Editorial

Beyond the Bedside: Case Reports and Clinical Images as Surgery's Early-Signal System

Além da Cabeceira do Doente: Relatos de Caso e Imagens Clínicas como Sistema de Sinalização Precoce em Cirurgia

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ABSTRACT

This editorial argues that surgical case reports and clinical images should be reconsidered not as low-level evidence, but as an essential early-signal detection system within surgical science. While randomized trials standardize and average findings, case reports capture rare, unexpected, and technically nuanced events that often precede major clinical advances. Structured reporting guidelines (CARE and SCARE) are strengthening their scientific rigor. The authors further highlight the democratizing value of case reports in enabling contributions from resource-limited settings, their educational role in training, and their growing relevance as structured inputs for artificial intelligence and machine learning systems. The editorial calls on journals to curate case reports strategically — prioritizing clinical relevance and signal value over mere rarity — thereby reinforcing their irreplaceable role in advancing surgical knowledge.

RESUMO

Este editorial defende que os relatos de casos cirúrgicos e as imagens clínicas devem ser recontextualizados, não como evidência de baixo nível, mas como um sistema essencial de deteção precoce no seio da ciência cirúrgica. Enquanto os ensaios aleatorizados padronizam e generalizam os resultados, os relatos de casos captam eventos raros, inesperados e tecnicamente complexos que frequentemente precedem avanços clínicos significativos. As diretrizes estruturadas de relato (CARE e SCARE) têm reforçado o seu rigor científico. Os autores sublinham ainda o valor democratizador dos relatos de casos ao permitirem contribuições de contextos com recursos limitados, o seu papel educativo na formação médica, e a sua crescente relevância enquanto dados estruturados para sistemas de inteligência artificial e aprendizagem automática. O editorial apela a que as revistas científicas curem os relatos de casos de forma estratégica, priorizando a relevância clínica e o valor do sinal em detrimento da mera raridade, reforçando assim o seu papel insubstituível no avanço do conhecimento cirúrgico.

Palavras-chave: Casos Clínicos; Cirurgia; Imagens Clínicas

In surgery, innovation rarely begins with a trial. It begins with an observation: an unexpected intraoperative finding, an unusual complication, a novel technical adaptation, or a rare anatomical variation that challenges existing assumptions. These events first emerge not as datasets, but as narratives. The case report is therefore not merely descriptive; it represents the first formal step in transforming clinical surprise into scientific knowledge.

For generations, surgical case reports have occupied an ambiguous position in medical publishing. They are among the oldest forms of scientific communication in medicine, yet frequently regarded as the lowest tier of evidence in contemporary hierarchies dominated by randomized trials and large clinical datasets. This paradox has led many journals to restrict their publication, despite their persistent popularity among clinicians and trainees. However, this traditional framing may overlook their most important function. Rather than viewing case reports and clinical images as isolated "anecdotes", it may be more accurate to understand them as the early-signal detection system of surgical science.

Historically, many clinical and surgical advances originated from such signals. New disease entities, unforeseen adverse effects of procedures, and innovative operative strategies were initially communicated through single or small numbers of cases. While these reports may not establish causality, they serve a different and equally necessary role: they generate hypotheses, alert the community, and define questions that structured research later seeks to answer. Without these early signals, many important phenomena might remain unrecognized until harm accumulates or opportunities for improvement are missed.

This signaling function is particularly relevant in surgery because the field operates at the intersection of biological variability, technical execution, and real-time decision-making. Unlike standardized pharmacological interventions, surgical procedures are inherently adaptive. Subtle modifications in technique, instrumentation, or patient selection can lead to outcomes that diverge from established expectations. Large studies, by design, tend to smooth out these individual variations; case reports, in contrast, illuminate them. They reveal the outliers that often drive progress.

Clinical images amplify this role even further. Surgery is fundamentally a visual discipline. Intraoperative photographs, endoscopic views, radiologic correlations, and schematic illustrations often convey information that text alone cannot capture. A single well-documented image can clarify a rare anatomical configuration, demonstrate a technical nuance, or illustrate a postoperative complication in a way that immediately informs practice. When curated and contextualized appropriately, clinical images function not simply as educational supplements but as visual data points within the scientific record.

Recognizing this role invites a shift in how the surgical community evaluates and writes case reports. The emergence of structured reporting standards such as the CARE[1,2] and SCARE[3] guidelines represents an important step in this direction. These frameworks move case reports away from informal storytelling toward transparent, reproducible clinical documentation. By emphasizing completeness, methodological clarity, and ethical rigor, they allow individual cases to be more easily compared, aggregated, and incorporated into broader evidence synthesis. Standardization transforms isolated observations into components of a cumulative knowledge system.

Yet the full potential of surgical case reporting may still be underappreciated. In the digital era, the value of individual observations increases when they are viewed collectively. Modern scientific ecosystems increasingly rely on distributed data sources, real-time surveillance, and rapid information sharing. Within this context, case reports and clinical images can be understood as micro-contributions to a global observational network. Each report adds a small but meaningful signal that, when combined with others, can reveal emerging patterns, new complications associated with technologies, rare presentations of disease, or innovative technical solutions arising in different parts of the world.

This perspective is especially important for ensuring inclusiveness in surgical scholarship. Large multicenter trials and high-resource research infrastructures remain concentrated in specific regions and institutions. Case reports, by contrast, offer a more accessible entry point into academic publishing. Surgeons working in smaller hospitals, resource-limited settings, or early in their careers can contribute valuable insights drawn directly from clinical practice. In this way, case reporting democratizes scientific participation and helps ensure that global surgical knowledge reflects diverse patient populations and operative contexts.

Educationally, the process of preparing a case report also mirrors the cognitive work of surgical practice itself. It requires careful reconstruction of clinical reasoning, critical appraisal of decisions, review of the literature, and reflection on outcomes. For trainees, writing a case report is often the first experience of translating bedside experience into structured academic communication. For experienced surgeons, it provides an opportunity to examine unexpected outcomes and share lessons that might otherwise remain confined to local morbidity and mortality discussions. Thus, case reporting simultaneously advances science and cultivates professional development.

If case reports and clinical images are indeed the early-signal system of surgery, the responsibility of journals is not merely to accept or reject them, but to curate them strategically. Priority should be given not only to rarity, but to relevance: cases that challenge existing paradigms, highlight decision-making dilemmas, reveal technical insights, or signal emerging risks. Similarly, authors should be encouraged to frame their reports explicitly in terms of the question or signal they contribute

to the field. What does this case alert us to? How might it influence future research, surveillance, or practice?

Reframing case reports in this way may also help resolve the longstanding tension between their clinical value and their perceived bibliometric limitations. Impact should not be measured solely by citation counts, but by their role in shaping awareness, prompting discussion, and guiding subsequent investigation. Many highly influential clinical insights begin as small signals whose importance only becomes evident retrospectively.

In an era increasingly defined by artificial intelligence, large registries, and algorithm-driven decision support, the importance of structured observational input becomes even more pronounced. Machine learning systems depend on diverse, well-documented data to detect rare events and refine predictions. High-quality case reports and annotated clinical images may therefore serve as valuable inputs into future knowledge systems, ensuring that unusual but clinically significant scenarios are represented rather than overlooked.

Ultimately, the continued relevance of case reports and clinical images in surgical publishing lies not in nostalgia for traditional formats, but in recognizing their unique epistemological role. They are the frontline sensors of surgical progress, the mechanism through which the unexpected enters the scientific conversation. By embracing rigorous reporting standards, valuing visual documentation, and positioning individual observations within a broader collective framework, surgical journals can ensure that these contributions remain central to the advancement of the field. Far from being relics of an earlier era, case reports and clinical images may be among the most adaptable and forward-looking tools in modern surgical science.

Their strength lies precisely where large studies are weakest: in detecting the new, the rare, and the unforeseen. And in surgery, it is often unforeseen that the next advance begins.

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