

Strangulated Inguinal Hernia Epidemiological and Therapeutic Aspects at the Prefecture Hospital of Siguiri

Camara Soriba Naby¹, Huseine Fofana², Camara Alpha Kabinet³, Balde Abdoulaye Korse⁴
Soumaoro Labile Togba², Balde Oumar Taibata⁴, Toure Aboubacar², Diallo Aïssatou Taran² Diallo Biro⁴

¹Department of Visceral Surgery Friendship Hospital Sino Guinean of Kipe, Gamal Abdel Nasser University of Conakry, Conakry, Guinea.

²Department of General Surgery, Ignace Denn National Hospital Gamal Abdel Nasser University of Conakry, Conakry, Guinea.

³Department of Thoracic Surgery, Donka National Hospital Gamal Abdel Nasser University of Conakry, Conakry, Guinea.

⁴Department of Visceral Surgery, Donka National Hospital Gamal Abdel Nasser University of Conakry, Conakry, Guinea.

***Corresponding Author:** Camara Soriba Naby, Department of Visceral Surgery Friendship Hospital Sino Guinean of Kipe, Gamal Abdel Nasser University of Conakry, Conakry, Guinea.

Abstract

This study aimed to determine the clinical and therapeutic aspects of strangulated hernias in the Siguiri region of the Republic of Guinea

The strangulation of the inguinal hernia constitutes a diagnostic and therapeutic emergency, the delay in surgical intervention jeopardizes the vital prognosis of the strangulated organ and also that of the patient during its evolution.

Methodology: *We had carried out a retrospective study over a period of 2 years from October 1, 2017, to September 31, 2019, inclusive.*

All patients admitted and operated on for hernial strangulation during the study period were included. Patients operated on for other pathologies were excluded from the study.

Results: *During the study period 71 patient (7.88%) were operated for hernial constriction. All of our patients were men.*

78% of our patients came from rural areas while the 21.13% in urban areas. Depending on the location, hernial constrictions occurred in 53 patients, i.e., 76.65 percent on the right while on the left, it was observed that in 18 patients, or 23.35 percent.

In our series, we used the Bassini technique in 65 patients or 91.55 percent and the Mac Vay technique in 6 patients or 8.45 percent.

According to the treatment of the contents of the hernial sac, no resection was carried out in 36 patients or 50.70 percent, appendectomy in 27 patients or 38.03 percent, resection of terminal ileal terminal anastomosis in 7 patients or 9.86 percent, and resection of Merkel's diverticulum in 1 patient or 1.41 percent.

The average length of hospital stay was five days 8 hours, with extremes of 18 hours and 25 days.

The postoperative follow-up was simple in 66 patients or 92.96 percent and complicated by the abscess of the wall in 3 patients and scrotal hematoma in 2 patients.

We did not record any deaths during our study.

Conclusion: *Hernial constrictions represent an emergency whose management is essentially surgical*

Keywords: *Hernia, strangled, frequency, management, hospital, Siguiri.*

INTRODUCTION

The inguinal hernia (HI) is the second most common digestive surgical pathology after appendicitis. It is defined as a hernia that emanates from the inguinal canal above the crural arch [1; 2].

The strangulated inguinal hernia (HIE) is its main complication; it is consecutive to the incarceration of its contents. It is, therefore, irreducible, and its evolution can lead to intestinal obstruction, a vascular disorder; secondary ischemia; necrosis of the hernial content; gangrene [3].

The strangulation of the inguinal hernia constitutes a diagnostic and therapeutic emergency, the delay in surgical intervention jeopardizes the vital prognosis of the strangulated organ and also that of the patient during its evolution [4].

An inguinal hernia is a mild and very common condition. In fact, more than 20 million patients are operated worldwide, with 0.2% throttling per year. [5].

This complication is the cause of suffering, incapacity for work, surgical costs, occupation of hospital beds, and often fatal outcomes [6].

Almost 95% of hernias in the groin are inguinal hernias which mainly affect the male subject between 20 and 60 years of age. They represent 10% of digestive surgery interventions [7].

- In the United States of America, the US Census Bureau estimates that 500,000 inguinal hernia treatments are performed each year with a rate of 28 cases per 100,000 inhabitants [8; 9].

- In England, according to Jorge Barreiro, strangulated inguinal hernias represented 5% of surgical emergencies at the University Hospital of London with estimated morbidity of 10% and post-operative mortality of 3.96% in 2007. [10].

- In France, the frequency of strangulated inguinal hernia reported by the French Association of Surgery is 8 to 15% [11].

- In Switzerland, with more than 25,000 operations per year, inguinal hernia repair (HI) is the most frequent operation in visceral surgery. The cumulative incidence over a lifetime is between 27 and 43% in men, and 3 and 6% in women, there is a low risk of strangulation of 5%. [12].

In some regions of Africa, hernia is still considered a shameful disease, which hinders early consultation and elective treatment of this condition. When strangulation occurs, accessibility to emergency services and care depends on many contingencies, in particular socio-cultural, geographic, and pecuniary. All this suggests a late consultation, preferential use of Raphia methods, high morbidity, and mortality [13].

- In Morocco in a study at the Meknes hospital, according to **Fatima Zahra**, HIEs represented 11.6% of all HIs admitted with 17.1% occlusive syndrome, 12.2% intestinal resection, and a mortality rate of 1.7%. [4].

LEBEAU R. et al. reported in Abidjan out of 200 cases of strangulated inguinal hernia 24% involved intestinal resection with 21.5% of postoperative complications and a mortality of 1.5% [14].

- In Kumasi, according to **M Ohene-Yeboah**, the strangulation reached inguinal hernias in 71.7% of cases on other hernias in his study [15].

- In Brazzaville, Mieret JC et al., in a 7-year hike study on an inguinal hernia in children, found 25.2% of cases of strangulation. The small intestine was the main organ found in the hernial sac with 53%, and intestinal necrosis was noted in 8.2% of the cases [16].

- In Mali, according to Ali Y. Maïga, the strangulated inguinal hernia represented 13.2% of surgical emergencies, and 30.3% of all the inguinal hernias operated on. Intestinal resection was performed in 8.4% of the cases. The abscess of the wall represented 3.3% of the cases, and the scrotal hematoma 1, 7% of the cases [17].

METHODOLOGY

Types and Period of Study

It was a descriptive retrospective study of two years duration, from October 1, 2017, to September 30, 2019.

Target Population

Our target population consisted of all the files of patients admitted for abdominal intervention in the general surgery department during the study period.

Study Population

Our study population consisted of all the files of patients admitted and operated on for the inguinal

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hernia strangled in the general surgery department during the study period.

Selection Criteria

Inclusion Criteria: We included in our study the records of all patients of all ages, from all sources, admitted to the general surgery department, and operated on for a strangulated inguinal hernia.

Exclusion Criteria: We excluded from our study, the records of any patient received in the general surgery

department and operated on for all non-inguinal hernias, non-strangulated inguinal hernias, and other inguinal swellings, as well as altered inguinal hernia case, files strangled operated during the study period.

Study Variables

We distributed our study variables in,

Epidemiological variables, progressive therapeutic paraclinical clinics.

Table1. Frequency of strangulated hernias compared to other surgical pathologies

Surgical pathologies	Effective	Frequency
Acute appendicitis	260	32.91%
Simple inguinal hernia	235	29.75%
Peritonitis	89	11.27%
Hernia choked inguinal	71	8.99%
Hydrocele	43	5.44%
Simple bowel obstruction	38	4.81%
Umbilical hernia	32	4.05%
Abdominal trauma	22	2.78%
Total	790	100%

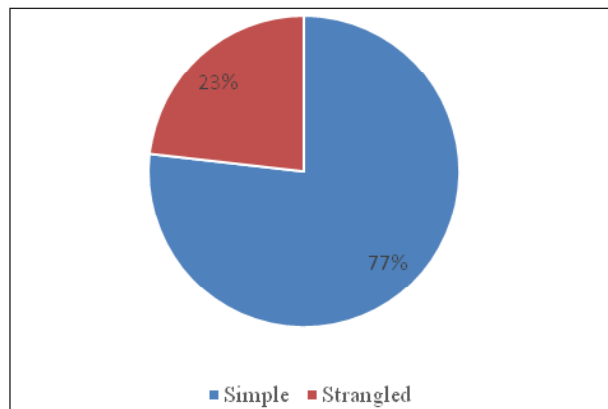


Figure1. Frequency of strangulated hernias compared to simple hernias

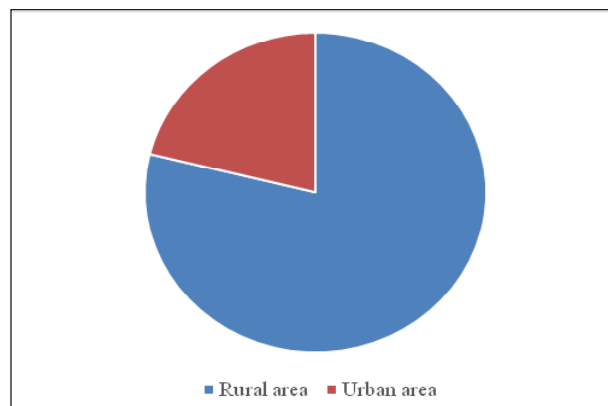


Figure2. distribution of patients in the area of origin

Table2. Distribution of patients according to the evolution of the simple hernia

Evolution of hernial disease (year)	Effective	Frequency
<1	18	25.35%
1 - 5	41	57.75%
> 5	12	16.90%
Total	71	100.0%

Average: 39 months, Extremes: 5 months and 132 months

Table3. Distribution of patients according to the duration of the strangulation

Duration of the strangulation (hours)	Effective	Frequency
0 - 24	56	78.87%
24 - 48	11	15.49%
> 48	4	5.63%
Total	71	100.0%

Average: 27 hours 4 minutes Extremes: 3 hours and 360 hours

Table4. Distribution of patients according to the reasons for consultation

Reason for consultation	Effective	Frequency
Inguinocrotal pain	27	38.03%
Isolated inguinal pain	20	28.17%
Isolated inguinal pain + Occlusive syndrome	15	21.13%
Inguinoscrotal pain + Occlusive syndrome	9	12.67%
Total	71	100.0%

Depending on the location, hernial constrictions occurred in 53 patients, ie 76.65 percent on the right while on the left, it was observed that in 18 patients, or 23.35 percent.

Table5. Distribution of patients according to the strangulated organ

Bag contents	Effective	Frequency
Hail handles	49	69.01%
Epiploon	17	23.95%
Appendix	4	5.63%
Appendix and cecum	1	1.41%
Total	71	100.0%

In our series, we used the Bassini technique in 65 patients or 91.55 percent and the Mac Vay technique in 6 patients or 8.45 percent.

According to the treatment of the contents of the hernial sac, no resection was performed in 36 patients or 50.70 percent, appendectomy in 27 patients or 38.03 percent, resection of terminal ilealilealileal anastomosis in 7 patients or 9.86 percent, and

resection of Merkel's diverticulum in 1 patient or 1.41 percent.

The average length of hospital stay was 5 days 8 hours with extremes of 18 hours and 25 days.

The postoperative follow-up was simple in 66 patients or 92.96 percent and complicated by the abscess of the wall in 3 patients and scrotal hematoma in 2 patients.

We did not record any deaths during our study.

DISCUSSION

Frequency

Our work consisted in carrying out a retrospective study on 71 cases of strangulated inguinal hernias collected in the surgery department of the PHS over a period of 2 years (2017-2019). Among the files of 790 patients operated on for non-traumatic abdominal surgical pathologies:

We found the simple inguinal hernia in second place with 29.75% after appendicitis which represented 32.91% of the cases.

HIE represented 8.99% of all these pathologies, and 23.20% of HIS.

This frequency is at least high because the strangulation of HI is a surgical emergency that can compromise the patient's life prognosis.

Our result is similar to that of Sagara Abdoulaye [20] in Kayes in Mali, who reported HIE as the second most common abdominal surgical pathology with a frequency close to 20.23%.

Our data is also close to that found by **BARRY Thierno Illah [19]** at Matam CMC which are 6.37% HIE compared to all abdominal surgical procedures and 19.15% compared to simple inguinal hernias.

The high frequency of HIE in our result compared could be explained by the negligence of patients to consult immediately on the occurrence of HI in health facilities. In our opinion, the evolution of HI cases towards strangulation is due to the delay in consultation, the causes of which are socioeconomic.

Age

The HIE had reached subjects of all ages in our study, so we observed a predominance of the group of 31 to 40 years, a frequency of 22.54% and an average of 37 years, between 1 and 71 years inclusive.

This result indicates a significant incidence of the strangulated inguinal hernia on the young subjects in our study, this reality could be explained by the increased physical activity at the level of this layer.

Other studies had revealed the affection of the young subject by HIE in sub-Saharan Africa which is the case of Y. Harouna et al [21] in Niamey where 80% of the population was less than 45 years old, and the average age was 32 years.

Sex

Almost all of the patients in our study were male. The absence of the female sex in this study would be due to their morphology characterized by the absence of the inguinal canal which is the route of progression of the hernial content.

In Brazzaville, an identical result was reported by Mieret JC et al [16] in their study. The classic male predominance in their study would be closely linked to the pelvic-abdominal morphological variations and the absence of a bulky cord in the female inguinal path.

The Source

The majority of patients in our study came from rural areas with a frequency of 78.87%. The HPS which is our framework of study constitutes the reference of rural health structures which do not intervene in cases of HIE. The rural population in addition to its remoteness, socioeconomic considerations and ignorance of the risk of strangulation, it is more constrained to activities requiring physical effort than the urban population.

This reality is approved by the study by M. Qoreichi and Col [22] which confirmed the same high proportions of rural patients with a frequency close to 77%.

Socio-Professional Categories

Most of our population was employed in peasant activities, more than half were artisanal gold miners with 53.52%, followed by cultivators 18.31% and only 7.04% of intellectuals. As indicated above, the occupation of rural populations in Siguiri is very dominated by gold panning and agriculture.

Our result is corroborated by the study by Drissa Traoré et al [23] which revealed the predominance of physical activities requiring effort, ie 51.1%, intellectuals represented only 21.3%.

The Risk Factors

The notion of effort, chronic constipation and cough were the risk factors most encountered in our study with respective proportions of 95.77%, 77.46% and 63.38%. These risk factors would have favored the occurrence of inguinal hernia in our patients especially its complication towards strangulation, they result in the sudden increase in intra-abdominal pressure resulting in the weakening of the natural barriers of the inguinal canal.

In addition, other studies have revealed the same reasons as in Abidjan such as R. Lebeau and Col [13] reported the concept of effort in 61.54% of the cases having favored strangulation.

Medico-Surgical History

The medical history encountered in our patients was dominated by chronic constipation and chronic cough (77.46% and 63.38% respectively). The surgical history included appendectomy and hernioraphy and laparotomy in the proportions of 53.52%, 21.13% and 2.82%, respectively. It is our opinion that this history has direct or indirect effects on the occurrence of hernial strangulation because of their impact on the anatomy of the inguinal canal of the patient.

The surgical history was dominated by hernioraphy with 23.9% in the study of Moussa ditLadji DAO [24] in Mali.

The Evolution of Simple Hernia.

In our study, the evolution from simple hernia to strangulation lasted on average 3 years, with extremes of 5 months and 11 years. More than half of the patients (57.75%) consulted in the period of one to five years from the onset of simple inguinal hernia. This development period is excessive and could be the cause of the occurrence of complications.

In addition, the evolution from simple hernia to strangulation was characterized by a frequency close to 46.8% for the age group of 1 to 10 years in the study by M. Qoreichi and Col [22].

The Duration of the Strangulation

Most of the patients consulted within the first 24 hours of the occurrence of strangulation with a frequency of 78.87%, the average was 27 hours and the extremes 3 hours and 15 days. The promptness of patients to consult following the strangulation of the inguinal hernia is explained by the excruciating pain and the fear of dying. Despite this reality, 4 people (5.63%) consulted after 48 hours which could be explained by the distance.

In Abidjan, such as R. Lebeau et Col [13] reported in its study a frequency of 65.03% of patients who consulted less than 2 days after the onset of signs of strangulation and average consultation time of 2 days (extremes of 4 h and 7 days). This result is in the same proportion as our data and reveals the readiness of patients to consult when HIE occurs.

The Functional and Physical Signs Observed

The functional and physical signs were characterized on the one hand by pain in 100% of the cases and nausea and vomiting for 91.55%, and on the other hand by the painful inguinal or inguino-scrotal swelling painful and irreducible with 87, 32%. These signs constitute the first directive to guide the diagnosis of HIE, they are the result of clinical examination of patients.

In addition ZAHRA IF [4] reported in its study in Morocco the same proportion of pain at 100% including 58.50% inguinal, 39% inguino-scrotal and 2.4% generalized. Vomiting was secondary with 41.50% of cases. Painful, irreducible swelling was observed in all of his patients.

Reasons for Consultation

The consultation following the strangulation of the inguinal hernia in our study was motivated by pain in the groin in all cases. Specifically, inguinoscrotal pain was greater with 38.03% of patients, followed by isolated inguinal pain 28.7% and isolated inguinal pain linked to occlusive syndrome 21.13%.

Our result is corroborated by the study by Sagara [20] in Mali who reported isolated inguinal pain as the main reason for consultation with a frequency of 92.3% followed by occlusive syndrome with 7.7%.

The Topographic Variety of the HIE

The HIE was found by its seat in 76.65% of cases located in the right inguinal canal and 23.35% in the left inguinal canal. However, we did not encounter bilateral inguinal hernia.

The preponderance of HIE in the right groin seat could be explained by the orientation of the physical effort exerted by the right members of the body of our patients since most of the people are right-handed.

Other studies have approached in the same direction with similar results. In Morocco Mr. Haouat Mohammed Amin [6] reported in his study 70.40% of HIE in the right seat of the groin.

The Type of Anesthesia Used

Given the importance and duration of the intervention, most of the patients, 92.96%, benefited from general anesthesia. A similar proportion of 76.50% of general anesthesia was reported in the study by M. Haouat Mohammed Amin in Morocco [6].

The Strangled Organ

The content of the hernial sac was in most cases made up of small handles, ie 69.01%, followed by the omentum 23.95%.

A similar result of 57.50% of small content followed by the omentum with 12.50% of cases was reported by M. Qoreichi and Col [22] in his study in Morocco.

The State of the Strangled Organ

The organ contained in the hernial sac was necrotic in 8 patients or 11.27% of the cases and the rest were healthy. Tissue necrosis is the result of ischemia caused by the throttling mechanism, it is the worst prognosis because it requires resection of the organ. It is caused by the delay in treatment.

According to the study by **PrFaouzi CHEBBI and Col [25]** in Tunisia, in the presence of a strangulated hernia, the contents of the hernial sac were necrotic in only 7.4% of cases. This close result attests to the delay in consulting patients.

The Operating Technique Used

The operative technique most used in our study was Bassini, it was recommended in 91.55% of patients. The Mack V technique was only applied in 6 people, ie 8.45%. The choice of the indicated surgical technique depends on the intimate conviction of the doctor in relation to his necessity but also on the training of this last.

In Dakar I. Konaté et al. [26] reported a similar result in their study, with 79.2% of the Bassini technique and 14.8% of that of Mac Vay. This close result attests to the unanimous choice of the Bassi technique in the surgical intervention of strangulated or simple inguinal hernias.

Processing the Contents of the Hernial Sac

The treatment required the most of the appendectomy with a frequency of 38.03% followed by the resection plus ileo-ileal anastomosis end to end in 7 patients or 9.86% and one case of Meckel's Diverticular resection with 1, 41%.

The choice of surgical procedure is the consequence of the extent of the strangulation of the inguinal hernia, the healthier the content, the less demanding the procedure. The frequency of appendectomy was the most preventive to avoid a subsequent appendectomy.

In Mali Ali YM [17] reported in his study 8.4% resection plus ileo-ileal end-to-end anastomosis and 3.3% appendectomy.

Duration of Hospitalization

In our study, the average length of hospital stay was 5 days with extremes of 18 hours and 25 days. 77.46% of the patients had left in the first week of the intervention. Only 5 patients or 7.04% had spent more than two weeks.

The length of hospital stay was one of the indicators of the quality of patient care considered good in our opinion because of the rate of discharge in the first week.

An average close to 3.5 days was found by I. Konaté et al [26] for patients operated on for a complicated inguinal hernia with extremes of 1 and 21 days.

Post-operative suites

In this study we have stratified the post-operative suites into two categories which are:

Immediate Consequences: This is the conclusion of the observation of the patient before his discharge from the hospital. They were considered simple without sequelae in 92.96% of the cases. Only the 5 people or 7.04% had complications including 3 cases of wall abscess and 2 cases of scrotal hematoma. As a result, we have seen no deaths.

Suites After 6 Months: It is the reappearance of complications or late genes observed during the consultation of patients after 6 months of their intervention. They concerned only 6 people and included 5 cases of pain and one case of delayed healing.

These cases of post-operative complications were taken care of and cured definitively. However we can conclude on a 100% cure rate.

In Togo KA Sakiye et Col [27] reported post-operative complications in 3.65% of the patients in his study. These complications were dominated by parietal suppuration, hematoma of the bursa and peritonitis. Most of the complications were infection of the operating wound.

In the long-term development, 18.75% of postoperative cluster headache towards the groin following significant physical effort was noted in the study by O. BERROHO [28] in Rabat.

REFERENCES

- [1] Strangulated inguinal hernia complicated by testicular ischemia due to permeability of peritoneo-vaginal canal. 2017; 6: 2.
- [2] Faure JP, Carretier M, Richer J P. How does an abdominal hernia form? The practitioner's review. 2003; 53 (15): 1649: 1634.
- [3] **Christelle KEMBENG TSAYEM.** Causes of late management of inguinal hernias: case of the surgery department of the general hospital of Bertoua. Nursing schools - Nurse level 3 2013.
- [4] ZAHRAIF. Strangulated inguinal hernias in adults. Thesis for obtaining a doctorate in medicine. Sidi Mohammed Ben Abdellah University Faculty of Medicine and Pharmacy Meknes. Kingdom of Morocco. Year 2018.
- [5] **Article written by Arnaud Douville from franssu:** inguinal hernia and surgical management. www.kinesport.info/Hernie-inguinale-et-prise-en-charge-chirurgicale_a2875.html.
- [6] **Mr. Haouat Mohammed Amin.** Strangulated inguinal hernias in adults (About 81 cases). Sidi Mohammed Ben Abdellah University Faculty of Medicine and Pharmacy Fez. Kingdom of Morocco. *Thesis for obtaining a doctorate in medicine Year 2012.*
- [7] Ananian P, Barrau K, Balandraud P, Le Treut Y P. Surgical treatment of inguinal hernias in adults: clinical, functional and economic challenges of surgical practices. *J Chir.* 2006; 143 (2): 76-83.
- [8] **US census office,** population estimate, 2004. Statistics by country for inguinal hernia.
- [9] **Henri Vuilleumier, Dritan Abrazhda, Martin Hübner, Nicolas Demartines, Antonio Foletti.** Algies after inguinal hernia repair: what to do? *Rev. Med Switzerland 2010; volume 6. 1288-1291*
- [10] **Jorge Barreiro.** Presentation and outcome of incarcerated external hernias in Adults. *Am J. Surg* 2007; 77 (1): 40-5
- [11] **Pessaux P, Arnaud JP.** Strangulated inguinal hernia. Monographs of the French association of surgery "Surgery of inguinal hernias of adults". Report presented at the 103rd French congress of surgery 2002; 157-65.
- [12] **Dramanielkefleyesus, near nicolasdemartines, markusschäfer and Drpierregermann.** Wall hernia surgery in 2018: development. Inguinal hernia. *Rev Med Switzerland 2018; 14: 1214-7.*
- [13] **R. Lebeau, F. Brou Assamoi Kassi, S. Kacou Yénon, B. Diané and J.-C. Kouassi.** Strangulated hernias of the groin: a surgical emergency still relevant in the tropics. *Visceral and Digestive Surgery Services, 1C.HU from Bouaké and 2C.HU from Cocody, Abidjan.*
- [14] **Lebeau R, Diané B, Koffi E, Yenon K, Kouassi JC** intestinal resection during the management of strangulated inguinal hernia in adults: predictive factors and influence on the prognosis of hernia. *General and Digestive Surgery Services - CHU de Bouaké - 01 BP 1174 Bouaké 01 - CHU de Cocody - BP V 13 Abidjan. Rev. Int. Sc. Med. Flight. 8, n ° 1, 2006, pp. 50-54 © EDUCI 2006.*
- [15] **Mr. Ohene-Yeboah.** Strangulated external hernias in Kumasi. *West African Journal of Medicine Vol. 22 (4) 2003: 310-313.*
- [16] **Mieret JC, Moyen E, Ondima I, Koutaba E, Mbutol MC, Moyen G.** Strangulated inguinal hernias in children at the Center Hospitalier et Universitaire de Brazzaville. Department of pediatric surgery. *Pediatric Intensive Care Service. Rev intsc med -RISM-2016; 18.2: 157-160. © EDUCI 2016.*

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