



ISSN : 2350-0743

www.ijramr.com



International Journal of Recent Advances in Multidisciplinary Research

Vol. 05, Issue 01, pp.3464-3466, January, 2018

## RESEARCH ARTICLE

### INGUINAL HERNIA IN PEDIATRICS, COMPARISON OF RESULTS OF OPEN SURGERY AND LAPAROSCOPIC

<sup>1</sup>Berenice López-García, <sup>2</sup>Enrique R. Leal-Cirerol, <sup>3</sup>Noé Belmar Díaz-Gómez and  
<sup>\*</sup>, <sup>4</sup>Nilvia Avalos-Antonio

<sup>1, 4</sup>Medical Resident of the Specialty of Pediatrics, Graduate School of Health Naval,  
Naval General Hospital of High Specialty

<sup>2</sup>Neonatal Pediatric Surgeon, Attached to the Department of Pediatrics, Hospital Naval General High Specialty

<sup>3</sup>Professor of the Specialty of Pediatrics, attached to the Department of Pediatrics,  
High Specialty Naval General Hospital

#### ARTICLE INFO

##### Article History:

Received 09<sup>th</sup> October, 2017  
Received in revised form  
25<sup>th</sup> November, 2017  
Accepted 17<sup>th</sup> December, 2017  
Published online 30<sup>th</sup> January, 2018

##### Keywords:

Inguinal hernia,  
Laparoscopy, Pediatrics,  
Naval Alta General  
Hospital Specialty.

#### ABSTRACT

**Introduction:** Inguinal hernia in children can threaten life or cause loss of organs. It requires an elective surgical approach, through open surgery or laparoscopic.

**Objective:** To compare the results of laparoscopic surgery versus open technique in indirect inguinal hernia in pediatric patients operated on in the General Hospital High Specialty Naval.

**Material and methods:** longitudinal, prospective, comparative and quasi-experimental study, typical clinical practice trial type, pediatric cases with hernia were analyzed indirect inguinal operated at the High Specialty Naval General Hospital during the period 2015-2017.

**Results:** 66 patients were included, between 1 month and 16 years of age. 51.5% is underwent minimally invasive surgery and 48.5% open surgery, they were not found differences in trans-surgical complications (p 0.73) or postsurgical complications (p 0.10), nor in surgical time, while the time of stay and recovery were significantly lower in the laparoscopic surgery group.

**Conclusions:** Both surgical techniques are safe, but laparoscopic surgery. It offers the advantage of identifying other alterations and performing the repair in the same surgical event, reduces the time of stay and the recovery time.

#### INTRODUCTION

A hernia is a sac formed by the lining of the abdominal cavity (peritoneum). The bag passes through a hole or weak area in the strong layer of the abdominal wall that surrounds the muscle, called fascia, according to its location can be of different types. The hernia Inguinal is the abnormal protrusion of tissues or of one or more abdominopelvic organs or part of them, through fascicular aponeurotic muscle layers of the abdominal wall, below the level of the anterior superior iliac spines and produce the inability to conserve the contents visceral of the abdominopelvic cavity (Robert M. Kliegman 2016). There are three types of inguinal hernias, most hernias in infants and children corresponds to indirect congenital hernias, as a consequence of a vaginal process permeable. Direct or acquired hernias represent 0.5 to 1% and femoral hernias they represent less than 0.5% (Wang, 2012). It is a common condition in pediatrics, it is much more frequent in children than in girls, with a ratio of 8: 1 approximately. The incidence of indirect congenital inguinal hernia in term infants is estimated at 3.5-35%, in preterm and low birth weight infants Birth is between 9 and 11% and approaches 30% in

those with very low birth weight (Mexican Association of Hernia, 2011). The 60% of the inguinal hernia are on the right side, 30% on the left and only 10% are bilateral. The incidence of bilateral hernias is higher in girls and up to 11.5% of Patients have a history of inguinal hernia in another relative (Mexican Association of Hernia, 2011). It typically appears as a mass in the inguinal region. In children the mass can potentially extend through the inguinal region into the scrotum. In girls, the Mass usually occurs in the upper portion of the labia majora. Sometimes, the mass is visible in times of irritability or when intra-abdominal pressure increases. Can be present at birth or appear weeks, months or years later. Most of the time It is usually detected by parents. The diagnosis is clinical, it is necessary to establish the differential diagnosis with hydrocele, cyst cord, undescended testicle, varicocele, abscess or inguinal adenopathy (CPG, 2011). Must a detailed examination and an inguinal ultrasound to rule out other pathologies. He Early diagnosis helps us avoid possible complications. An inguinal hernia in children is an indication of surgical repair. In infants under one year of age diagnosed with inguinal hernia, the repair must be made at the make the diagnosis (Kozlov, 2016). Until the last 15 years, most of the inguinal hernia repairs were performed at through an inguinal incision and extraperitoneal ligation of vaginal pathological

**\*Corresponding author:** Nilvia Avalos-Antonio,  
Medical Resident of the Specialty of Pediatrics, Graduate School of  
Health Naval, Naval General Hospital of High Specialty.

processes, However, since 2000, the laparoscopic approach has gained popularity and there has been Increasing descriptions of various techniques for laparoscopic repairs, in this minimally invasive surgery is being applied more and more to the repair of hernias inguinals in pediatrics (David Juang, 2016). In 2016, Collin D. Gause et. cols. in her article "Laparoscopic versus open inguinal hernia repair in children > 3: a randomized controlled trial "evaluated the results after surgery laparoscopic and open repair of inguinal hernia in children under or 3 years of age, A prospective, single-blind and parallel controlled trial was carried out on sites In these studies, postoperative pain was compared (Collin D. Gause, 2016). Forty-one patients were randomized, the dose of acetaminophen did not vary between the groups. The Secondary outcomes included surgical time, complications and the score of satisfaction of the parents or caregivers, a shorter operative time was demonstrated in the laparoscopic repair, in terms of complications and parental satisfaction, no observed differences, so it was considered important to include new variables that identify other benefits compared with conventional open surgery, including younger children or newborns. The objective of the study was to compare the results of minimally invasive surgery versus open technique in indirect inguinal hernia in pediatric patients operated at the Hospital Naval General High Specialty.

**MATERIALS AND METHODS**

Longitudinal, prospective, comparative and causi-experimental study type Practice Test. Habitual Clinic, the pediatric surgery books were reviewed. The cases of Surgical patients with diagnosis of indirect inguinal hernia were included patients from 1 month to 16 years of age, in the period from January 2015 to June 2017. They formed two groups of study according to the type of surgical approach: group A surgery of minimal invasion, group B open surgery.

The statistical program SPSS was used, with the statistical test of Kolmogorov-Smirnov corroborating that none of the numerical variables had a normal distribution, which is why.

**Comparisons of the means between the surgical techniques were made with U of Mann**

Whitney; while the comparison of proportions were made with the chi test square or, where appropriate, with Fisher's exact test. For the multivariate analysis, the general model of the analysis of variance of two factors. The null hypothesis in this test suggests that there are no differences between the expected and the observed, and the alternative hypothesis suggests that if there are significant differences between the groups observed, with a significance level of 0.05 (95% confidence level) and 1 degree of freedom.

**RESULTS**

We found 66 patients between 1 and 192 months (16 years) of age, with an average of 58 months, attended at the Pediatric Surgery Service of the Naval General Hospital of High Specialty, with diagnosis of indirect inguinal hernia, 18 women, corresponding to 27.3% and 48 men, corresponding to 72.7% (Table 2). Of the sample of patients, 50% presented right inguinal hernia, 36.4% inguinal hernia left, 10.6% bilateral inguinal hernia and only 3% presented a diagnosis of inguinal hernia plus another associated pathology, such as varicocele or cryptorchidism. 51.5% of the sample obtained underwent minimal-invasive or laparoscopic surgery. Open surgery 48.5%, a similar percentage in both groups. As a find we found post-surgical diagnoses other than admission, see Table 1. A bivariate analysis was performed to obtain the correlation between the pre-diagnosis and postsurgical, we observe, with the coefficient tau b of Kendall 0.729 (p = 0.0001), that there is a close correlation between the diagnosed hernia and the plasty performed. Of 33 HID in 29 patients

**Table 1. Post-surgical diagnosis**

	Frequency	Percentage
plastia I. Right	30	45.5
Plastia I. Left	15	22.7
PI Bilateral	17	25.8
Other	4	6.1
Total	66	100.0

Source: self made

**Table 2. Multivariate analysis of the variables of laparoscopic surgery and open surgery**

Compared variables	Surgical technique		P
	Laparoscopy (n = 34)	Open (n = 32)	
Age (months)	60.7 +/- 54.5	55.2 +/- 49.1	0.71
Male sex	26 (76.5%)	22 (68.5%)	0.48
Diagnostic			
Right inguinal hernia	13 (38.2%)	20 (62.5%)	
Inguinal hernia left	15 (44.1%)	9 (28.1%)	0.16
Bilateral inguinal hernia	4 (11.8%)	3 (9.4%)	
Other	2 (5.9%)	0 (0.0%)	
Post-surgical diagnosis	10 (29.4%)	20 (62.5%)	0.02
Right inguinal plasty	8 (23.5%)	7 (21.9%)	
Left inguinal plasty	13 (38.2%)	4 (12.5%)	
Bilateral inguinal plasty Other	3 (8.8%)	1 (3.1%)	
Complications transsurgical	1 (2.9%)	1 (3.1%)	0.73
Complications postsurgical	0	3 (9.4%)	0.10
Surgical time	55.7 +/- 22.2	52.1 +/- 21.7	0.52
Time of stay	7.8 +/- 8.0	10.6 +/- 10.0	0.04
Recovery time	42.9 +/- 23.9	58.1 +/- 26.3	0.01

Source: self made

(87.9%) had right inguinal plasty, of 24 HII in 15 (62.5%) inguinal plasty was made left (although up to 33.3% was bilateral inguinal plasty) and of the 7 inguinal hernias Two bilaterals underwent bilateral inguinal plasty. By integrating the variables and comparing both groups (Table 2) it was found that according to the technique used in the ages there was no significant difference (p 0.71), predominance of sex was observed male and there was no difference in the type of surgical procedure performed (p 0.48), whereas postoperative diagnoses differed significantly basically because the laparoscopy group performed more bilateral plasties (p = 0.02); consequently, the differences in time of stay and recovery should be explained if they were also not determined rather by postsurgical diagnoses. In the bilateral plasties with the open technique the average of hours of stay was 15.2 against only 7 of the bilateral laparoscopic plasty treaties (p = 0.10 for the comparison of the hours of stay of cases bilateral plasties according to technique). Finally it was found that the recovery time is significantly different according to the surgical technique used, being lower in minimally invasive surgery (p 0.01).

## DISCUSSION

The demographic variables were uniform, with a greater number of male patients. The average age was 4.8 years, which coincides with that reported in the literature. The majority presented right inguinal hernia (50%), similar to that described in the literature (60%), but According to the trans-surgical findings, a surgical procedure was performed in some cases different from the initial planned, which explains the variation of the diagnoses postsurgery and the benefit of minimally invasive surgery on open surgery, since this type of approach allowed to perform contralateral exploration and repair undiagnosed hernias or alterations not previously detected, thus avoiding a new exposure and risk of a new surgical event. Regarding trans-surgical complications, a complication was reported in each of the surgical techniques, equivalent to 3% of the total surgeries performed. While in the Postoperative complications reported a greater number in male children, without finding significant differences between laparoscopy and open surgery (21), which coincides with the study where despite finding a 9.4% in surgeries with open technique, the sample did not turn out be significant (p 0.10), most likely associated with the size of the sample. Relative to the time of stay, practically all surgeries, were procedures ambulatory, only in some cases they required hospitalization for a longer time, mainly in open surgeries, however in the current literature no descriptions were found regarding the length of stay, so it would be advisable to carry out other studies that allow to determine, according to the time of stay, the costs generated in each one of the procedures.

Finally, when performing a multivariate analysis in relation to recovery time, it was found a significant difference (p 0.01), the recovery time being shorter in the surgery minimum invasion with 42.9 days, while the average recovery in patients who treated with open surgery was 58.1 days, so far in the literature it is not found studies that report in this difference between both surgical techniques.

## Conclusions

Inguinal hernia is one of the main surgical diagnoses in the pediatric age, finding cases of inguinal hernia from minor infant patients to patients teenagers. Both surgical techniques were analyzed according to different variables, finding that both surgeries are safe, as we find different postsurgical diagnoses to the presurgical diagnosis, since in the minimally invasive or laparoscopic surgery it was possible identify other alterations and perform the repair of these in the same surgical event, while in open surgery we found, during the patient's follow-up, hernias contralateral that required a second incision or that it was not possible to repair in the same surgical act. It was also found, in relation to the primary outcome of the study, that the minimum surgery invasion reduces the length of stay and the recovery time so it becomes a recommended surgery in pediatric patients diagnosed with inguinal hernia.

## REFERENCES

- Collin, D. Gause, et. 2016. Laparoscopic versus open inguinal hernia repair in children> 3: a randomized controlled trial ".cols.
- CPG. Clinical guidelines for diagnosis and treatment. Mexico: CPG, 2011.
- David Juang, Jason D. Fraser, George W. Holcomb. 2016. The laparoscopic approach for repair of indirect inguinal hernias in infants and children. *Transl Pediatr*, pgs. 222-226.
- Laparoscopy in neonates and infants.Kozlov Y., Kovalkov K., Nowogilov V. 2016, *Journal Laparoendosc*, pgs. 1021-1027.
- Mexican Association of Hernia A. C. Clinical practice guidelines for abdominal wallhernias. Mexico: sn, 2015.
- Most frequent hernias of the abdominal wall.MJ Moya Jiménez, A. Maraví Petri1, JC de AgustínAsensio. 2007, *Acta Pediatr Esp.*, Pgs. 231-235.
- Robert, M. Kliegman, M.D. 2016. *Nelson Treaty of Pediatrics*. Barcelona, Spain: Elsevier.
- Wang., Kasper S. 2012. Assesment and Managment of Inguinal Hernia in infants. *American Academy of Pediatrics*, pgs. 768-773.

\*\*\*\*\*