Advances in Surgical Sciences
2024; Vol. 12, No. 1, pp. 6-10
https://doi.org/10.11648/j.ass.20241201.12

Research Article

Prosthetic Management of Inguinal Hernias Using the Lichtenstein Technique in 100 Cases

Diakite Sandaly[1, *], Diallo Mamadou Saliou[1], Camara Fode Lansana[2], Soumaoro Labile Togba[1], Diakite Saikou Yaya[2], Barounga Djaoussa Mahamat[1] Fofana Naby[1], Oulare Ibrahima[1], Bangoura Mamadou Saliou[1], Cond éAnsoumane[1], Camara Mariame[1], Cond éOusmane[1], Toure Aboubacar[1]

[1]Department of General Surgery, Ignace DEEN National Hospital, Gamal Abdel Nasser University of Conakry, Conakry, Guinea

[2]Department of Visceral Surgery, Donka National Hospital, Gamal Abdel Nasser University of Conakry, Conakry, Guinea

Abstract

Introduction: There has always been a plethora of hernia repairs in the absence of consensus. Techniques described as ancient, such as the Bassini, Mac Vay or Shouldice procedures, are still widely practised. Aponeurotic plasty has proved its worth in our practice. Prosthetic plasty, which has reduced recurrence by half, has become the gold standard. The aim of this study was to report on the feasibility of prosthetic management of inguinal hernias using the Lichtenstein technique. Material and method: This was a prospective fifteen (15)-month study: from July 1, 2022 to September 30, 2023. Study variables were sociodemographic, clinical and therapeutic. Results: During the study period, 173 patients underwent surgery for inguinal hernia. We noted one hundred (100) patients operated on according to the Lichtenstein procedure, i.e. 58% of all patients operated on for inguinal hernias in the department. We noted 98 men and 02 women. The mean age was 48.8 years (extremes: 20-91). The category of heavy laborer (laborer, farmer, etc....) accounted for % of cases. The hernia was exclusively right in 9 cases, left in 21 and bilateral in 10. A strangulated hernia was present in 9 patients. NYHUS classification was dominated by type IIIA (38.9%). Therapeutically, spinal anesthesia was the most common treatment: 8 cases. 40% of patients were pain-free in the immediate post-operative period, according to the analogue pain scale. The main complications were chronic pain in 10 patients and seroma in 02. After a minimum follow-up of three months for each patient, we noted no recurrence. Conclusion. The Lichtenstein technique is a relatively new procedure in our practice. Today, it is the technique of choice, with little postoperative morbidity.

Keywords

Inguinal Hernia, Prosthesis, Lichtenstein

1. Introduction

Inguinal hernia is a protrusion of abdominal cavity contents or preperitoneal fat through a hernial defect in the inguinal region [1]. It is a frequent surgical pathology, and its etiology is multifactorial, among which connective tissue

*Corresponding author: sandiak2003@gmail.com (Diakite Sandaly)

Received: 17 March 2024; **Accepted:** 27 March 2024; **Published:** 17 April 2024

changes play an important role in the pathogenesis of inguinal hernia, and the artificial patch has therefore been widely used in hernia surgery [2]. Inguinal hernia repairs are the most commonly performed procedure in general surgery, with 73% of abdominal wall hernias operated on and 97% of groin hernias repaired, with a male predominance and a sex ratio of 9:1 [1]. Operative techniques have continually evolved over the last few decades. The Lichtenstein procedure, a tension-free prosthetic cure, is considered the gold standard [3].

The tension-free open Lichtenstein technique is the most widely performed procedure in the world, with optimal results and a low recurrence rate [4].

However, the Lichtenstein technique is associated with complications such as chronic pain, foreign body sensation in the inguinal region and erosion of adjacent organs [2]. It is estimated that 20 million inguinal hernia repairs are performed worldwide each year [5].

In our practice, we record a multitude of operative techniques for the cure of inguinal hernias, with varying results including recurrence and post-operative pain. The Lichtenstein technique, which is the most reliable procedure with a low recurrence rate, is also used. Prior to 2020, however, it was not widely used in our department, for a number of reasons: the availability and cost of prostheses. Since then, as prostheses have become more widely available, this technique has become a common procedure for inguinal hernia repair.

The aim of this study was to report on the feasibility of managing inguinal hernias with prostheses and to describe the epidemiological, clinical and therapeutic aspects.

2. Material and Method

This was a prospective descriptive study of 100 cases collected over fifteen (15) months: from July 1, 2022 to September 30, 2023. The study covered all patients operated on in the general surgery department of the Ignace DEEN national hospital. We included all patients who had benefited from surgical cure of the Lichtenstein prosthesis. Patients operated on by raphia without prosthesis, patients under 15 years of age, and hernias associated with other pathologies, notably prostatic, were excluded. Some patients underwent planned surgery, sometimes on an outpatient basis. We recorded cases managed as emergencies following hernial strangulation in the absence of necrosis. The Nyhus classification was used for intraoperative surgical exploration.

The LICHTENSTEIN technique [6]: the principle of this technique is to reinforce the transversalis fascia, which is not open, with a prosthesis stretched from the inguinal scythe to the inguinal ligament. We used polypropylene prostheses that had been cut, slit for the passage of the cord and adapted by the surgeon.

The prosthesis is slid under the cord and spread posteriorly. The rounded end is attached to the prepubic fibrous tissue with a stitch of non-absorbable monofilament.

A slit is made with scissors on the external side of the prosthesis.

The two suspenders are passed on either side of the cord behind it. The upper part of the prosthesis is then secured with two separate stitches, taking care not to damage the nerves, and the two suspenders are then sutured together to form a new inguinal ring. The cord is then tied by the two straps of the prosthesis, which reproduce the ring, normally forming the inferolateral limit of the deep inguinal orifice.

The study variables were sociodemographic, clinical and therapeutic.

Data were collected during follow-up, either in person or by telephone. Follow-up was carried out at 1 and 3 months. Data were collected and analyzed using Epi info 7.

RESULTS

During the study period, 173 patients underwent surgery for inguinal hernia. We noted one hundred (100) patients operated on using the Lichtenstein procedure, i.e. 58% of all patients operated on for inguinal hernias in the department.

Table 1. *Socio-demographic characteristics.*

Socio-demographic characteristics	Number (N=100)	Percentage (%)
Average age	48.8	
Age ranges		
15 - 25 ans	18	18
26 - 35 ans	12	12
36 - 45 ans	13	13
46 - 55 ans	14	14
56 - 65 ans	15	15
66 - 75 ans	21	21
76 - 85 ans	04	04
86 - 95 ans	03	03
Gender		
Male	98	98
Female	02	02
Professions		
Workers/ Farmers/ Breeders		
Pupils and students		
Civil servants		
Housewives		
Liberal		

Table 2. *Distribution of patients according to factors contributing to inguinal hernia.*

Contributing factors	Number (N=100)	Percentage (%)
Physical effort	62	62
Chronic Constipation	41	41
Sedentary lifestyle	25	25
Chronic bronchitis (Cough)	24	24
Prostatic hypertrophy	02	02
Obesity	09	09
Congenital	04	04
No	02	02

Table 3. *Type of hernia.*

	Number (N=100)	Percentage (%)
Volume		
Inguinale	87	87
Inguino-scrotal	13	13
Evolution		
Uncomplicated	89	89
Strangled	09	09
Irreducible (Giant hernia)	02	02
Headquarters		
To the right	69	69
To the left	21	21
Bilatéral	08	08
History		
Primary (Non-operated)	91	91
Repeat offender	09	09

Table 4. *Distribution of inguinal hernias according to NYHUS classification.*

NYHUS classification	Number (N=100)	Percentage (%)
Type I	26	20,6
Type II	25	19,8
Type IIIA	49	38,9
Type IIIB	13	10,3
Type IIIC	00	00
Type IV	13	10,3
Total	126	100

Table 5. *Distribution of patients by type of anesthesia.*

type of anesthesia	Number (N=100)	Percentage (%)
General anesthesia	10	10
Local anesthesia	4	4
Spinal anesthesia	86	86
Total	100	100

Table 6. *Distribution of patients according to Early Post-Operative Complications.*

Early post-operative complications	Number	Percentage (%)
Simply	78	78
Pain	17	17
Infection	05	05
Total	100	100

Visual analogue assessment (VAE) of postoperative pain	Effectif	Pourcentage (%)
No pain (0)	83	83
Mild pain (0-2)	12	12
Moderate pain (2-4)	05	05
Total	100	100

Table 7. *Late post-operative complications.*

Late post-operative complications	Number	Percentage (%)
Simply	87	87
Chronic pain	10	10
Serome	02	02
Delayed healing	01	01
Total	100	100

No recurrence after at least three months' follow-up

3. Discussion

The mean age of the patients in our series was 48.8 years (extremes 16 and 95 years). This young age is reported by most authors [3-6]. This could be explained by repeated physical exertion at this age.

There was a clear male predominance in our practice. This male predominance could be related to the anatomical features of the male inguinal canal and the daily activities of men, which often involve repeated physical effort, exposing them to aggravating the parietal defect [7].

Laborers and cultivators, all forced laborers, were dominant in this study. This predominance of hard workers has been reported by several other authors [3, 8, 9]. These repeated physical efforts and the use of the abdominal strap are favourable factors in the genesis and aggravation of the parietal defect leading to weakening of the inguinal canal due to a significant increase in intra-abdominal pressure and/or collagen alteration.

In this study, the site of the hernia was on the right in 71 patients, bilateral in 8 patients, and on the left in 21 patients. This right-hand predominance of inguinal hernia is in line with the findings of the literature [3, 10].

Inguinoscrotal hernias were noted in 13 cases in our series, including 02 cases of giant hernias. We note a delay in consultation in Africa. African populations, especially those living in rural areas, allow hernias to develop for longer than elsewhere. This condition is considered shameful.

The NYHUS classification in our study was dominated by type IIIA, which accounted for 38.9%.

Strangulated hernias had rarely been cured by prosthesis in our series. This option is explained by caution in view of the urgency, unavailability of the prosthesis, local conditions and risk of associated sepsis.

The reluctance to place prostheses in an infected environment is shared, although several series have demonstrated feasibility in emergency and the absence of significant additional morbidity [12, 13]. In our series, we inserted prostheses in 09 cases of strangulation without necrosis. No complications requiring removal of the prosthesis were noted.

In this study, 86% of patients underwent spinal anaesthesia. Spinal anaesthesia appears to be well suited to prosthetic cure, due to the long recovery time for mobility, but with a risk of urine retention, as well as the advanced age of patients and associated surgical procedures.

The type of Mesh used in our study was polypropylene for all patients. This may be explained by the availability and accessibility of this prosthesis.

The early postoperative course was straightforward in 72.6% of cases. Immediate complications were pain (24.2%) and seroma (3.2%). [11].

According to the immediate post-operative visual analog pain scale (VAS), patients treated for inguinal hernia using the Lichtenstein technique were pain-free in the majority of cases (40%).

This could be explained by the fact that pain perception can vary considerably from one person to another due to individual factors such as pain tolerance and nerve sensitivity.

Two cases of seroma were noted. Postoperative seroma is a complication frequently reported in studies [12, 13]. It is more often due to the microporous characteristics of the prosthesis and extensive tissue dissection [14].

The rate of prosthesis infection was low in our series, at 0.7%. Prosthesis insertion required rigorous aseptic precautions. These hernia cases were operated on in a dedicated block for planned cases. In addition, the prosthesis was soaked in an antiseptic solution during insertion.

Deysine reports a drastic reduction in the infection rate from 4% to zero with the strict application of aseptic measures [15].

Tension-free treatment is associated with less immediate postoperative pain, less need for analgesia, and faster convalescence [16].

Chronic pain, however, has become a classic concern and a criterion of judgment. Its incidence varies from 0.7% to 43.3%, depending on the publication [17].

It was noted in 9.7% of patients and should take into account the psychosocial dimension of pain, as well as the operators. Symptomatic treatment was sufficient in each case, with no need for revision.

The study of this chronic pain was simplified by Cunningham's team, who classified it into three types [18]:

1) somatic pain linked to tension in musculoaponeurotic structures and typically triggered by exertion;
2) neuralgic pain linked to nerve damage in the inguinal canal, spontaneous or triggered, typically violent and brief;
3) and visceral pain linked to obstruction of the vas deferens by scar fibrosis and typically triggered by ejaculation.

After a minimum of three months for each patient, we noted no recurrence. This zero rate for this short period must take into account patients lost to follow-up. Our results are comparable to those reported in the literature, with recurrence rates of less than 1% [12, 19].

4. Conclusion

In view of our results, prosthetic treatment of inguinal hernias should be the rule in our context, given the extreme frequency of hernias caused by physical exertion. The simplicity of the Lichtenstein procedure makes it the procedure of choice.

Complications are rare and recurrence exceptional. Compliance with the rules of asepsis and the surgical environment are prerequisites for reducing postoperative morbidity.

Abbreviations

VAS: Visual Analog Pain Scale

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] T Berri; K Brahmi. Inguinal hernias. Revue médicale Algérienne. 2021; (36): 62-71.

[2] Baoshan Li, Xin Zhang, Yi Homme, Jiadong Xie, Wei Hu, Huang et al. Lichtenstein inguinal hernia repair with porcine small bowel submucosa: a 5-year follow-up. A prospective randomized controlled study; Regenerative biomaterials; China-2021. (20) 1-5.

[3] Dieng, El ouzi, a, onaté I, issé, anou, anoussi, Dia, ouré Strangulated groin hernias in adults: a series of 228. Mali Med. 2008; 23(1): 12-16.

[4] A. Aïolfi, D Bona, M Cavalli, G Micheletto, F Lombardo, G Bonitta et al. Primary inguinal hernia: systematic review and Bayesian network meta-analysis comparing open, laparoscopic, totally extraperitoneal and robotic preperitoneal trans abdominal repair; Hernia 2019; (23): 473-484.

[5] A Meyer a, L. Bonnet b, M Bourbonb, P Blanc b. Laparoscopic treatment of inguinal hernias using the totally extraperitoneal (TEP) technique with TAP (transversus abdominis plane) block without curare on an outpatient basis: a prospective study; Journal of Visceral Surgery 2015; (152): 156-160.

[6] Papaziogas B, Lazaridis CH, Makria J, Koutelidakis J, Patsas A, Grigoriou M, Chatzimavroudis G, Psaralexis K, Atmatzidis K. Tension-free repair versus modified Bassini technique (Andrews technique) for strangulated inguinal hernia: a comparative study. Hernia. 2005; 9: 156–159.

[7] Bay-Nielsen M, Kehlet H, Strand L. Quality assessment of 26304 herniorraphies in Denmark: à prospective nationwide study. Lancet 2001, 358: 1124-1128.

[8] Diallo SK. Inguinal hernias treated by Shouldice technique in B surgery at Point G national hospital (123cas). Medical thesis Bamako, 2000, FMPOS. N °38.

[9] Samaké B. Inguinal hernias: diagnostic and therapeutic aspects at CSRéf CI Bamako, 2014 FMOS. N °94.

[10] Enyinnah M, Dienye PO, Njoku P. Inguinal mesh hernioplasties: a rural private clinic experience in South Eastern Nigeria. Glob J Health Sci. 2013. 13; 5(4): 176-181.

[11] B Sine, A Ndong, A Sarr, AC Diallo, M Faye et al. Prise en charge des hernies inguinales dans un service d'urologie d'Afrique subsaharienne: àpropos de 205 cas; j afr chir digest 2019; 19(2): 2805 – 2808.

[12] Harjai MM, Nagpal BM, Singh P, Singh Y. A Prospective Randomized Controlled Study of Lichtenstein's Tension Free versus Modified Bassini Repair in the Management of Groin Hernias. Med J Armed Forces India. 2007; 63(1): 40-43.

[13] Samir SA, Sasi Yallalampalli BA, Ahmad MS, Charles FB, Albo D, Berger DH. Improved outcomes with the prolene hernia system mesh compared with the time-honored Lichtenstein onlay mesh for inguinal hernia repair. The Am J Surg. 2007; 193: 697–701.

[14] Diop. B 1, Sall I, Sow O 1, Ba P A, Konate I, Dieng M, Wilson E, Wane Y, Sarré SM. Management of inguinal hernias by prosthesis according to the Lichtenstein procedure: an analysis of 267 procedures. Health Sci. Dis: Vol 19 (1) January – February – March 2018 Available at www.hsd-fmsb.org

[15] Deysine. Infection control in a hernia clinic: 24 year results of aseptic and antiseptic measure implementation in 4,620 "clean cases" Hernia. 2006; 10: 25–29.

[16] Olasehinde O, Lawal OO, Agbakwuru EA, Adisa AO, Alatise OI, Arowolo OA, Adesunkanmi AR, Etonyeaku AC. Comparing Lichtenstein with darning for inguinal hernia repair in an African population. Hernia. 2016; 20(5): 667-674.

[17] Alfieri S, Amid PK, Campanelli G et al. International guidelines for prevention and management of post-operative chronic pain following inguinal hernia surgery. Hernia 2011; 15: 239-249.

[18] Cunningham J, Temple WJ, Mitchell P, Nixon JA, Preshaw RM, Hagen NA, Cooperative hernia study. Pain in the post-repair patient. Ann Surg 1996; 224: 598 602.

[19] S. S. Bessa K. M. Katri W. N. Abdel-Salam N. A. Abdel-Baki. Early results from the use of the Lichtenstein repair in the management of strangulated groin hernia. Hernia. 2007; 11: 239–242.