

Computerized plastic surgery office

Philip J. Miller

Purpose of review

Technology in general and computer capabilities in particular are growing at an exponential rate. Keeping current with the latest technological capacities and means of incorporating this technology into the facial plastic surgeon's office poses a significant challenge. This review will document the most appropriate method of incorporation and the latest available technological tools.

Recent findings

Recent developments in wireless networking, systems integration, digital photography and video, powerful inexpensive computer systems, and the growth of personal digital assistant integration have all contributed to a surge in technological advances. Implementing any or all can significantly benefit the busy facial plastic surgery office.

Summary

Keeping abreast of technological advances is a daunting task. Adaptation of these advances into the office can at times be overwhelming. This review will assist the practicing physician in incorporating selective technological tools to streamline his or her systems and increase efficiency.

Keywords

computers, technology, plastic surgery, office management, practice management, networking

Curr Opin Otolaryngol Head Neck Surg 12:357-361. © 2004 Lippincott Williams & Wilkins.

Department of Otolaryngology, New York University School of Medicine, New York, New York, USA

Dr. Miller has no affiliations with any of the companies listed in this paper.

Correspondence to Philip J. Miller, Department of Otolaryngology, New York University School of Medicine, 530 First Avenue, Suite 7U, New York, NY 10016, USA
Tel: 212 263 5959; fax: 212 263 2044; e-mail: drmiller@drphilipmiller.com

Current Opinion in Otolaryngology & Head and Neck Surgery 2004, 12:357-361

Abbreviations

PDA personal digital assistant
VPN virtual Private Network

© 2004 Lippincott Williams & Wilkins
1068-9508

Introduction

Technological advances continue to proceed at an exponential rate. Advanced software versions, more powerful hardware, faster networking capabilities, sophisticated peripheral devices (printers, fax machines, and wireless networking capabilities) offer opportunities for technological integration in an astonishingly powerful and unique manner. This paper will serve to introduce the new technologies and offer suggestions for their incorporation.

There are an overwhelming number of technological resources that can be incorporated into a facial plastic surgery office: from the latest computer systems, the largest flat panel monitors, wireless networking, to multifunction fax printer, color scanners, video documentation, and digital photography. Where does one begin? How does one choose which technological features should be incorporated into one's practice? This and other questions will be reviewed in this paper.

The very purpose of technological advances is to increase efficiency, decrease redundancy, and eliminate errors. In adapting a new technological system into one's practice, one must identify the system that the new technology is going to replace or improve. Therefore, before considering any new technological addition to the office, one must first spend the time outlining the system into which it is being incorporated. For example, it is best not to purchase an expensive photo-quality printer if there is no system in place for the photographs to be printed.

Systems management

The first step, therefore, in incorporating new technological advances is to identify one's internal systems. As a complicated operation can be dissected into a finite number of specific techniques and steps, so too can your office "operation" be distilled into a discrete set of procedures. These procedures (taking photographs, or printing a newsletter) should be thoroughly contemplated and then each step of the procedure should be clearly identified and documented. This process can be equated to the materials and methods section of any original article: one thoroughly documents, in an organized and sequential fashion, the steps of a particular scientific experiment or study. In a likewise fashion, practicing physicians should perform the same critical and objective analysis of their office policies and procedures. In this fashion, with-

out incorporating any technology whatsoever, one may identify a number of inefficiencies and redundancies within the system that can be eliminated. Hence, without the purchase of any technological devices at all, one has greatly improved communication, efficiency, and productivity. This outline of the practices and procedures gives the physician not only a tremendous handle on his/her daily practice, but also a view of where the incorporation of a technological device would vastly improve efficiency, decrease redundancy, and potentially eliminate errors.

As an example, “the dictation procedure” was recently reviewed in my office. Originally, there were no less than 23 individual steps necessary from original dictation to eventual sending of dictated material or filing operative reports. That system was then carefully analyzed by all participants in the office such that it was reduced to no more than eight steps while incorporating Web-based technology (which will be discussed later in this paper).

Therefore, the very first step in “computerizing one’s office” is to first recognize all of the office’s procedures and systems.

Recently available technological systems

There are a number of ways in which one can discuss the incorporation of technological systems into one’s office. One particular way would be to introduce each and every technological capability and describe it in detail. Alternatively, one can describe the ways in which those technological systems have already been incorporated into a practice. This paper will simultaneously perform both.

Web site capabilities

With the advancement of Web site capabilities and computer operating systems that more reliably interact with a Web site, this technological feature plays a significant role in streamlining office systems.

Patient interaction

Available as a stand-alone product or more likely as an “add on” to your preexisting office management system software, a Web-based, patient-oriented front end that incorporates itself into your office management system software can allow your new and preexisting patients to automatically perform a number of tasks, alleviating the burden from your staff. These can include (1) entry of all new patient demographics—full name, address, insurance information, and so on; (2) searching for the next available date for consultation or follow-up; and (3) downloading postprocedure instructions, directions for the office, or preoperative guidelines.

Web-based hard drive

One of the most simple to set up yet powerful features of an Internet and Web site connection is the use of a Web-based hard drive. Essentially, any Web site is nothing

more than a hard drive containing your Web site, with typically a lot of extra space. The newer Windows Operating System (Windows 2000 and Windows XP) allows you to access this Web-based hard drive as if that hard drive was actually physically connected to your computer. The advantage of accessing this Web-based hard drive is that files can be readily accessed, worked on, and saved from anywhere there is an Internet connection. (This is a particularly excellent solution for those individuals who have not yet set up a Virtual Private Network [VPN]. A Web-based hard drive allows users access to their office computer systems remotely, either from home or on the road, as if they were sitting in front of their own office computer.) In the absence of a VPN, Web-based hard drives allow the physician to store a copy of the presentation when going to a meeting in case they were to lose the CD on which the presentation resides. Web-based hard drives are also an excellent solution to those who prefer not to carry a laptop from location to location, but do in fact have computers at several locations, offices or between the office and home. To set up a Web-based hard drive, simply add a new network place in your Windows operating system by clicking on Start, Network, Add a network place, and proceed to complete the wizard. You may need assistance from your Web site hosting company, which will provide you with the necessary information to complete this task.

Our documents section

By now most of us who are using the Windows operating system are very familiar with the concept of the My Document section. This was an improvement in the Windows operating system. Before the incorporation of the My Document section of the hard drive, each and every program on your computer more or less stored any files produced by that program (a document created by Microsoft Word, or spreadsheet created by Microsoft Excel, or presentation created by Microsoft Power Point) in each of the program’s respective folders. Therefore there was no one particular area on the hard drive that contained all of these documents. This was particularly troublesome should you want a backup of your created documents. One had to search throughout the computer to find all of the created documents and somehow systematically back them up. With the creation of the My Document section, all created files are automatically stored in this folder. One can easily and readily locate a created document and also back it up.

In our office, we have created on our central server an Our Documents section. This folder contains all of the documents in digital format that are critical and vital to the operations of our office. No longer are some files stored on one individual computer or stored elsewhere. Rather, one should designate a single computer as the computer to which all documents will be stored and

place on that computer an Our Documents folder into which all files are stored. Then by allowing access to that folder by all computers, one can readily identify, find, and use the forms, letters, and presentations that are routinely used by the office.

Our manual section

Another extraordinarily powerful feature of an office network, in addition to Web browsing (Internet Explorer, Netscape Navigator) capabilities and office systems management, is ability to create an office manual. An office manual is not intended to dictate and confine the office staff to a set of rules or regulations. Rather, it should be conceived as a reflection of the individual steps taken for the staff to perform its varied goals and tasks. Writing this office manual in Microsoft Word allows for a number of output formats. This manual can be printed and distributed or it can, with a click of a button, be converted into a Web page whereby it is stored in the Our Document section for individuals to peruse with Internet Explorer. The purpose of the manual is to document the systems that were described in the first part of this paper. That is, each and every operation performed by the office staff can be divided into a number of individual steps. Each of the steps is then listed and can be reviewed by the entire office in an objective manner. If a particular staff member is absent, the other staff members know exactly how to perform the task by simply opening up this manual file and performing the detailed and listed steps. We have found our manual documents to be extraordinarily useful, and they have created an increased awareness of the role of each of the members of our staff in the overall workings of the office.

Taking advantage of mass e-mailing

As we are all well aware of solicitations through e-mail for Viagra, mortgages, and a get-rich-quick scheme from Nigeria, e-mail has become an extraordinarily effective and inexpensive way to communicate. We have incorporated e-mail into our office in a number of ways.

The appointment confirmation

Our computer database office management system is able to scan the next week's schedule and automatically send out e-mails to our patients reminding them of their appointments. Typically, the majority of those patients respond, thereby eliminating the need for a personal phone call. Furthermore, our patient appreciates that we contact them in this fashion, which simply requires a click of the reply button to respond as opposed to picking up the phone, dialing and leaving a message. For those patients who do not have e-mail, or do not respond, we call them directly.

E-mail newsletter

Another important feature for the facial plastic surgeon is keeping in touch with prospective as well as prior patients. A newsletter is an effective way of achieving this

goal; however, it can be extraordinarily costly. Creating a monthly e-mail newsletter, however, is very affordable. One can create an e-mail newsletter using Microsoft Word and then distribute that e-mail newsletter by using the mail merge feature in Microsoft Word. When performing that Microsoft Word feature, one is given the option of selecting either a paper or e-mail mail merge. The newer versions of Microsoft Word greatly facilitate this convenient capability. Another way of achieving a monthly e-mail newsletter is through the Web site www.constantcontact.com. This site allows, in a similar fashion, quite an impressive-appearing newsletter to be sent to a list of your patients.

Synthesis of telephone, personal digital assistant, and pager

In this day of miniaturization and technological synthesis, I am so surprised when I see a physician carrying a cell phone, a pager, and personal digital assistant (PDA). These three items are nicely combined now into one unit. Of course, one is limited to the specific devices offered by their cell phone carrier. Nevertheless, one of the following two phones should be considered. The Samsung I 600 is a Windows-based pocket PC telephone that synchronizes with Microsoft Outlook, can be set up to receive all pages, and can be set up as alphanumeric pager. Alternatively, the Treo is a palm-based unit offering similar features. There are several points to keep in mind when converting to an all-in-one system like these.

Most scheduling software that runs in a medical office is proprietary, but many will synchronize with Microsoft Outlook. Microsoft Outlook can then be synchronized with your cell phones/PDA. All PDA phones allow you to both visualize the telephone number of a particular contact and then simply press the send button to dial that telephone number, thereby eliminating the need to hold the PDA in one hand and dial the number with your cell phone in the other. Fortunately, that feature extends itself to text messaging. When my answering service forwards me any message describing the circumstances and telephone number of an individual whom I have to call back, I can simply press the send button while reading the message and the phone will dial the number listed on the message transmitted by the answering service. This greatly reduces the repetitive nature of reading the text on the pager and inserting that into a cell phone.

One of the last advantages of having the text messaging (alphanumeric paging) service incorporated on a cell phone is that the text message is continually broadcast until the phone accepts the message and confirms the receipt. Therefore, should a page be transmitted when the phone is out of range, the transmission continues until the phone receives the page. Thus, there are fewer incidences of lost pages.

Web site dictation service

As I have mentioned previously in this paper, we most recently reviewed our dictation system and identified a technological innovation that greatly reduced the number of steps required by our office staff to produce dictations. We have incorporated a technological innovation called Scribe.com, a Web site designed specifically for medical dictation. A dictation can be performed through the telephone or (as this paper has been generated) through the use of a digital recorder, which is then connected to a computer and the digital file is uploaded through an e-mail to the scribe.com Web site. Once the Web site receives the digital file (through the telephone or through an e-mail), they transcribe the dictation and it is placed in your private inbox. After logging onto the Web site, one can review the transcription, make any changes, send the transcription back for further review, listen again to the dictation should there be any confusion as to the appropriate transcription, and then finally approve the transcription. Upon approval, the dictation can be faxed, e-mailed, or printed directly from the Web site getting the final consultation note or operative note into the hands of the referring physician immediately. Furthermore, these dictations remain on your personal area on the Web site, and therefore can be accessed at anytime 24 hours a day, 7 days a week from anywhere in the world. It almost becomes an electronic medical record of your patients available anywhere in the world. Finally, there is an impressive advanced search capability on this Web site, which allows you to identify which dictations have been printed, approved, or sent to physicians.

Image management

One area in particular that separates the facial plastic surgeons office from all others is the vast number of photographs that are taken before, during, and after a procedure. Digital photography has greatly reduced the cost of taking the photograph, but it transformed the burden of filing physical slides into now filing images on the computer. One has several options for this burdensome task. On the one hand, there are the professional and excellent digital imaging archiving software companies that make themselves available and support our societies at the meetings. On the other hand, there are a number of inexpensive, do-it-yourself digital archiving softwares available at your local computer store. I am often asked whether or not the professional digital archiving software is worth it. I offer the following opinion. In my personal opinion, the professional service is not worth the price that they are requesting. However, that is not really what you are paying for. I suggest you think of their cost as a consultation fee. If you do not know how to organize your files in a systematic fashion, this task will soon be absolutely burdensome and overwhelming to you or your office staff, or both. Hiring a professional firm that is accustomed to organizing facial plastic sur-

gery for pre-, intra-, and postoperative photographs is the most cost-efficient and headache-free way of achieving this goal. If, on the other hand, one is quite accustomed to installing, adapting, and integrating computer software systems, there are a number of digital photograph filing software systems available that make this task quite simple. I would recommend ACDSee 5.0 from www.ACDsystems.com. This simple but extraordinarily powerful computer program generates thumbnails (small photos) of all the photographs and allows you to rearrange them in any manner. Furthermore, it allows you to categorize all of your photographs by procedure or by age, date, and so on.

Photo morphing

Photo morphing—the ability to perform virtual surgery on preoperative photographs—falls under the same category as the previous section, photo archiving. There are professional firms that provide excellent and reliable solutions to this necessary component within a facial plastic surgery office, but are quite expensive. Again, think of the fees associated with this incorporation as hiring a consultant rather than paying for extraordinarily expensive software. An alternative to this expensive morphing software is a very simple software program called Kai's Power Goo. This software is actually designed for children, but by selecting the appropriate brushes, you can easily reduce a nasal hump or modify a chin or move eyebrows, and give your patients a relatively quick and realistic perspective of their postoperative results.

Plastic surgery office management systems

Finally, it is my firm belief that being efficient, eliminating redundancy, and simplifying the office procedures and policies requires one to keep the number innovations and amount of technological adaptation to a relative minimum. This concept translates into the notion that if one software can perform all the tasks necessary to streamline your office systems, then choose that software as opposed to incorporating 15. Our office utilizes Nextech's practice 2004. This office management system specifically designed for facial plastic surgeons incorporates a patient module (demographics, insurance, tracking, billing, photography, document retrieval, prescription writing, and soon-to-be-released electronic medical records) with letter-writing module (for mail, e-mail, or regular mail marketing). Sophisticated reports and inventory for supplies are capabilities as well as extensive financial analysis of the practice with projections, and an impressive marketing module that helps you decide where your patients are coming from. Although I could certainly list a number of individual software titles that can perform each one of these individual tasks, experience has proven that one system is much better than 15.

Electronic medical records

There are two forms of electronic medical records. There is a version where all information is entered into the computer and a sophisticated retrieval system is used for creation of documents, letters, consultation letters, future operative notes, and so on. This is a very time-consuming project both in its implementation and arguably in its actual practice. The advantages, however, are that it creates a completely paperless office, and the information is readily retrievable. The disadvantage, some say, is that one is spending more time typing or clicking into the computer than communicating with the patient.

An alternative to the complete digital electronic medical record is the paperless office concept. In this version of a modified electronic medical record, one continues to practice as they would previously, except that at the end of an office session, rather than placing the paper generated during the office visit into a chart, the paper is scanned into a computer and then placed into a digital chart. Many plastic surgeons prefer this alternative to the true electronic medical record because it does not drastically change the way in which they practice their consultations or document their patient interactions. Furthermore, this solution also allows several members of the office staff to access a particular patient's chart simultaneously as one would a true electronic medical record, but does not require nearly the implementation time, energy, or cost of the true electronic medical record.

Conclusion

In conclusion, there are a number of technological advances in operating system, peripherals, and Internet capabilities that can be incorporated into one's office to streamline the practice and increase efficiency. How one goes about doing this is an entirely different question. There are two components to adapting technological advances into one's office. The first is identifying the system into which the advance is being incorporated and second is actually making the change. Although the office staff is absolutely necessary for the first component, the second can be delegated to an outside consultant. Often, these consultants are technologically gifted but are not as familiar with the needs and demands of a medical office. On the other hand, there are those who find incorporating these technological systems into their office a relatively easy task, in which case this article will shine some light on the recent advances in the technological realm.

References and recommended reading

Papers of particular interest, published within the annual period of review have been highlighted as:

- Of special interest
- Of outstanding interest

- 1 Miller P, Backer D: Photography, computers, and the Internet facial plastic surgery. In *Facial Plastic Surgery*, vol 15, no 2. Edited by Tardy ME, Bull TR. New York, Thieme; 1999.
- 2 Miller T, Backer D: Facial plastic surgery in the digital age. In *Facial Plastic Surgery Clinics of North America*, vol 8, no. 1. Philadelphia: WB Saunders Co.; 2004.