



CIRUGÍA ESPAÑOLA

www.elsevier.es/cirugia



Editorial

Why is research important in surgery?☆

¿Por qué es importante la investigación en cirugía?



Advances made in surgery are mainly based on the ability of surgeons to investigate surgical problems. Everything starts with a critical mind-set, prodigious power of observation, and the recording of the results of everything that is done. However, this way of thinking is relatively recent. At the end of the last century, the figure of the ‘great chief surgeon’ predominated, whom everyone respected and assumed his teachings to be true. No one challenged the ‘veracity’ of such knowledge. Thus, many of us remember the obligation of the nasogastric tube in the immediate postoperative period of colorectal surgery, or that patients should not be mobilized after surgery. Clinical research in the form of prospective randomized controlled studies has shown these situations to be ineffective or even harmful.^{1,2}

Until the 1980s, clinical surgery studies were characterized by applying simple methods, descriptive analyses and single-center experiences.³ However, a decade later there was a change in mentality. ‘Scientific’ surgeons began to appear. Old stereotypes were abandoned, and studies began to be published with the same rigorous methods as other branches of medicine. These methods are based on the use of evidence-based medicine, the preponderance of study design over statistics, and the analysis of large populations.^{4,5}

Today’s ‘scientific’ surgeons require more training. In addition to mastering pathology and surgical technique, they must have knowledge of data management and analysis, study methodology and design, and statistics applied to surgical research. In addition, there is the need for mastery of the English language. Likewise, a ‘scientific’ surgeon must seek and foster transversal collaboration with other specialists outside surgery and even outside the field of healthcare. For example, increased quality of publications has been observed after the inclusion of biostatisticians in working groups.⁶ Today, in order to make relevant achievements, we need to create multidisciplinary teams with engineers, biologists, mathematicians, computer scientists, economists, lawyers, etc. This symbiosis will allow us to better commu-

nicate our clinical problems and their resolution from different perspectives.

However, to reach this level, we must start with a solid education in the basics of clinical research. We must know how to formulate the questions that arise from our surgical activity. Subsequently, we must identify all bibliographic resources, since it is possible that the answer is already in the literature. Moreover, we must know how to formulate our hypotheses and propose study objectives. Afterwards, we need to determine on the most appropriate study design.

It is not easy to propose a study and its design; therefore, different guidelines have been described to this effect. These have been developed to recommend study design organization and communicate methodologies in a clear, transparent manner. These methodological guidelines generally consist of a checklist and/or flowchart with explanatory text. The Consolidated Standards of Reporting Trials (CONSORT) guidelines were the first set of rules for prospective, randomized, controlled clinical trials, but these were soon followed by other guidelines for other study designs.^{5,7} There is currently an enormous number of methodological guidelines, which are classified by the EQUATOR network (Enhancing the Quality and Transparency Of health Research).^{5,8}

However, as indicated by Herbella et al.,⁹ we must not fall into assaultive or tempting thoughts (logismoi), which he calls ‘crutches for mediocrity’ that endanger good research and publication.

After conducting a quality study, no less important is how to share the results of our surgical research by preparing a scientific communication for a national or international congress or choosing the journal that is most suitable for publishing our study. For all this, it is necessary to know how a scientific article is structured and what errors to avoid in order to prevent rejection. Furthermore, in today’s world we must consider the great influence of social networks to share our findings.

☆ Please cite this article as: Serra-Aracil X, López Cano M, Targarona E. ¿Por qué es importante la investigación en cirugía? Cir Esp. 2022. <https://doi.org/10.1016/j.ciresp.2021.11.003>

Table 1 – Topics of the AEC methodology manual: *Cómo y Porqué Investigar en Cirugía*.

| Topic | |
|--|---|
| 1 | I. PRESENTATION |
| | Why is surgical research important? |
| 2 | Quantitative and qualitative research |
| | II. WHERE DO IDEAS COME FROM FOR SURGICAL RESEARCH? |
| 3 | Criteria for a good research project |
| 4 | What is evidence-based surgery? |
| 5 | And now, how is the idea documented? Bibliographic search |
| | III. TYPES OF CLINICAL STUDIES IN SURGERY |
| 6 | Experimental study: prospective controlled and randomized; of superiority, equivalence, not inferiority |
| 7 | The observational study in surgical research |
| 8 | The systematic review and metaanalysis |
| | IV. THE VARIABLES IN CLINICAL RESEARCH IN SURGERY |
| | What types are there? How are they conducted and analyzed? |
| 9 | Registries and databases: How are they used? |
| 10 | How to correctly describe variables (quantitative, qualitative, time) and which graphs to use. |
| | The survival variable: basic concepts and errors to avoid |
| 11 | Diagnostic tests: how to describe their efficacy? |
| 12 | The risk factor concept in surgical research: What is it? Which types and when to use them? |
| 13 | Study validity. External and internal validity |
| 14 | Univariate vs multivariate analysis: stronger together |
| | V. CONCEPTS TO KEEP IN MIND IN THE APPLICATION OF CLINICAL RESEARCH IN SURGERY |
| 15 | Biases in surgery |
| 16 | Size of the effect: does size matter? |
| 17 | Overdiagnosis and overtreatment: Is more better? |
| 18 | Shared decisions. Evidence focused on the patient |
| 19 | Clinical guidelines: What are they, and how to interpret them? GRADE methodology |
| | VI. HOW TO SHARE THE RESULTS OF SCIENTIFIC RESEARCH? |
| 20 | How to prepare scientific communications for a medical conference |
| 21 | Structure of a scientific article |
| 22 | Peer review: Is it important? |
| 23 | What shouldn't I do if I want my article published? |
| 25 | Surgical research and ethics: Friends or enemies? |
| 26 | I have an idea and need funding: How to develop a competitive research project? |
| 27 | How to initiate and develop a multicenter, prospective, controlled and randomized study? |
| AEC, Asociación Española de Cirujanos (Spanish Association of Surgeons). | |

So, how to get there? The Educational Division of the AEC and the *CIRUGÍA ESPAÑOLA* journal have suggested the idea of creating a project about Methodology in Surgical Clinical Research, with the intention of providing a tool that serves to increase quality research in our specialty.

Structuring this tool has not been easy. In the first place, we had to find out which topics could be of greatest interest to surgeons, creating a survey with this objective in mind. The questions were divided into 3 blocks: bibliometrics, study design and applied statistics. This resulted in the topics listed in Table 1.

The orientation of the project is eminently practical so that it is useful both to surgeons-in-training and senior surgeons. The intention is to create a manual with the title *The Hows and Whys of Research in Surgery (Cómo y Porqué Investigar en Cirugía, Manual of the Education Division of the AEC)*. A short article will be derived from each chapter in the form of 'methodology letters' for the *CIRUGÍA ESPAÑOLA* journal, associated with an explanatory video clip.

We are aware that methodology texts can be a 'dry' subject for reading and understanding. For this reason, a format with short texts has been designed to make the reading as light as possible. We hope that this manual and

the methodology letters will please the reader, while contributing to increased methodological understanding and, consequently, higher quality clinical research conducted in our specialty.

REFERENCES

1. Nelson R, Edwards S, Tse B. Prophylactic nasogastric decompression after abdominal surgery. *Cochrane Database Syst Rev.* 2007;18(3):CD004929.
2. Rawlinson A, Kang P, Evans J, Khanna A. A systematic review of enhanced recovery protocols in colorectal surgery. *Ann R Coll Surg Engl.* 2011;93(8):583-8.
3. Brooke BS, Nathan H, Pawlik TM. Trends in the quality of highly cited surgical research over the past 20 years. *Ann Surg.* 2009;249:162-7. <http://dx.doi.org/10.1097/SLA.0b013e31819291f9>.
4. Brooke BS, Smith AB, Ghaferi AA. Past and future role of the surgical outcomes club in advancing surgical outcomes and health services research. *JAMA Surg.* 2018;153(12):1071-2.
5. Brooke BS, Ghaferi AA, Kibbe MR. Effective use of reporting guidelines to improve the quality of surgical research. *JAMA Surg.* 2021;156(6):515-6.

6. Held U, Steigmiller K, Hediger M, Gosteli M, Reeve KA, von Felten S, et al. Is reporting quality in medical publications associated with biostatisticians as co-authors? A registered report protocol. PLoS One. 2020;15e0241897. <http://dx.doi.org/10.1371/journal.pone.0241897>.
7. Begg C, Cho M, Eastwood S, Horton R, Moher D, Olkin I, et al. Improving the quality of reporting of randomized controlled trials: the CONSORT statement. JAMA. 1996;276:637-9. <http://dx.doi.org/10.1001/jama.1996.03540080059030>.
8. Simera I, Moher D, Hirst A, Hoey J, Schulz KF, Altman DG. Transparent and accurate reporting increases reliability, utility, and impact of your research: reporting guidelines and the EQUATOR Network. BMC Med. 2010;8:24. <http://dx.doi.org/10.1186/1741-7015-8-24>.
9. Herbella FAM, Sar MG, Patti MG. Catorce muletillas para la mediocridad. Los logismoi que ponen en peligro una buena investigación y publicación. Cir Esp. 2021. <http://dx.doi.org/10.1016/j.ciresp.2021.05.012>.

Xavier Serra-Aracil^{a,b,*}, Manuel López Cano^{a,c},
Eduardo Targarona^{a,d}

^aEditores del Manual *Cómo y Porqué Investigar en Cirugía*, Manual de la Sección de Formación AEC, Spain

^bCoordinador de la Sección de Formación de la AEC, Profesor Agregado del Departamento de Cirugía de la Universidad Autónoma de Barcelona, Hospital Universitario Parc Taulí, Spain

^cEditor de la revista *Cirugía Española*, Miembro de la Sección de Formación de la AEC, Coordinador de la Sección de Pared Abdominal AEC, Profesor Agregado del Departamento de Cirugía de la Universidad Autónoma de Barcelona, Hospital Universitario de la Vall d'Hebrón, Spain

^dDirector de la revista *Cirugía Española*, Profesor Titular del Departamento de Cirugía de la Universidad Autónoma de Barcelona, Hospital Universitario de la Santa Creu i Sant Pau, Spain

*Corresponding author.

E-mail address: xserraa@gmail.com (X. Serra-Aracil).

2173-5077/

© 2021 AEC. Published by Elsevier España, S.L.U. All rights reserved.