

Complications of Herniorrhaphy at the Regional Hospital of Ngaoundere (Cameroon)

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ABSTRACT

Groin hernia repair constitute one of the most common practiced surgery in general surgery nowadays. Post-operative complications constitute a major problem in the management process of this pathology. The objective of this study was to determine and assess the complications related to the different surgical techniques of herniorrhaphy. As such, a retrospective study of 10 years has been carried out at the regional hospital of Ngaoundéré, whereby 286 cases of groin hernia were recorded. Results reveal that, the most used surgical technique was that of Bassini with 46.20% and 11.45% recurrence. The least recurrence complication recorded was that of Shouldice with 1.21%. It is concluded that, post-operative complications of herniorrhaphy is related to the surgical technique used. Hence, Shouldice surgical technique is the best mean for hernia repair in developing countries as a result of its reduced complication rate and cheapness.

Keywords: Herniorrhaphy, Complications, Ngaoundéré

INTRODUCTION

Herniorrhaphy is the surgical repair of hernia, with suture of the abdominal wall. But when the weakened area is very large, strong synthetic material is sewn over the defect to reinforce the area and this procedure is called hernioplasty. It is the surgical technique that assures an efficient and durable treatment of groin hernias. In the world, hernia is a frequent benign pathology and more than 20 million patients are operated every year [1]. In Africa, hernia affects about 4.6% of the population [2,3] and mostly youths. In Cameroon, hernia is also a public health problem regarding the circumstances of appearance and its management not so easy. The most frequent groin hernia is inguinal hernia followed by inguino-scrotal hernia [4]. Several techniques of groin hernia repairs are known amongst which are the techniques of Bassini, Shouldice, Mac Vay, Lichtenstein, etc. The goal of the modern surgical treatment is to favor techniques that decrease postoperative pain and faster recovery along with low recurrence rates. The first etiologic factor of recurrence resulting from these hernias is suture under tension of structures which are not normally in apposition [5]. A global rate of about 10% of complications is recorded every year in patients undergoing groin hernia repairs in the USA; and the complications are probably related to the surgical technique used [6]. We noticed another complication related to post-operative chronic pain

(1-63%) which last 3-6 months after surgery. Several reasons may explain the importance of this study as the outcome of recurrences and post-operative infections which are a real fact to be considered in the process of hernia repair [7]. As a result, the general objective of this study was to make a census of complications related to the technique of herniorrhaphy used at the regional hospital of Ngaoundéré so as to establish strategies for prevention of these complications. As such specific objectives were:

- i. Enumerate the different techniques of herniorrhaphy practiced at the regional hospital of Ngaoundéré.
- ii. Establish the link of association between the technique used and the outcome of complications.

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- iii. Identify techniques with less post-operative complications.

METHODOLOGY

Study design and setting

This was a descriptive retrospective study carried out at the regional hospital of Ngaoundéré from January 1st 2005 to January 31st 2015.

Study subjects and population

All patients’ files that presented to the surgical department with a clinical diagnosis of groins hernias and subsequently underwent surgery at the regional hospital of Ngaoundéré were included in the study. Patients’ files presenting with strangulated hernia, voluminous obstructive hernia were excluded from the study. The recruitment of patients was based on the documented available files in the hospital and included as such: registers of hospitalization, registers of surgical report and a pre-established data collection file. Data collected included socio-demographic data (age, sex and occupation), clinical presentation (side affected, type of hernia, notion of primary or recurrence hernia), type of surgical procedure, postoperative complications, the duration of hospital stay and mortality.

STATISTICAL DATA ANALYSIS

Statistical data analysis was done using SPSS software version 20.0 and the rest by the software Microsoft office Word and Excel version 2010. Chi-square (χ^2) test was used to study associations between certain qualitative variables. Data was summarized in form of figures and frequent tables for categorical variables and results presented in the form of proportions, percentages, tables and graphs.

ETHICAL CONSIDERATIONS

Ethical approval to conduct the study was obtained from the university department of biomedical sciences, the ethical committee of the regional hospital of Ngaoundéré and regional delegation of public health for the Adamawa region before the commencement of the study.

RESULTS

Type of surgical technique/procedure

The most used surgical procedure is that of Bassini with 132 appearances for a general percentage of 46.2%. The least used surgical technique is that of Lichtenstein with 15 appearances for a percentage of 5.2% (**Figure 1**).

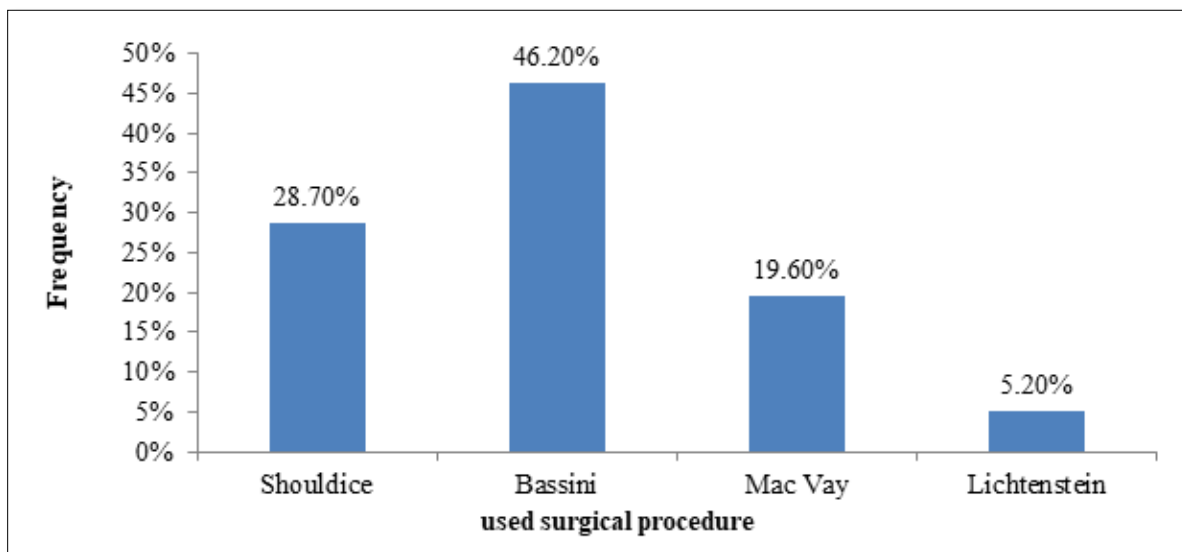


Figure 1. Different surgical procedure practiced.

Duration of surgery by surgical procedure

Figure 2 below reveals that, two cases of herniorrhaphy using the Bassini technique took more than 2 h of surgery

with a rate of 1.54%. Whereas, for the other known techniques, the average duration is generally less than 1 h and rarely between 1-2 h.

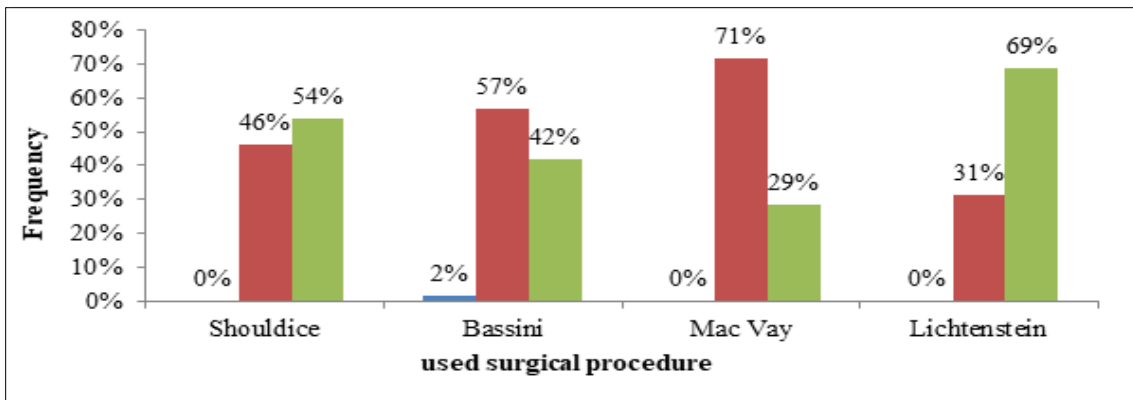


Figure 2. Duration of surgery by technique.

Post-operative complications

Below is a representation of hernia recurrences after surgery from different techniques used. As such, for Bassini, we recorded 15 cases of recurrence either a percentage of

11.45%; for Shouldice we recorded 1 case of recurrence with a percentage of 1.21% and 6 cases of recurrences for the Mac Vay technique with a percentage 10.71% (Figure 3).

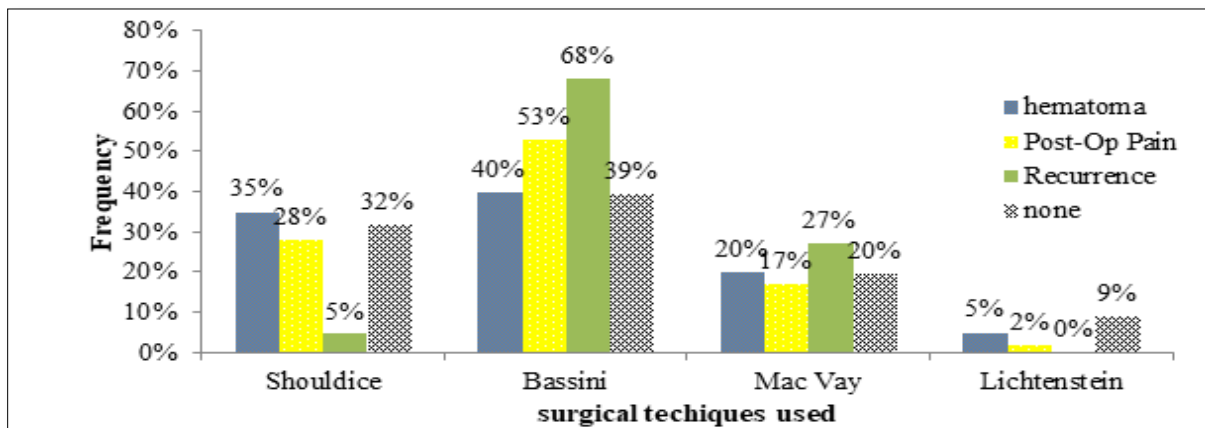


Figure 3. Epiplating system A) Transcutaneous bar and pins. B) Anchored auricular prostheses.

Types of hernias

We have for the most right inguinal hernia represented in 138 cases with a percentage of 48%, followed by the left

inguinal hernia represented in 120 cases with a percentage of 42% and lastly bilateral inguinal hernia with 28 cases and a percentage of 9.8% (Figure 4).

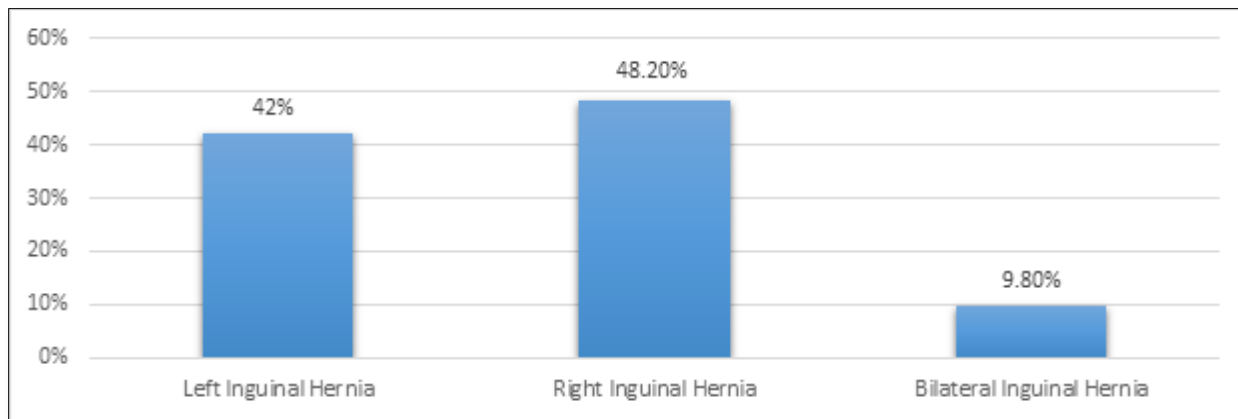


Figure 4. Types of hernia.

Association relations

For association relations between our different variables, we used a confidence interval of 95% for Chi-Square values (Table 1).

Table 1. Association relations between the anesthetic type and post-operative complications.

Anesthésie	Shouldice	Bassini	Mac Vay	Lischtenstein
General anesthesiology	20 (24.4%)	17 (12.9%)	6 (10.7%)	1 (6.7%)
Spinal anesthesiology	62 (75.6%)	115 (87.1%)	50 (89.3%)	14 (93.3%)
Total	82 (100.0%)	132 (100.0%)	56 (100.0%)	15 (100.0%)

For the association between the type of anesthesiology and post-operative complications we had a Chi-Square value of $\chi^2=1.635$ and $p=0.652$ which is greater than 0.05 as such p-

value not statistically significant and consequently there exist no link of association between anesthesiology and outcome of complications in herniorrhaphy (Table 2).

Table 2. Association relations between the surgical techniques and complication outcomes.

Complications	Shouldice	Bassini	Mac Vay	Lischtenstein
Hematoma	78.5%	86.1%	47.1%	16.7%
Post-op Pain	2429.3%	4634.8%	1526.8%	213.3%
Recurrences	11.2%	1511.4%	610.7%	00.0%
Others	5061.0%	6347.7%	3155.4%	1280.0%
Total	82100.0%	132100.0%	56100.0%	15100.0%

We used for this purpose a Chi-Square value $\chi^2=9$ and a p-value 0.001. P-value $p=0.001$ is less than 0.05 as a result statistically significant. Consequently, there exist a relation of significance between the surgical technique used and post-operative complications.

Elsewhere, the rate of recurrence of primary hernia after surgery by the technique of Lichtenstein varies between 0% to 4% [8]. In this study the percentage obtained from the technique is 0%.

DISCUSSION

Every surgical procedure has judgment criteria that serve as an evaluation guide of efficiency for the techniques used in the repair process of groin hernia. We talk here of secondary judgments which are the rate of post-operative complications, post-operative pain intensity, the cost of the surgical procedure, duration of hospitalization and work stoppage. The most of part of these criteria are subjective and or liable to external factors. Nevertheless, the principal judgment criteria remain the rate of recurrence which is an objective criterion for the evaluation of efficiency of groin hernia repair.

The choice of surgical procedure

The repair of groin hernia today faces the problem of choice regarding the technique to be used among the several techniques known with relatively comparable clinical results [12]. The most practiced technique is that of Bassini whereby the cases were 132 followed by the Shouldice technique with 120 cases and lastly the Lichtenstein technique 15 cases. Obtained results are comparable to those of Halidou A. with 51.5% for Bassini technique [13] and Miyazaki [14] with 51.08%. Studies carried out by Harouna and Varshney [15] used instead the technique of Shouldice and obtained each 45.79% and 48.27%, respectively. In this design study, we obtained 28.67% for the Shouldice technique. This difference may be as a result of the difference in practice of every surgeon that considers one technique more appropriate for him than the other [16].

Cases of recurrences of groin hernia

In the course of this study, we recorded one case of recurrence by the technique of Shouldice with a percentage of 1.21%. This rate is comparable to those of Warssern et al. [8]; in Pakistan who obtained 1.28%, Harouna [9] in Niger with 2%, Drew et al. [10] in England with 0.99% and Paul et al. [11] who obtained 1%. This small recurrence rate may be explained by the fact that the Shouldice technique for hernia repair has been proven by the Toronto team in Canada.

Presence of hematoma after surgery

Post-operative sub-cutaneous hematoma represented 8.52% of the sample of patients operated by the Shouldice technique. The result of this study is similar to that of Drissa et al. [17] in 2015 who obtained a rate of inguinal hematoma of 8%. Post-operative sub-cutaneous hematoma represented

7.14% regarding Mac Vay technique. This result is greatly above that of Flemming et al. [18] in 2001 who obtained 3% of sub-cutaneous hematoma. This other difference may be explained by the absence of electro-surgical knife which is an indispensable instrument for hemostasis.

Types of anesthesiology used

Herniorrhaphy with spinal anesthesiology was mainly the anesthetic procedure used with 242 cases and a percentage of 84.61%. On the other hand, herniorrhaphy with general anesthesiology represented 15.38% of the cases. Our results obtained are similar to that of Dieng and al in 2012 who obtained 86.2% spinal anesthesiology and 13.8% general anesthesiology [19]. Equally, Desarda [20] in 2006 practiced most of his hernia repairs using either local or loco-regional anesthesiology in 98.95% of all his cases.

CONCLUSION

The complications resulting from hernia repair depends on the surgical technique used which equally depends on the pathway approach. Certain complications are benign or severe may breakout despite the attention and care brought by surgical team, as such creating generally real deontological and medico-legal problems. Among the surgical procedures used to repair hernia, the technique of Shouldice seems to be the best for repairs of groin hernia in developing countries because of the limited post-operative complications related to its procedure and yet equally cheap compared to others techniques that need prosthesis.

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