











# Digital organization of Plastic Surgery Service

## *Organização digital do Serviço de Cirurgia Plástica*

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### ■ ABSTRACT

The attention and enthusiasm of doctors in the pre- and post-operative period is of extreme importance in maintaining good doctor/patient relationships. An adequate organization and documentary record contributes to achieving a good relationship and ensures an important legal tool for physicians. With current technological advances, the electronic medical record is a secure and democratic way to deal with this information. The government has sought to implement this system in public institutions; however, results are still modest, perhaps mainly due to the lack of resources for investment in this area. In light of this, and given the relevance of practical, informative, and dynamic medical records, we aim to present our experience with the use of a complementary digital resource that is commonly associated with medical records and uses a free of cost digital platform for storing data in the “cloud”. This system can provide additional information about each patient, including outpatient follow-up, as well as photographic records of the pre-, intra-, and post-operative periods, and also facilitates quick, synchronized, and remote access through the internet. The system generates optimization of resources, surgical planning, and improvement in patient/doctor relationships. It also leads to greater integration of the medical team, particularly in the discussion of cases and distribution of surgeries by preceptors and residents. Thus, it is an alternative resource to improve medical charts with important data regarding the performance of medical teams, paying special attention to the peculiarities of plastic surgery.

**Keywords:** Plastic Surgery; Medical Records; Health Services; Patient Care; Organization and Administration.

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## ■ RESUMO

A atenção e zelo do médico no período pré e pós-operatório é de extrema importância para a manutenção da boa relação médico/paciente. A organização e o adequado registro documental, contribui para a obtenção de um bom vínculo e assegura importante ferramenta jurídica ao médico. Hoje, com os avanços tecnológicos, o prontuário eletrônico é uma forma segura e democrática de lidar com estas informações. Nas instituições públicas o governo tem buscado implementar este sistema, mas os resultados são ainda discretos, talvez pela falta principalmente de recursos para investimento nesta área. Diante deste cenário e da grande relevância de um prontuário médico prático, informativo e dinâmico, objetivamos apresentar a nossa experiência com o uso complementar de um recurso digital sem custos. Associado ao prontuário médico de uso habitual dos serviços, descreve-se um sistema complementar, utilizando-se uma plataforma digital de armazenamento de dados na “nuvem”. Por meio desse sistema é possível fornecer informações adicionais sobre cada paciente, incluindo o seguimento ambulatório, assim como o registro fotográfico do pré, intra e pós-operatório, além de viabilizar um acesso rápido, sincronizado e remoto por meio da internet. O sistema gera economia de recursos, planejamento cirúrgico e melhora na relação médico/paciente. Favorece maior integração da equipe médica, discussão dos casos e distribuição das cirurgias por preceptor e residente. Assim, é um recurso alternativo para incrementar os prontuários médicos com dados importantes para a atuação das equipes médicas, com especial atenção às peculiaridades da cirurgia plástica.

**Descritores:** Cirurgia plástica; Registros médicos; Serviços de saúde; Assistência ao paciente; Organização e administração.

## INTRODUCTION

A medical record is the most basic and fundamental document that permeates the activities of care, research, teaching, administrative control, and legal monitoring of medical activities in a health unit. It is also an element of communication between various sectors of services and between institutions and users, and is the repository of a data that provides information about interventions and tracks the patient's overall medical history<sup>1</sup>.

An objective way to evaluate the creation and establishment of a good doctor/patient relationship is via the analysis of medical records. As described by Sampaio (2010)<sup>1</sup>, adequate formalization and detailed completion of this document serves as a reflection of a good relationship with the patient. This corroborates the importance of early contact in the teaching and elaboration of this instrument, even in undergraduate studies, and explains the emphasis that should be placed on it during the training of specialists.

Despite the importance of the document in any area of medicine, in the area of plastic surgery,

its relevance significantly increases because courts understand that the obligation of the plastic surgeon is results, i.e., that he/she is obliged to obtain the promised result desired by the patient, which makes the issue very delicate due to the subjectivity of the concept of good and bad outcomes.

The attention and zeal of the doctor in the pre- and post-operative period is of extreme importance to maintain a good doctor/patient relationship. The observation of ethical principles provides the essence of good care and, together with the organization and an adequate documentary record, contributes crucially to the achievement of a satisfactory result<sup>2</sup>.

With current technological advances, electronic patient records are already being used in some health institutions. This would be the safest and most democratic way of dealing with this information<sup>3</sup>. Despite the security, there is still resistance on the part of certain conservative professionals and institutions. The government has sought ways to implement this system in public institutions; however, results remain insignificant, perhaps mainly due to the lack of resources for investment in this area. According

to data provided by TOTVS<sup>4</sup>, a technological management company, the health sector is the least digitalized industry; in fact, worldwide, this segment is more reliant on paper. In Brazil, there are at least seven thousand institutions, of which only 19% are digitalized.

Given this far from ideal scenario and the relevance of practical, informative, and dynamic medical records, we aim to present our experience with the use of a complementary digital resource that stores data in the “cloud” as an auxiliary tool to the traditional medical records and as a means of optimizing the organization of the service of Plastic Surgery, Federal University of Triângulo Mineiro (UFTM).

## METHODS

A complementary system is described associated with usual medical records of various services using a digital cloud storage platform. Through this system, it is possible to provide additional information about each patient, including outpatient follow-up, as well as pre-, intra-, and post-operative photographic records.

Among various options available online, Google Drive, which is free of charge, was chosen as a storage and organization platform. We have no professional or economic ties with the company.

In order to facilitate understanding and serve as a guide for reproducibility for other services, the following is a step-by-step elaboration of the system and our data feed proposal and usage suggestion:

Step 1: Create a Google account through Gmail (Figure 1).

Step 2: Access Google Drive preferably by a computer or through the application. Access will be made available to all members of the service through a login and password. An elected moderator will receive security notifications of the account (Figure 2).

Step 3: Create folders for each type of surgery/procedure performed, specifying by the service (ex.: Abdominoplasty) (Figure 3).

Step 4: Inside the folders named by the type of procedure (ex.: Abdominoplasty), create spreadsheets with the name of each preceptor, so that patients will be registered separately by the professional who evaluated and indicated that procedure (Figure 4).

Step 5: The worksheets contain personal data, telephone numbers, hospital records, and dates relating to pre-operative follow-up, such as exams and pre-anesthetic evaluation, and post-operative follow-up. Moreover, peculiarities of the cases, such as the use of anticoagulants, allergy to latex, and other observations that can be individualized are inserted in the worksheet (Figure 5A).

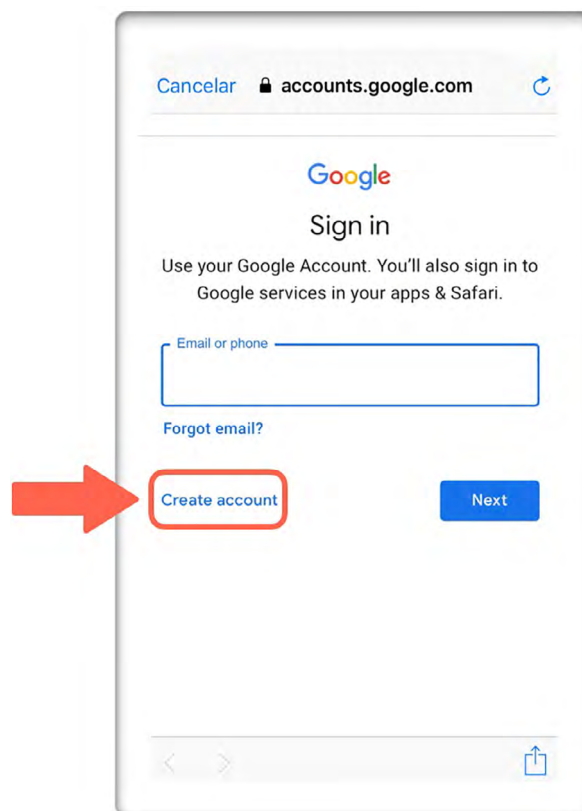


Figure 1. Google platform account creation

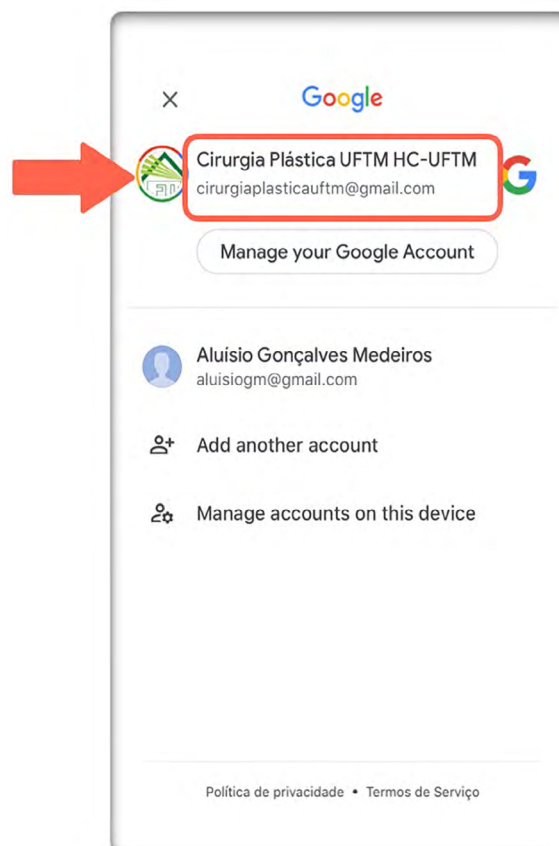


Figure 2. Drive access through newly created login and password.

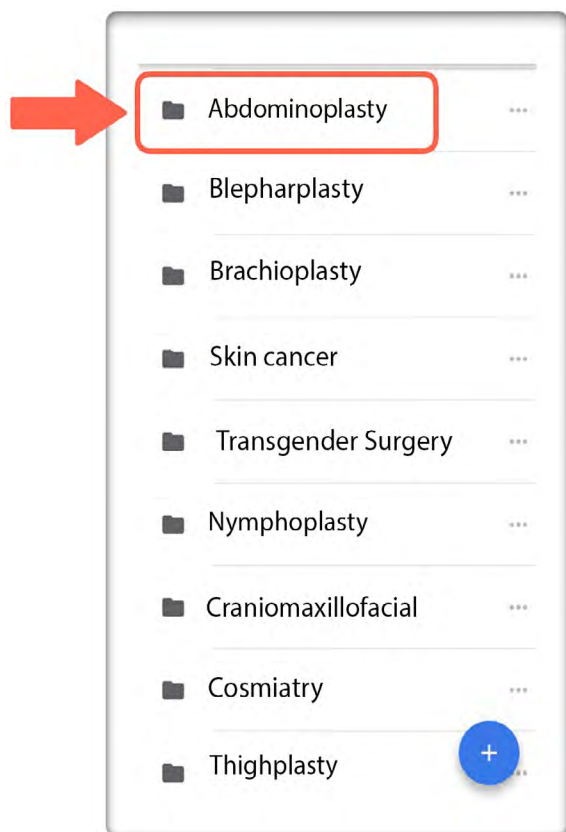


Figure 3. Folders referring to surgical procedures performed.

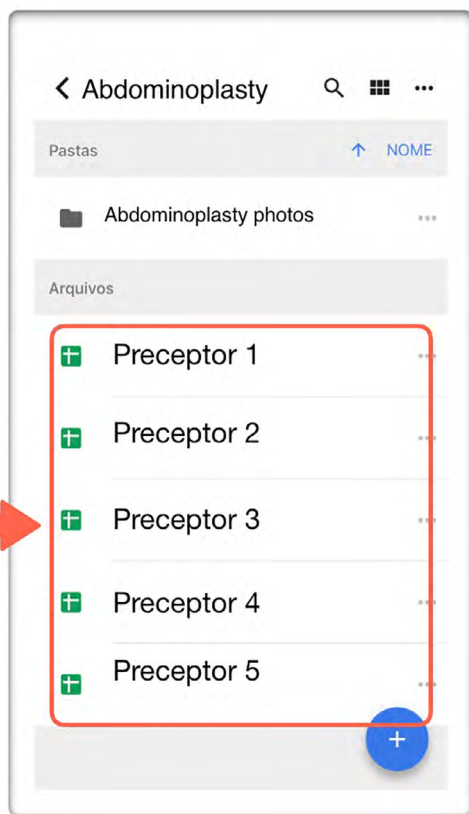


Figure 4. Nominal worksheet for each professional / team preceptor.

This registry in worksheets facilitates organization and surgical planning, as it clearly presents patients in outpatient follow-up procedures. It enables pre-operative care to be requested in accordance with the demand for each surgery and preceptor, avoid unnecessary expenses and anxiety associated with the surgery, as it is requested only for patients with a probable date of surgery. The subtitles can be standardized during the time of assigning, for example, green for patients ready to be operated; red for operated patients; and black for outpatients (Figure 5B).

	A	B	C	D	E	F
	NAME	MEDICAL RECORD	DATE OF BIRTH	DATE OF INDICATION	MEDICAL EXAMS	ANESTHESIOLOGY
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

	G	H	I	J
	LAST CONSULT	CITY	TELEPHONE	OBSERVATIONS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
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17				
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19				
20				

Figure 5. A: Spreadsheet with data on outpatients following surgical indication by the preceptor. B: In red the patients already submitted to surgery and in green the patients able to the surgical procedure.

Step 6: Inside the folder for each type of procedure (for example: Abdominoplasty), in addition to the spreadsheets, create a folder for the photographic record (for example: Abdominoplasty Photos) (Figure 6).

Step 7: Create a nominal folder for each patient within the photographic folder (for example: patient 1), as soon as he/she is evaluated and determining procedures are indicated. This folder must contain photographs of the pre-, intra-, and post-operative follow-up period (usually a month, three months, six months, twelve months, and annually), as well as a copy of the Informed Consent Form signed by the patient. The upload of photos can be performed directly by a mobile device or by a computer (Figure 7).

Step 8: Using Google Calendar, a monthly schedule of surgeries is compiled. All members of the

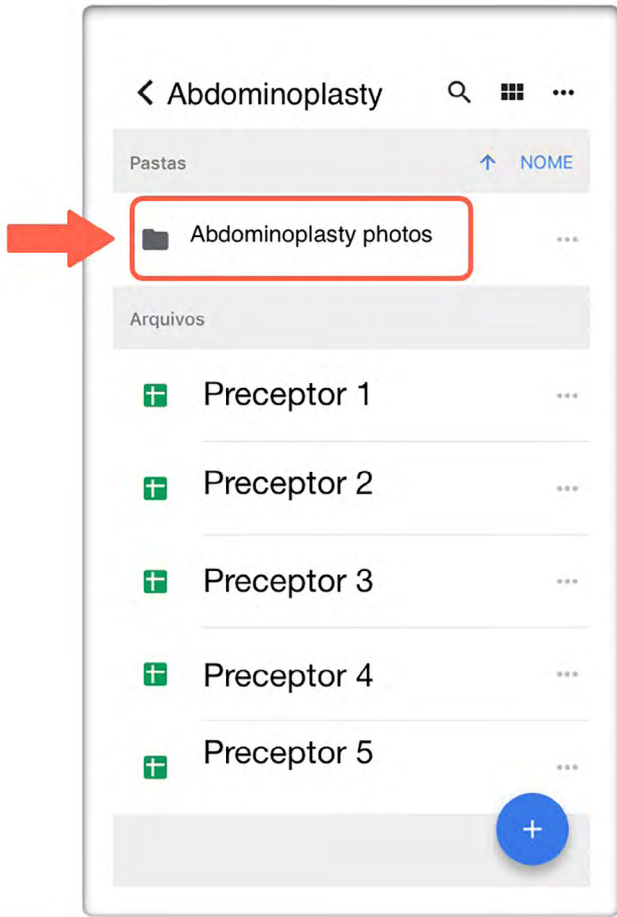


Figure 6. Separate photographic record folder according to each type of surgery performed at the service.

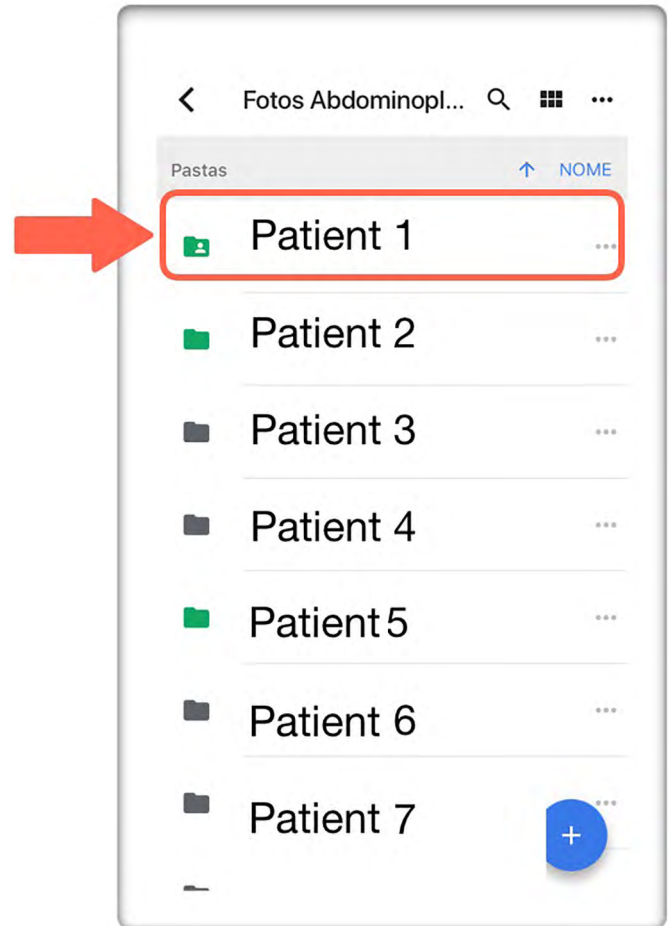


Figure 7. Nominal photo folder for each patient.

medical staff have synchronized access to the planning of surgeries, which facilitates discussion and analyses of cases. The agenda contains the name of the surgery at that time, the case preceptor, the patient's name, and the hospital record. An alert is programmed and sent 30 minutes before each surgery to members' cell phones (Figures 8A and 8B).

### RESULTS

The data complementation model proposed in this study was developed and introduced in the Medical Residency Service in Plastic Surgery at the Federal University of Triângulo Mineiro (UFTM) in March 2016. This model arose due to the need of expansion of data and information of patients whose traditional medical records lacked, for example, digital photographic records, and to enable fast, synchronized, and remote access through the internet.

Over three years of use, this feature has provided greater agility and organization to the service. Using it, it is possible to evaluate the pent-up demand by type of surgical procedure, and thus, propose actions such as joint

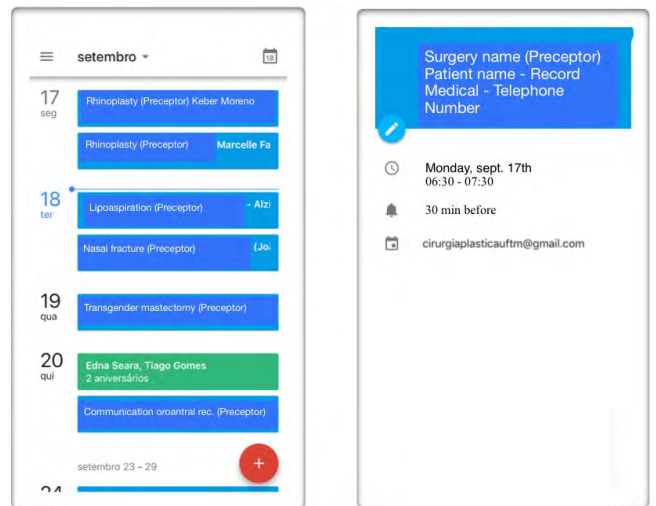


Figure 8. A: Google Calendar with the data of each scheduled surgery; B: Alerts 30 minutes before the time of each surgery, sent the registered cell phones

surgeries. As an example, in 2017, a university extension program was created by the UFTM Plastic Surgery discipline, which was aimed at correcting protruding ears, leading to a greater benefit to the population and increasing activities of the medical residency.

This strategy also enables an economy of resources, planning, and reduction in patient anxiety, since pre-surgical examinations and assessments are requested only for patients with already planned surgery dates. Another benefit was in relation to photographic records, which became more agile with higher and standardized longitudinal follow-up, enabling an easily accessible collection to the team for critical analysis of results, such as a source of good quality images, and standards for scientific research and classes, in addition to being an important legal tool, in case legal defense is required.

Furthermore, a greater integration of the whole team was observed with activities conducted in the service. Through the digital agenda, all members can follow daily and monthly scheduled sessions, which facilitates the remote study of cases and increases discussions between members. The digital agenda makes it easier to organize and distribute types of surgery by resident and preceptor and follow guidelines of the core curriculum proposed by the Brazilian Society of Plastic Surgery.

Finally, among other improvements, it proved to be a resource that strengthened the doctor/patient relationship. The zeal observed with the filling and feeding of the system is noticed by patients as a differential in medical care. The possibility of shared analysis of pictures in the pre-operative period has facilitated an understanding in patients in terms of benefits and limitations of their case, providing increased balance in surgical expectations of patients and medical staff.

## DISCUSSION

With the digital evolution experienced in recent decades, various technological resources have been deployed for health and incorporated into the medical routine<sup>5</sup>. However, mainly with regard to public health services, the shortage of financial resources remains a limiting factor in this deployment. Digitization in this area could drastically reduce the volume of paper, streamline care, facilitate the communication process—democratizing care—and also reduce costs associated with paper and printing<sup>3</sup>.

For the patient, it would be the easiest and safest way to store data, in addition to enabling an accumulation of information that will produce a database that for scientific research and serve as a source for research for professionals from diverse areas—with permission from patients and responsible medical staff, as there are ethical issues. It would also facilitate access to information and minimize the risk of loss of documents, increasing the protection of the institution responsible for their safekeeping.

While this was not achieved, we believe that the constant search for improvements in the quality

of services provided and the optimization of available resources is necessary. These pillars, that should guide the performance of plastic surgery teams, require proper documentation and medical records. Accordingly, it is important to develop new strategies that enable the modernization of services towards the digital evolution in order to combine technological benefits with the clinical practice of doctors.

## CONCLUSION

The proposal presented herein for the organization of documents is an alternative to improve backward/outdated medical records which largely constitute the reality of the country. It is one of several ways to streamline, organize, and record important data for the performance of medical teams, paying special attention to peculiarities of plastic surgery, and can also be beneficial to patients. Above all, it is important to emphasize that it constitutes a resource without financial cost or profit, and is easily reproducible by other departments and plastic surgery teams.

## COLLABORATIONS

<b>AGM</b>	Analysis and/or data interpretation, Conception and design study, Data Curation, Final manuscript approval, Project Administration, Writing - Original Draft Preparation, Writing - Review & Editing
<b>MTRC</b>	Data Curation, Final manuscript approval, Project Administration
<b>LRCCT</b>	Analysis and/or data interpretation, Data Curation, Final manuscript approval
<b>MPSN</b>	Analysis and/or data interpretation, Data Curation, Final manuscript approval
<b>MAOM</b>	Analysis and/or data interpretation, Data Curation, Final manuscript approval
<b>CRRC</b>	Analysis and/or data interpretation, Data Curation, Final manuscript approval
<b>VAP</b>	Data Curation
<b>JPRP</b>	Data Curation

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