G7   OdontoSearch: Modifications, Updates, and Proper Usage

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After attending this presentation, attendees will better understand using the OdontoSearch program for dental identification.

This presentation will impact the forensic science community by providing an overview of recent modifications of OdontoSearch and will include case examples highlighting proper usage of the program.

It has been two years since the enhanced web version of OdontoSearch was formally introduced to the forensic community at the 68th Annual AAFS Scientific Meeting in Las Vegas, NV. Since that time, there have been significant changes to the program; this presentation will educate attendees about the recent enhancements to the OdontoSearch program. A brief tutorial will also be given regarding the proper use of the program, and informative case examples will be presented.

OdontoSearch is a computerized program which is available online (www.odontosearch.com). It is a tool used by forensic odontologists to statistically determine the frequency that specific dental patterns would be expected to occur in a population. As such, OdontoSearch provides an objective means for users to recognize whether specific dental patterns formed by combinations of missing, filled, and unrestored teeth are common or unusual. The program utilizes a large database of dental records of known individuals for comparison. Empirical comparison of an "unknown" pattern against the reference data in OdontoSearch will reveal the frequency with which this pattern would be expected in the general population. These results can be used to support dental identification in situations in which the observed matching pattern between an unidentified body and a missing person is found to be extremely rare.

The OdontoSearch reference database is constantly growing as more appropriate samples become available for research. Recently, two new sources of dental data have been obtained for incorporation into OdontoSearch. These include the dental data from the 2013-2014 National Health and Nutrition Examination Survey (NHANES), as well as a portion of the "BigMouth" data repository. OdontoSearch 3.0, released in 2015, had a sample size of 57,980 records. With the availability of the NHANES and BigMouth data, the sample size of the next release of OdontoSearch will increase substantially.

The NHANES dental data are periodically collected as part of an initiative by the Centers for Disease Control and Prevention to study dental health. Participants in the newly released 2013-2014 NHANES study represent a cross-section of the United States civilian population. There are more than 9,400 individuals represented in the latest NHANES release, a subset of which is applicable to the OdontoSearch program. Earlier iterations of the NHANES study have formed the foundation of the OdontoSearch reference data.

BigMouth is an oral health data repository available for research.[1] Currently, the BigMouth dental repository is composed of electronic chartings contributed by six United States dental schools as part of the Consortium for Oral Health Research and Informatics. The total BigMouth database holds dental information on more than one million patients. The participating dental schools have generously agreed to contribute their data to OdontoSearch, and a subset of this massive data repository has been converted for use in the next version of OdontoSearch.

Users of OdontoSearch have the ability to customize searches based on specific demographic parameters (age, gender, and ancestry) and/or specific databases, as desired. This can be useful if, for example, the frequency of a dental pattern was needed for only females between 35 and 50 years of age. In addition, language options have been added to OdontoSearch, so all pages can be accessed in Spanish.

When using OdontoSearch, it is important to perform searches only on teeth with exact matches between the antemortem or postmortem records. Explainable discrepancies (e.g., a filled tooth in an antemortem record corresponding to a missing tooth in a postmortem record) should not be included in an OdontoSearch query. Specific "dos and don'ts" of OdontoSearch usage, such as the points listed above, will be discussed, in addition to illustrative case examples.

Reference(s):

1.   Walji M.F., E. Kalenderian, P.C. Stark, J.M. White, K.K. Kookal, D. Phan, D. Tran, E.V. Bernstam, and R. Ramoni. Bigmouth: A Multi-Institutional Dental Data Repository. *J Am Med Inform Assoc*. 21, no. 6 (2014): 1136-40.

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