

# Videosurgery Learning and the Internet - How to Keep Yourself Up-To-Date Accessing the Virtual World

## O Aprendizado da Videocirurgia e a Internet – Como se Manter Atualizado Acessando o Mundo Virtual

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### ABSTRACT

**Objective:** Present the main sources of research and medical-surgical teaching available on the worldwide web, facilitating the increasingly necessary academic upgrading of the surgeons. **Discussion:** The worldwide web is a resource with a growing presence. Medical sites, including those which focus on surgical education by providing classes, lectures, demonstrations of surgical techniques and others, are multiplying. The interaction between surgeons and the communication resources that information technology offers already make the availability of real-time communication with operating rooms a reality. **Conclusion:** The near future promises a broad and extremely beneficial relationship between these two areas of science, ever more interdependent, with a common goal: the benefit of our patients.

**Key words:** Surgical learning, internet, endoscopic surgery.

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## INTRODUCTION

The union of medicine with new technologies offers a new world of possibilities. Web-related services offered range from web sites specializing in the study and improvement of medical professionals to live transmissions of surgeries over the internet, video-courses, to the most sophisticated solutions such as remote surgical procedures.

The internet applications for surgical education are numerous and revolutionary. Cases can be discussed at a distance, videosurgeries can be tutored, and teaching workshops using virtual reality can be conducted with students in different countries and continents. All this is only possible because of the developments of the videosurgery era and the parallel development of high-speed Internet and optical components.

This review aims to present several present and future possible scenarios in which the teaching of videosurgery is linked with the Internet.

## MEDICAL EDUCATION PORTALS DEVOTED TO VIDEOSURGERY

In the area of education, Websites offer everything from search services specializing in the field of medicine (including surgery), such as Bibliomed, which is focused primarily on providing learning tools for students and health professionals, to specific guidance for the surgical specialties, like LapSurg and WebSurg, whose goal is to provide literature in support of online training in surgery.

Comprised of a team of collaborators from diverse fields, LapSurg Institute<sup>1</sup> is currently divided in two parts: the LapSurg portal and LapSurg Institute.

The LapSurg portal disseminates videosurgery knowledge and techniques. Video of surgeries, lectures, discussions are available. One of the distinguishing offerings of the portal are the surgeries broadcasted through the internet in real time. Accessing the site's restricted area you can consult

the collection, where you can find articles, lessons, surveys, interviews, and multimedia content.

Another portal accessed all over the world is WebSurg – the *World Electronic Book of Surgery*. It provides users with videos of surgery cases, tips, conferences, debates, interviews with experts, and specialized courses. The portal claims to offer the “largest collection of educational programs in minimally invasive surgery”.<sup>2</sup>

Bibliomed provides leaning and training resources for the key medical specialties. It has offices in Brazil, Argentina and the United States, and its founders are large companies in the health sector, such as the Latin Healthcare Fund, and large medical groups as members of the host countries. The company offers two portals on the internet: Bibliomed and Good Health.

The Bibliomed portal provides scientific and educational presentations, applications for Palm PDAs, medical articles, images, news, diets, a Center of Toxicology, and Virtual Congresses. It has an area where subscribers can see full technical books and a section called “Professional Education”, which contains links to medical periodicals, monographs and dissertations.<sup>3</sup>

Another portal, ABC Medicus, proposes that a well-informed patient, based on scientific information, can discuss with the doctor, extracting more concise informations from him and, in some ways, aiding in a quicker diagnosis. The user, when accessing the website, can watch videos, see photos, look for the meaning of scientific terms and symptoms in a specialized dictionary, and search for hospitals and doctor.<sup>4</sup>

Another option for videosurgery professionals is the *MedScape MedCenter*. This is an online platform owned by WebMD that offers professional content for physicians and other health professionals, in addition to offering education tools. The services offered range from review articles to views of professionals and various clinical cases.

Through the EBSCO *Information Services* portal called A to Z<sup>5,6</sup>, the subscriber can find articles, theses or monographs. The website has more than 81,000 essays submitted over 70 years from about 23 countries. When researching on the portal, you will get answers from some of the 17 most important medical databases available on the internet.

EBSCO DynaMed website for physicians has approximately 3,000 topics arranged in 36 categories. Dynamed differs from other portals; it

does not offer direct search to technical articles or books and magazines, rather the website offers a search to summarized and reviewed material, as a medical encyclopedia.

The reader may feel confused when choosing among so many sources of information, so in Table 1 we present a comparison with the attributes that we consider most important in a medical portal. This table compares the main medical portals which provide material on videosurgery, according to the following features:

- ♦ **Dedication to specific issues:** considers if the website addresses specific topics in medical field.
- ♦ **Free Access:** considers if the website has areas where access is restricted to subscribers or has free access.
- ♦ **Articles, Theses, Books and Magazines:** considers if the portal has areas of research, reading, downloading or acquisition of technical work.
- ♦ **Interviews:** consider if the portal offers interviews with physician experts.
- ♦ **Multimedia:** indicates if the portal offers access or download of files of photos, videos or educational materials.
- ♦ **Forum:** considers the presence of a forum for discussion between doctors and patients or physicians.
- ♦ **Conferences, Courses and Congress:** informs if the website has an area for providing information on conferences, courses and congress or performs them online.
- ♦ **Glossary:** considers if the portal offers a glossary with detailed information about diseases or symptoms.
- ♦ **Debates:** considers if the website offers access to debates performed, doctors and researches, but without the interaction with the users.
- ♦ **Information for patients:** reports if the site has an area of information for patients or has language adapted for the lay public.

## SEARCH AND ESSAY PORTALS

Presented below are several sites that allow users to perform queries and provide access to the technical-scientific articles.

	Specific issues	Free	Monthly Fees	Papers	Thesis	Books	Journals	Interviews	Multimedia	Forum	Conferences	Clinical cases	Debate	Glossary	Patient info	Courses	Symposium
WebSites	✗	✓	✓	✓	✓	✓	✓	✗	✓	✗	✗	✗	✗	✗	✓	✗	✗
Bibliomed	✗	✓	✓	✓	✓	✗	✓	✗	✓	✗	✗	✗	✗	✗	✓	✗	✗
WebSurg	✗	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✓
BoaSaúde	✗	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗
abcMedicus	✗	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✓	✗	✗
LapSurg	✓	✓	✗	✓	✗	✗	✗	✓	✓	✗	✓	✓	✓	✗	✗	✓	✓
MedCenter	✗	✓	✗	✓	✗	✗	✓	✓	✗	✗	✗	✓	✗	✓	✓	✗	✓
EBSCO AtoZ	✗	✗	✓	✓	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✓	✗	✗
EBSCO UpToDate	✗	✗	✓	✓	✓	✗	✗	✓	✗	✓	✗	✓	✓	✓	✓	✗	✗
EBSCO DynaMed	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗

Table 1 – Comparison among some medical-educational portals.

The Federal University of Sao Paulo (UNIFESP) offers the online library of the Department of Information Technology in Health, which allows the user to search for articles, books and journals. The library has 514 featured articles, 689 books, 2007 magazines (international), 116 Brazilian journals and 27 searchable databases.<sup>7</sup>

Elsevier provides the search tool *ScienceDirect*. Through this you can perform searches of articles or images that were or were not published in journals or books. The portal has a simplified structure that facilitates searches on databases and tools that streamline navigation such as: quick search, history of the links and navigation on homepage. *ScienceDirect* has an efficient search engine, returning to the user articles classified as published articles, accepted but unpublished articles, and as either free or available for purchase.<sup>8,9</sup>

Besides *ScienceDirect*, Elsevier also offers *Scirus*, which claims to be “the most comprehensive scientific research tool on the web” with more than 410 million articles indexed and 27 databases. The portal has a simple interface, very similar to that of Google<sup>8,9</sup>.

The Virtual Health Library (*Biblioteca Virtual em Saúde – BVS – in Portuguese*) is the result of a partnership of the Ministry of Health, Ministry of Education, and Secretariat of Health of the State of São Paulo at Bireme – Specialized Center of the Pan American Health Organization (PAHO). BVS offers a free tool to search information related to health area. The consortium involves Latin American, African and

European countries and databases such as: BVS, *ePORTUGUESe*, GHIL and *SciELO*.<sup>10,11</sup>

ProQuest® is a repository of electronic publications. It has a simple and intuitive interface, very similar to the *ScienceDirect*. In addition to searching to its own database, ProQuest conducts queries on the sites of other content providers. The user can conduct basic, advanced, topics and publications queries. The website provides another tool, Tesouro ProQuest®, which the user can enter subjects to search through a vocabulary list.

The American Society for Testing and Materials (ASTM), a century old society of engineers and scientists offers a search portal, the *Standards and Engineering Digital Library (SEDL)*. The ASTM portal has a different focus from the websites described above. The website is focused on engineering; therefore, materials related to Bioengineering and Biomedicine are easily found.<sup>13</sup>

IngentaConnect™ is a service offered by *Publishing Technology*, which seeks to provide visibility for users publications by making their work available online, and offers a search engine of excellent quality. The website, which claims 25 million users, offers a database with over 13,000 publications from 25 publishers covering over 4 million articles. The portal offers free access; some results are classified as closed to free reading, requiring the purchase of the article.<sup>14</sup>

Proceed is a program of the Brazilian government, a partnership of the Ministry of Science and Technology and the Brazilian Institute of Information

in Science and Technology (IBICT), established in 1995 with the goal of promoting the use and creation of on-line information services. Proceed maintains collections of electronic documents on specific areas of knowledge. The user can select topics of interest to search, and can also access the Virtual Library of Notables of Science and Technology in Brazil where you will find biographies of important Brazilian scientists.<sup>15</sup>

The surgeon who wishes to obtain Brazilian scientific journals should visit the *SciELO* – *Scientific Electronic Library Online*. *SciELO* is an electronic library consisting of a collection of Brazilian scientific journals and created by the Foundation for the Support to Research of the State of São Paulo (FAPESP) – in partnership with BIREME and the Council for Scientific and Technological Development (CNPq).

*SciELO* users can access a wide range of journals, and view them issue by issue, with access to the complete text of articles. The journals and articles can be retrieved according to subject, author, an alphabetical list of journals, or by using the search tool.<sup>16</sup>

Aiming to distribute and promote the dissemination of books and journals for health professionals, the *Flying Publisher* company developed the websites *www.FreeBooks4doctors.com* and *www.FreeMedicalJournals.com*. Both portals have the same interface and offer the same services, but are focused on the distribution of different content. The professional can navigate by topic, impact, or title of the material. If these options are not sufficient to find the desired material, the user may inform the topic, subject or title of work that is sought and perform that search through the search tool on the website.

*FreeMedicalJournals* has approximately 709 journals available, while the *FreeBooks4Doctors* website has about 365 books (*Flying Publisher Books4Doctors*, 2010).<sup>17,18</sup>

For professionals seeking to publish content online, CogPrints is a good tool. The portal, developed by the University of Southampton in England, offers this “auto archiving” service. The user, after registering, has the opportunity to include their works in the database of the website. The Cogprints portal classifies the published essays according to the year of publication and subjects addressed. Users can search by a piece of text, title, author or other information contained in the article.<sup>19</sup>

The *National Center for Biotechnology Information* (NCBI) offers users PubMed. PubMed is a search tool linked to the *U.S. National Library of Medicine* and the *National Institutes of Health*, with approximately 20 million biomedical citations from MedLine, books and journals online. The portal includes scientific articles encompassing the most diverse areas of medicine, including surgery.<sup>20</sup>

## CONCLUSIONS AND FINAL CONSIDERATIONS

The internet is transforming surgical education and the exchange of experiences in the field of videosurgery. The popularization of the high-bandwidth, high speed internet and easy-to-use applications on smartphones will accelerate this trend. In addition to the theoretical content available for study, videos and surgical animations are increasingly available on the worldwide web. Soon the resources of virtual reality and surgeries tutored at a distance will revolutionize surgical training and the way operations are performed around the world. This is especially true in regions of the globe where there are profound economic and scientific challenges for surgeons to maintain contact with advanced technology and keep up to date. Welcome to the future!

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### RESUMO

**Objetivo:** Apresentar as principais fontes de pesquisa e de ensino médico-cirúrgico disponíveis no mundo da web, tornando mais fácil a disponibilidade necessária para a atualização acadêmica dos cirurgiões. **Discussão:** O mundo da web é uma fonte com crescimento presente. Os sites médicos, incluindo aqueles com ensino em cirurgia que proporcionam aulas, cursos, demonstração de técnicas cirúrgicas dentre outras, estão se multiplicando. A interação entre cirurgiões e fontes de comunicação, as quais são oferecidas pelas informações tecnológicas, torna uma realidade possível à comunicação em tempo real com os centros cirúrgicos. **Conclusão:** O futuro próximo promete uma relação ampla e extremamente benéfica entre estas duas áreas científicas, cada vez mais interdependentes, com um objetivo em comum: o benefício de nossos pacientes.

**Palavras chave:** Aprendizado cirúrgico, Internet, cirurgia endoscópica.

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