

Cost Of Laparoscopic Management In Digestive Surgery At Brazzaville University Hospital

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Abstract

Objective : To evaluate the cost of laparoscopic management in digestive surgery at Brazzaville University Hospital.

Patients and method : This was a descriptive study, with prospective data collection, aimed at evaluating the cost of laparoscopic management in the Digestive Surgery Department of the Brazzaville University Hospital. The study was unrolled over a 24-month period from January 2023 to December 2024 and included patients aged at least 18 years who underwent laparoscopy for a digestive pathology.

Results : 47 patients underwent laparoscopic surgery in the department during the study period. These included 36 cases of cholecystectomy, 6 cases of appendectomy, 4 cases of exploratory laparoscopy and 1 case of drainage of a right subphrenic abscess. The average age of the patients was 36.48 ± 12.35 years, ranging from 16 to 65 years. There were 31 women and 16 men. The average cost per laparoscopic procedure was : 403394.444 ± 8641.97 FCFA; 266766.66 ± 6527.77 FCFA; 280975 ± 1762.5 FCFA respectively for cholecystectomy, appendectomy and exploratory laparoscopy. The cost of drainage of the subphrenic abscess was 279800 FCFA.

Conclusion : The cost of laparoscopic surgery in Brazzaville remains high and is a barrier to wider adoption.

Keywords : Cost, laparoscopic, digestive surgery, Brazzaville

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I. Introduction

Laparoscopic surgery, an increasingly preferred method in digestive surgery, can be used to treat a variety of pathologies, with significant advantages such as smaller scars, shorter hospitalisation and fewer complications. However, using this technique requires expensive equipment, specialised consumables and specific surgical expertise, all of which add up to significant costs, especially in resource-limited settings.

In Africa, some authors [1, 2, 3] have reported on the costs of cholecystectomy, appendectomy and laparoscopic surgery.

In the Congo, no work has been done on this subject. Health infrastructures and financial resources often remain insufficient for optimal health coverage, and it is essential to understand the economic impact of laparoscopy on the health system. We therefore proposed to carry out this study with the aim of evaluating the cost of laparoscopic management in digestive surgery at Brazzaville University Hospital.

II. Patients And Method

This was a descriptive study, with prospective data collection, aimed at the economic evaluation of laparoscopic management in the Digestive Surgery Department of the Brazzaville University Hospital. The study was unrolled over a 24-month period from ¹January 2023 to 31 December 2024 and included patients aged at least 18 years who had undergone laparoscopy for digestive pathology.

The economic evaluation consisted of determining the costs associated with consultation and hospitalisation fees, the purchase of drugs and consumables specific to laparoscopic surgery, paraclinical check-ups and surgical procedures. These direct costs were evaluated in francs of the Communauté Financière Africaine (CFA) and in US dollars (USD).

Patient's socio-demographic data were collected using a survey form.

The information was then entered and analysed using Microsoft Excel 2016.

III. Results

Epidemiological, therapeutic and developmental aspects

During the study period, 964 patients were admitted to the department. 47 patients underwent laparoscopic surgery.

There were 36 cases of cholecystectomy, 6 cases of appendectomy, 4 cases of exploratory laparoscopy and 1 case of drainage of a right subphrenic abscess.

The average age of the patients was 36.48 ± 12.35 years, with extremes ranging from 16 to 65 years.

There were 31 women and 16 men.

Post-operative management was straightforward in our patients.

The average hospital stay was 36 hours for cholecystectomy (24-48 hours), 24 hours for appendectomy and exploratory laparoscopy, and 96 hours for drainage of the liver abscess.

The average hospital stay for laparoscopic surgery in digestive surgery is 45 hours.

Direct cost of care

Cost of hospitalisation

The cost of hospitalisation in the surgical department is CFAP 15,000 per day for a single room and CFAP 5,000 per day for a multi-bedded room.

The average cost of hospitalisation was 5851.06 ± 1557.26 FCFA.

Cost of pre-operative assessment

The pre-operative check-up includes: blood count, blood sugar, renal function (urea creatinemia), haemostasis (PT, TCK) and in some cases a chest X-ray and ECG.

The average cost of the preoperative check-up was 34000 ± 5500 FCFA, with extremes ranging from 23000 to 40500 FCFA.

Cost of surgery

The cost of surgery includes the operation, consultation costs, surgical and anaesthetic prescriptions and laparoscopic consumables.

Table 1: Summary of the cost of surgery by procedure

	Cholecystectomy	Appendectomy	Exploratory laparoscopy	Subphrenic abscess
Consultations	10000	10000	10000	10000
Surgical prescription	58800	69200	58800	63800
Anaesthetic prescription	79150	79150	85300	92000
Laparoscopy consumables	185000	50000	50000	50000
Surgical procedure	36000	22500	36000	36000
Total	368950	230850	240100	251800

The average cost per laparoscopic procedure is

- Cholecystectomy: 403394.444 ± 8641.97 FCFA

- Appendectomy: 266766.66 ± 6527.77 FCFA

- Exploratory laparoscopy: 280975 ± 1762.5 FCFA

The cost of drainage of a subphrenic abscess is 279800 FCFA.

IV. Discussion

1. Epidemiological, therapeutic and evolutionary aspects

Laparoscopic surgery remains an uncommon practice at Brazzaville University Hospital, accounting for only 4.9% of surgical procedures performed during the study period. This low frequency can be explained by several factors: lack of suitable equipment, high cost of consumables, limited staff training, and limited financial access for patients. Similar or slightly higher rates have been observed in other African countries [4, 5, 6], underlining that the introduction of laparoscopy remains a major structural and economic challenge for healthcare systems.

As in other countries in the sub-region, laparoscopic cholecystectomy is the most frequent indication (76.6%), which is in line with international practice, where it has become the gold standard for the management of uncomplicated gallbladder disease. Appendectomy and exploratory laparoscopy come in second place. Laparoscopic surgery for drainage of subphrenic abscesses, although more technical, shows a desire to extend the indications in complex cases.

The average age of our patients (36.5 years) is lower than that of other African authors [7, 8], and the predominance of women (sex ratio 1.9) can be explained by the higher frequency of bladder disease in women of childbearing age.

The simple post-operative course observed in all patients clearly illustrates the recognised clinical advantages of minimally invasive surgery: reduced post-operative pain, rapid return to activity, reduced risk of infection, and reduced parietal complications. G. Bonkougou in Burkina Faso and Haithem Zaafour in Tunisia also reported simple post-operative follow-up in their series [1, 9].

The average hospital stay (45 hours) is significantly shorter than that generally observed for conventional surgery (often 3 to 7 days for open cholecystectomy or appendectomy). These data confirm the favourable impact of laparoscopy on the length of hospital stay.

Cost of care

The average cost of hospitalisation (5851 FCFA) and the cost of the pre-operative check-up (34000 FCFA) are moderate but not negligible in the local socio-economic context. On their own, they represent a significant financial burden for low-income households in a country where health insurance is underdeveloped.

The average total cost of a laparoscopic cholecystectomy is FCFA 40,394, or around € 600. This figure is considerably high, especially when compared with the average per capita income in the Congo, which is estimated at between USD 2,000 and USD 2,500 a year. Exploratory appendectomies and laparoscopies are also expensive, often costing in excess of CFAF 250,000. Sanogo ZZ in Mali [1] and B Tchangai in Togo [2] reported in their series costs of cholecystectomy and laparoscopic appendectomy of 114315 FCFA and 151480 FCFA respectively (West African FCFA).

The main item of expenditure is laparoscopic consumables, representing up to 45% to 50% of the total cost of the operation. This confirms observations made in several developing countries, where the lack of sterilisation or reuse of instruments and the importation of high-cost equipment weigh heavily on hospital budgets.

V. Conclusion

Laparoscopic surgery at Brazzaville University Hospital has undeniable benefits, particularly in terms of postoperative follow-up and length of hospital stay. However, the cost is still high, and this is holding back its wider adoption by patients. Organisational, economic and educational reforms are needed to make laparoscopic surgery an accessible, sustainable and equitable option in the Congolese context.

Conflicts of interest : The authors declare no conflicts of interest.

Authors' contributions : All the authors played an active part in drafting and editing the article. They have read and approved the final version of the manuscript.

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