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Surgery and out-patient data collection and reporting using Filemaker Pro

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Abstract. – OBJECTIVE: The application of an electronic database in clinical practice is used widespread in every field of medicine. The aim of the present study is to illustrate our experience to use a database software for documentation of two of our clinical activities, outpatient hysteroscopy and inpatient gynaecological surgery.

PATIENTS AND METHODS: In 2004, we designed two databases, the first one to document surgical procedures in the operating theatre, the second to document outpatient hysteroscopy procedures using FileMaker v.8.5. The data entry interface contains free text fields for patient demographic data and the description of the surgical procedure, supplemented by drop-down lists for items such as clinical findings, procedures, instrumentation, technique, and complications. Copies were filed in the main hospital notes, sent to General Practitioners, and also given to our patients.

RESULTS: Since August 2004, we have used our two databases to document 2766 gynaecological operations and 3777 outpatient hysteroscopies. All users particularly liked the dropdown lists as their use greatly reduced the time taken to enter each patient's data. The databases were regularly used to select patients for audit projects and research data collection for prospective studies.

CONCLUSIONS: FileMaker is an user-friendly and easily configured software, extremely valuable in everyday clinical work.

Key Words:
Database software, Outpatient hysteroscopy, Gynaecological surgery.

Introduction

The documentation of diagnostic and surgical procedures electronically is challenging because of the inherent differences in the needs of different specialties and procedures[1-3]. Off-the shelf software is often inadequate, cumbersome and too non-specific for the requirements not only for subspecialties but even individual surgeon's practice. Once installed, generic software tends to be difficult to customize without expensive reprogramming[4,5]. Currently available electronic medical record systems such as Cerner (Cerner Corporation, North Kansas City, Missouri, USA) very much fall into this category.

We describe the application of FileMaker Pro relational database (FileMaker, Inc., Santa Clara, CA 95054, USA) to document two of our clinical activities, out-patient hysteroscopy and in-patient gynaecological surgery[6-10]. We chose FileMaker Pro as an easily configured and reasonably user-friendly software which can readily be adapted to document diagnostic and surgical procedures according to our requirements. The data can be used to generate reports/letters for patients and their General Practitioners and can be used for audit and research.

Methods

In 2004, we designed two databases, the first one to document surgical procedures in the operating theatre, the second to document outpatient hysteroscopy procedures using FileMaker v.8.5. The data entry interface contains free text fields for patient demographic data and the description of the surgical procedure, supplemented by drop-down lists for items such as clinical findings, procedures, instrumentation, technique, compli-

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cations, etc. The drop-down lists were configured according to the specific requirements of our surgical team and could be edited by us in real time. The current version of the Surgery Report database contains 23 descriptive fields and 20 drop down lists, and the Hysteroscopy Report 20 descriptive and 34 drop down lists.

Selected items from the databases were used to generate a "Surgery Report" or "Hysteroscopy Report" for each patient providing relevant information of their treatment or investigation. Copies were filed in the main hospital notes, sent to General Practitioners, and also given to our patients. Women seen in the Hysteroscopy Clinic were provided with their "Hysteroscopy Report" immediately after they had been de-briefed following the procedure, whereas those undergoing surgery under general anaesthesia were given their Report on the post-surgical ward round. As previously described[1], surgical patients were also given photo images and, if they wished, an edited recording of their surgery on CD ROM.

The FileMaker Pro databases were held on a secure hospital server. As not all computer terminals were loaded with FileMaker Pro, after each session we exported both databases into Microsoft Excel (Microsoft, Redmond, Washington, USA) so they could be accessed anywhere in the hospital.

Results

Since August 2004, we have used our two databases to document 2766 gynaecological operations and 3777 outpatient hysteroscopies. Apart from the authors, more than 50 other medical staff working with us have input data into the two databases during this period. New users required minimal intuition to be able to use the databases. All users particularly liked the drop-down lists as their use greatly reduced the time taken to enter each patient's data (Figures 1-2).

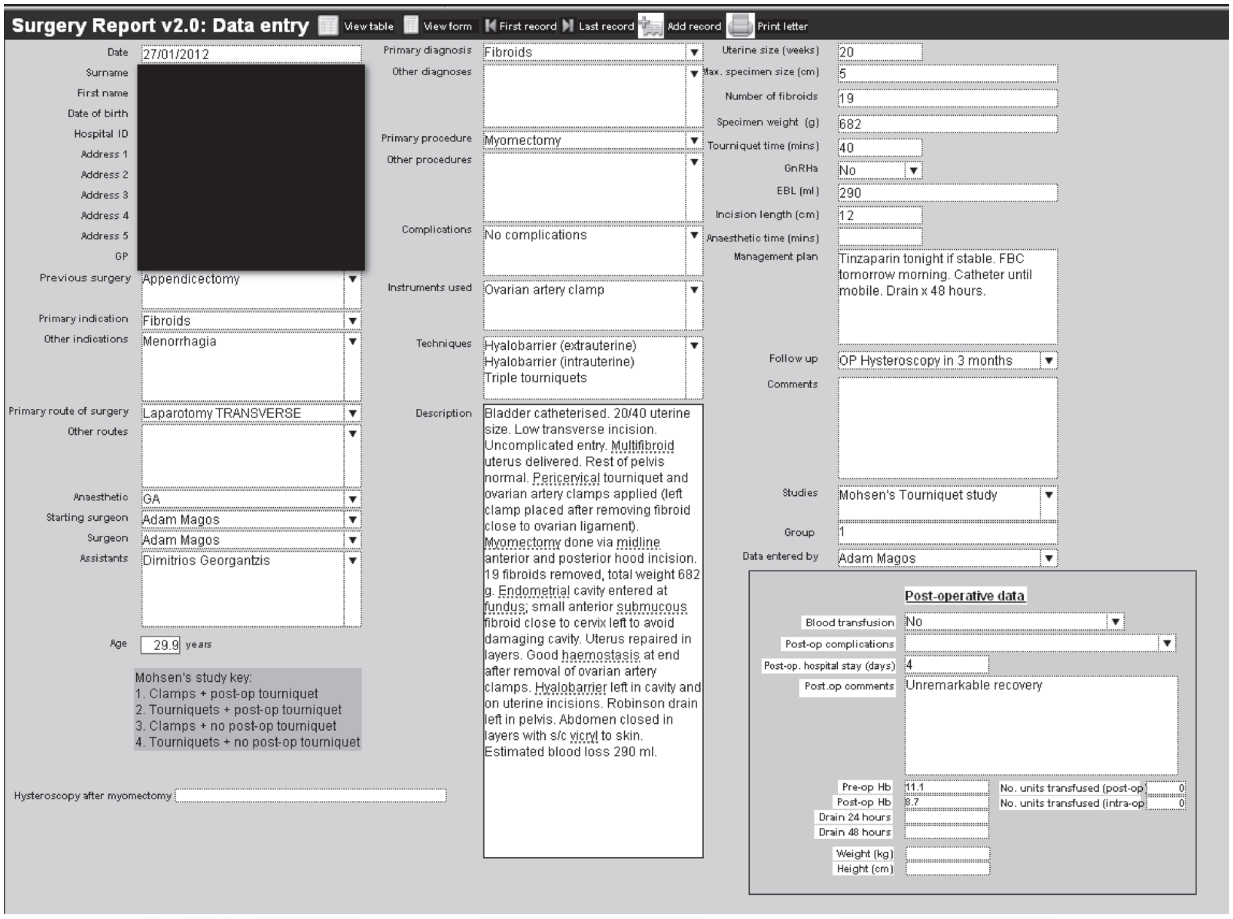

Figure 1. Surgery computer data entry form.

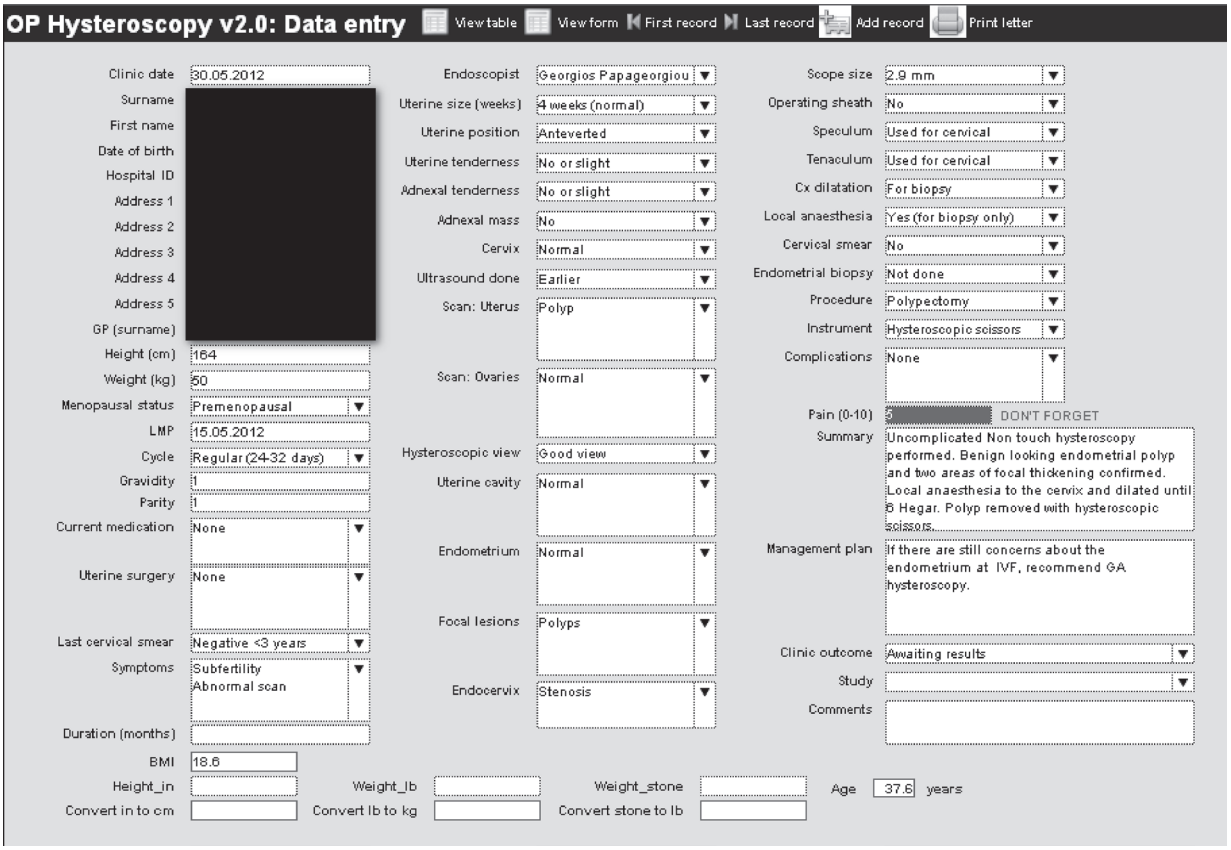

Figure 2. Hysteroscopy computer data entry form.

Although we did not formally assess the opinion of our patients, our impression was that they were pleased to be given a typed summary of their procedure.

In addition, the availability of procedural data on any computer terminal in the hospital was useful when the hard-copy hospital records were not available (e.g., when patients were seen later in out-patient clinics and medical records are not available). The databases were regularly used to select patients for audit projects, and latterly, we extended the databases to include research data collection for prospective studies.

Discussion

Our experience of using the two FileMaker Pro databases to document almost 7000 diagnostic and operative gynaecological procedures has been very positive. Universally, all users liked the numerous drop-down lists which meant that the database was quick to complete. The fact that the databases utilized drop-down lists extensively reduced typographic errors and helped to standardize terminology. This also meant that the data could be filtered easily for audit and research. We believe these in our important advantages of the system. Recently, in IVF unit at University of Naples Federico II, we have also extended the use of File Maker Pro software to colposcopic evaluation. At moment, we have collected more than 300 cases with a good satisfaction of our staff.

We found the facility for editing the drop-down lists to our particular and changing requirements to be particularly useful. For instance, when there are staff changes and the names of new surgeons have to be added, or when new procedures, instruments or techniques were being introduced, it was a simple matter for us to update the database immediately. This would be impossible with a dedicated system where any changes have to be programmed by the software vendor, a time-consuming and potentially expensive process. The alternative is to use a different off-the-shelf database, and we have had experience with Microsoft© Access. However, Access is much more cumbersome and less convenient to

use. For instance, making changes to drop-down menus would involve closing the master database, creating or editing the look-up table (which is a separate file), saving it, and then re-opening the master database to allow the changes to take effect. In contrast, with FileMaker Pro, any look-up table can be created or edited without any additional steps, and the database and all the look-up tables are contained in a single and relatively small file. In security terms, this also makes it much easier to encrypt the database.

What are the negatives with FileMaker Pro? In our view, there are three deficiencies. Firstly, analyzing the database is relatively complicated compared with programmes such as Microsoft Excel and Access. Scripts have to be written to do even the simplest analysis as there are no built-in, easy-to-use analytic functions. Secondly, although we are using a relatively old version of FileMaker Pro which had no built-in facility to generate graphs, even the latest version is not as intuitive or easy to use as, for instance, Microsoft Excel or Access. It is for this reason that we export our data to Excel for analysis and graphical summaries of our results. Thirdly, our databases are not integrated with the hospital patient computerized management system, which means that we have to enter the patients' demographic details ourselves rather than loading them from the hospital's database.

Despite these reservations, we consider FileMaker Pro to be an extremely valuable tool in our everyday clinical work. We are not the first to use FileMaker Pro in clinical practice, but as far as we are aware, we are the first to use it to document surgical procedures [11-14]. As the software is available not only for Windows computers but Apple Mac OS, including iPhone and iPad, everyone can use it.

Conclusions

Electronic collection of patients records provide valuable advantages in terms of healthcare system improvement, medical audit process and statistical analysis of data.

From 2004 we adopted FileMaker Pro Software to design two different databases in order to document surgical operations and out-patient hysteroscopies. The software gives the opportunity to modify every field of interest easily making it suitable for any needs. At the end of the procedure, all the information collected can be used to create letters for patients, colleagues and General Practitioners. In addition, all the data could be easily exported to Excel for statistical analysis. Many audit and clinical studies[6,15-22] have been conducted by our team using both databases successfully. In conclusion, we believe that FileMaker Pro could be an extremely useful tool in clinical practice to document efficiently every medical or surgical procedure.

Conflict of Interest

The Authors declare that they have no conflict of interests.

References

1) Papadopoulos N, Polyzos D, Gambadauro P, Papalampros P, Chapman L, Magos A. Do patients want to see recordings of their surgery? Eur J Obstet Gynecol Reprod Biol 2008; 138: 89-92.
2) Meaders RA, Sullivan SM. The development and use of a computerized database for the evaluation of facial fractures incorporating aspects of the AAOMS Parameters of Care. J Oral Maxillofac Surg 1998; 56: 924-929.
3) Budak AB, McCusker K, Gunaydin S. A structured blood conservation program in pediatric cardiac surgery. Eur Rev Med Pharmacol Sci 2017; 21: 1074-1079.
4) Harper JC, Wilton L, Traeger-Synodinos J, Goossens V, Moutou C, SenGupta SB, Pehlivan Budak T, Renwick P, De Rycke M, Geraedts JP, Harton G. The ESHRE PGD Consortium: 10 years of data collection. Hum Reprod Update 2012; 18: 234-247.
5) Van Hees D, Van Gelder F. Importance of informatics and database management in transplant coordination. Acta Chir Belg 2008; 108: 22-26.
6) Graziano A, Lo Monte G, Piva I, Caserta D, Karner M, Engl B, Marci R. Diagnostic findings in adenomyosis: a pictorial review on the major concerns. Eur Rev Med Pharmacol Sci 2015; 19: 1146-1154.
7) Zinna M, Gentile M, Torcia F, Bianchi P, Cozza G, Marziani R, Milazzo GN, Catalano A, Di Properzio M, Manzara F, Schimberni M, Caserta D, Frega A. Diagnostic accuracy of sonohysterography vs hysteroscopy in benign uterine endocavitary findings. Eur Rev Med Pharmacol Sci 2015; 19: 365-371.
8) Mollo A, Conforti A, Alviggi C, De Placido G. Successful direct bipolar resection of 6th week cesarean scar pregnancy: Case report and literature review. Eur J Obstet Gynecol Reprod Biol 2014; 179: 229-231.
9) Mollo A, Alviggi C, Conforti A, Insabato L, De Placido G. Intact removal of spontaneous twin ectopic Caesarean scar pregnancy by office hysteroscopy: case report and literature review. Reprod Biomed Online 2014; 29: 530-533.

10) De Placido G, Clarizia R, Cadente C, Castaldo G, Romano C, Mollo A, Alviggi C, Conforti S. Compliance and diagnostic efficacy of mini-hysteroscopy versus traditional hysteroscopy in infertility investigation. Eur J Obstet Gynecol Reprod Biol 2007;135: 83-87.

11) Brouwer R, Kiroff G. Computer-based logbook for surgical registrars. ANZ J Surg 2002; 72: 57-61.

12) Hambek M, Adunka O, Baghi M, Gstoettner W, Knecht R. AdOnco: a database for clinical and scientific documentation of head and neck oncology. Ann Otol Rhinol Laryngol 2006; 115: 144-149.

13) Takai K, Sawazaki M, Tomari S, Yamana K, Ogawa Y. Development of a new data entry system suitable for the Japan Adult Cardiovascular Surgery Database. Gen Thorac Cardiovasc Surg 2009; 57: 192-196.

14) Goetsch MF. Incidence of Bartholin's duct occlusion after superficial localized vestibulectomy. Am J Obstet Gynecol 2009; 200: 688. e681-686.

15) Conforti A, Krishnamurthy GB, Dragamestianos C, Kouvelas S, Micallef Fava A, Tsimpanakos I, Magos A. Intrauterine adhesions after open myomectomy: an audit. Eur J Obstet Gynecol Reprod Biol 2014; 179: 42-45.

16) Pinto RM, Michos G, Papageorgiou G, Halmos G, Moustafa M, Magos A. Incidence of unplanned oophorectomy at laparoscopic ovarian cystectomy for clinically benign cysts. J Obstet Gynaecol 2014; 34: 718-720.

17) Morelli M, Di Cello A, Venturella R, Mocciaro R, D'Alessandro P, Zullo F. Efficacy of the levonorgestrel intrauterine system (LNG-IUS) in the prevention of the atypical endometrial hyperplasia and endometrial cancer: retrospective data from selected obese menopausal symptomatic women. Gynecol Endocrinol 2013; 29: 156-159.

18) Conforti A, Strina I, Mollo A, Amoroso R, Marrone V, Marci R, de Placido G. The efficacy of modified luteal phase support with intramuscular progesterone in IVF/ICSI cycles: a retrospective observational study. Eur Rev Med Pharmacol Sci 2017; 21: 657-661.

19) Alviggi C, Marci R, Vallone R, Conforti A, Di Rella F, Strina I, Picarelli S, De Rosa P, De Laurentiis M, Yding Andersen C, De Placido G. High progesterone levels during the luteal phase related to the use of an aromatase inhibitor in breast cancer patients. Eur Rev Med Pharmacol Sci 2017; 21: 3134-3138.

20) Willame A, Marci R, Petignat P, Dubuisson J. Myoma migration: an unexpected "effect" with Ulipristal acetate treatment. Eur Rev Med Pharmacol Sci 2016; 20: 1439-1444.

21) Alviggi C, Guadagni R, Conforti A, Coppola G, Picarelli S, De Rosa P, Vallone R, Strina I, Pagano T, Mollo A, Acampora A, De Placido G. Association between intrafollicular concentration of benzene and outcome of controlled ovarian stimulation in IVF/ICSI cycles: a pilot study. J Ovarian Res 2014; 7: 67.

22) Milone M, Mollo A, Musella M, Maietta P, Sosa Fernandez LM, Shatalova O, Conforti A, Barone G, De Placido G, Milone F. Role of colonoscopy in the diagnostic work-up of bowel endometriosis. World J Gastroenterol 2015; 21: 4997-5001.