NYSORA - New York School Of Regional Anesthesia - Anesthesia Teaching On The Web: A Tool For The Generations To Come

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Citation

Abstract

After a relatively dormant period of several decades, new information, research and teaching in regional anesthesia have exploded. A number of excellent and innovative texts and inter-active CD-ROM programs of remarkable educational value have been recently published. But how can a busy clinician keep up with the rapid changes in the field on a daily basis and get at information on the fly? With the advent of the Internet, NYSORA.com offers a user-friendly guide to regional anesthesia information via the Web. In this short review we summarize the NYSORA website, present salient technical details on the decision making process involved with building advanced medical Web sites, and share our views on the value and future of Web-based teaching medical sites.

INTRODUCTION

After a relatively dormant period of several decades, new information, research and teaching in regional anesthesia have exploded. A number of excellent and innovative texts and inter-active CD-ROM programs of remarkable educational value have been recently published. But how can a busy clinician keep up with the rapid changes in the field on a daily basis and get at information on the fly? With the advent of the Internet, NYSORA.com offers a user-friendly guide to regional anesthesia information via the Web. In this short review we summarize the NYSORA website, present salient technical details on the decision making process involved with building advanced medical Web sites, and share our views on the value and future of Web-based teaching medical sites.

WHAT IS NYSORA?

NYSORA stands for New York School of Regional Anesthesia. This website's mission is the online teaching of principles and practice of regional anesthesia and it's

functional anatomy. As opposed to a traditionally static format of textbooks and atlases of regional anesthesia, NYSORA has a continuous, dynamic character that changes in pace with new developments in the field. Why NYSORA? Well, New York – because the featured material on this site is specific to the practice of regional anesthesia at St. Luke's-Roosevelt Hospital Center, a Columbia University affiliate at New York NY, where the authors are clinically and academically affiliated. School of Regional Anesthesia because the approach to practice of regional anesthesia is truly unique and distinct from the traditional teaching, yet universally applicable.

A BIT OF HISTORY

The NYSORA debuted in the fall of 1996 under the name www.idamedical.simplenet.com. This was a true pioneering project since at that time this was one of the first web sites that focussed on peripheral nerve blockade. Early on, only a series of techniques that had been developed or refined by the authors were featured. The decision was made to limit

the content of the site to original contributions and techniques specific to the authors' practices rather than reproduce work that had already been published elsewhere. We continued to follow this principle as we further developed and expanded the site. As a result, we combine the information from the basic (anatomy) and clinical research and continuously assess and evaluate the details of the techniques.

The testimony to its educational value came at the authors' scientific exhibits on peripheral nerve blocks at the 1997 ASA, IARS and PGA meetings.[1,2,3] The scientific exhibits and demonstration of the website received enormous attention and proved that this pioneering project was an overwhelming success. Consequently, the rapidly growing website demanded a commitment to another re-organization and more flexible ISP (Internet Service Provider) hosting. The second generation of NYSORA emerged as a much-expanded version in December of 1997 under the name www.anesthesiaregional.com on a Yahoo server. The rising number of daily visits, incoming emails with questions on regional anesthesia, and inquires regarding the training in nerve block techniques soon demanded a new level of commitment to this regional anesthesia teaching project. At the same time, the stream of publications, continuous work on the concept of "Functional Regional Anesthesia" and the establishment of the regional anesthesia fellowship and the Center of Excellence in Regional Anesthesia at St. Luke's-Roosevelt paralleled and fostered the development of the web-based school project. The current, third edition of the website, now located at www.NYSORA.com and hosted on a newer dedicated server, has been redesigned in order to service these demands and offers a bold frills-free tutorial on the principles and practice of peripheral nerve blocks to the ever-growing Internet-enabled Anesthesia community. The site has been substantially expanded to include more techniques, discussions on principles of practice of regional nerve blocks, local anesthetics, equipment and focused videos on techniques and responses to nerve stimulation.

NYSORA – ANATOMY DISSECTION CONTENT

The NYSORA web site is currently organized into 12 sections. These sections present the necessary information for successful implementation of practice of nerve blocks in a logical, user-friendly format. The "What's New?" section features information on upcoming meetings and recently released teaching material. Information about past meetings is also stored in a database. "New Concepts' contains discussions on various aspects of regional anesthesia practice, including discussions on equipment and tips for their successful use. It also includes discussions on various controversial issues as well as the upcoming additions to NYSORA. The "Equipment" section deals with the organization of regional anesthesia carts, the selection of local anesthetics, and discussions on the selection and use of nerve stimulators and nerve block needles. The "Techniques" section is the heart of the site. It contains a free concise manual on nerve block techniques. Of note, many of these techniques have been developed or substantially modified by the authors to fit the needs of modern anesthesia and surgery practices. We have richly illustrated this section in order to convey the nuances of techniques and their anatomical correlation, and feature video demonstrations of block techniques and responses to nerve stimulation. "Clinical Applications" focuses on practical discussions on the use of regional anesthesia for inpatient and outpatient surgery. "Training Opportunities" offers some insight into what is available at St. Luke's-Roosevelt to those interested in pursing a career in regional anesthesia. Especially appealing is the fellowship in regional anesthesia that utilizes a well-structured teaching program in specific peripheral nerve blocks. "Our Surgeons" is a growing section featuring surgeons who almost exclusively operate on patients anesthetized using regional anesthesia. The "Guest Contributors" section attempts to strike a balance between the specifics of the techniques taught and practiced by the authors (New York School of Regional Anesthesia) and those of other prominent regional anesthesia practices throughout the world. This page remains open to all authorities in the field wishing to contribute. Finally, a "Forum" section was established in the latest site design to foster discussion on various subjects of interest and controversy in regional anesthesia. The site also includes standard features such as a site map, related links, and information about the authors.

TECHNICAL INFORMATION (SKELETON)

NYSORA is currently hosted by the ISP Interland (www.Interland.com). We selected Interland for their fast and flexible Internet backbone connectivity in anticipation of our desire to provide video and other high bandwidth services to simultaneous visitors. This also guided our decision to host our site on a dedicated server that also provides streaming video, email, and database services. The server supports both the Windows and McIntosh platforms,

and supports ASP (active server pages) and CGI (common gateway interface) services which will allow us to continue to evolve the site's design into the very dynamic, interactive environment we envision. These services should also reduce the effort required to perform routine content maintenance.We also utilize a content search engine, Atomz, for fast cross-reference searches on subjects of interest.

Additionally, Interland provides us with site evaluation tools so that we can review visitor access to the site. They setup the industry-standard Web Trends tools that automatically generate weekly reports containing data regarding the number of successful hits, operating platform, navigational patterns, problems with pages, and other helpful site statistics. As a site that is constantly evolving to adapt new information and technologies while maintaining user-friendliness and accessibility, these site statistics have been invaluable to site design and management decisions. In addition to site statistics from Web Trends, we also receive search engine statistics generated by Atomz that allow the web masters to review and analyze visitor's content interests.

VIDEOS ON THE WEB
REALITY OR SCIENCE FICTION?

Because visual presentations are among the most useful teaching tools in regional anesthesia, it has been clear from the very beginning that NYSORA will eventually need to address the need to incorporate this media in its teaching armamentarium. While this was simply impossible or impractical back in 1996 due to the technical limitations related to the size of digital video images and slow transfer rates, the technological advances in telecommunications and digital imaging have made it possible that the modern sites of similar goals incorporate video material.

VIDEOS FILES FOR THE WEB AND THE CHOICE OF ARCHITECTURE

All videos featured at NYSORA were filmed in the operating rooms on actual patients using a Fuji Film, FinePix 4700 Zoom (Fuji Photo Film.,Ltd. Japan) and Sony DVCAM DSR-20/20P. The images were then digitally edited using Adobe Premiere 5.1 editing software (Adobe Systems Inc.). The exported AVI files were compressed using Media Cleaner(Pro 4 (Terran Interactive, Inc), the industry standard for dynamic media compression. The Cleaner supports REALG2, Windows Media (NetShow), QuickTime 4 and MPEG, making it an ideal tool to produce

all major formats on both platforms. The two most important aspects of working with desktop video are: 1)Synchronizing, managing and playing movies and 2) aking the movies small enough to be stored and played properl.

In order to effectively handle these tasks, two special types of technology were developed: multimedia architectures and codecs. Multimedia architectures address the first issue of handling and synchronizing digital video files (QuickTime, RealSystem G2, Windows Media). Video, in its raw form, occupies enormous amounts of space and is impractical for use on the web. For example, one second of uncompressed NTSC video takes about 27 Mb of disk space. Codecs address this issue by making the movies small enough to play properly and be stored in a realistic amount of space. Codecs are the actual compression and decompression algorithms, with Sorenson Video being a QuickTime web codec and Cinepak being a cross-architecture codec commonly used for CD-ROM projects. A further discussion on the choice of multimedia architecture would be superfluous as the architectures for Web video are changing rapidly.

PROGRESSIVE DOWNLOAD VS. TRUE STREAMING

There are currently two common ways to deliver video over a network: "A progressive download" and "True streaming". Both delivery methods are often simply called "streaming", which can be confusing. In general, if a video is being broadcast live, or if a specialized media server or protocol is used (such as RTSP), the video is truly streaming. On the other hand, when an HTTP server is used, the file will be delivered by progressive download. "Progressive download" refers to online media which users may watch as the files are being downloaded. The user can see the part of the file that has downloaded at a given time, but cannot jump ahead to future portions that have not been transferred yet. Progressive download is especially useful for slower dial-up modem delivery of short pieces, because it allows one to create a movie with a higher data rate than a modem could play in real-time. While doing this causes the viewer some delay, it also allows presentation of a much higher quality movie. In addition, administration of progressive download material is much easier as it is placed on a standard HTTP or FTP server. In contrast, true streaming delivery always happens in realtime, and it is more suited for live events.

Based on the features comparison just described, we decided to standardize for the moment on the progressive download

method for video delivery in order to accommodate the widest range of Internet access speeds. The NYSORA team can be criticized for requiring the latest software options (QuickTime 3 or 4 and RealTime 8) for the viewing of educational videos. However, from its very start in 1996, NYSORA is continuously looking into the future and has had to, at times, lock into proprietary non-backward compatible solutions for the sake of quality.

SUMMARY

It is almost universally accepted that peripheral nerve blocks offer numerous advantages over the general and spinal/epidural anesthesia. When performed judiciously and skillfully, nerve blocks can facilitate fast-tracking, allow early mobilization, decrease hospital stay, reduce unanticipated hospital admission, and reduce health care costs at large. Similarly, with the rapidly expanding scope of ambulatory surgery, emergence of better nerve block techniques and equipment, and imminently pending development of substantially more flexible local anesthetics, nerve blocks are also rapidly becoming the anesthetic of choice for majority of patients undergoing ambulatory surgery. Because of these trends, it is imperative that the organized anesthesia societies continue to emphasize the teaching of peripheral nerve blocks.[1] As the Internet makes its way into homes and operating rooms worldwide, advances in video, telecommunication and computing technologies offer an unprecedented possibility for online education in regional anesthesia. Numerous medical educational web sites are emerging as powerful online tools for a rapid access to needed medical information. Our own site monitoring tools have confirmed that the NYSORA website has already developed a group of regular visitors that browse our materials at length. We feel our site will continue to grow and educate as long we continue to routinely review, refocus, and redesign it utilizing current technologies. Our experience so far has taught us to embrace change in order to establish and maintain an effective robust educational environment on the Internet.

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