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Retrospective Study

Impact of the Coronavirus Pandemic (Covid 19) on Surgical Practice,at the Lubumbashi "Haut-Katanga" Province Public Health Facilities, D.R. of Congo. Lessons Learnt and Perspectives

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Abstract

This article is a summary of the work presented at the Annual General Meeting, Scientific Conference of the University of Lubumbashi (UNILU) Faculty of Medicine, January 2021.

The surgical team aimed to explore the impact of the pandemic Covid-19 on their activities in view of learning from it and proposing some perspectives as the disease still continued.

For this purpose, they carried out a retrospective study to compare the two-period surgical work in term of major surgery, before the pandemic and after its beginning in Lubumbashi in March 2019, in the three major public health facilities of the capital city of the Haut-Katanga Province. The twelve month activity analyzed took in account the same parameters during the two periods: the clinical presentation of the disease (diagnostic), its revelation (emergency or elective), its causes or etiology, type of major operation done, surgical and anesthetic team and short term outcome.

As results, the analysis before Covid-19 period revealed the magnitude of major surgery causing a real burden of the surgical personnel, happening mainly as emergency conditions, almost along all the months of the year, causing management challenges due to the weakness of the teams in number and quality. During this period, all sorts of conditions underwent major surgery with predominance of surgical inflammations, surgical infections, followed by trauma, tumours and congenital malformations. After the occurrence of the pandemic and during the same length of duration, the number of the major surgeries drastically dropped in all the three popular and affordable health facilities. The authors discussed many alternatives issues minded by the fear to be contaminated by the Covid-19 outside or to be recognized as having it. This double fear, entertained by the covid-19 campaign, could have played role of many domestic surgical deaths, without respiratory component, brought to mortuary as Covid-19 cases.

The community's attention is drawn in maintaining always casualty services for both medical and surgical and in avoiding self-medication, avoiding confinement and practicing barrier prevention and voluntary vaccination.

Keywords: *Haut-Katanga; Surgical Emergency; Major Surgery; Coronavirus Pandemic; Psychology of Fear*

Introduction

Since Passagia [2], Surgery is known as the medical art aiming to cure the disease by the only use of human hands! In fact it is the ideal way to free the human body from the sickness by "extracting" it and throwing it away and not only alleviating from it or neutralizing its effects! However, illness is most the time deeply seated, explaining the upside-down way of the surgery art until real biological and bio-

technical progresses came to reveal more on the living body: its anatomy, and function, the way to fight against pain, the haemorrhage and the infection due to surgical wound. Tremendous progresses in these domains rehabilitated the surgery and have accredited it as medical art using various manual and instrumental skills on a living body, not only to "extract" the disease, but also to prevent the illness, to screen and diagnose numerous morbidities, to alleviate advanced diseases and to restore function of a consolidated human organ lesion.

"Haut-Katanga" province stands among the largest and of the high density provinces of the Democratic Republic of Congo (DRC) occupying the Austrial part of the country. Its capital city Lubumbashi is economically the second after Kinshasa and known mainly for its mines and popularly called "the second lung" of the DRC. Its population is escalating and heterogenous and counts now 4 to 5 millions people. It is also a well know city of sciences heberging the University of Lubumbshi Faculty of Medicine (UNILU FACMED) that, every academic year, updates the provincial surgical activities, during a school symposium. The UNILU FACMED held a symposium in January 2019 during which major surgery activities were analysed in the province from the precedent year.

Up to this 2019 symposium, there was no single case of Coronavirus observed neither in Lubumbshi nor in other part of the province. The first reported cases were in March 2020, followed by the fear of getting contaminated by this virus, causing desolation in Chinese, European and American countries. This double fear of being contaminated by a serious infection leading to death mainly by its respiratory complication in low income countries and fear of being potential contamination of the disease to the community was and is still emphasized by the motto "stay safe, stay home"! [1,3,4].

Study Objectives

The main objective of the study was not to compare the practice of major surgery among the three public health institutions but to explore the global levels before and after Covid-19 in view of explaining the possible impact of the pandemic on the surgical practice to the community. In specific ways, the study was aiming to determine the magnitude of the surgical practice of 12 months before Covid-19 (frequency, diagnosis, causes, circumstances, short outcomes), to evaluate the same magnitude of 12 -month period after the occurrence of the pandemic in Lubumbashi; to compare the two results in order to discuss them with regards to reported deaths and to make recommendations or perspectives.

Methods

The study was a retrospective, cross section one with some analytic aspect, including all major surgical procedures done in 2018 and 2020 in the three Lubumbashi public hospitals (CUL, HGRS and HSNCC). Variables included frequencies, diagnosis, causes, procedures, operative constraints (emergency or elective; surgical and anesthetic teams and drugs) and short post surgery outcomes. Were excluded patients whose files without requested parameters. Data were collected on pre-established questionnaires from 1st January to 31st December of each year before entering Excel sheets before statical analysis, Groups discussion were also organised.to compare the two series were in each of their variables and discuss the impact of the covid-19 campaign and motto and the way forward.

Results and Discussions

Frequencies of admission for major surgery in Lubumbashi public hospitals in 2018 and in 2020.

2018		2020	
January	55	January	63
February	62	February	45
March	66	March	48
April	51	April	27
May	61	May	43
June	41	June	27
July	73	July	31
August	70	August	15
September	61	September	14
October	65	October	21
November	62	November	27
December	53	December	18
Total	710	Total	388

Table 1: *Admission for major surgery at the Lubumbashi Public Hospitals before and after the Covid-19.*

Discussion

With regard to what had happening in 2018, far from the occurrence of the pandemic, there was a progressive drop but drastically of admissions for major surgery in 2020. Almost half less of patients to major surgery from April the beginning of pandemic in Lubumbashi in all three popular and affordable hospitals the patients used to attend. In December 2020 the attendance dropped to almost a quarter of its usual frequency.

Around the world the motto was and is the same on Social Medias, TVs, international reports, WHO measures, States' rules and measures. All health means were focused on the terrible diseases of deaths rates horrible in China, Italy, France, USA, UK! Things were expected to be worse in LMIC where these means, mainly are rare or inexistent hence more fear.

It is not false to think that among the non-respiratory related home deaths are hidden surgical deaths who feared or could no go to hospital for many reasons. This is supported by the analysis of causes and constraints of the major surgery done in the province in 2018.

Analysis of causes and constraints of major surgery in Lubumbashi in 2018

The part of surgical inflammations and infections

This shows first that the major surgery was done for surgical inflammatory and infectious diseases as well as the trauma injury of which operation could not be delayed more than 48 hours.

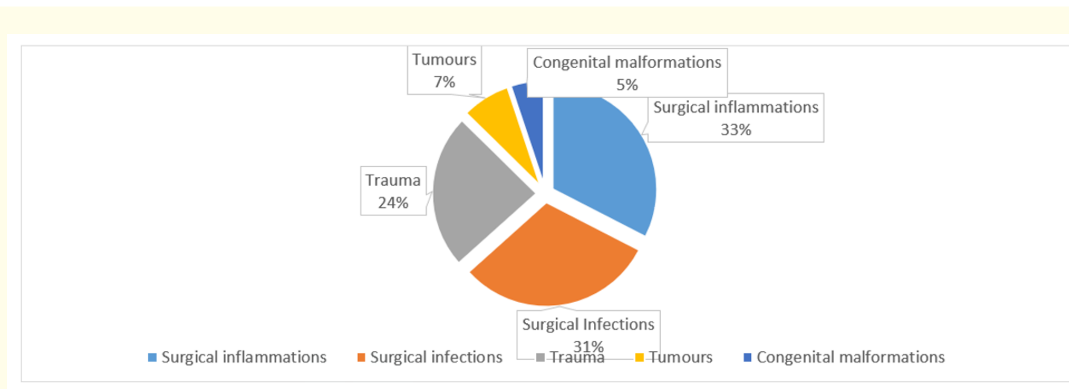

Figure 1: *Cause and clinical presentation of major surgery patients at Lubumbashi Public Hospitals in 2018: Surgical inflammations (33%), Surgical Infections (31%), Trauma (24%), Tumours (7%) and Congenital malformations (5%).*

As shown in the above figure 1 surgical inflammations and infections that constituted more than 60% of these cases surgeries needed urgent hospital action. To reinforce this opinion the details of these clinical presentations are given on the following table 2-4.

Surgical Inflammations	2018	2020
Acute surgical abdomen (appendicitis excluded): Secondary peritonitis, mechanical intestinal obstruction, hemoperitoneum and pancreatitis	247	< 30
Digestive fistulas	++	0
Hernias	++	+
Surgical proctology (Hemorrhoids, fissures, fistules peri-anal fistula)	++	0
Critical limb ischaemias	++	+
Urinary Retentions	++	0
Urinary and biliary lithiasis	++	0
Urethral strictures	++	0
Empyema thoracis	++	0

Table 2: *Surgical inflammations observed during 2018 and 2010 periods.*

Discussion

The decrease was statistically significant for all the components of this group of aetiology. The most to mention with relationship to home death are those related to surgical acute abdomen. On overall almost only one over ten attended the hospital in 2020! Peritonitis and perforated intestinal obstruction patients are calm patients and if the community is asked to stay home. They surely end by demising and be brought as dead and directed to mortuary as a coronavirus victim!

With regard to surgical infections coming at the second line as cause of major surgery 31%, the record of the 2020 mentioned only some cases of appendicitis

Despite the fact that antibiotics and auto-medication might temporarily alleviate the pain, the treatment of surgical infection is surgical and cause related.

Surgical Infections	2018	2020
Appendicitis	+++	<20
Chronic Tonsilitis	++	0
Osteomyelitis	++	0
Abscess and secondary infections	+	0

Table 3: *Surgical infections recorded in 2018 and 2020.*

Legend: +: less than 10; ++: less than 100; +++: more than 100.

Data: Appendicits few cases; Tonsolitis 0; Ostéomyélites 0 and Secondary abscess 0.

Trauma surgery

Apart from conservative management of osteo-articular trauma disorders, the 2020 report does note mention any care for visceral trauma and burns or of polytrauma as the 2018 report.

Trauma Surgery	2018	2020
Bones and joints	+++	++
Fractures Dislocations	++ ++	+ +
Visceral and Polytrauma	++	0
Burns	+ +	0

Table 4: *Trauma surgery in 2018 and in 2020.*

Legend: +: Less than 10; ++: Less than 100; +++: More than 100.
Characteristics of trauma in 2018 report:

- *Osteo-articular+++: Fractures: forearm bones++, wrist ++, Femur++, Dislocation : shoulder, ++ elbow; hip;*
- *Vicseral++ trauma and polytrauma: Abdomen, ++ thorax, +, Cranio-encephalic injury +, neck; pelvis*
- *Burns.*

Major surgery for tumors

There was no single major surgery mentioned on the 2020 report. This could be understood as they are elective case, but they need assessment and they don't need ventilator to be assessed. One may need palliative treatment and event neoadjuvant treatment.

Major Oncology Surgery	2018	2020
Benin and malignant Breast Tumors	++	+
Prostate Cancer	++	0
Goiters	++	0
Oesophageal Tumours	++	0
Renal Tumors	+	0
Retinoblstoma	+	0
Urinary bladder tumours	+	0

Table 5: *Tumour report of 2018 and of 2020 series.*

Legend: +: Less than 10; ++: Less than 100.

Congenital malformation

Despite the fact that some are discovered at the birth time, there was a single one mentioned in the 2020 report. Some may wait but others need urgent action as it is shown in table 6.

Major Surgery for Congenital Malformations	2018	2020
Inguinoscrotal hernias of infant	+++	0
Imperforated anus	++	0
Omphalocele/ Laparoschisis	+	0
Dolichocolon	+	0
Cryptorchidis/ undescended testi	+	0
Hypospadias	+	0
Hydroccephalus and Spina bifida	+	0

Table 6: *Malformations treated in 2018 and 2020 reports.*

Legend: +: Less than 10; ++: Less than 100; +++: More than 100.

As it is shown on table 6, these malformations at the Lubumbashi public hospitals: were mainly: Inguinoscrotal hernias of infant; Imperforated anus; Omphalocele/Laparoschisis; Dolichocôlon Cryptorchidis/undescended testis, Hypospadias, Hydroccephalus and Spina bifida.

Procedures diversities in the two series

	2018	2020
Head and neck	56	12
Thorax	80	10
Abdomen	434	182
Pelvis and male genitalia organs	86	7
Limbs and vertebra column	250	176
Total	906	386

Table 7: *Comparative procedures.*

Discussion

- Our study shows reduction of almost half of major procedures in 2020. Even tough some procedures could have been done elsewhere in private clinics which used to be less financially affordable than the public ones, other cases could have led to domestic deaths brought to mortuaries as Covid-19 death; other cases, less acute could have preferred self-treatment and stay home.
- Similar observations have been made through world literature (see references and bibliography at the end of the article) following the advice of confinement, lack of ventilator, appointment given after the pandemic, fear to attend hospital and contract the virus or be discovered covid-19 reactive.

From other operative constraints between the two series 2018 and 2020

These se included: emergency and elective surgery, surgical team and chief surgeon, anesthesia (chief anesthetist, type of anesthesia), post-operative intensive care unit and its equipments all were analyzed in the study but here is a summary:

- Emergency and elective surgery. As fore-Showed more than 60 patients in 2018 needed major surgery in emergency situation. Despite the reduction of cases the 2020 series reveals that more than 80% underwent major surgery in emergency situation. The confinement should lead to more deaths! Our series join the international literature in attesting that in surgical health facilities with emergency admissions and outpatient clinic, emergency admissions predominant.
- Qualifications of surgical and anesthesic teams: Being done the same settings of the study separated only from one year gross findings from the 2018 are found in 2020 with more lacks in 2020in the three hospitals:
    1. The correspondence between the chief operator's qualification and the performed procedure was found only in 30/100 of cases
    2. In 10% of cases, a qualified surgeon was operating in a different domain
    3. Frequently (40%) a senior assistant (registrar) was operating as chief surgeon
    4. In 20%, a junior assistant (SHO), was the chief operator even in the different field
    5. For 135 cases of the first series the chief operator was a MB ChB not under specialization man for 25 cases, the chief operator was not a medical doctor
    6. With regard to anesthetist, types of anesthesia, it was observed a weak rate of local anaesthesia (551 general anaesthesia's. 121 spinal anaesthesia's, 19 local anaesthesia's. The anaesthesic team was not complete.
- The post operative care: The intensive care unit with its equipments (ICU). This was the main reason of restriction to usual activities mainly surgical Resuscitation tools as ventilator and monitoring machines were kept for covid-19 beds. In fact by ethical rules and jurisprudence, it is not fair to do major surgery without having on mind the possible need of postoperative resuscitation; oxygen assistance, endotracheal tubes, defibrillator. That looked unfair was to give priority to one disease and ignore others also lethal.

Discussion of the two series with regard to the surgical component of the global health

The 2018 series revealed the following, as reported above

- Most major surgery are being carried out in emergency situation
- Big surgical contribution from senior and junior assistants doctors
- Almost all cases were handled by general surgeons at various levels
- There is a real surgical burden of the staff in Haut Katanga. This deserves to be recognised by donors and international organisations

- The situation of the anesthesic staff is less comfortable as well as that of the paramedical personnel
- Similar situations are found in many Sub-Saharan countries but this report is located at the high side. There are some works in the bibliography section at the end of the article: Ozgediz et Riviello, Alkire, Raykar, Shrime., *et al*, Meara, Leather, Hagander., *et al*, Sani, Grimes, Law, Borgstein., *et al*, McCord, Kruk, Mock., *et al* [5-11].

The 2020 series

- The pandemic has come to aggravate as it has been underlined on the previous tables and figures.
- Taking valid people away from work created indirect surgical deaths among "confined" surgical patients unable to attend hospitals.
- Reducing family economic power to afford the medical care in areas where medical schemes are not working.
- Keeping the task holders away from the common surgical diseases; deviation from usual management to other therapies by deviating hospital resources only to Covid-19.

Conclusion

- Revealed by the preCOVID-19 report of 2018, the surgical workload in the Haut-Katanga province is very high. Its burden global disease (BGD) and disability adjusted life years (DALYS) are similar to those of other low and middle income countries (LMIC) of the Third World and of Afrique.
- Hence the province deserves to be provided with the Surgical action of the Global Health of 11% from global fund.
- Among the surgical diseases treated the surgical inflammations were predominant, followed by the surgical infections, trauma injurie, the tumours and the congenital malformations.
- On the 2020 series a drastic drop of patients undergoing major surgery to half in April and to one third in December 2020 is related to Coronavirus. The drop concerned mainly on emergency and vital cases of which surgery could not be delayed more than 72 hours! Therefore, this might allow to think that many domestic deaths brought to mortuary were "deprived-surgery" deaths' indirect covid-19 deaths!
- The Covid-19 has become one reality to cope with. A lot of deaths recorded in Chine, Italy, France, USA, UK, India, Africa. Hence vigorous to prevent its spread: have been advocated the following: confinement, mask-up, frequent hand washing, hydro-alcoholic gel' social distance…vaccination.

Perspectives

The results from the study allow to inspire as follows:

- The pandemic is still going on; try to live with it, from new normal to new-normal shall be wiser.
- No more stay home, No more confinement.
- If universal doubtful, convert the universe to an operating theatre, but practice surgery.
- Effective accessibility to health care for all (finance, safety): Increase medical facilities and means
- Vaccinations recommended but not mandatory are they are still experimental. Observe contraindications.
- No priority to Covid-19 among diseases to manage: First come, first to treat.
- Emergency surgery to be done as prepared as well as elective operations.
- Surgical Global Health to be provided to needed health facilities.

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