Commentary

# The Role of Internet and Personal Digital Assistant in Oral and Maxillofacial Pathology

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## Abstract

**Internet usage for dentistry and medicine is growing. Using search engines available on the Internet, websites for oral pathology and oral medicine information resources are explored and evaluated. A framework, whereby the personal digital assistant is used in conjunction with the Internet to enhance the practice and education of oral pathology, is proposed.**


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## Introduction

The Internet is a global network of networks that connect computers all over the world, so that anyone from any point in the network can communicate with others on the network through a service provider. The Transmission Control Protocol/Internet Protocol (TCP/IP) and the World Wide Web (www) technology have become the universal standard for networking and delivery of information. The personal digital assistant (PDA), also known as handhelds, pocket computers or palm-tops, are rapidly converging on a single pocket device that is leveraging on the wireless TCP/IP networks and www protocol so that information can be delivered anywhere and anytime.[1-4]

There are many ways of networking with the PDA and currently the popular standards include: Infrared Data Association (IrDA), Wireless-Fidelity or Wi-Fi (IEEE 802.11g), Bluetooth™ radio and the General Packet Radio Service (GPRS). In the National University of Singapore, the integrated wireless LAN operating on an 802.11b network can enable Internet access in defined locations. The in-built infrared port, utilising the IrDA, can also allow PDA to become client devices onto the central database server i.e. NUSNET IV.[4,5]

## Materials and Methods

A cursory search on the Entrez website (http://www.ncbi.nlm.nih.gov/) found that available literature sources on oral pathology were lacking. The search terms, "oral pathology", "oral and maxillofacial pathology" and "oral medicine" were entered into 3 common search engines: Google (http://www.google.com.sg/), MSN (http://www.uk.search. msn.com/) and Yahoo (http://search.yahoo.com/). The top sites identified by each search engine were downloaded and assessed for authorship, content and data. The most useful sites are represented in the next section.

## Results

The unique resource locator (URL) of the top 50 sites identified by each engine was recorded. Google returned 633,000, MSN 152,233 and Yahoo 754,000. The top 50 returns were chosen as it was deemed unlikely that the average user would search beyond the first 50 sites returned by the search. The search results were first reviewed for their relevance to clinicians. Standards based on the quality criteria described by Azdelhard[6] were then used to score the content of the relevant sites. The two authors then made a subjective judgement on whether the information is relevant to the clinician or pathologist.

Of the top 150 identified, 16 were deemed relevant. Of these, some (n = 28) were duplicated within and between the search engines (Table 1). Manual and random searches were then performed and the most useful sites gleaned, represented in Appendices 1 and 2.

## Discussion

PDAs are attaining increasing usage and functionality in the dental and medical community.[7] Physicians are using them to track patient information and movements in the word.[8] The BAOMS download site offers a surgical logbook

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Table 1. Table Depicting Summary of Yields from Each Search Engine

| | Search engines | | |
|---|---|---|---|
| | Yahoo | Google | MSN |
| Total yields | 633,000 | 754,000 | 152,233 |
| | Top 50 sites | | |
| Useful sites | 10 | 4 | 2 |
| Duplicated sites | 7 | 8 | 13 |
| Redundant sites | 33 | 38 | 35 |
| Inter and intra group duplications | | 28 | |

that can be used to log patient cases. Other useful and shareware materials can also be collectively found.[9]

The other more important use is in teledentistry and radiology. An initial experience with a wireless PDA as a teleradiology terminal for reporting emergency computerised tomography scans in a neurology department has proven effective.[10] Explorative investigation in oral and maxillofacial surgery showed that the idea may be equally possible in oral maxillofacial pathology setting.[11,12] Requests for oral pathology services can now be sent via the Internet.[2]

The Internet and PDA, or the PDA with Internet access, can become essential teaching tools. This was shown by a pilot study conducted on final-year medical students in a Paediatrics department.[5] The Internet is replete with resources and sites that provide on-line tutorial and image libraries.[1-4]

Better on-hand or point of care can be made available to physicians or oral surgeons practising oral pathology or oral medicine. Drug databases that can be easily downloaded onto handheld devices have become one of the most useful features on the PDA for doctors.[7,13] Medical and specialist dental e-journals and e-books are now widely available (Appendix 2).

The Internet, with its organisational homepages, bulletin boards and mailing lists, allows for information exchange and collaboration at a global level. Standards in research and patient care can be made available at an international level and shared. Clinicians are made to be aware from the present paper that although there is a vast resource of oral pathology and medicine interest on the Internet, there is still some difficulty in locating the most useful sites with the present search engines.

## Conclusion

Although the use of the PDA and Internet in oral pathology and oral medicine is at an early stage of development, it is likely that future technical advances will allow increased usage and functionality in the dental community. The ability to link data on a client's PDA to a central database allows unlimited potential in developing point-of-care application.

This paper has examined the available resources on oral maxillofacial pathology and medicine on the Internet. It also proposes a framework where the PDA can be used to enhance the practice of oral maxillofacial pathology through better information on-hand, tracking and management of patient and collaboration at the international level.

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**Appendix 1: Newsgroup**

BBOPLIST
Listserv Address: listserv@ubvm.cc.buffalo.edu
Description: Buffalo Board of Oral Pathology. Discussion of ideas and topics regarding oral pathology, service, research and teaching.
Contact: Rich_Alberth@sdm.buffalo.edu

CALCIF-L
Listserv Address: listproc@usc.edu
Description: Calcified tissue discussion. Focus is biomineralisation in calcified tissues. Contact: MLSnead@zygote.hsc.usc.edu

EXPATH-L
Listserv address:listproc@usc.edu
Description: Experimental pathology with special emphasis in the oral cavity and head and neck. Contact: MLSnead@zygote.hsc.usc.edu

**Appendix 2: Websites**

Oral Pathology, UCSF
http://www.ucsf.edu/oralpath/

Oral Pathology, USC
http://www.usc.edu/hsc/dental/opath/

Oral Pathology, Iowa
http://www.vh.org/Beyond/Dentistry/oralpath.html

Oral Pathology, Forsyth
http://www.forsyth.org/oralpathology/

Oral Pathology, UMDS
http://www.udms.ac.uk/dental/omedpath/omedhome.htm

Oral Pathology, Guy's and St Thomas
http://www.hospital.org.uk/dentistry-oral_pathology_biopsy_service/welcome.html

Oral Pathology, National University of Singapore
http://www.dentistry.nus.edu.sg/histo.htm

Oral Pathology Lab, Inc
http://www.oralpathlab.com/

MedNet HELLAS: Pictures in Oral Pathology
http://www.mednet.gr/pim/oralpath.htm

Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics
http://www1.mosby.com/Mosby/Periodicals/Dental/

Journal of Oral Pathology and Medicine
http://www.munksgaard.dk/journals/

American Academy of Oral and Maxillofacial Pathology
http://www.aaomp.org/

International Association of Oral Pathologists
http://www.eastman.ucl.ac.uk/~iaop/