level, the trivialisation of aesthetic surgical procedures through social media normalises interventions that carry real risks, which are often minimised in published content. Surgical videos disseminated without appropriate medical context create false representations of potential complications and recovery timelines. For the profession, unregulated media exposure risks competitive distortion and the devaluation of medical practice.

Opportunities and Communicational Value

Social media nonetheless offers genuine opportunities. The dissemination of quality medical information to the general public — on risks, indications, and non-surgical alternatives — represents a public health education mission that practitioners can embrace responsibly. Between practitioners, these platforms facilitate the sharing of clinical experiences, the discussion of complex cases, and the dissemination of new techniques.

Medical Marketing and Photography

The boundary between legitimate medical communication and commercial advertising remains difficult to define, but critical to respect. While practitioners have the right to inform the public about their activity and areas of expertise, promotion through retouched photographs or before-and-after comparisons falls under medical advertising, which is strictly regulated in most countries. In Morocco, any use of photographs for promotional purposes without appropriate oversight exposes the practitioner to disciplinary and legal sanctions.

Technical Criteria and Photographic Protocols [2,18-25]

Equipment Selection

The quality of a medical photograph depends on an entire production chain: image capture, processing, and display. The choice of a semi-professional digital SLR camera is generally recommended for medical photography, with the following technical specifications: CCD or CMOS sensor of at least 6 megapixels, colour depth of 8 bits minimum (16 bits recommended), dynamic range ≥ 6 stops, TTL exposure metering with flash synchronisation, automatic and manual white balance modes, and compatibility with RAW, PNG, TIFF, and JPEG formats. A focal length between 85 and 105 mm is recommended for medical portrait photography, minimising perspective distortion.
The importance of pixel count is often overstated: it determines image size more than image quality, and becomes significant only in cases of significant cropping or enlargement. Lens quality and mastery of exposure parameters are far more decisive factors.

Studio Configuration

The reproducibility of technical conditions is what guarantees the comparative value of pre- and post-operative photographs. The diagram below illustrates the recommended layout for a medical photography room.

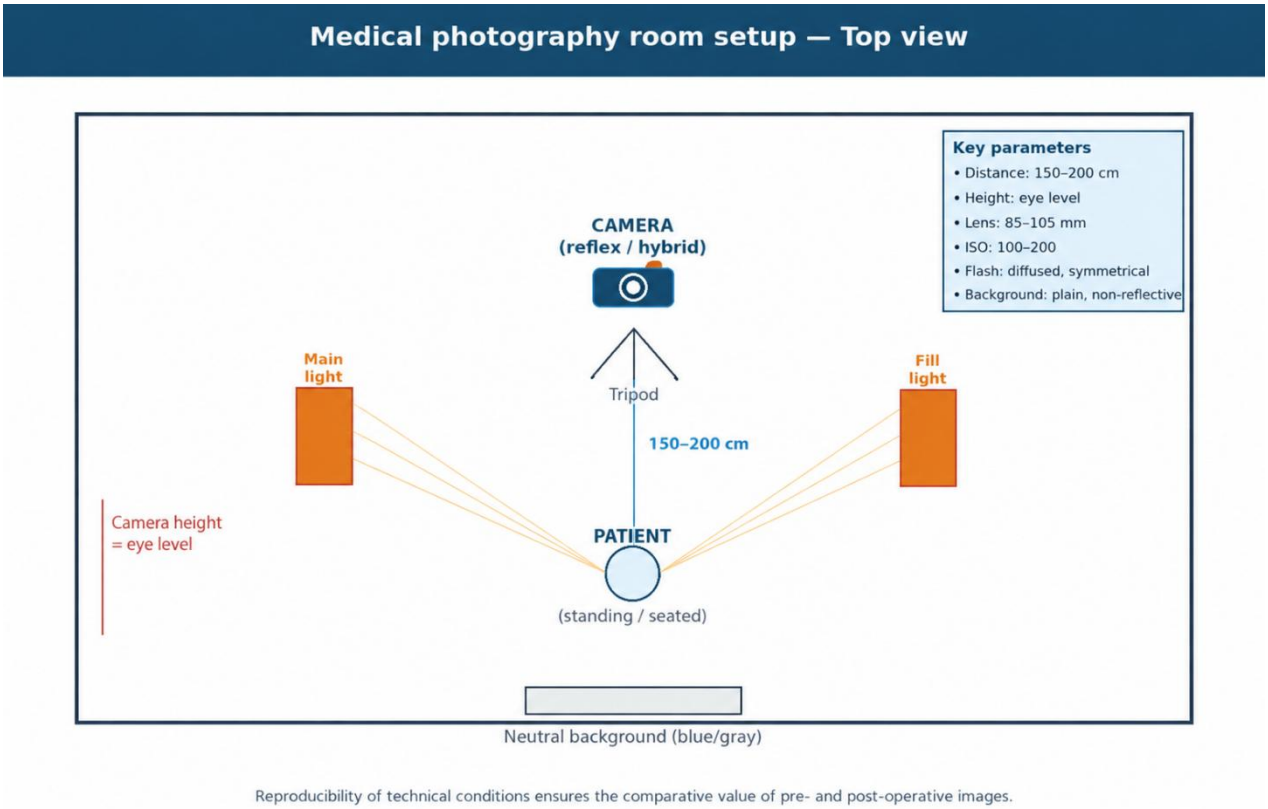

Figure 1 — Medical photography room configuration (top view): positioning of patient, camera, and light sources
Lighting is one of the most critical determinants of medical photographic quality. Standardised, reproducible, diffuse lighting is preferable. The use of a ring flash or a symmetric lighting system produces homogeneous illumination, minimising parasitic shadows that could distort anatomical interpretation. The background should be neutral — preferably light blue or grey — uniform and non-textured.

Protocol for Facial Surgery
Facial surgery requires a standardised photographic protocol covering several complementary views. Head position is consistently referenced according to the Frankfort Horizontal Plane — a line passing through the tragus of the ear and the inferior orbital rim. The diagram below presents the recommended standard views.

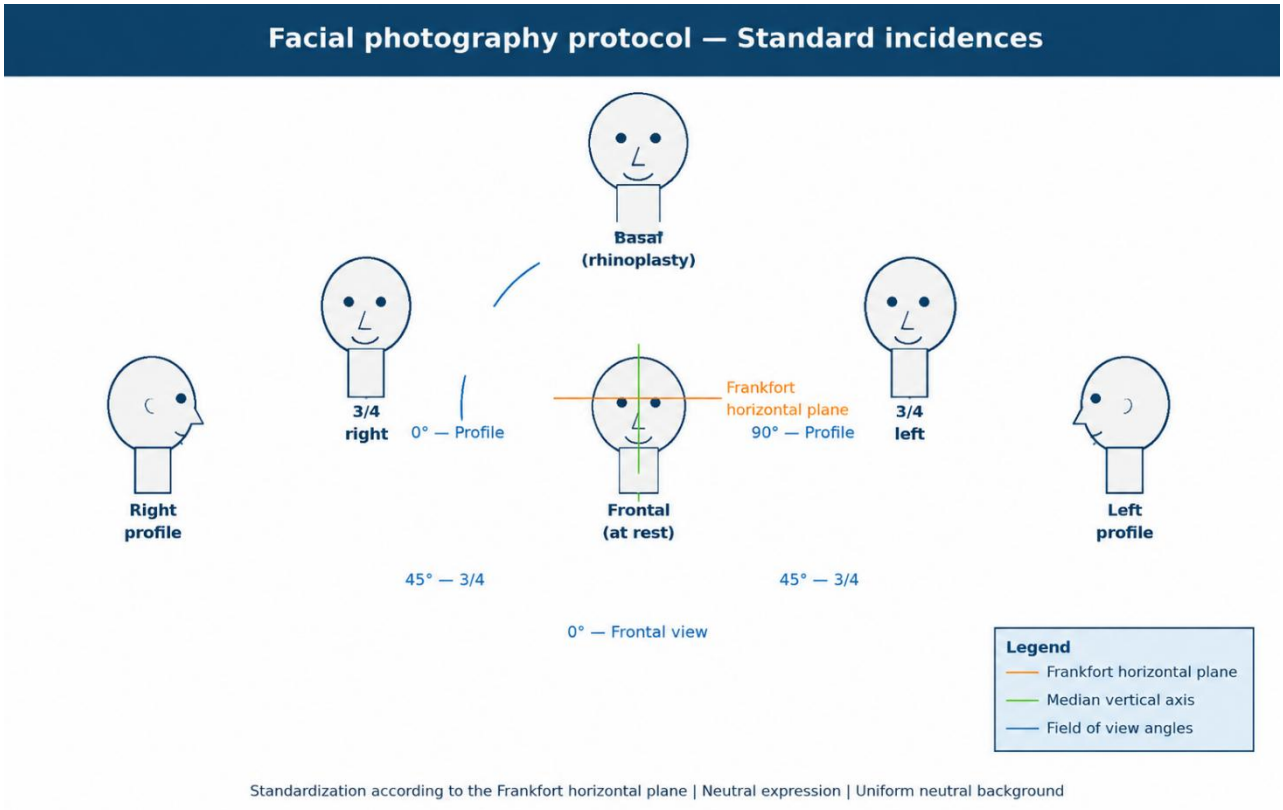

Figure 2 — Standard photographic views for facial surgery: frontal (0°), lateral profiles (90°), three-quarter views (45°), and basal view for rhinoplasty

The patient's expression must be neutral for reference images, to avoid any morphological distortion due to facial movement. Additional images with expression (forced smile, pursed lips) may be added according to the indication. The focal length and camera height relative to eye level must remain rigorously constant between sessions.

Anatomical Landmarks and Aesthetic Reference Lines

The scientific interpretation of facial photographs relies on standardised anatomical landmarks and established aesthetic reference lines. Mastery of these landmarks by the practitioner is essential for pre-operative analysis and the assessment of post-operative outcomes.

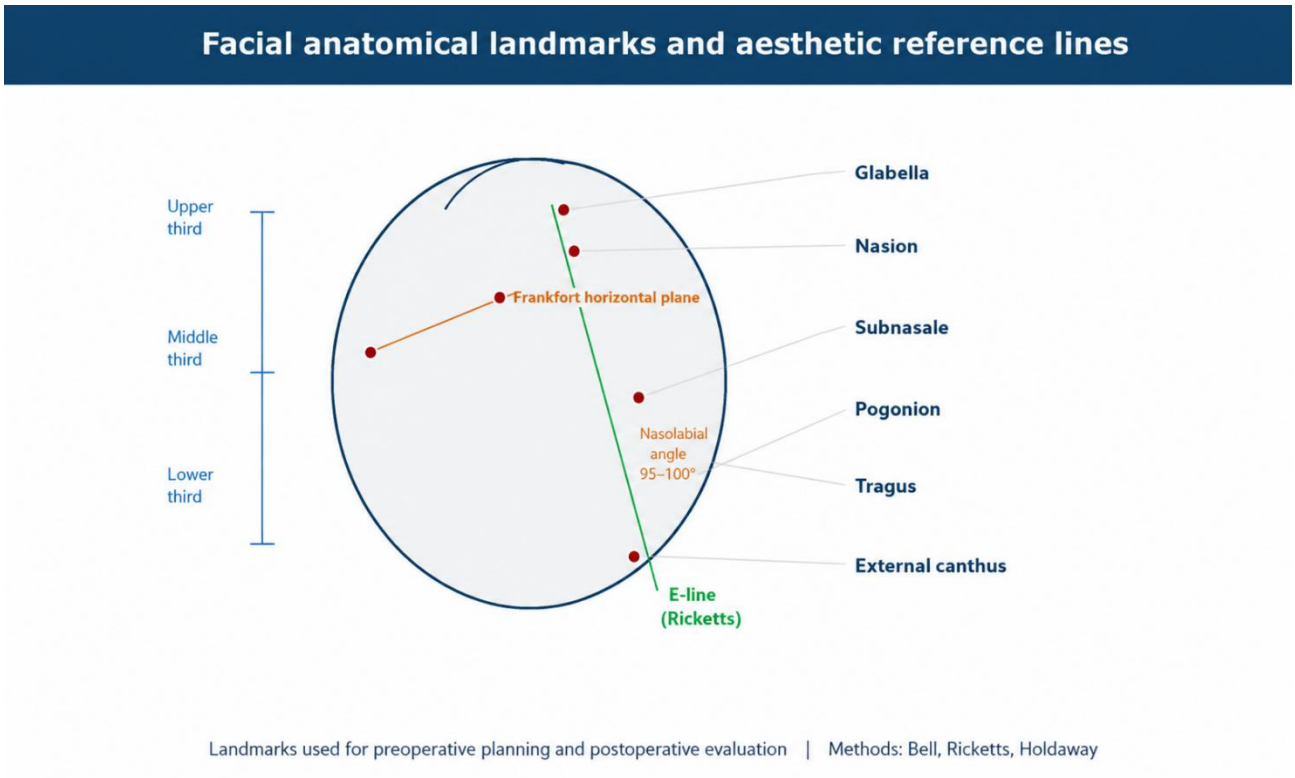

Figure 3 — Facial anatomical landmarks and aesthetic reference lines used in pre-operative photographic analysis (Frankfort Plane, Ricketts E-line, facial thirds)

Bell's method divides the face into three equal horizontal thirds (upper, middle, and lower thirds). Ricketts' E-line, passing through the nasal tip and the soft-tissue pogonion, assesses labial profile balance. Holdaway's criteria define reference facial angles, notably the soft-tissue facial angle (91° ± 7°) and nasal prominence (14–24 mm). These landmarks constitute the anthropometric foundation of any rigorous surgical planning.

Protocol for Breast and Body Contouring Surgery

Breast and body surgery requires an adapted photographic protocol covering all axes of morphological evaluation. A minimum of five views is required to ensure comprehensive assessment.

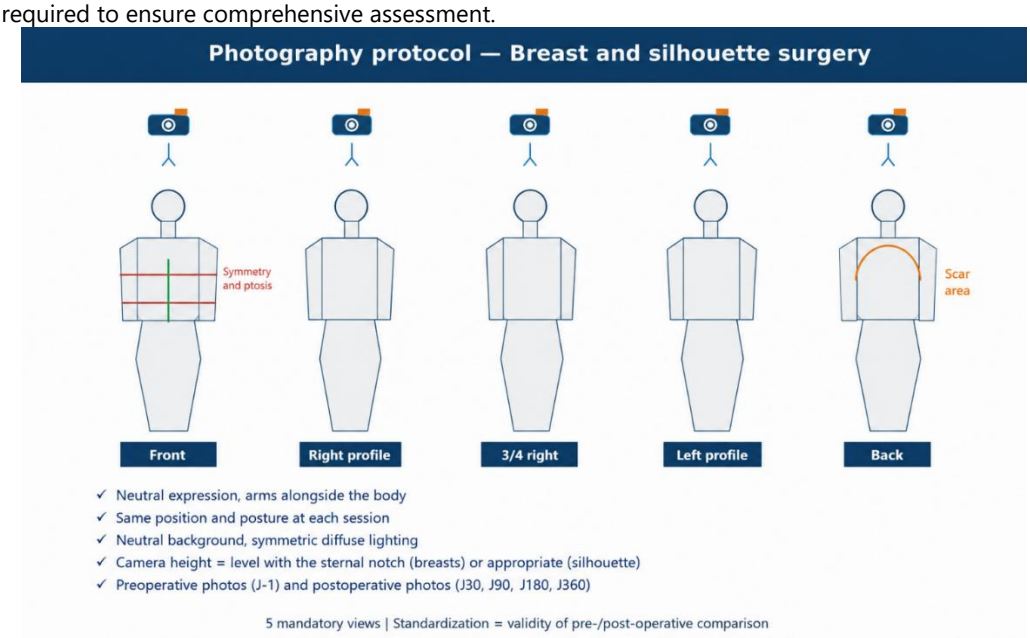

Figure 4 — Photographic protocol for breast and body contouring surgery: 5 standard views (frontal, profiles, three-quarter, posterior) with symmetry and healing control points

Patient posture standardisation is particularly demanding for body surgery: arms alongside the body, weight equally distributed on both lower limbs, horizontal gaze. Camera height is adjusted to the level of the sternum for breast surgery, and to the level of the umbilicus for body contouring. A photographic follow-up schedule is recommended: Day -1 pre-operative, then Day 30, 90, 180, and 360 post-operatively.

3D Photography and Emerging Technologies

The emergence of three-dimensional (3D) photography represents a major advance in the standardisation and objectification of morphological assessments. 3D capture systems produce precise, reproducible, and quantifiable volumetric representations of the face or body, overcoming inherent limitations of traditional two-dimensional photography — notably the inability to capture volumes in their entirety and sensitivity to angle variation.

Pre-operative simulation software, enabling visualisation of potential outcomes or quantification of anatomical modifications, is progressively establishing itself as a valuable complementary tool. It contributes to improving communication with patients and objectifying outcomes within a scientific framework, provided its use for promotional purposes remains strictly controlled.

Technical Limitations

The literature identifies several categories of technical limitations that may affect the scientific value of medical photographs: limitations related to the absence of variable clinical data (skin tone, oedema, emotional state); limitations related to shooting conditions (lighting defects, focal length variations); limitations related to patient compliance (non-reproducible positioning, non-standardised expressions); limitations specific to smartphone use (limited sensors, absence of standardisation); and failures of image annotation (absence of date, identifier, or clinical context). These limitations underscore the need for specific professional training in medical photography and clear protocol codification within each clinical facility.

Specificities of the Moroccan Context

Current Situation

The Moroccan context presents specific features that warrant attention. Aesthetic surgery is experiencing sustained growth, driven by the rising purchasing power of the middle classes, evolving social norms, and the growing influence of social media on beauty standards. At the same time, dedicated training in medical photography remains insufficiently structured within undergraduate and postgraduate medical curricula.

The regulatory framework, though in place, has gaps specifically concerning medical photography in aesthetic surgery. Law 09-08 provides a legal basis for the protection of personal data, but its practical application in the daily context of clinical photography remains to be strengthened. The absence of specific national professional guidelines constitutes a gap that relevant learned societies could usefully address.

Practitioners' Practices

Data from surveys conducted among Moroccan specialists in aesthetic surgery reveal heterogeneity of photographic practice. While pre- and post-operative photographs are near-universally obtained, the standardisation of protocols, the secure management of photographic data, and the formalisation of consent remain variable from one practitioner to another. These findings underline the need for harmonisation of practices and greater awareness of ethical and legal considerations.

Telemedicine and Future Perspectives

The development of telemedicine opens new prospects for the use of medical photography. Remote consultation, tele-expertise, and post-operative follow-up through secure photographic exchange are rapidly growing applications, particularly relevant in a country where geographical inequalities in access to specialist care remain significant. These developments require, however, an adapted regulatory framework and technically secure tools guaranteeing the confidentiality of exchanges.

Practical Recommendations

Based on this literature review, seven recommendations are formulated for practitioners in aesthetic surgery:

- Systematically collect written, specific, and time-limited photographic consent, explicitly specifying each intended use of the images (medical, scientific, or communicational).
- Adopt and apply a standardised photographic protocol within each clinical facility, including technical parameters and the anatomical views required according to the type of procedure.
- Use dedicated software tools for the secure management of medical photographs, compliant with applicable health data protection requirements.
- Refrain from any retouching or digital manipulation of clinical images intended for medical documentation or scientific research.
- Strictly regulate any public photographic communication in accordance with the Code of Medical Ethics, avoiding any promotional or advertising drift.

- Integrate medical photography training into plastic and aesthetic surgery specialist training programmes.
- Actively contribute to the development of specific national professional guidelines on medical photography in aesthetic surgery, under the aegis of competent learned societies.

Conclusion

Photography occupies a place that is both irreplaceable and delicate in contemporary aesthetic surgery practice. As a tool for diagnosis, surgical planning, therapeutic monitoring, research, and education, it represents a major clinical and scientific asset when used with rigour and method. At the same time, its growing mediatic dimension, amplified by the pervasive presence of social media, exposes practitioners and their patients to ethical, legal, and deontological risks that it would be imprudent to overlook.

Medical photography cannot be reduced to a simple visual recording. It is a medical act in its own right, subject to the same demands of rigour, transparency, and respect for the person as any other clinical act. Informed patient consent, technical standardisation of protocols, data security, and compliance with deontological obligations are its indissociable pillars.

At a time when three-dimensional photography, artificial intelligence, and telemedicine are opening unprecedented prospects for the objectification and communication of surgical outcomes, the medical community must anticipate these developments by building an appropriate ethical and regulatory framework. Only on this condition will photography be able to fully fulfil its promise: to serve, in the interests of the patient and of science, as a faithful and illuminating mirror of clinical reality.

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