

Technical Note

Experience of maintaining laboratory educational website's sustainability

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Received: 15 April 2016

Accepted: 22 July 2016

Published: 01 September 2016

Abstract

Laboratory methodology websites are specialized niche websites. The visibility of a niche website transforms it into an authority site on a particular “niche of knowledge.” This article presents some ways in which a laboratory methodology website can maintain its sustainability. The optimal composition of the website includes a basic content, a blog, and an ancillary part. This article discusses experimenting with the search engine optimization query results page. Strategic placement of keywords and even phrases, as well as fragmentation of the post’s material, can improve the website’s visibility to search engines. Hyperlinks open a chain reaction of additional links and draw attention to the previous posts. Publications in printed periodicals are a substantial part of a niche website presence on the Internet. Although this article explores a laboratory website on the basis of our hands-on expertise maintaining “Grossing Technology in Surgical Pathology” (www.grossing-technology.com) website with a high volume of traffic for more than a decade, the recommendations presented here for developing an authority website can be applied to other professional specialized websites. The authority websites visibility and sustainability are preconditions for aggregating them in a specialized educational laboratory portal.

Key words: Authority website, niche website, search engine optimization

Access this article online

Website:

www.jpathinformatics.org

DOI: 10.4103/2153-3539.189702

Quick Response Code:



INTRODUCTION

Laboratory niche websites reflect the precise goals of methodology websites, where procedural details are predominant. However, in contrast to niche marketing websites, which exhibit the tendency to narrow the scope of products to maximize earnings by avoiding competition with the mainstream market, laboratory niche websites address a narrow area of technological interest in the context of a broad general methodology approach.

Numerous books^[1-5] and online materials provide recommendations on how a website can secure a place on the Internet. However, these materials have a predominantly commercial orientation or discuss general website design issues.

This technical note explores the methods of maintaining a laboratory niche website’s sustainability on the Internet. We use our “Grossing Technology in Surgical Pathology” website as an example. The principles of developing a sustainable laboratory niche website are discussed

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This article may be cited as:

Dimenstein IB. Experience of maintaining laboratory educational website's sustainability. J Pathol Inform 2016;7:37.

Available FREE in open access from: <http://www.jpathinformatics.org/text.asp?2016/7/1/37/189702>

in the articles “Development of a Laboratory Niche Website” published in *Annals of Diagnostic Pathology* in 2013^[6] and “Laboratory Educational Authority Website Development” in 2016.^[7] The current article is a continuation of them.

SEARCH ENGINE OPTIMIZATION

A laboratory educational methodology niche website is brought “alive” through a slate of visitors with relatively narrow specific interests. Such website should be easy to find through search engines: visibility is the key. Ideally, if the topic were placed in the search engine query box (bar), the niche website should appear on the first line of the first results page or at least on the first three pages. If not, it does not exist for the “Internet market.” At the risk of sounding boastful, we can say that our website has almost always been on the first page of the search results for “grossing technology” or “grossing techniques” topics, with an average of more than 100K views per year.

The visibility of the niche website is predominately based on the merit of addressing visitors’ needs. Visibility transforms it into an authority site. Authority websites are assigned a rank by major search engines based on the query results of their ranking algorithms. One-way to increase search engine optimization (SEO) is to ensure strategic, through tactful or “ethical,” placement of keywords or phrases at the beginning, body, and end of articles and posts. Other methods include the use of tags, trust rank, backlink profiles, and links to well-established, preferably indexed publications.

EXAMPLES OF SEARCH ENGINE OPTIMIZATION FOR A LABORATORY NICHE WEBSITE

Abundant literature, from variants of SEO for dummies^[8] to the latest edition of art of SEO,^[9] describes in some detail how SEO works. For understandable reasons, these books handle material on topics not closely related to a laboratory website.

This article presents the examples of how SEO works in the case of a laboratory educational website that includes experimentation on “influencing” search engine query results pages to enhance website visibility. This experience may be beneficial for website hosts and website users to better understand how a laboratory website can be maintained on the Internet, without being proficient in computer science. More sophisticated methods are in the realm of website design professionals.

Key Words and Sentences

As keyword placement is a considerably delicate task, extremes should be avoided; thus, one must not neglect

the tactical use of keywords or provide an excessively long list of them. While there is a notion that the keywords list has outlived its usefulness,^[1] its main advantage, however, is its relevance to topics and texts.

Besides the already mentioned “strategic placement” of keywords in the posts, it is useful to periodically review the website’s short descriptions (meta-description tag) that appear on the query results page of Google or other search engines, which characterize or highlight the topic in question (query keywords). It is important to see what is extracted from the page’s text by the search engine’s algorithm as they can sometimes be out of context, often irrelevant to the main subject, or wrongly formulated in the post.

Let us take a simple example from our website. If we search Google for “orientation sampling surgical pathology,” the relevant results from our website entities are provided on the first line [Figure 1a] of the page. However, when searching for “Embedding Follow-up,” which was also on the website, the search engine missed the logical procedural page [Figure 1b]. This was caused by a deficiency in the visibility of the website as a methodological entity.

After replacing the following vague initial sentence in an article, “The following-up of embedded sampled specimens is becoming less common...,” [Figure 1b, in yellow circle] with, “Embedding follow-up is part of sampling orientation in the processing cassette,” the page entitled, “Embedding Follow-up in Surgical Pathology Laboratory,” [Figure 1c] appeared below the page entitled, “Orientation During Sampling in Surgical Pathology,” [Figure 1d] on the same day! Now both topics are always together on the search engine’s results list [Figure 1e]. Incidentally, when these website pages are presented together on Google’s query results page, they represent the laboratory website methodology fragmentation principle: separately but together.

This example, which was an experiment from our practice, shows how a formal page structuring exercise can allow the host to enhance the informational or methodological value of the site. This may be a minor detail, but the methodology is about details. This also illustrates how the formulation of key sentences and words on a website’s page can influence (“manipulate”) the query results for SEO.

In a laboratory methodological website, simply crafted sentences that include related keywords are sufficient to stabilize identification by search engines. The simplicity of the website’s language is not a disadvantage in this situation but rather enables robotic Web crawlers in applying the algorithms. Numerous editing agencies, such as Scribendi, should identify materials intended to be published on a professional website, keeping the Web

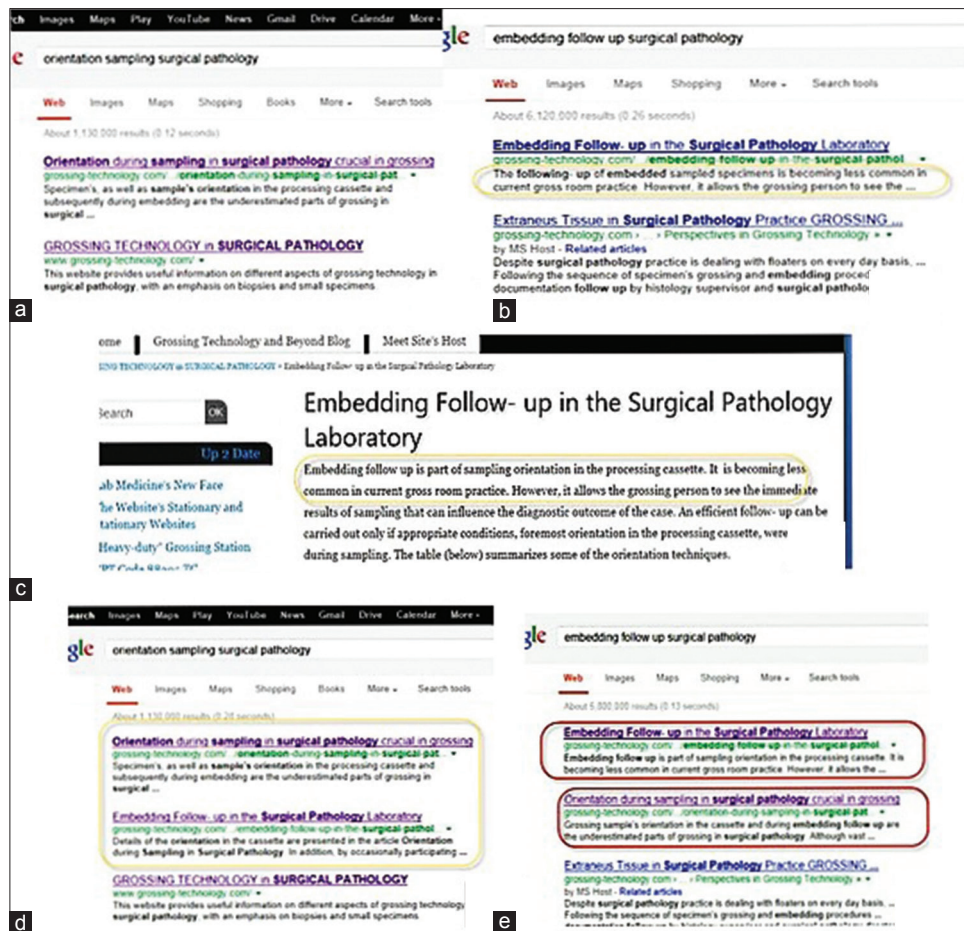


Figure 1: (a) Google’s query results page on the topic of “orientation sampling surgical pathology,” (b) Google’s query results page on the topic “embedding follow-up in surgical pathology.” (c) The changed first sentence on the page. (d) Google’s query results page on the topic of “orientation sampling surgical pathology” after changes were made to the wording of the first sentence. (e) Google’s query results page on the topic of “orientation sampling surgical pathology” after changes were made to the wording of the first sentence

crawlers in mind as potential “readers” of the material. The style of these materials should be different from that of articles to be published in journals or magazines.

Fragmentation of Web Pages

Owing to the discrete characteristics of laboratory procedures, a reasonable fragmentation of the material, such as differentiation or reorganization of the website’s content menus, would be a specific method in the design of a laboratory niche website (the “nested doll principle”).^[10] Fragmentation can provide additional leverage of keywords placement and internal links for SEO [Figure 2].

Internal Links

The visibility of the niche website and its popularity based on its ability to address the visitors’ needs, with links from different sources, transforms it into an authority site. Google (representing around 70% of search traffic) determines the value of a website through links to it from other websites. The search engine ranks the website using its PageRank algorithm. The higher the number of links to the website, the

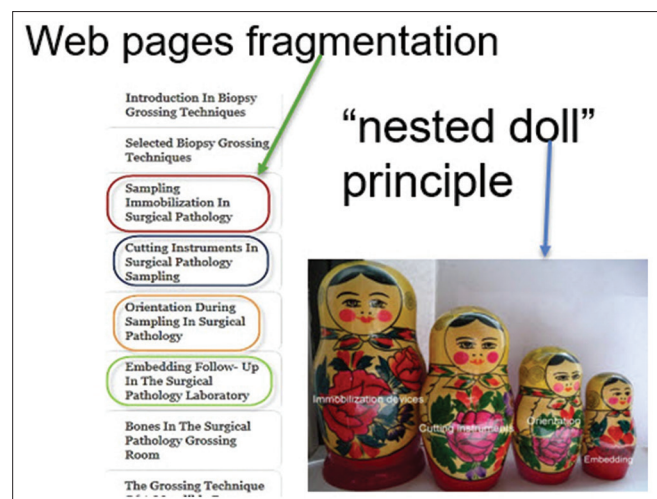


Figure 2: Fragmentation of the web page material (“nested doll principle”)

more accurate the ranking. A laboratory methodological website cannot have many outside links, given that relevance to the website’s topic is a stringent criterion. Thus, internal links can be used for a better query

results page outcome. The old SEO postulate suggests: Links build links.

An example from our website can be used as an illustration. Despite our website's diverse presentation of the bone grossing topic on results pages, search engines had ignored three posts: "Bones which do not fit the cassette," "Fragile bones on the grossing table," and "The third-hand immobilization principle in bone gross section." These pages are on important topics, which touch on the most difficult parts of bone grossing. We have to admit that all formal attempts to draw search engines' attention to these "jewels" of our website by reshuffling keywords and sentences failed. Moreover, they were presented on the website's slideshow in full. These articles only appeared on the Google's search engine query results page on the topic of "grossing small bones" when more internal links were added [Figure 3].

As a general observation, it is reasonable to place some fragmented pages on the website simultaneously with each other, in clusters that would provide internal links to enhance the website's visibility. In particular, this provision should be followed when the website is launched or in the early stages of its existence.

Maximization of internal links is completely reasonable and justified for increasing the visibility of the site while comprehensively presenting of the topic. It is not a link

scheme that Google warns to avoid in the Webmaster Guide when some marketing niche websites practice to enhance their PageRank through link exchange.^[11] Moreover, a laboratory website does not "suffer" from the "traffic virus" that proliferates on popular social or marketing sites because the potential audience is for understandable reasons limited.

Printed Materials

Printed materials can play a role in a website's visibility on the Internet. In this regard, publications with a high impact factor are especially important. We have noticed that our appearance, even as an abstract in a conference, published in American Journal Clinical Pathology reverberates in the daily statistics of website visitors.

An example from our "Grossing Technology in Surgical Pathology" experience would be the illustration when our website occupies more than one page for the Google's query topic, "bones grossing surgical pathology." A peer-reviewed publication in Annals of Diagnostic Pathology might contribute to the search engine's "appreciation [Figure 4c]."^[12] A publication in CAP Today's column "Innovation in Pathology" could also be beneficial.^[13] Some comprehensiveness of the "bones grossing surgical pathology" topic on the website, when even the CPT coding [see the line circled in blue on Figure 4a] and safety [Figure 4b] are presented, might also determine the "generosity" of search engines' results pages because these materials were also published.^[14,15]

COMPONENTS OF THE WEBSITE

Three optimal components of a laboratory methodological website, namely, the basic content, the blog, and the ancillary part, can contribute to the sustainability of the website.

The interaction between the internal links of the basic components of pages and blog posts are a definite advantage for a laboratory niche website [Figure 5]. The internal links provide methodological comprehension of information without interfering with the logical presentation of the material. On the other hand, they add to the visibility of the site by repeating the keywords.

DAILY STATISTICS

Alexa Traffic Ranks, Compete, Similar Web, SEM Rush, and numerous other professional online websites estimate website traffic. However, they should not be taken literally because they focus on the marketing value of the websites. Laboratory, and especially educational, websites have a limited number of potential visitors. Google Analytics, the most commonly used, provides

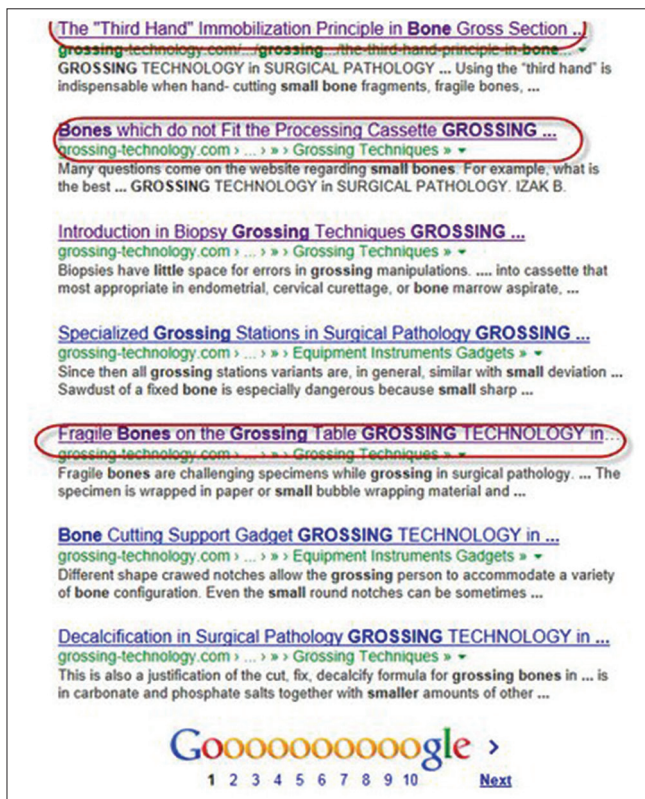


Figure 3: Google's query results list for the topic of "grossing small bones"

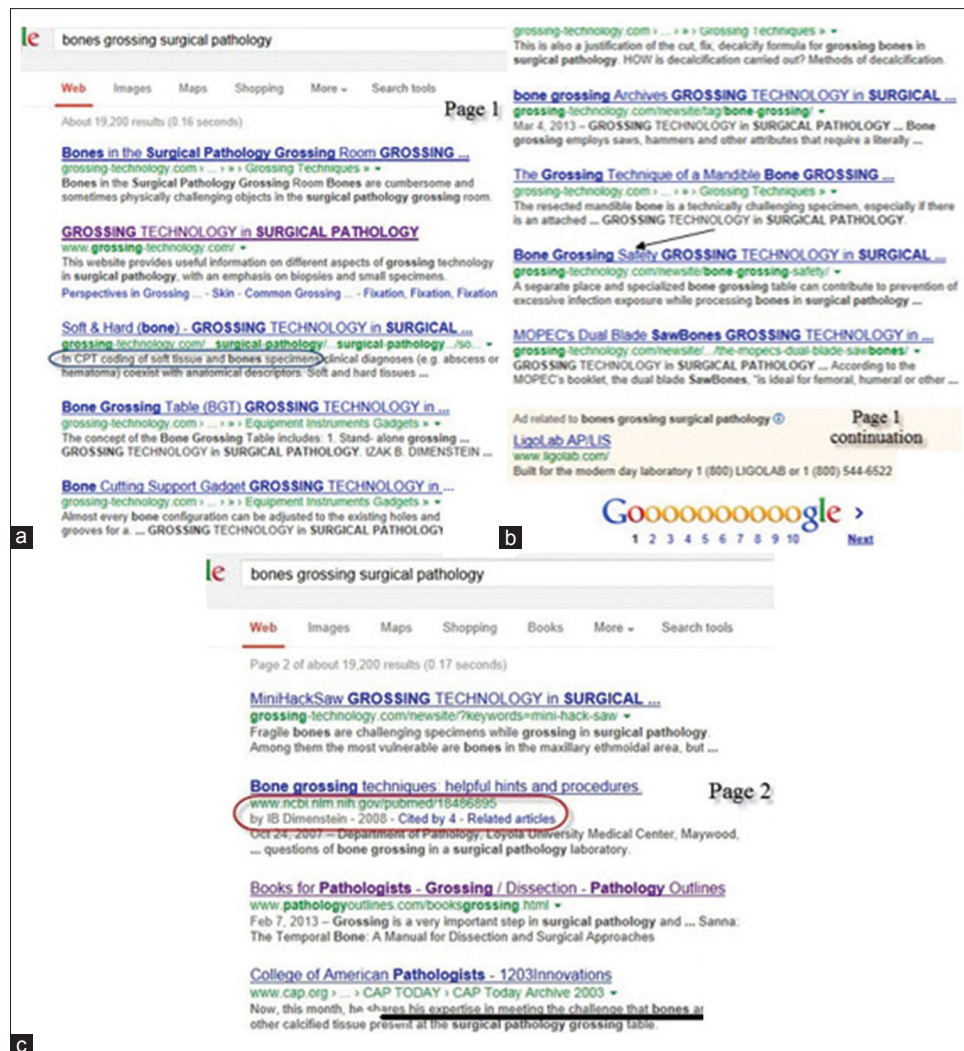


Figure 4: (a) Page 1 of Google’s query result page for “bone grossing surgical pathology” topic. (b) Continuation of Page 1. (c) Page 2 Google’s query results page for “bones grossing surgical pathology” topic

some orientation but again it does not include specifics and particularities of the laboratory website.

Many platforms provide free daily statistics that are interesting by themselves for judging the website’s relevance to its prospective audience. WordPress’s daily statistics show the website’s daily attendance by calculating traffic within WordPress. When the daily statistics show that over the course of a year, the website had more than 100K views, it means that the site host’s efforts have not been in vain.

However, the most instructive part is the daily analysis of the posts the visitors opened [Figure 6 right column] and the inquiries visitors made that the website could not satisfy [Figure 6 left column]. While some of the inquiries could be outside the scope of the website, the others should be included. Obtaining statistics on the visitors’ actions is useful for maintaining the website’s visibility and sustainability.

DISCUSSION

Although everything published on the Web remains there (a cached copy can be obtained from Google), unfortunately, an individual proprietor’s website is destined to fade and disappear from the Internet. The website’s “mortality” depends on many conditions. Besides those already mentioned, other circumstances range from the physical ability to maintain the website to the financial support.

Even our still sustainable website demonstrates a tendency to fade. Currently, the website’s daily attendance is lower than in the “heydays” of previous years. There could be a self-assuring explanation that the narrow special interest pool of potential visitors has been saturated by providing information faster than the amount of new visitors, but these statistics could be a sign of a problem with the website’s sustainability.



Figure 5: The components of a laboratory website

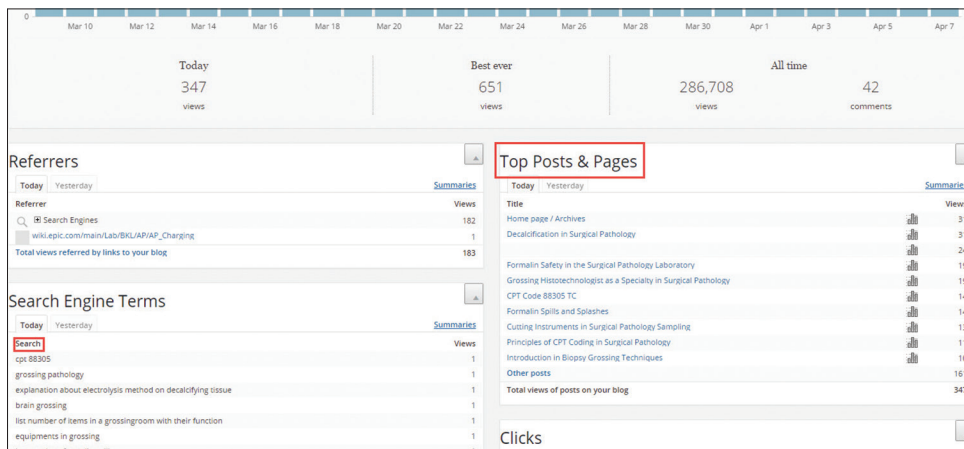


Figure 6: “Grossing technology in surgical pathology” website’s topics inquiries

However, the main problem with the visibility and sustainability of current websites is that they are dispersed on the Internet without interconnecting with each other. They are literally at the mercy of the search engines.

As an example of our recent experience can be this illustration. Despite making every attempt to present a comprehensive approach to biopsy submission during grossing on our website, a special method, namely agar preembedding with the color orientation of prostate needle biopsies, was missed.^[16] After our publication, a letter in CAP Today’s February 2016 issue on this

subject, the author of the method, Dr. Ervin Shaw, drew attention to his website, which was a part of the informational website of his pathology group.^[17] The website is informative, and the method is interesting. Without doubt, many valuable websites are hidden in the institutional websites outside of the search engines’ abilities to reveal for common consumption.

The apparent solution to this problem is to aggregate all educational laboratory methodological websites in a specialized portal. Portals of different kinds are now ubiquitous. Yahoo! is actually a giant portal, and most

medical facilities have implemented patient portals as the portal development methodology has been available since the nineties.

The practical development of a specialized laboratory portal requires special discussion. However, an informative authority website forms the cornerstone of a portal. This article and our previous publications laid out the conditions for establishing authority websites as a resource of pathology informatics.

CONCLUSION

While the informative content of the laboratory website is the priority, the principles of the World Wide Web should be followed to maintain the site as an authority niche website. The visibility and sustainability are preconditions for aggregating in a specialized educational laboratory websites portal.

Financial Support and Sponsorship

Nil.

Conflicts of Interest

There are no conflicts of interest.

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