

# Review of Cases of Incisional Hernia in the Period from 2005 to 2018. A Case Reviews of Incisional Hernia in the 2005-2018 Period

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Jorge Satorre Rocha<sup>3</sup>, Pedro Rolando López Rodríguez<sup>1\*</sup>, Olga Caridad León González<sup>2</sup>, Eduardo Garcia castillo<sup>4</sup>, Luis Manuel Danta Fundora<sup>5</sup>, a. Lais Angelica Ceruto Ortiz<sup>6</sup>

<sup>1</sup>Specialist I and II Degree in General Surgery, Consultant Professor, Assistant Professor and Auxiliary Researcher, Cuba

<sup>2</sup>Specialist I Degree in General Surgery, Assistant Professor and Auxiliary Researcher, Cuba

<sup>3</sup>Specialist I Degree in General Surgery, Assistant Professor, Cuba

<sup>4</sup>Specialist I Degree in General Surgery, Assistant Professor, Cuba

<sup>5</sup>Specialist I Degree in General Surgery, Instructor Professor, Cuba

<sup>6</sup>Resident of first year in General Surgery, Cuba

## Abstract

**Introduction:** Incisional hernia is a frequent complication of abdominal surgery. Its incidence varies between 2 and 15% of patients, and some authors indicate that it can reach 23% when it is related to an infection of the surgical wound.

**Objective:** To describe the characteristics of patients operated by incisional hernia in the General Teaching Hospital "Enrique Cabrera", between 2005 and 2018.

**Methods:** A retrospective descriptive observational study was carried out at the "Enrique Cabrera" General Teaching Hospital between 2005 and 2018. The total of the universe consisted of 424 patients with preoperative diagnosis of incisional hernia, operated between January 2005 and December 2018. incisional hernia, operated between January 2005 and December 2018. Demographic parameters, toxic habits, personal pathological history, previous surgeries, location of the anterior incision, surgical technique, use and location of prosthesis, antibiotic therapy and postoperative complications were analyzed.

**Results:** 85% of the patients were female, 40.6% were between 50 and 61 years of age, 58.3% had toxic habits, 66.0% of the hernias had infraumbilical location, and the highest incidence corresponded to hysterectomies and cesarean sections. The Stoppa technique was the most applied in hernioplasty and the Mayo technique in herniorrhaphy.

**Conclusions:** Obesity and diabetes were the most frequent diseases found in the study. The majority of the patients were smokers. The infraumbilical surgical incisions for abdominal hysterectomies were the most frequent location of the incisional hernias. Infection of the surgical wound was the complication found most frequently. Postoperative recurrence occurred in 3.7% of patients.

**Keywords:** Incisional hernia, Herniorrhaphy, Hernioplasty, Prosthesis.

## Introduction

By definition, an incisional hernia is a defect of the abdominal wall, with or without an increase in volume, in the area of a postoperative scar perceptible or palpable by clinical or imaging examination. It represents the failure in the reconstruction of the wall in abdominal surgery, and it reaches frequency of presentation that vary between 11% (for patients undergoing general abdominal surgery) and 23% when it is accompanied by infection of the operative wound [1-3]. These high recurrence rates have led to numerous studies and meetings of experts, without standardization in the treatment of incisional hernia. A wide spectrum of surgical techniques have been developed and recommended as effective, ranging from the simple suture of the defect to the use of different types of synthetic prosthesis [4,5]. In addition, at present, the incisional hernia represents a source of major morbidity, which includes clogging between 6 to 15% of patients, and strangulation by about 2%. Because of the above, the treatment can not be considered easy, since it is not uncommon to have to perform large surgeries with poor results, and reach recurrence rates, according to different authors, between 25-52% [5].

In Cuba, in recent years, the rate of recurrence of incisional hernias has decreased, mainly due to the adequate use of synthetic prostheses, understanding that they must be tension-free, ideally in contact with tissues, well-irrigated, to which can be integrated and fixed with monofilament 6 non-absorbable material, including the mesh and the entire thickness of the aponeurotic plane [6]. Due to the importance of studying the factors that condition the appearance of this complication, it is decided to carry out this investigation.

\*Corresponding author: Pedro Rolando López Rodríguez, Specialist I and II Degree in General Surgery, Consultant Professor, Assistant Professor and Auxiliary Researcher General Teaching Hospital "Enrique Cabrera". Havana Cuba, Email: lopezp@infomed.sld.cu pedro.rolando.lopez42@gmail.com

## Methods

A retrospective descriptive observational study was carried out at the "Enrique Cabrera" General Teaching Hospital between 2005 and 2018. The universe total consisting of 424 patients operated on with the diagnosis of incisional hernia was taken. We included those over 18 years operated with this diagnosis regardless of the place of origin. A spreadsheet for the collection of data was prepared, which were extracted from the patient's medical records and stored in an automated database created in Microsoft Excel, which was subsequently processed in the statistical program SPSS version 11.0. The statistical analysis was based on descriptive statistics techniques. Absolute and relative frequency distributions were made. As a summary measure, the averages were used for the quantitative variables and the percentages for the qualitative ones. Chi square test was carried out to establish a relationship between variables with a confidence level of 95%.

## Results

In Table 1 we can see that the female sex was the most accepted (360, 85%) of the total of patients, whose ages ranged between 51 and 60 years. The male sex constituted 15% (64 patients of the series), and both age groups agreed.

Table 2 shows that the most frequent location of the incisional hernia was infraumbilical in 280 patients (66%), and the surgical interventions that originated them were the gynecological ones (184 hysterectomies, 43.5%), followed by the cesareans. in 90 patients (21.3%) and cholecystectomies in 50 patients (11.8%) of the total. These operations were those that led to the appearance of the largest number of incisional hernias.

**Table 1:** Distribution of patients operated on incisional hernia according to age and sex

Age in Years	Sex Femenine		Sex Male		Total	
	No.	%	No.	%	No.	%
18-30	26	6,0	6	1,4	32	7,5
31-40	46	10,8	6	1,4	52	12,2
41-50	64	15,1	8	1,8	72	17,0
51-60	172	40,6	24	5,6	196	46,3
61-70	40	10,4	12	3,0	56	13,3
Older Than	8	1,9	8	1,8	16	3,7
Totals	360	85,0	64	15,0	424	100,0

**Table 2:** Distribution of patients according to the location of the hernia and previous surgeries

Location of Hernia	No.	%
Infraumbilical	280	66,0
Supraumbilical	124	29,3
Suprainfraumbilical	20	4,7
Total	424	100,0
Previous Surgeries		
Prostatectomy	10	2,3
Histectomy	184	43,5
Cholecystectomy	50	11,8
Cesareans	90	21,3
Repair of epigastric hernia	37	8,7
Appendectomy	24	5,6
Repair of umbilical hernia	24	5,6
Others	5	1,3

Table 3 shows that 310 hernioplasties were performed (73.1%), and it was the Stoppa technique that was applied most frequently (44.3%). Of the 114 herniorrhaphies performed, the Mayo technique in 84 patients (20.0%) was the most applied.

Table 4 shows that 314 patients (74.0%) did not present complications and 110 patients (26.0%) did. Complications are also seen according to the applied surgical technique, herniorrhaphy or hernioplasty. It is good to say that in both groups there were patients who presented more than one complication, and that peritonitis in 10 patients, the enterocutaneous fistula in 2 patients and in 5 patients rejection of mesh used only appeared in patients who underwent a hernioplasty.

Table 5 shows the complications presented by the patients who underwent hernioplasty, in relation to the place where the prosthesis was placed (supraponeurotic or preperitoneal). It is evident that the greatest number of complications occurred in those who underwent preperitoneal prosthesis, including 8 peritonitis, 2 enterocutaneous fistula and 2 rejection of prostheses.

**Table 3:** Distribution of patients according to the applied surgical technique

Surgical Technique	No.	%	
Hernioplasty	Stoppa	188	44,3
	Lichtenstein	122	28,7
Subtotal	310	73,0	
Herniorrafia	May	84	20,0
	Catell	24	5,6
	Dasilva	6	1,4
Subtotal	114	27,0	
Total	424	100,0	

**Table 4:** Number of postoperative complications and relationship between the applied surgical technique and complication

Complicated Patients	No		%		Total	
	No.	%	No.	%	No.	%
No	314	74,0				
Yes	110	26,0				
Total	424	100,0				
Complications	Surgical Techniques					
	Herioplasty		Herniorrhaphy		Total	
	No	%	No	%	Total	P
Infection of the wound	48	80,0	12	20,0	60	0,12
Seroma	26	76,5	8	23,5	34	0,64
Hematoma	12	66,6	6	33,3	18	18,8
Peritonitis	10	100,0	-	-	10	0,38
Recurrence	6	37,5	10	62,5	16	1,32
Enterocutaneous Fistula	2	100,0	-	-	2	1,10
Rejection of Mesh	5	100,0	-	-	5	1,30

**Table 5:** Relationship between the location of the mesh and the appearance of postoperative complications

Complication	Location of the Mesh					
	Supraaponeurotica		Preperitoneal		Total	
	No	%	No	%	No	%
Wound infection	10	28,8	38	79,2	48	0,14
Hematoma	4	33,3	8	66,6	12	0,34
Peritonitis	2	20,0	8	80,0	10	1,88
Seromas	4	15,4	22	84,6	26	1,50
Recurrence	2	33,3	4	66,6	6	1,24
Enterocutaneous Fistula	2	100,0	-	-	2	0,32
Rejection of the Meshs	3	60,0	2	40,0	5	0,48

## Discussion

Our casuistry is made up of a total of 424 patients, of which 360 (85.0%) are women and age groups between 31 and 60 years are the most committed, with an average age of 41. This is due to greater weakness and flaccidity of the abdominal wall tissues in women, caused by less physical activity, a history of pregnancy and a greater frequency of interventions in relation to men [8,9]. The prevalence of female sex and of these ages in incisional hernias coincides with other national and foreign reports

The hernias of the abdominal wall are no longer considered as the result of only a mechanical defect of this, to establish at present an equal or more important added factor, as is the adequate metabolism of the tissue that will be part of a healing normal, because there are well-established diseases, others less defined and some associated factors that interfere with tissue metabolism [7]. Specifically, according to some authors [8], there is a complex interrelation between the induction of cell death, the aberrant functional properties of fibroblasts, and a loss of tissue that causes poor healing, and, consequently, the breakdown of abdominal wall repair after surgery. The knowledge of the mechanism by which these hernias are produced can have an impact on the therapeutic area when optimizing the design of new intelligent materials (meshes, sutures, etc.) with instructive capacity, and improving biocompatibility and applications [8]. Another important aspect to consider in the pathogenesis of incisional hernias is the location of the surgical incisions, since they appear, more frequently, after midline laparotomies, as indicated by Dur [10] and others in a study published in 2009, which, working with a sample of 77 patients, reported 100% of the previous incisions as means, and of them, 18 were supraumbilical (23.4%), 14 infraumbilical (16.9%) and 46 supra and infraumbilical ( 59.7%) 9 Similarly, Halm [11] and others found a significant reduction in the rate of incisional hernia appearance, from 14.5% to 1.7% with the use of transverse incisions in the upper abdomen, with respect to the middle incisions [12].

Table 1 shows that the majority of surgical interventions were performed on the female sex (180 patients, 85%), as well as the fact that the age group most affected was the sixth decade of life. The greater incidence in the female sex is related to the weakness and greater flaccidity of the tissues of the abdominal wall, due, fundamentally, to the lower physical activity and the antecedents of pregnancies and greater frequency of surgical interventions in relation to the man, as well as , the hormonal action of estrogens on tissues and healing [7]. As for the most affected age group, it corresponded to the sixth decade of life, due to its association with the poor synthesis of collagen fibers and their metabolism with inversion of the Collagen I-III ratio and its accelerated destruction.

It should be noted that among the toxic habits that predispose the appearance of an incisional hernia, smoking plays an important role [7,8,12], because this toxic habit accelerates the destruction or degradation of collagen by interfering with the protease system, antiprotease. This was pointed out by Abrahamson J in his study.12 Of the associated diseases, obesity is the one that most predisposes the operated patients to develop an incisional hernia, which is in correspondence with the higher fat content of the tissues, since it increases the intra-abdominal pressure in the postoperative period, but in addition, it is known that in

these there is often a decrease in muscle tone and resistance. As observed, the infraumbilical location was the most frequent for incisional hernias (Table 2), which is due to the high incidence of gynecological operations, mainly hysterectomies and cesarean sections [13]. This is related to a greater weakness of the wall abdominal at this level, since the transversalis fascia does not have the muscle-aponeurotic structures that protect it above the umbilical region, especially in the area below the Douglas arch. In our series [2], main types of hernia defect repair were performed. The first, which was applied to the largest number of patients (310), was the prosthetic repair that corresponds to the Stoppa surgical technique in 188 patients (44.3% of the total technique applied), and among the classical techniques, the herniorrhaphy that was most used was that of May to 84 patients (20.0% of the total), as shown in Table 3. 18 The most commonly used prostheses today are non-absorbable, and within them, particularly, the of marlex (polypropylene), mersilene (dacron) and gorotex (polytetrafluoroethylene), introduced by Gore in 1950. New absorbable materials have also been commercialized, such as the synthetic meshes of dexon (polyglycolic acid) and vicryl (polyglactin) (Ultrapro)[13]. In Table 4 we can see the complications according to the applied surgical technique. Infection of the wound, peritonitis and enterocutaneous fistula and rejection of the prosthesis, were observed more frequently in the hernioplasties. The administration of prophylactic preoperative antibiotic was applied to 385 patients (90.1%) of our series. We consider, like other authors [6,13,18], that it is of great importance to avoid contamination of the prosthesis and surgical wound, so it is carried out in our service as a policy, in this type of intervention surgical, to achieve a satisfactory evolution of patients. In laparoscopic repair the mesh can be placed intraperitoneally [14,15], or in the preperitoneal space [16]. The edges should be surpass the defect, at least, from 3 to 5 cm, 15 but, regarding the location of the mesh, preperitoneal or supraponeurotic and the relationship with complications and the lower rate of recurrence, it is indicated that the preperitoneal location offers a lower index of recurrences, both in the open and laparoscopic way; [17-20] however, in our review these complications were observed more frequently with the placement of the preperitoneal prosthesis, in both ways there was a rejection of the prostheses and enterocutaneous fistula was found in the preperitoneal route (Table 5), which may be related, in part, to the learning curve and the way of fixing the mesh [21,22].

We conclude that the female sex was more predisposed to develop an incisional hernia, as well as the age group belonging to the sixth decade of life. Obesity and diabetes mellitus play an important role in the pathophysiology of incisional hernia, and the habit of smoking was found in most of our patients, which favor postoperative complications. The area of greatest predisposition to develop incisional hernia was infraumbilical, abdominal hysterectomy was the surgical procedure that most often gave rise to the incisional hernia, and the surgical technique that was most frequently performed in hernioplasties was that of Stoppa. , while in herniorrhaphy was that of May. In spite of the administration of prophylactic antibiotic, infectious complications appeared, and sepsis of the surgical wound was one of the most frequent. There was no significant relationship between the use of prosthesis and its location with the appearance of postoperative complications.

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