

# Results of the simultaneous bilateral inguinal hernia repair by the Lichtenstein technique

## *Resultados da herniorrafia inguinal bilateral simultânea pela técnica de Lichtenstein*

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### A B S T R A C T

**Objective:** To analyze the results of bilateral inguinal hernia repairs by the Lichtenstein technique. **Methods:** We studied the charts of 59 patients who underwent elective simultaneous bilateral inguinal hernia repair between 2003 and 2007. We analyzed: gender, age, weight, operative time, length of hospital stay, Nyhus classification, complications in the immediate and late postoperative periods, and recurrence. These data were submitted to descriptive statistical analysis. **Results:** Of the 59 patients, 95% were men. Age ranged from 40 to 60 years; weight, from 50 to 103 kg; operative time, from 60 to 80 minutes; and the length of stay, from one to six days. Thirty patients had type IIIB hernias; nine, type II; ten, type IIIA; seven, type IV; one, type II on the left and type IIIB on the right; one, type IIIA on the right and IIIB on the left; and one, type IIIA on the right and type II on the left. In the immediate postoperative period, pain was the most important manifestation, in 30.5% of subjects. In 94.92% of cases there were no complications. There were two cases of inguinodynia and one of burning pain in the surgical site. There was one recurrence 29 months after the procedure. **Conclusion:** Simultaneous bilateral inguinal hernia repair by Lichtenstein technique was safe and effective, with a low rate of complications, short hospital stay, and only one case of recurrence at an average of 48 months follow-up.

**Key words:** Hernia. Hernia, inguinal. Hernia, inguinal/complications. Herniorrhaphy. Recurrence.

### INTRODUCTION

Inguinal hernia is the most common surgical disease of the abdominal wall<sup>1</sup>. It occurs in approximately 1.5% of the general population and in 5% of males<sup>2</sup>. It is more common in men<sup>3</sup> and in the age group above 50 years<sup>4</sup>. Of the inguinal hernias, the most common are the indirect<sup>5</sup>. They are predominantly unilateral and at the right side. The bilateral are more rare (affecting about 12% of patients), the direct and the combined ones being more frequent than the indirect<sup>6</sup>.

For many years it was believed that bilateral inguinal hernias could not be corrected simultaneously, since such approach resulted in a high rate of recurrence<sup>7</sup>. This idea came to be questioned with the emergence of the "tension free" technique

In the literature there are few studies that report the results of the simultaneous repair of bilateral inguinal hernias by the Lichtenstein technique. This fact motivated the present work, which aims to analyze the safety and

efficacy of bilateral inguinal hernia repair by the Lichtenstein technique, in the early and late postoperative periods.

### METHODS

Data were collected from 59 patients undergoing bilateral inguinal hernia repair by the Lichtenstein technique between 2003 and 2007, pertaining to: a) gender, age and weight of patients; b) type of hernia according to the Nyhus classification; c) total time of operation; length of hospital stay; d) complications in the immediate postoperative period; e) late complications; f) hernia recurrence. We contacted patients by phone and informed them about the work. Those who agreed to participate in the study were visited and received information through the Informed Consent. This document was read by the examiner as many times as necessary for the complete understanding by the patient. Those who agreed to

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participate in the study were sampled after signing (literate) or putting their fingerprint (illiterate) at the IC. Patients were examined for analysis of recurrent of the bilateral inguinal hernias as follows: after inspection of the inguinal region looking for lumps, the index finger of the examiner was invaginated by the scrotal skin as deep as possible, seeking the external inguinal ring. We checked whether the ring was permeable only the tip of the finger or to the entire finger. Keeping the finger in the inguinal canal, the patient was asked to do the Valsalva maneuver. If a mass was noted touching the finger, relapse was diagnosed.

Data analysis was performed using descriptive statistics to calculate the arithmetic mean, standard deviation and percentage of the following variables: gender, age, weight, type of hernia according to the Nyhus classification, duration of operation, time of hospital stay, complications in the early and late postoperative, and recurrence. The latter information was obtained during the examination.

The project was approved by the Ethics in Research Committee of the College of Sciences of the Vitoria Holy Home of Mercy—Emescam, number 0097/2009, and approved by the heads of the Medical Archives of the Vitoria Holy Home of Mercy Hospital (HSCMV) and of the Clinic of Surgery and Medicine (Climec).

## RESULTS

Of the 59 operated patients, 95% were male 63% were in the age group between 40 and 60 years (mean 54, SD  $\pm$  9,43). Weight ranged from 50kg to 103kg (mean 75.55, SD  $\pm$  8.94). All agreed to participate in the study.

When analyzing the surgical description sheet to check the type of hernia according to Nyhus classification, it was observed that: 30 patients (50.84%) had type IIIB hernias (indirect inguinal hernia with dilated internal inguinal ring associated with a defect of the posterior wall of the inguinal canal); nine (15.25%) had type II hernias (indirect inguinal hernias with preservation of the posterior wall); ten (16.94%), type IIIA hernias (direct hernias); seven (11.86%) had hernia type IV (recurrent); one patient had type II hernia on the left and type IIIB on the right (1.69%); one had type IIIA on the right and IIIB on the left (1.69%); and one had type IIIA on the right and type II on the left (1.69%).

The minimum time taken for completion of the procedure was 60 minutes, and the maximum 180 minutes (mean 113, SD  $\pm$  19.33). Hospital stay ranged from one to six days (mean 1.55, SD  $\pm$  0.83).

In the immediate postoperative period, 38% of patients had complaints, pain being the most common, in 27.7% of cases (Figure 1).

The duration of postoperative follow-up ranged from 27 to 91 months (mean 48.16, SD  $\pm$  14.76). During

physical examination, it was found that only one patient (1.69%) had recurrence (bilateral). Only three patients reported complaints, two with inguinodynia (3%) and one with burning pain at the surgery site (2%).

## DISCUSSION

For a long time it was assumed that the repair of bilateral inguinal hernias in one surgical time should not be performed. This is because such conduct would cause increased postoperative pain, wound complications and increase in the number of recurrences<sup>8</sup>. Today, it is known that the simultaneous repair of bilateral hernia is safe and effective.

Surgical correction of bilateral inguinal hernia in one operative time is designed to allow only one hospital admission, one anesthesia and definitive resolution of the disease. It is intended minimize psychological stress and reduce the time away from work and family life.

The patients in this study stayed in hospital on average 1.55 days following surgery. Most were admitted for one day. Miller *et al.*<sup>6</sup> reported a mean hospital stay of 6.4 days. Serpell *et al.* reported a hospital stay ranging from two to 12 days<sup>9</sup>. These authors said that patients undergoing simultaneous repair of bilateral inguinal hernias presented shorter hospital stay than those submitted to two sequential repairs. When assessing the results of this work with the literature, it is observed that the hospital stay was significantly lower in our patients.

Only one anesthetic avoids greater exposure to anesthesia and, consequently, to anesthetic complications. Only one surgical procedure aims at being the ultimate solution for the patient. All these intentions, ultimately, will decrease hospital costs and patient's own, should he have to pay for the hospitalization.

The operative time of a bilateral hernia is greater than of the one sided. This can be disturbing when operating high-risk patients. The evolution of anesthesia and

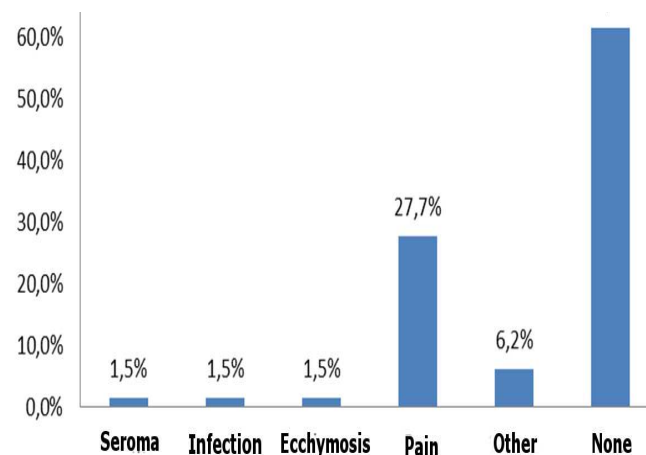


Figure 1 - Complications in the immediate postoperative period.

perioperative care caused the surgery time to stop being a problem. But it is known that the greater the duration of surgery, the greater the trauma, and the greater the local inflammation. In addition, an operative time over three hours is considered a risk factor for surgical site infection. In this work, the average surgical time was 113 minutes. Melchor González *et al.* reported a mean operative time of 120 minutes<sup>10</sup>. According to Dakkuri *et al.*, although the time for the simultaneous repair is 50% greater, costs of the procedures increase just by 18%<sup>8</sup>. That is, even if the simultaneous repair takes longer, there is a significant reduction in hospital costs. Another point to be considered is that the operating time depends on the learning curve of the surgical team. Better trained teams perform procedures faster. Thus, the attempt to shorten this time may be beneficial in the elderly and other patients who often have associated diseases.

In this paper we applied the Lichtenstein technique, which has been widely used. It is considered tension-free, with reduced recurrence rates compared with techniques that use tissues from the region to correct the hernia defect<sup>11</sup>. The choice of technique for inguinal hernia repair has currently been based on the Nyhus classification. The model proposed by Nyhus takes into account points, as the site of the hernia in the inguinofemoral region, the type of hernia (direct or indirect, primary or recurrent) and features of floor of the inguinal canal. However, in the literature there is no specific description for bilateral inguinal hernias. Thus, the classification of hernias has been made considering each side individually, using said classification.

In the bilateral group, the literature describes higher frequency of both combined 6 hernias and direct 9 types. However, in the present study, the number of cases of indirect hernias was nearly four times greater than the one of direct.

In the immediate postoperative period, most patients (62%) had no complications. Pain and seroma were the most frequent. In hernia correction there are described: urinary retention, scrotal hematoma, urinary tract infection, wound infection, and even cardiac arrhythmia and deep vein thrombosis<sup>6</sup>; neuralgia, testicular atrophy, hydrocele and infection<sup>7</sup>; orchitis, wound infection, testicular edema, hematoma and seroma<sup>12</sup>; local inflammation and pain<sup>13</sup>; infection<sup>14</sup>.

In the late postoperative period, 95% of patients in this study had no complications. Two patients (3%)

complained of inguinodynia, and one (2%) of burning pain on the site. Chronic pain can occur in about 20 to 30% of patients undergoing unilateral inguinal hernia repair<sup>15</sup>. Solorzano *et al.* also came to the same conclusion about the pain<sup>16</sup>. Post *et al.* said the lower density meshes (multifilament) appear to be preferable for the Lichtenstein operation<sup>17</sup>, but more cohort studies will be required to their routine indication. These meshes produce more proinflammatory mediators than the monofilament ones and less pain when exercising after six months postoperatively<sup>18</sup>. Nonetheless, they are associated with greater foreign body sensation<sup>17,19</sup>.

Our mean follow-up after surgery was 48 months. One (1.69%) patient had a relapse when examined at 29 months postoperatively. Sarli *et al.* found 4.3% recurrence among 43 patients<sup>20</sup>. Kark *et al.* observed less than 1% recurrence in 199 patients<sup>14</sup>. Amid *et al.* reported 0.1% recurrence in 1000 individuals<sup>7</sup>. Hidalgo *et al.*<sup>13</sup> found no hernia recurrences in a total of 55 subjects studied. The results of this study show that recurrence of 1.69% is within the limits reported by the literature. Relapses are possibly related to the number of patients and length of follow up, since not all the cited works contained information about the latter. Furthermore, Viana *et al.*<sup>21</sup> emphasize that 40% of recurrences occur within five years and 20% after 25 years of the primary operation.

Some things may account for the failure of the operation: technique failure, insufficient fixation of the mesh, mainly in its medial position to the pubic tubercle<sup>22</sup>, and deficiency of collagen in the transversalis fascia<sup>21</sup>. The success can be attributed to the experience of the surgical team and features of both patients and meshes. Regarding the surgical team, Amid *et al.*<sup>7</sup> are pioneers in the use of the Lichtenstein technique. Therefore they are a more experienced team, which justifies their low recurrence rate with this technique of herniorrhaphy.

There is consensus that the use of Lichtenstein technique gives good results regarding the immediate and late postoperative period, and it is effective among the various services that use it, given the low number of relapses. This work confirms this thesis, the results being among the lowest relapse rates when compared to other works.

In conclusion, simultaneous repair of bilateral inguinal hernias by the Lichtenstein technique was safe and effective, since there was a low complication rate, short hospital stay, and only one recurrence at an average of 48 months follow-up.

## R E S U M O

**Objetivo:** analisar os resultados da herniorrafia inguinal bilateral pela técnica de Lichtenstein. **Métodos:** estudo dos prontuários de 59 pacientes submetidos à herniorrafia inguinal bilateral simultânea, eletiva, no período entre 2003 e 2007. Foram analisados: sexo, idade, peso, tempo operatório, tempo total de internação, classificação de Nyhus, intercorrências no pós-operatório imediato e tardio, e recidiva. Esses dados foram submetidos à análise estatística descritiva. **Resultados:** dos 59 pacientes, 95% eram homens; e 5%, mulheres. A idade variou de 40 a 60 anos, o peso de 50 a 103 kg, o tempo operatório de 60 a 180 minutos, o tempo de internação de um a seis dias. Trinta pacientes apresentavam hérnias do tipo IIIB; nove, do tipo II; dez, do tipo IIIA; sete, do tipo IV; um, do tipo II à esquerda e tipo IIIB à direita; um, tipo IIIA à direita e IIIB à esquerda; e um, do tipo IIIA à direita e do tipo II à esquerda. No pós-operatório imediato, a dor foi a manifestação mais importante em 30,5% dos casos. Em 94,92% dos casos, não houve complicações tardias. Ocorreram dois casos de inguinodinia e um de dor em queimação local. Observou-se uma recidiva, no 29º mês de pós-operatório. **Conclusões:** a herniorrafia inguinal bilateral simultânea pela técnica de Lichtenstein foi segura e eficaz, pois houve baixo índice de complicações, curta permanência hospitalar e, em um período médio de 48 meses de acompanhamento, houve apenas um caso de recidiva.

**Descritores:** Hérnia. Hérnia inguinal. Hérnia inguinal/complicações. Herniorrafia. Recidiva.

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