

Electronic data collection for the analysis of surgical maneuvers on patients submitted to rhinoplasty

Cezar Berger¹, Renato Freitas², Osvaldo Malafaia³, José Simão de Paula Pinto⁴, Marcos Mocellin⁵, Evaldo Macedo⁶, Marina Serrato Coelho Fagundes⁷.

- 1) Master. Volunteer Teacher in the ENT Department of HC-UFPR and Doctor and Medical Advisor for the Fellowship Program at IPO.
- 2) Associate Professor and Head of the Plastic Surgery Service of the Federal University of Parana. Associate Professor and Head of the Plastic Surgery Service of the Federal University of Parana.
- 3) Doctor. Professor of Surgery at UFPR, Coordinator of the Graduate Program in the Principles of Surgery of the HUEC, and Professor at the Evangelical School of Paraná.
- 4) Doctor. Adjunct Professor at the Federal University of Parana and Coordinator of the Master of Science, Management and Information Technology.
- 5) Doctor. Head of the Department of Otorhinolaryngology, HC-UFPR.
- 6) Doctor. Coordinator of the NEP IPO and Professor at the Department of Otorhinolaryngology, HC-UFPR.
- 7) Graduate Student. ENT doctor.

Institution: Hospital Instituto de Otorrinolaringologia do HC-UFPR.
Curitiba / PR - Brazil.

Mailing address: - Marina Serrato Coelho Fagundes - Av. Republica Argentina 2069 - Curitiba / PR - Brazil - Zip code: 80620-010 - Telephone: (+55 41) 3074-7482 - E-mail: ma.serrato@hotmail.com

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SUMMARY

Introduction: In the health field, computerization has become increasingly necessary in professional practice, since it facilitates data recovery and assists in the development of research with greater scientific rigor.

Objective: the present work aimed to develop, apply, and validate specific electronic protocols for patients referred for rhinoplasty.

Methods: The prospective research had 3 stages: (1) preparation of theoretical data bases; (2) creation of a master protocol using Integrated System of Electronic Protocol (SINPE[®]); and (3) elaboration, application, and validation of a specific protocol for the nose and sinuses regarding rhinoplasty.

Results: After the preparation of the master protocol, which dealt with the entire field of otorhinolaryngology, we idealized a specific protocol containing all matters related to the patient. In particular, the aesthetic and functional nasal complaints referred for surgical treatment (i.e., rhinoplasty) were organized into 6 main hierarchical categories: anamnesis, physical examination, complementary exams, diagnosis, treatment, and outcome. This protocol utilized these categories and their sub-items: finality; access; surgical maneuvers on the nasal dorsum, tip, and base; clinical evolution after 3, 6, and 12 months; revisional surgery; and quantitative and qualitative evaluations.

Conclusion: The developed electronic-specific protocol is feasible and important for information registration from patients referred to rhinoplasty.

Keywords: rhinoplasty; medical informatics; database.

INTRODUCTION

Computerization is becoming increasingly necessary to professional practice in several fields, including the health area, because it eases the recovery of stored data. Further, it is being used to promote the production of research with a high degree of scientific rigor. The development of data bases with systematically organized information permits the use of computerization in scientific work and thereby results in more reliable conclusions. Therefore, the improvement of data collection via computerization is indisputably important.

The Integrated System of Electronic Protocol (SINPE[®], intellectual property of Professor Osvaldo Malafaia) was created in 1999 and has been registered with the

National Institute of Industrial Property (INPI) under the number 00051543 (1). The system enables the development of research in the otorhinolaryngology and facial plastic surgery fields with greater readiness and versatility in data collection, allowing the immediate sharing of information within the scientific community.

The present study integrates the line of research named "Computerized Protocols" from the post-graduation program at the Surgical Clinic of the Division of Health Sciences at Federal University of Parana.

METHOD

For developing a theoretical database, all necessary information in the field of otorhinolaryngology and facial

plastic surgery was gathered from text books and published periodicals (22). Once the information was compiled, an electronic database was created using the Microsoft Word and Microsoft Excel programs. Afterwards, the generated files were converted to text format archives to enable their incorporation into SINPE®.

We created a master protocol containing 20,109 items. The structure incorporates practical sorting and is constituted of anamnesis, general physical examinations, complementary exams, and clinical treatment. For each area, as determined from the physical exam, the information is specific and encompasses the diagnosis, surgical treatment, complications, and follow-up. A specific protocol termed "Rhinoplasty" was created from 954 items. Two different manager protocols were developed to organize data in the software: (1) a master protocol that works as a receptacle for information related to otorhinolaryngologic diseases but in a non-selective manner and (2) a specific protocol that selects, covers, and groups exclusive information from determined fields of practice.

RESULTS

After concluding the elaboration and review of the master protocol (20,209 items), which encompassed the greater field of otorhinolaryngology, we hierarchized an idealization of the specific protocol (954 items) containing the entire subject related to patients with aesthetic and functional nasal complaints referred to surgical treatment (i.e., rhinoplasty) into 6 main categories related to research: anamnesis, physical examination, complementary exams, diagnosis, treatments, and outcome.

For the present research, we used the categories of treatment and outcome (main roots) and their sub-items, as listed below.

1. Finality
2. Accesses
3. Surgical maneuvers on the nasal dorsum
4. Surgical maneuvers on the nasal tip
5. Surgical maneuvers on the base of the nose
6. Clinical evolution—3 months
7. Clinical evolution—6 months
8. Clinical evolution—12 months
9. Revision surgeries
10. Qualitative evaluation (satisfaction)
11. Quantitative evaluation (measures of the nose)

1.1 The creation of the master protocol

Clicking on "Protocols" will display the protocol options (master or specific). Clicking on "Data" will present

the option to initiate or simulate data collection or initiate a search. Using the option "Patients," the user can identify or insert a patient in the program, or even consult pre-existing data. By selecting "Doctors," the user is allowed to insert, modify, or exclude a particular professional. In the item "Parameters," one can verify users, access permissions, subscribe to new institutions, and view a unit's fields and fees. Finally, help options are available under the item "Help: protocols system help; how to make security copies; how to restore a security copy; how to send a copy to the central database; and data regarding the program."

By clicking on the icon "+" beside the word root, one can open it to show the content of the master protocol. The icon "+" next to the root of a folder or an archive indicates that the folder or archive is closed (i.e., the content is not exposed). Clicking on the icon "+" will convert it into "X," exposing the content to be used. Along the horizontal column above this icon are shown 5 options in the master protocol: clicking on the blank box beside "View in alphabetic order" will result in the folder contents being shown in alphabetic order. By clicking on "Expand," the folder content is selected and entirely exposed. Conversely, clicking on the option "Reduce" will close the folder. Clicking on the option "Father" will create a new father item. The option "\$" can be used to modify numerical value data, such as fees, procedures codes, and medications. In addition, 3 options are available in the right vertical column: the magnifying glass icon is utilized to perform a search within the entire master protocol and is aimed at finding specific information; by clicking the up and down arrows, the user can alter the position of an item inside the folder. At the bottom of the screen, 5 options can be found in the master protocol: "Add sibling," "Add son," "Remove," "Refresh," and "Visualize in HTML." All options can only be used after opening the root, when the master protocol content is exposed. To close the master protocol and return to the computerized protocol operation, just click on the option "Close" positioned at the right side of the bottom of the screen.

The screen in Figure 1 shows the content corresponding to the master protocol with the opened root. The folders contain clinical data from several otorhinolaryngological pathologies.

When the root is opened, it is possible to list the functions of the options shown at the bottom horizontal line. Clicking on "Remove," the user can exclude a folder or archive selected by using the mouse. To alter the characteristics of a selected folder or archive, such as the orthography, just use the option "Alter" by clicking over it with the mouse. After concluding the desired alteration, the user confirms the text and again includes the folder or archive selected by clicking on the option "Refresh." For

care process and increased the quality of assistance to the patient, since these systems assisted in the diagnosis process and therapy prescription. This capacity can be implemented due to intelligent systems, which permit the inclusion of clinical reminders for assistance follow-up, warnings about drugs interaction, alerts in dubious treatments, and deviations from clinical protocols (27).

Electronic protocols, in which questionnaires are filled using the computer, can be used as tools for prospective data collection. These protocols are effective because they enable the inclusion of systematized data through software that permits posterior manipulation by crossing data to generate quality scientific information.

Quality clinical studies are fundamental to continued scientific development. They allow secure access to new information with a consequent improvement of knowledge, goal planning, disclosure of procedure evaluations, and professional conduct.

SINPE® permits the user to create, modify, and add necessary information into master and specific protocols. This type of collected data storage allows the research to inform all parameters of the research (28). Furthermore, the possibility of interconnecting computers and institutions expands the collection and storage of data, which will be of fundamental importance in the development of computerized and multicenter databases in improving reliability.

The creation of a protocol specific to rhinoplasty emerged from the requirement for standardized and reliable information collection and led to the elaboration of descriptive and analytical studies in the field of nasal aesthetics, in which the subjectivity of the evaluations of surgical maneuvers and indications is preponderant.

At large medical centers in Europe and the United States, the computerization of patient data has enabled these difficulties to be resolved and has led to a steady increase in the inclusion of such studies in journals that avoid the subjective nature of data collection (27).

This protocol contains the option of direct filling. This feature enables the researcher to avoid the subjectivity that is characteristic of information collection and that complicates the interpretation of the results in high quality journals. A collector can fill in the initial information on the patient, such as name, age, gender, and insurance. However, a doctor must perform the collection of information related to the medical area, which was encompassed in this study in performed surgical maneuvers, and data related to satisfaction and interpretation of nose measures.

CONCLUSION

Applied in a simple and systematic way, the developed electronic specific protocol (SINPE) is a viable method for registering information on patients with an indication for rhinoplasty.

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