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EVALUATION OF THE IMPACT OF PRE-PERITONEAL TRANSABDOMINAL INGUINAL HERNIORRAPHY (TAPP) DURING THE SEVENTH HERNIA EFFORT

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Abstract: **Introduction:** Lichtenstein and transabdominal preperitoneal (TAPP) operations are considered in the repair of inguinal hernias, both with advantages. Determining the superiority between them is done by evaluating the complications -chronic pain and recurrence-, fast recovery, reproducible results and better cost-effectiveness. Objective: To identify the best surgical technique for repairing inguinal hernias in relation to the rate of recurrence, chronic pain and time to return to daily activities, at the Hospital Universitário Ciências Médicas (HUCM), during the Seventh Hernia Campaign, in 2019. Methods: The quantitative-qualitative observational cross-sectional study took place between 2021 and 2022. Patients from the 7th hernia joint effort, promoted by the Brazilian Society of Hernias, treated at a university hospital in Belo Horizonte, were evaluated. men and women of majority, with unilateral and bilateral inguinal hernias, non-recurring, submitted to surgery with TAPP and Lichtenstein. Of these, 17 patients performed a questionnaire and physical examination to investigate chronic pain, time to return to daily activities and recurrence. Results: Two groups composed of eight patients submitted to Lichtenstein (2 women and 6 men) and nine men to TAPP, with a mean age of 63 years (p=0.0885). Chronic pain affected 44.4% of the Lichtenstein group and 37.5% of the TAPP group (p-value>0.999). On physical examination, there was no recurrence in both techniques. Returning to work took more than one month for 44.4% of Lichtenstein members and 25% of TAPP members (p=0.555). Conclusion: Absence of statistical difference to determine which was the best surgical technique applied during the task force at HUCM. However, Lichtenstein meets the needs of the institution, given the socioeconomic conditions, defined by the limited access to the laparoscopic technique by SUS. (Unified Health System)

Keywords: Inguinal hernia; herniorrhaphy; Chronic pain.

INTRODUCTION

Hernia is an abnormal protrusion of tissue or organ through a natural or accidental orifice, the most common in both sexes being the inguinal hernia[1]. It is estimated that more than 20 million people undergo surgical correction of inguinal hernia annually, all over the world[2]. In view of this, the discussion about the best technique to be used for the reversal of these hernias becomes relevant.

Surgical operations for the repair of inguinal hernias are divided into laparotomy - the main one being Lichtenstein - and laparoscopic - such as transabdominal preperitoneal (TAPP), the most used3,4. Currently and according to guidelines proposed by the International guidelines for groin hernia management, as it is clarified that both techniques have advantages. Lichtenstein is beneficial due to its low operating costs, although with a longer hospital stay and return to daily activities, while TAPP has a lower incidence of chronic pain in the postoperative period due to nerve injury, for example 5,6. Regarding operating expenses, Lichtenstein is less expensive in general, but compared to TAPP, the costs to the community outweigh the value of the laparoscopic technique[3]. About hernia recurrence,

Given this scenario, the best surgical technique is defined as the one with low complication rates, rapid recovery for the patient, ease of learning and reproducible results for the surgeon, and the best cost-effectiveness for the service. Therefore, there is no standard technique, they must be evaluated according to the available resources, the professional's skills and the patient's particularities. [2] Knowing this, this work proposes to elect the model technique

applied in the general surgery service of a University Hospital (HU), during the 7th Hernia Campaign, held in 2019.

During this event, the HU participated in the repair of approximately 250 hernias, reducing the waiting list by up to two years, and offered patients surgery with minimally invasive techniques, enabling better results, as described by the president of the Brazilian Society of Hernias (SBH)7.

The joint effort was made possible by the availability of laparoscopic equipment, by SBH in partnership with the Non-Governmental Organization, Hernia International, during August 5th to 10th, 2019. In a recent survey at DATASUS 8, in Brazil, less than 1% of herniorrhaphies are laparoscopic, limiting the patient and the physician.

In view of this, there is a need to assess the impact of implementing less invasive techniques in the HU during this task force. Thus, the Lichtenstein and TAPP techniques were compared regarding the rate of recurrence, chronic pain, acute postoperative pain and time to return to domestic and work activities.

METHOD

This is a quantitative and qualitative observational cross-sectional study carried out on the premises of a HU in Belo Horizonte, during the seventh hernia campaign, promoted by SBH, between August 5th and 10th, 2019.

After approval of the work by the hospital and the Research Ethics Committee (CEP) (CAAE: 45702621.0.00005134), all 79 medical records of the participants were evaluated. Of these, thirty-eight had undergone inguinal hernioplasty using the Lichtenstein (17 patients), TAPP (17 patients), Shouldice (3 patients) and Total Extraperitoneal (TEP) (1 patient) techniques. The selected members were of both sexes, over eighteen years old, with bilateral or unilateral, primary, direct or indirect inguinal hernias, submitted to Lichtenstein or TAPP. Those with recurrent inguinal hernias and hernioplasties performed using other techniques were excluded. Therefore, seventeen patients were recruited and evaluated, eight from TAPP and nine from Lichtenstein,

After checking the data and selecting the participants of the task force, according to the exclusion and inclusion criteria, the project was carried out in two stages. Initially, those selected were contacted by telephone to schedule a return to the outpatient clinic, then they underwent a consultation consisting of a physical examination and application of the questionnaire, based on articles 3, 9, 10, with the visual scale for pain assessment - Visual analog scale (VAS), proposed by Yale University.

The physical examination was performed by an experienced surgeon, who inspected the site and performed the Valsalva maneuver in order to check for hernia recurrence. Subsequently, a systematic interview was applied with the aim of ascertaining age, sex, length of stay in the hospital after surgery, presence of acute pain and use of medication in the immediate postoperative period, as well as the time taken to return to daily activities and to work. work. Furthermore, the existence of chronic pain was evaluated, as well as its frequency, impact on daily activities and intensity, using the VAS.

All documents and data were gathered in a Google Drive account created and accessed only by the researchers, through login and password, guaranteeing secrecy. Categorical variables were presented as absolute and relative frequencies and age as mean ± standard deviation and median (1st quartile – 3rd quartile). The associations between the variables and the technique used were evaluated using the Chi-square test and the

comparison of age between the techniques using the Mann-Whitney test. The analyzes were performed using the R software version 4.0.3 and a significance level of 5% was considered.

RESULTS

Paired analysis comparing Lichtenstein versus TAPP revealed no statistically significant difference regarding the best surgical technique to be adopted (Table 1).

The results of eight patients submitted to Lichtenstein and nine to TAPP were evaluated, being fifteen men and two women, being they only in the first group. The mean age of patients undergoing Lichtenstein and TAPP was 63 years (p=0.0885). After physical examination, in all participants, it was identified that both surgical techniques had no recurrence.

With regard to chronic pain, 44.4% of patients reported pain in the operated area after undergoing the Lichtenstein technique, and 37.5% of patients undergoing the TAPP technique reported chronic pain (p-value >0.999). Of those with chronic pain, after Lichtenstein, 75% report pain that is rare and does not affect their usual activities. Of these, 50% indicated pain intensity equal to 2, according to the VAS scale. In those with chronic pain after TAPP, 33.3% classified the pain as constant, with an intensity equal to 3 on the VAS scale, in addition to interfering with their usual activities.

Regarding the time to return to activities, those submitted to TAPP required less time. About 12.5% needed more than a month to return to home exercises, compared to 33.3% of patients operated by Lichtenstein. Similarly, the time to return to work exceeded one month in only 25% of TAPP members, in contrast to 44.4% in the Lichtenstein group (p= 0.555).

With regard to acute postoperative pain, two patients submitted to the Lichtenstein technique claimed pain for a week, while those with TAPP, three had pain, each with a different duration, being one week, one month or more than 6 months. Furthermore, 100% of the patients submitted to the Lichtenstein technique mentioned the use of medication due to acute postoperative pain. This demonstrates disadvantages compared to TAPP in which 66.7% of patients used analgesics (> 0.999).

From the comparison of the variables, the recovery after the surgery was evaluated in one, two or more days. Being that the time of one day was about 55.6% in patients submitted to Lichtenstein, compared to 75% in TAPP. The p-value (p=0.499) showed no statistically significant difference between the techniques.

	Technique		
	Lichtenstein (n=9)	**TAPP** (n=8)	**pQ value**
Age	61.6 ± 8.0 62.0 (58.0 - 66.0)	63.2 ± 13.2 64.0 (56.5 - 69.8)	0.885M
Recurrence on physical exam			
static inspection			-
Yes	0 (0.0)	0 (0.0)	
No	9 (100.0)	8 (100.0)	
Palpation and Valsalva			-
Positive	0 (0.0)	0 (0.0)	
Negative	9 (100.0)	8 (100.0)	
discomfort on palpation			-
Yes	0 (0.0)	0 (0.0)	
No	9 (100.0)	8 (100.0)	
Chronic pain			
Pain in the operated area			>0.999
Yes	4 (44.4)	3 (37.5)	
No	5 (55.6)	5 (62.5)	
pain frequency			0.654
Constantly	0 (0.0)	1 (33.3)	
1 or 2 times a week	1 (25.0)	1 (33.3)	
Rarely	3 (75.0)	1 (33.3)	

Does it interfere with usual activities?			>0.999
Yes	0 (0.0)	1 (33.3)	
Sometimes	1 (25.0)	0 (0.0)	
No	3 (75.0)	2 (66.7)	
Intensity			0.425
1	1 (25.0)	0 (0.0)	
2	2 (50.0)	0 (0.0)	
3	1 (25.0)	1 (33.3)	
4	0 (0.0)	2 (66.7)	
Time to return to activities for household activities			0.307
Two weeks	6 (66.7)	5 (62.5)	
1 month	0 (0.0)	2 (25.0)	
More than 1 month	3 (33.3)	1 (12.5)	
To the work			0.555
Two weeks	2 (22.2)	1 (12.5)	
1 month	3 (33.3)	5 (62.5)	
More than 1 month	4 (44.4)	2 (25.0)	
Acute postoperative pain			
Afterwards, did you feel pain?			0.609
Yes	2 (22.2)	3 (37.5)	
No	7 (77.8)	5 (62.5)	
How much time?			>0.999
1 week	2 (100.0)	1 (33.3)	
1 month	0 (0.0)	1 (33.3)	
More than 6 months	0 (0.0)	1 (33.3)	
Medicine?			>0.999
Yes	2 (100.0)	2 (66.7)	
No	0 (0.0)	1 (33.3)	
Hospital stay after surgery			0.499
1 day	5 (55.6)	6 (75.0)	
2 days	2 (22.2)	0 (0.0)	
more than 2 days	2 (22.2)	2 (25.0)	

[Q]Chi-square test

Table 1– Comparison of variables with the technique used

DISCUSSION

In order to select the best surgical technique for the hernia clinic in 2019 at the HU, this study compared the results obtained after inguinal hernioplasty with TAPP vs Lichtenstein. For this, the recurrence rate, chronic and acute postoperative pain, time of return to daily activities and length of hospital stay were evaluated. The data obtained allow concluding that there is no association between the variables and the technique used, due to the absence of statistical difference between them. The study presented limitations such as memory bias, small sample size and difficulty of contact with the participants of the Mutirão, selected by the inclusion and exclusion criteria.

RECURRENCE RATE

Regarding the recurrence rate, no patient had hernia recurrence on physical examination. In the study by Bahram et al (2014)., this variable also showed no statistically significant difference when comparing the same procedures, with a recurrence rate equivalent to 3.3% in TAPP and 1.7% in Lichtenstein. This study considered the screen size as responsible for reducing and creating this proportional difference, however, other comparison criteria must be considered. As highlighted in the study by Stoker DL et al. (1994), the surgeon's experience reduced the recurrence rate by 5%.

In the present research, similar screen sizes were used, excluding this variable from our analysis. As well as the experience of the surgeon, which we consider compatible among the professionals, since the objective of the research is the integral analysis of the institution's team and not just of one professional.

CHRONIC AND ACUTE POSTOPERATIVE PAIN

In this study, the report of acute postoperative pain was present in more patients submitted to TAPP compared to Lichtenstein, a proportion which is not supported by other studies. According to current evidence, laparoscopic repair has a lower incidence of acute pain compared to open surgery.[1,11,12,13,14]

In addition, patients submitted to laparoscopy reported a longer mean time of pain compared to the open technique, although 100% of these used analgesics, unlike those submitted to TAPP. This result is similar to that found in other studies, where significantly lower consumption of these drugs was verified in the laparotomy technique [12]. Regarding chronic pain, the findings of this study are in line with current evidence, with a representation of more Lichtenstein patients complaining of pain, compared to TAPP [11]. However, the frequency of onset of pain, at the time of reassessment, was described as more frequent and more intense in those undergoing laparoscopic surgery. As described in Bahram 2017,

TIME TO RETURN TO DAILY ACTIVITIES

When it comes to the percentage differences in the data, there is convergence with current studies, indicating the superiority of TAPP over Lichtenstein in terms of returning to daily activities in less time 15. As verified, in percentage terms, the return to domestic activities took a similar time in both operations. The time taken to return to work was shorter at TAPP. According to a Cochrane systematic review, the best results of TAPP are noticeable. However, this conclusion is questionable due to the heterogeneity in the definition of the type of activity in the analyzed studies.

On the other hand, a meta-analysis showed that the difference in the time to return to work did not reach a sufficient level of significance for this variable to determine the primacy of one technique over the other.14,16 And due to the absence of statistical difference in the present study, it concludes It is known that the institution provided similar results in both techniques, and therefore, it is not the deliberative factor to define the predilection of one over the other.

LENGTH OF STAY IN THE HOSPITAL

The data revealed that most patients stay for one day in the hospital, in both types of operations. Lichtenstein presented a slightly longer length of stay, but without statistical difference that would disqualify it in the current analysis. As concluded by McCormack K et al (2003), the difference in time depends more on the hospital's internal policies than on the technique itself. Therefore, the results offered by the analysis institution, allow the application of any of the techniques, therefore, this factor will not be decisive for the selection of the best technique to be performed in this HU.

Based on the aforementioned data, the similarity in the results obtained between the techniques infers that the researched institution is capable of performing both hernioplasties regarding the operational factors analyzed in this study. However, in order to define the best surgical technique, one must consider technical and socioeconomic aspects, which are summarized in a cost-benefit analysis.[2] As highlighted, the benefit was equal in both TAPP and Lichtenstein, due to the absence of statistical difference; therefore, cost evaluation will be the defining factor in the choice.

This research did not evaluate the technical costs of the operation due to the availability of materials during the task force sponsored by SBH. However, the cost of laparoscopic

surgeries for the institution, and therefore for the SUS (Unified Health System), is high.[17] However, systematic reviews evaluating indirect expenses, that is, social ones, found that operations, such as TAPP, present lower monetary expenses, when less pain intensity and incidence of complications, early return to work and less recurrence are considered. Thus, the cost benefit of TAPP is superior to the open technique.[18] However, as mentioned in the Guideline, Lichtenstein is a method of choice to be applied in health services whose demand is extensive and resources are limited, compatible with the context in which the study was managed.[2]

CONCLUSION

There was no significant difference between the data analyzed to specify which was the best surgical technique applied during the hernia campaign in 2019, at the HU. Thus, the reflection of the clinical and statistical variables of the surgical methods is necessary for the choice. For this, one should consider the access and costs of the techniques, the patient's preference, the physician's experience and the characteristics of the hernia.

Given the data presented, it is understood that TAPP and Lichtenstein can be applied in the context of this HU in Belo Horizonte. However, Lichtenstein is preferred as the method of choice at this institution, even with a higher incidence of chronic pain. This is due to the socioeconomic context, characterized by restricted access to the laparoscopic technique and its low economic viability. In short, further studies are needed to decide in favor of Lichtenstein in different contexts, considering temporality, access to technique and institutional experience.

DECLARATION OF THE EXISTENCE OR NOT OF CONFLICT OF INTEREST

We have no conflicts of interest.

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