



## Patients Undergoing Gynecological Surgery Who Come to the Emergency Department after Hospital Discharge, Frequency, Reasons and Possible Solutions

Lasaga I, Martínez A, Vesga A, Centurión E, Pérez I, Gondra J, Hernando A, Rivera M and Lete I\*

Obstetrics and Gynecology Clinical Management Unit, Araba University Hospital, Spain

### Abstract

**Objective:** To determine the frequency with which patients operated for a Gynecological cause attended the emergency room in the first month after hospital discharge and the reasons for doing so.

**Method:** Retrospective study of scheduled surgeries performed by the Gynecology Service of the Araba University Hospital in the period between January 1<sup>st</sup> and December 31<sup>st</sup>, 2022.

**Results:** 135 of the 851 patients who underwent surgery (15.8%) went to the emergency department in the first month after being discharged from the hospital. The main reason was infection of the surgical wound in patients who underwent breast surgery, followed by those operated on by laparotomy. The second reason was pain in patients who have undergone laparoscopic surgery.

**Conclusion:** To reduce the number of patients who come to the Emergency Department for an infection of the surgical site, it could be proposed that, in addition to the intravenous antibiotic that is administered in the operating room, the patients at higher risk should be discharged with antibiotics to be used at home, to reduce the number of those who come for pain, a greater use of analgesia at home could be considered and in order to reduce the number of women who come to us because of vaginal bleeding after surgery, it would be advisable to provide adequate information about this possibility and to provide a care sheet that includes this possible complication.

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#### \*Correspondence:

Iñaki Lete Lasa, Obstetrics and Gynecology Clinical Management Unit, University Hospital Araba, José Atxotegi s/n. 01009 Vitoria, Spain, Tel: + 34 945007204

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**Keywords:** Gynecologic surgery; Emergency Department; Surgical site infection; Postoperative pain

### Introduction

An estimated 310 million surgeries are performed worldwide each year [1]. One in 6 patients (16.6%) who undergo elective surgery will experience a postoperative complication [2]. These data conclude that every year about 50 million people around the world will have a postoperative complication.

The number, type, and severity of postoperative complications are an indicator of the quality of health services offered by an institution [3] and can determine patients' perceptions of the care received [4]. For more than 30 years, we have had a validated tool for the description and classification of postoperative complications, the Clavien classification [5], but, to our knowledge, we do not have information on the number of patients who, regardless of the aforementioned classification, go to the emergency department after being discharged from the hospital.

For this reason, we set out to collect information on what happened in our hospital in order to know how often patients went to the emergency room and, in addition, the reasons for doing so.

### Material and Methods

This is a retrospective study of scheduled surgeries performed by the Gynecology Service of the Araba University Hospital in the period between January 1<sup>st</sup> and December 31<sup>st</sup>, 2022. Emergency surgeries and obstetric surgeries (curettage and caesarean sections) were excluded from this study.

### Objectives

The objectives of the study were: (1) to quantify the number of patients who attended the

emergency department of our hospital in the month after being discharged from the hospital; (2) to know the reasons why they go to the emergency room and (3) to look for relationships between some factors and the reason for the emergency room consultation.

### Study population

Information was collected from all patients who underwent elective surgery during the study period described by any of the following indications: Fibroids, benign and malignant adnexal pathology, benign breast surgery and breast cancer, pelvic organ prolapse surgery, endometrial polyp resection, endometriosis, endometrial carcinoma, cervical and vulvar carcinoma, and leiomyosarcomas.

### Methods

The patients underwent gynecological surgery in our hospital are initially classified by the type of admission they will make: Day hospital without admission or classic hospitalization. In the first scenario, that of patients who do not spend the night in the hospital, the treatment of postoperative pain is carried out by the Anesthesiology service and the management of post-surgery care is the responsibility of the nursing staff of the Non-Admission Surgery Unit who, in addition to providing written recommendations at the time of discharge, they make a phone call the day after discharge to inquire about the patients' condition.

In the case of patients who are hospitalized and spend at least one night in the hospital, the responsibility of administering analgesia for the postoperative period rests with the members of the Gynecology service, as well as informing them of care and alarm symptoms in the postoperative period.

Our surgical site infection prevention protocol includes that almost all patients we operate on receive an intravenous dose of 2 grams of amoxicillin and clavulanic acid immediately prior to the start of surgery.

For the collection and analysis of the data, a specific sheet was designed in the Excel program (Microsoft Excel 2016 MSO (version 2309 build 16.0.16827.20166) of 32 bits). Sociodemographic data (age), clinical data (Body Mass Index [BMI]), data related to the surgical intervention (diagnosis of the process that originates the surgical prescription, type of surgery performed and access route used), type of hospital admission, complications were recorded in this sheet.

In order to perform a more precise analysis of the data, some of them were grouped as follows: The causes or diagnosis that led to the surgical intervention were classified, for benign pathology, as: Surgery on the adnexa different from endometriosis, endometriosis, stress urinary incontinence, surgery on the breast, surgery on fibroids, surgery for prolapse, surgical treatment of endometrial polyps and family planning. For malignant pathology, the procedures were grouped into: surgery for breast, endometrial, ovarian, cervical and vulvar cancer.

The access routes for the surgical procedure were: breast, laparoscopic or robotic, vaginal or vulvar, laparotomic and hysteroscopic.

Regarding hospital admission, two types of variables were collected: Admission to day hospital or admission to hospitalization. We used the ClassIntra classification [6] for the collection of intraoperative complications and the Clavien-Dindo classification updated in 2004

[7] for the registration of postoperative complications.

The reasons for going to the emergency room during the month after hospital discharge are grouped into: Pain; surgical wound infection (including seromas); vaginal bleeding; hematoma; other causes.

### Statistical analysis

Data were collected in an Excel sheet designed specifically for the study. The database included ranges and internal consistency rules to ensure data quality control. All analyses were performed from a single sample of evaluable patients that included all those patients who met the selection criteria and presented data on the main study variables. Categorical variables were described as absolute and relative frequencies. For the comparison of qualitative variables, we used the Chi-square test, establishing the statistical significance at a value of  $p < 0.05$ .

### Ethics

All patients had signed the informed consent form for the type of intervention scheduled and for this study the information was extracted from the records of surgical activity that were anonymized by one of the study authors (IL) so that the identity of the patients was always kept hidden.

### Results

During 2022, we performed 851 scheduled surgeries. Table 1 describes the type of surgeries performed, classified according to the type of pathology, organ affected, and access route, among other factors.

Of the total number of surgeries performed, 350 (41.1%) were performed by breast and/or axillary access, 221 (26%) by laparoscopic/robotic approach, 191 (22.2%) by vulvar/vaginal/hysteroscopic access, and 89 (10.4%) by laparotomy.

In 766 cases (90%) there were no intraoperative complications and of the 85 cases in which, if any type of complication occurred, in 54 cases (63.5%) the complication was grade I. During the period analyzed, there was one intraoperative death due to massive oropharyngeal hemorrhage during the endotracheal intubation procedure. Of the 851 patients included in the study, 135 (15.8%) went to the emergency department in the first month for surgery-related causes. The only factor analyzed that was statistically significant for the possibility of going to the emergency room was the type of admission. Patients admitted to the Day Hospital attended fewer emergency rooms after discharge than those who stayed at least one night ( $p = 0.000001$ ).

The reasons for going to the emergency room were: surgical wound infection on 45 occasions (33.3%); pain in 33 cases (24.4%); vaginal bleeding in 25 patients (18.5%); hematoma on the surgical wound bed on 15 occasions (11.1%); other causes in 17 cases (12.6%). Table 2 presents the data on the causes of patient visits to the emergency department, grouped by diagnosis. According to these results, surgical wound infections in breast surgeries and postoperative pain and vaginal bleeding in laparoscopic surgeries are the main reasons for going to the emergency room.

The analysis of postoperative complications according to the Clavien-Dindo classification found that in 669 cases (78.6%) there was no deviation from the normal course, while in 182 (21.4%) there was. Of the 182 cases in which some postoperative complication was

**Table 1:** Basic characteristics of surgeries performed during 2022.

	Total patients	Returning to the emergency room N (%)	P value
<b>Age</b>			
10-19 years	9	2 (22.2)	0.699
20-34 years	59	10 (16.9)	
35-49 years	252	48 (19.0)	
50-64 years	307	40 (12.9)	
>65 years	224	35 (15.6)	
<b>Pathology</b>			
Benign	448	67 (14.9)	0.564
Malign	403	68 (16.8)	
<b>Access</b>			
Breast	350	47 (13.4)	0.757
Laparoscopy	221	36 (16.2)	0.168
Laparotomy	89	13 (14.6)	0.731
Vaginal/Vulvar	191	22 (11.5)	0.087
<b>Type of surgery</b>			
<b>Benign</b>			
AH	50	8 (16.0)	6.584
LTH	37	15 (40.5)	
Adnexa	43	5 (11.6)	8.866
VH	38	8 (21.0)	33.348
<b>Malign</b>			
LTH	44	11 (24.4)	0.232
Cytoreductive	20	3 (15.0)	0.369
Conservative	157	21 (13.3)	2.209
Mastectomy	61	15 (24.5)	
<b>Hospital stays</b>			
0 days	457	47 (10.2)	0.000001
≥ 1 day	394	88 (22.3)	

AH: Abdominal Hysterectomy; LTH: Laparoscopic Total Hysterectomy; VH: Vaginal Hysterectomy

recorded, 135 were classified as scale I (74.1%).

Of the 135 patients who attended the emergency department, 21 were readmitted, which represents 15.5% of those who attended and 2.4% of the total of 852 patients who underwent surgery. The reasons for readmission were: Hematoma in the breast in 6 cases, infection of the surgical wound in 4 cases, abdominal pain in 4 others, vaginal bleeding in 3 patients, vomiting in two cases and also 1 case of pulmonary embolism and another of severe anemia that required transfusion.

## Discussion

Postoperative complications can be diverse and include fever, upper respiratory infection, surgical site infection, urinary tract infections, and bloating [8]. Sometimes complications lead to readmission to the hospital, but in most cases, they are resolved on an outpatient basis after evaluation and treatment offered in the emergency department.

In our series, 135 cases of patients who attended the emergency department within 30 days of being discharged (15.8%) were collected.

**Table 2:** Patients who went to the Emergency Department.

Reason for going to the Emergency Department	Type of surgery approach, N	Went to the emergency room N (%)	P value
Surgical site infection N=45	Breast 350	26 (7.4%)	<b>0.002</b>
	Laparoscopy 221	8 (3.6%)	0.271
	Laparotomy 89	6 (6.7%)	0.444
	Vaginal 191	5 (2.6%)	0.061
Pain N=33	Breast 350	4 (1.1)	<b>0.002</b>
	Laparoscopy 221	16 (7.2)	<b>0.002</b>
	Laparotomy 89	6 (6.7)	0.139
	Vaginal 191	7 (3.7)	0.862
Vaginal bleeding N=25	Breast 350	2 (0.5)	<b>0.002</b>
	Laparoscopy 221	12 (5.4)	<b>0.010</b>
	Laparotomy 89	1 (1.1)	0.284
	Vaginal 191	10.52	0.032
Hematoma N=15	Breast 350	15 (4.2)	
	Laparoscopy 221	0 (0.0)	
	Laparotomy 89	0 (0.0)	
	Vaginal 191	0 (0.0)	

The advancement of minimally invasive surgery for abdominal procedures and breast-conserving surgeries allows many of the patients we operate on to be discharged the same day of surgery. In our series, this occurred in 457 of the 851 surgeries (53.7%). We could believe that those cases in which patients do not spend the night in the hospital could be more susceptible to having doubts and concerns that lead them to go to the Emergency Room. In our series, women who did not spend a night in the hospital went to the emergency room less after hospital discharge than those who stayed at least one night in the hospital, 0.2% vs. 22.3%. (P=0.000001).

In a retrospective study in which information was collected on 405 patients who underwent prolapse repair surgery, of whom 258 (63.7%) were discharged on the same day of surgery, 9.7% of them went to the emergency department within the first 30 days of hospital discharge [9].

In another prospective study that included 165 patients who underwent laparoscopic or robotic hysterectomy and were included in an intensive recovery protocol after abdominal surgery (ERAS), the most frequent reasons for returning to the hospital were urinary retention (30%) and poor pain control (30%), and no differences were observed between patients who were discharged on the same day of surgery and those who remained hospitalized for at least 1 day [10].

In our study, the main reason for going to the emergency department after hospital discharge was a surgical site infection. This complication occurred in 5.3% of all patients operated on and accounted for 33% of the cases that attended the emergency department. Surgical site infection is one of the most common and serious hospital-acquired infections worldwide [11] and is estimated to affect up to one-third of patients who have undergone a surgical procedure [12]. According to the World Health Organization (WHO), surgical site infection is the most common postoperative complication and can affect up to 11.8% of surgical interventions [12]. A systematic review including 18 studies found that the range of surgical site infection ranged from 2% to 17.8% [13].

In a retrospective study in which information on surgical site infections was collected in 389 patients, 40 cases of this complication occurred (10.28% of all cases) [14]. Our infection rate is more similar to that reported by other authors, such as Ortiz et al. [15] and Barbosa et al. [16], who reported infection rates of 1.5% and 2.2% respectively. Therefore, it is essential to include a strict infection control policy, fair antibiotic use practices to be implemented. It is also recommended to monitor comorbid conditions before planning elective surgery.

In our experience, the second reason for returning to the emergency department was pain after minimally invasive surgery (24.4% of the causes of attendance and 3.8% of all surgeries). In a retrospective study involving 532 abdominal surgeries, 83% of patients (97/117) who underwent minimally invasive hysterectomy and were discharged postoperatively on day 0 or day 1 did not receive an opioid prescription, while 51% of patients who underwent laparotomy were discharged without an opioid prescription. The conclusion of the study was that patients undergoing abdominal gynecologic surgery can be safely discharged without opioid prescriptions with proper education and perioperative analgesia prescribing practices [17].

Although the laparoscopic access route has been associated with lower rates and intensity of postoperative pain [18], data from a retrospective study that included 280 patients undergoing laparoscopic surgery showed that 115 (41%) had severe pain in the immediate postoperative period [19].

Readmissions after surgery are considered a marker of the quality of care, we offer our patients [20]. In our series, we had a readmission rate of 2.4%. In cases of oncological surgeries, the rate of readmissions is higher, reaching 13.2% of patients operated on in the case of the series of Henretta et al. [21] or 11% in the series of Wilbur et al. [22].

## Conclusion

135 of the 851 patients who underwent surgery (15.8%) went to the emergency department in the first month after being discharged from hospital. The main cause for going to the emergency department is infection of the surgical wound in patients who have undergone breast surgery, followed by those who have undergone laparotomy. The second reason for going to the emergency department is pain in patients who have undergone laparoscopic surgery.

To reduce the number of patients who come to the emergency department for an infection of the surgical site, it could be proposed that, in addition to the intravenous antibiotic that is administered in the operating room, the patients at higher risk are discharged with antibiotics to be used at home; to reduce the number of women who come for pain, a greater use of analgesia at home could be considered, and to reduce the number of women who come because of vaginal bleeding after surgery, it would be advisable to provide adequate information about this possibility and to provide, for this purpose, a care sheet that includes this possible complication.

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