How to write a clinical paper for publication

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Abstract

Research is an essential part of surgical training, so a surgical trainee must publish to prosper. The most important piece of advice is to seek expert help before commencing the process of research and subsequent publication. Having a piece of research worthy of communication to peers is an essential prerequisite, but there are many different types of publication, and many different avenues for publication. Starting with a simple case report is often a good beginning. The higher profile the research, the more likely there are to be formal rules about its conduct and its publication (CONSORT, PRISMA, etc). Writing in scientific English requires economy of style and linguistic restraint. The author has evolved a method to make writing a scientific manuscript as painless as possible. It may be tempting to relax once the writing is complete but managing the paper through submission can also be challenging. Most journals will not accept a paper immediately but will require corrections suggested by independent referees after formal peer review. All dealings with journal Editors should be professional and courteous.

Keywords CONSORT; electronic publication; impact factor; peer review; PRISMA; statistics; surgical publication

Introduction

The truth is that the main reason most doctors write a paper is to enhance their career. It is expected of all surgical trainees that they undertake some scientific research, and it is very hard to find a senior surgeon who does not think this is generally a good idea. There is a moral imperative to communicate the results of research, since there is no point in doing a project and not writing it up, even if the study is negative. Also, surgeons owe it to participants involved in the study, and indeed to themselves, to publish.

There are other positive benefits of publishing research. Writing a manuscript teaches how scientific surgical papers are structured and it will mean that, when reading research published by others, it will be easier to follow, and the messages will be simpler to identify. It also helps create a critical eye that enables a clinician to judge whether published material is sound or flawed. There are also altruistic reasons for research and publishing. First, conducting a research project is a way of improving your personal knowledge about a subject, and second, communicating that knowledge improves the understanding among the rest of the scientific community (as long as you can get your papers published).

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Getting scientific research published is not easy, particularly when an author is just starting. The most important advice I can give is that you get as much help as possible in the early stages from an experienced and sympathetic senior colleague who has published widely before.

Before you take up a pen

Before you start to create any sort of manuscript, you will need material with which to work. Most people will have done a research project or have research results available. A good research project always starts with a hypothesis and then the collection of data to confirm (or refute) the hypothesis. This article is going to assume that material is already available, and that a research project has come triumphantly to its fruition.

An important part of any research project is to do a thorough literature review, since this will provide the background information on which to base the research and also help to inform and populate the discussion section of the manuscript afterwards. Many young surgeons these days use electronic support, such as a Reference Manager™, that automatically places research references in the correct order of the reference section at the end of the manuscript. The alternative is to create the reference section manually at the end, but this can lead to confusion if a manuscript goes through several versions or major structural change.

For surgeons early in their publishing career, the advice of a senior colleague who is experienced in writing and publishing manuscripts will be invaluable. Seeking support should have predated the start of the study, since an experienced researcher will be able to give advice about whether or not a research project is novel and worthwhile and will later help to point out exactly how and where a paper could be published.

Finally, before you start to think about writing, you need to clear time and space so that there are no other competing pressures. But do not wait too long; it gets increasingly difficult to write a manuscript the longer you leave it after the last result is in.

Types of article published

There are many different types of article published, just as there are many different journals. One key to publication is picking the right paper for the right journal. There is an ascending value, or currency, for all research, which is largely based on how useful it is in modifying clinical practice (Figure 1). The best journals have the highest impact factor (IF), which is a metric designed to value each research paper (and each journal). Simplistically, the IF of a paper is the number of times that an article is cited in a paper published by another author in the 2 years after the index paper is published. The IF of a journal is thus the average IF of all its papers. Journals with a very high IF (20–30) tend to be the major weeklies (*BMJ*, *Lancet*, *New England Journal of Medicine*, *Journal of the American Medical Association*). Most surgical journals are published monthly and have an IF between 3 and 6; the *British Journal of Surgery* (*BJS*) had an IF of 5.9 in 2017, the third highest general surgical journal in the world.

Author pays models

It is important to be aware that there are different models for funding the publication of surgical research. The traditional

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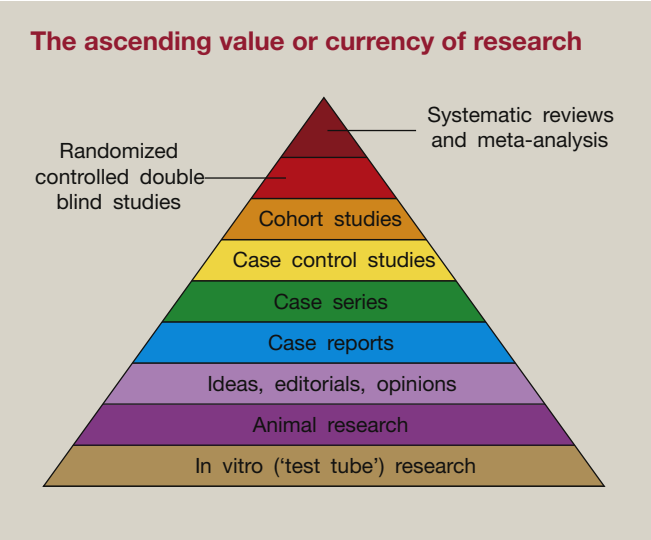

Figure 1

model (subscriber pays) is free to authors, since readers fund the publication of papers through journal subscriptions. However, this means the full paper is only available to subscribers. Many journals are moving towards an author pays model, which allows access to anyone who wants to read the paper ('open access'). Authors typically pay around £2000 to get an accepted article published. Some research funding bodies insist on open access publication and include funding for this in the research grant. Authors should understand where they are submitting, since subscriber pays journals tend to be of higher quality. There are a large number of dubious open access journals that will gladly publish your paper for a fee, with only marginal refereeing and editing. These should generally be avoided by serious researchers; interview panels will usually recognize a CV decorated with such papers.

Case report

The first paper almost everyone publishes is a short case report. This is because it is the easiest thing to start on. Usually it consists of a description of a rare or interesting patient or procedure, with a summary of the available literature. My first case report took a total of 18 months to write and get published; I reference it here so it will have been cited at least once![1] It is easiest to get case reports published if they contain an unusual illustration or image. Many journals have sections now for publishing good pictures, particularly if they are good quality and in colour. Alternatively, there are a number of online resources that accept case reports for electronic publication only. Remember that if you take clinical photographs, you must request permission from the affected patient, and this must be sent to a journal with any submission. Very few clinical cases are so rare that they have not been written about before, as will be found by a thorough literature search; however, a clear and well written case report will usually be published somewhere, though often in a lower ranking journal.

Case series

These sound better if they are called Cohort Studies, but they are in reality just reviews of a series of patients with the same condition, often treated in a potentially novel way. My aim as a young trainee was to find out the single procedure or technique that my consultant trainer did that was different from everyone else; almost all consultants have favourite conditions or operations. I would volunteer to review the patients and write them up, thus improving my CV, but also ingratiating myself to the trainer. Simple, but effective, and a good way to build up a series of publications: one per trainer! The clinical material may be collected prospectively, as many clinicians keep electronic databases, but they are usually analysed retrospectively. Alternatively, a series of case notes may be retrieved and summarized retrospectively, to try and learn how a condition may be managed optimally. Once again it is important the literature is reviewed thoroughly and that the paper is aimed at an appropriate journal for publication. Recently, even this type of paper has come under scrutiny with published recommendations about structure and content (www.strobe-statement.org).

Case control study

This is a particular type of study where two cohorts of patients are matched in every respect except the condition of interest; thus, factors contributing to a condition can be identified by comparing individuals with it (cases) to those without (controls). This requires careful planning and is often quite difficult to do since it is easy to introduce confounding factors if the two cohorts are not well matched.

Controlled study

These are important studies, described as the bedrock of scientific literature, since they provide the best evidence that underpins changes in practice. A controlled study involves a formal comparison of two groups treated in different ways, selected at random: one group may be controls with no active treatment, though more commonly they receive optimal existing treatment, and the second group receives the new medication or treatment according to random chance. These randomized controlled trials (RCTs) require formal construction and reporting using a particular structure called the CONSORT style, which not only helps design the trial but assists in reporting it in the journals.[2] There are many poor RCTs and much of this is due to the fact that they are inappropriately small to answer the question posed by the hypothesis. Making sure there is a plan to recruit an adequate number of participants to an RCT is an essential prerequisite before starting, and thus requires a formal statistical power calculation. RCTs are often large and very expensive to run; they usually require application to formal funding bodies and may need to be conducted in multiple centres. It is important to remember to register an RCT before it is undertaken (e.g. www.clinicaltrials.gov, www.controlled-trials.com).

Systematic review or meta-analysis

These are formal and sophisticated research tools, where high-quality RCTs are aggregated and analysed together using formal statistical methodology. Together they often provide the best evidence on which to base changes in practice and/or clinical guidelines. There are a number of organisations such as the Cochrane Collaboration (http://www.cochrane.org) who will arrange and co-ordinate these sorts of publications, which are high profile and highly cited. There is modern tendency to

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