

Research Article

Cost and Results of Prosthesis Placement for Hernia Repair at Ignace Deen Hospital (Guinea)

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Abstract

Introduction: The aim of the study was to evaluate the cost and results of prosthesis placement in hernia repairs in the general surgery department of university hospital centre CHU Ignace Deen. **Material and methods:** This was a prospective, descriptive cohort of 06 months' duration (June to December 2023) monitored in the general surgery department of university hospital centre (CHU) Ignace Deen. All patients operated on for hernias with placement of a drill bit who agreed to answer our questions were included in the study. The variables were sociodemographic, clinical, therapeutic and evolutionary. **Results:** We included 120 patients, representing 57.4% of all surgical procedures. The mean age was 58.1 ± 16.1 years, with extremes ranging from 20 to 91 years. The 60 to 69 age group was most affected (25.8%). The sex ratio was 3.2 in favor of men. The site of the hernias was dominated by the inguinal region (93%). The Liechtenstein technique was used for all patients. Only one type of mesh was used, polypropylene. Mean operating time was 89.9 ± 28 min. The average cost of treatment was $3,308,333.3 \pm 56,9594.3$ Guinean francs (GF). Pain was noted in 12 patients (10%), recurrence in 3 (2.5%) and delayed healing in 5 (4.2%). Average hospital stay was 1.8 ± 1.1 days. **Conclusion:** The results of our study show that the use of the wick in hernia repair is highly beneficial for the patient, as the post-operative outcome was favorable in the majority of cases.

Keywords

Cost, Results, Prostheses, Cure, Hernias, Ignace Deen

1. Introduction

Hernia is one of the most frequent pathologies in general surgery, particularly in Africa, where it affects around 4.6% of the population [1]. It may be the result of repeated exertion,

heavy lifting, obesity, chronic coughing or constipation [2].

Numerous repair techniques have been described to date, but tension-free prosthetic repairs are widely used today due

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to their low recurrence rate, which varies around 1% [3].

The use of wicks in the management of hernias has now become the Gold standard [4]. They are a medical device whose purpose is to surgically replace an organ that has been wholly or partially removed, or to conceal a deformity [5].

However, the cost of wicks is a limitation of these techniques in developing countries.

The need to use wicks and to assess their cost motivated the choice of this study, the aim of which was to evaluate the cost and results of using wicks in hernia repairs in the general surgery department of CHU Ignace Deen.

2. Material and Methods

This was a prospective, descriptive cohort of 06 months' duration (June to December 2023) carried out in the general surgery department of the Ignace Deen University Hospital. All patients operated on for hernias with the placement of a drill bit who agreed to take part in our questionnaires were included in the study. The variables were sociodemographic, clinical, therapeutic and evolutionary.

3. Results

During the course of the study, we included 120 patients, representing 57.4% of all surgical procedures. The mean age was 58.1 ± 16.1 years, with extremes ranging from 20 to 91 years. The 60 to 69 age group was the most involved (25.8%), with the other age groups shown in Table 1. The sex ratio was 3.2 in favor of men (76.67%). Over a third of patients lived in urban areas (72.5%). Sixty-one (50.8%) had no schooling, 27 (22.5%) were university graduates, twenty patients had secondary education (16.7%) and twelve had primary education (10%). Married people were more numerous in 96 cases (80%), followed by bachelors in 20 cases (16.67%) and widowers in 4 cases (3.33%). Patients doing heavy labor were most numerous in 78 cases (65%), followed by civil servants in 24 cases (20%), housewives in 12 cases (10%) and pupils and students in 4 cases (3.3%).

Care-related expenses were paid by the family in 57 cases (47.5%), the patient in 48 cases (40%), the company in 13 cases (10.83%), and only two patients were insured (1.67%).

The average consultation time was 19.4 ± 35.1 months, with extremes of 1 month and 240 months. Fifty-one patients consulted before the 10th month and four patients consulted after 5 years.

Swelling was the main reason for consultation in all patients, followed by cessation of feces and gas in 12 cases (10%) and vomiting in 6 cases (5%).

Thirty-three patients had previously undergone surgery, twenty had chronic constipation, fifteen had chronic bronchitis, seven had dysuria, and three each were obese or sedentary. Twenty-four patients were hypertensive.

Hernias were reducible in 96 cases (80%) and strangulated

in 24 cases (20%). Inguinal location was predominant in 112 cases (93%), followed by linea alba in 5 cases (4.17%) and umbilical in 3 cases (2.5%). Ultrasound was performed in 36 patients, unprepared abdominal radiography in 5 and abdominal CT scan in 3. General anesthesia was used in 55 patients (45.8%), spinal anesthesia in 39 (32.5%) and local anesthesia in 26 (21.67%). The Liechtenstein technique was used in all patients. Only one type of wick was used, polypropylene (100%). Mean operating time was 89.9 ± 28 min, with extremes of 45 min and 175 min. Paracetamol was used in 109 patients (90.83%) and paracetamol combined with paracetamol in 11 patients (9.67%). One hundred and five patients (87.5%) took analgesics for 3 to 7 days.

The average duration of antibiotic treatment was 6.2 days ± 1.7 , with extremes of 3 days and 14 days. One hundred and twelve patients took antibiotics for less than 7 days. Post-operative management was straightforward in 97.5% of cases. Complications included pain in 12 patients (10%), recurrence in 3 (2.5%) and delayed healing in 5 (4.2%). Average hospital stay was 1.8 ± 1.1 days. The average total cost of care was 3,308,333.3 FG ± 569594.3 , with extremes of 1680000 FG and 4990000 FG. Ninety-five percent of patients were satisfied with the quality of care.

4. Discussion

Out of a total of 770 patients operated on in the surgical department of the Ignace Deen National Hospital, 209 underwent hernia surgery during the study period, with drill placement performed in 120 of them, i.e. a proportion of 57.4%. Our result is inferior to that of Attolou SGR et al [2] in Benin in 2019, who in their study reported wick placement in all patients, i.e. 100%. The unavailability of wicks in local pharmacies and the low socioeconomic status of patients explain the low rate of use of these medical devices in our context.

This was the case for young adults in our series, as well as that of Ouédraogo S et al [6] in Burkina Faso in 2016. In the literature, the placement of wicks is indicated after 45 years of age and this is justified by the fragility of the structures with the aim of minimizing the risk of recurrence.

Male predominance is due to the work performed by men in African society to support the weight of the family, exposing them to this condition [7-9].

Swelling is the sign that often brings patients into consultation, as noted by Tamegnon D et al [8] and in our study.

The mean time to progression in our sample is comparable to that of Ndong A et al [10] in Senegal in 2023, who reported a mean time to progression of 28.2 months. Consultation in traditional medicine and self-medication explain the delay in consultation in specialized centers in the African context.

The favouring factors reported in our study were noted in varying proportions by Diarra K in Mali in 2013 [11] and Foadéy M et al [12] in Togo in 2023.

Four-fifths of patients had a simple hernia. Amougou B et

al [7] in Cameroon in 2021, who recorded 95.6% hernia and 3.2% strangulated hernia.

The predominance of inguinal location was also noted by Tamegnon D et al [13] and Koutora B et al [14].

The type of anaesthesia used in our study differed from that used by Attolou SGR et al [2] in Benin in 2019, in whom all patients underwent spinal-type locoregional anaesthesia.

The last decade has seen the introduction and/or development of tension-free hernia repair techniques, such as the laparoscopic approach or the Lichtenstein operation, unquestionably improving the postoperative course and patients' quality of life.

At the same time, significant progress has been made in terms of wick structure, composition and shape.

Only one type of drill bit, polypropylene, was used in all our patients. Zar éC et al [9] in Burkina Faso in 2017 also used polypropylene wicks, which were placed in a retro-muscular prefascial position after detaching the posterior muscular fascia from the broad abdominal muscles.

Placement of these wicks resulted in a satisfactory healing rate, as in the study by Attolou SGR et al [2].

Complications have been noted by some authors [2, 7], as in our case. They were dominated by postoperative pain.

In our study, the average length of hospital stay was close to that reported by Ou étraogo S et al [6], who found an average postoperative hospital stay of 2 days.

The unavailability of this medical device in local pharmacies explains its high cost in our context.

5. Conclusion

The results of our study show that the use of a prosthesis in hernia repair is highly beneficial for the patient.

Post-operative evolution was favorable in the majority of cases.

However, the cost remains high, taking into account the guaranteed interprofessional minimum wage (SMIG) of 440,000Fg. A study including the costs of the paraclinical work-up is necessary for a more global assessment.

Table 1. Patient distribution by age group.

Age bracket (years)	Number	Percentage
20 – 29	5	4,2
30 – 39	13	10,8
40 – 49	16	13,3
50 – 59	20	16,7
60 – 69	31	25,8
70 – 79	23	19,2
80 – 89	10	8,3
Over 89	2	1,7
Total	120	100

Abbreviations

CHU University Hospital Centre
GF Guinean Francs

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Kingsnorth A, LeBlanc K. Inguinal and incisional hernias. *Lancet* 2003; 362: 1561-71.
[https://doi.org/10.1016/S0140-6736\(03\)14746-0](https://doi.org/10.1016/S0140-6736(03)14746-0)
- [2] Attolou SGR, Gandji WE, Souaibou YI, Komandan S, Gnanon F, Natta H, et al. Results of inguinal hernia cures by prosthesis at the Ouidah zone hospital of Benin. *SBC-BENI* 2019; 30: 99-103.
- [3] Marre P, Damas JM, Penchet A, P édissier EP. Traitement de la hernie inguinale de l'adulte: résultats des réparations sans tension. Communication présentée à l'Académie nationale de chirurgie au cours de la séance du 5 juin. *Ann chir* 2001; 126: 644-8.

- [4] Dalibert L, Goffette J. What is a prosthesis? Concepts and uses. HAL 2020; 222: 10-7.
<https://doi.org/10.6092/issn.2038-3460/17607>
- [5] Kokotovic D, Bisgaard T, Helgstrand F. Long-term Recurrence and Complications Associated With Elective Incisional Hernia Repair. JAMA 2016; 316: 1575-82.
<https://doi.org/10.1001/jama.2016.15217>
- [6] Ouedraogo S, Sanou A, Zida A, Traore SS. Results of inguinal hernia repair using the Desarda technique in Burkina Faso. AJOL 2014; 8: 15-8.
- [7] Amougou B, Cisse D, Ngandeu M, Engbang JP, Djoufang R, Beyeme T, et al. Article Original Les Hernies Inguinales de l'Adulte à l'Hôpital Central de Niéte: Aspects Épidémiologiques et Anatomocliniques, Health Sci. Dis2021; 22(7): 107-11. <https://doi.org/10.5281/hsd.v22i7.2703>
- [8] Tamegnon D, Kokou KK, Iroukora K, Olivier AE-G, Komlan A, David DE. Prise En Charge Des Hernies De L'aine Au Chu-Kara (Togo). ESJ 2021; 17: 256-256.
<https://doi.org/10.19044/esj.2021.v17n21p256>
- [9] Zaré C, Sèkou T, Edgard O, Belemlilga H, Maurice Z, Ibrahim T. Traitement Chirurgical Des Eventrations Abdominales Avec Pose De Prothese: Experience A Court Terme Du Chu Yalgado Ouedraogo. ESJ 2017; 13(36): 424-31.
<https://doi.org/10.19044/esj.2017.v13n36p424>
- [10] Ndong A, Sine B, Faye M, Diallo AC, Bagayogo NA, Ndiaye M, et al. Diagnostic, therapeutic and evolutionary particularities of inguinal hernias in subjects over 60 years of age. PAMJ - Clinical Medicine 2020; 2 (157): 1-6.
<https://doi.org/10.11604/pamj-cm.2020.2.159.22322>
- [11] Diarra K. Use of the parietal prosthesis in the cure of inguinal hernia in open surgery. PAMJ 2013; 6: 2-7.
- [12] Tamegnon D, Kouliwa Kokou K, Olivier AE-G, Iroukora K, Komlan A, Ekoué David D. Prise En Charge Des Hernies De L'aine Au Chu-Kara (Togo). ESJ 2021; 17(21): 256-64.
<https://doi.org/10.19044/esj.2021.v17n21p256>
- [13] Koutora B, Alassani F, Amouzou E-G, Sakiye A, Geraldo RF, Tchangaï BK, et al. Prise en Charge des Hernies de l'aine: Expérience d'un Hôpital Confessionnel en Zone Rurale au Togo. ESJ 2019; 15: 191-191.
<https://doi.org/10.19044/esj.2019.v15n18p191>