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Laparoscopic surgery in Cameroon: Improving the services at the Garoua Provincial Hospital

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Introduction

Laparoscopic surgery (LS) brought a revolution in the field of medicine. Its evolution and spread was rapid in developed countries (1). Laparoscopic surgery has replaced open surgery for many interventions over the years and since 1994, almost 30 years after it development, it is estimated that 70-80% of gynaecological surgery can be performed by using laparoscopy (1). In the industrialized countries it is often the first choice intervention when surgery is needed. However, there still a major gap in the implementation of LS in under-resourced settings often due to restricted availability or access to the equipment and lack of training. Laparoscopic surgery compared to open surgery as it may offer advantages, such as less infectious complications, minimal tissue trauma, faster recovery and shorter stay in hospital (1-3). Its implementation is associated with some constraints such as the surgeons' skills, the cost of equipment acquisition and maintenance, the need of general anaesthesia and the availability of electricity and carbon dioxide (1).

In Cameroon, diagnostic laparoscopic exists for more than 30 years but laparoscopic surgery was only implemented in 1990 (4). Nowadays, minor and major laparoscopic gynaecological surgery is performed in the two referral public hospitals of the country. The referral hospitals are located at the economic and political capitals covering 20% of the total population in a country with a poor referral health system of patients. LS are not practiced at the provincial and district level where it's estimated that 70 - 80% of the population is treated. There is a disparity in the national territorial LS practice coverage with some areas lacking complete coverage by a specialist in this field. The practice of LS is mainly in the southern part of the country while the northern part (3 provinces of the total of 10); with almost 40% of the general population has no laparoscopy facilities. The aim of this paper is to raise the need for the setting of a LS service at the provincial or secondary level of health care in Cameroon and submit a proposal to achieve this aim at a pilot provincial hospital in Garoua (northern Cameroon) before expecting its extension to other provincial hospitals of Cameroon.

Objectives

General objective

To improve laparoscopic surgery at the Garoua provincial hospital in Cameroon through a collaboration project with GFMER. We expect to extend the project to some other provincial hospitals in the country.

Specific objectives

Short term:

- Evaluation of the current status of laparoscopy at different levels of care in Cameroon
- Evaluation of the status of laparoscopic surgery practice (personnel, material, training) in Cameroon
- State the needs in order to extend laparoscopic surgery at the provincial or secondary level of care.

Develop a training centre at the Yaoundé University teaching hospital

Long term:

- The practical training in laparoscopy of all graduating residents from the FMSB of UYI (Faculty of medicine and Biomedical Sciences of the University of Yaoundé I).

Background

General description of Cameroon

Cameroon is a bilingual country, located in central Africa in the gulf of guinea. It has 475.000 km^2, 16 million inhabitants with 51% are females. More than half (52,9%) is urban population and the mean age of the population is 18,7 years. The population growth rate is1,8%, the crude birth rate 35,4 per 1000, 56% of deliveries are attended by skilled attendants, the total fertility rate per woman of 15 to 49 yrs is 4,61, contraceptive prevalence rate for women 15 to 49 years using modern methods is 7,1%. The maternal mortality for 100.000 live birth is 730/100.000, the infant mortality rate is 88,1/1000, and the neonatal mortality is 77/100. 33,4% of the population is living with less than 1 dollar per day. The HIV/AIDS prevalence is 12 %, and there is one doctor available for 7100 inhabitants. Cameron is classified as a low income country and belongs to the low income group as classified by the World bank (5). Cameroon is divided administratively in 10 provinces with 3 in the northern part (Adamaou, nord and extreme nord) covering almost 40% of the population and presenting the worst profile in term of scolarisation and health indicators (5). The 7 other provinces are in the southern part of the country and the tertiary centres where laparoscopic surgery is performed are located in the political and economical capitals. The northern part is remote from these centres (distance of more than 600 km from the nearest referral laparoscopic centre).

Current status of laparoscopy at different levels

Cameroon has a pyramidal health care system with primary, secondary and tertiary levels of health care.
The primary or operational level is the base of the pyramid. It is composed of 256 districts hospitals (100-200 beds). More than 80% of the patients are seen at this level and complicated cases are referred to the secondary level although the health referral system still needs to be ameliorated. General practitioners are the ones involved in the health care system at the district level and there is no laparoscopy practice at this level of the health care system.
The secondary or technical support level is made up of 10 provincial hospitals (200-500 beds), Yaoundé central hospital and Douala Laquintinie hospital with special status. At this level of the health care system there are general practitioners and specialists from several fields mainly gynaecologist and surgeons. No LS is carried out although they are skilled specialised practitioner in general surgery to which the training for advanced technology in laparoscopic surgery may be benefit for the population and specially those in remote parts of the country.
The tertiary level or strategic level is the highest point of the pyramid in charge of the national health policy at the ministry of health with two reference general hospitals (Douala, Yaoundé), the university teaching hospital and the gynaecologic/obstetrics and paediatrics hospital. Laparoscopic surgery is carried out in the two general hospitals and in the gynaecology /obstetric department only. Only diagnostic laparoscopy is carried out in the Yaoundé university hospital because of lack of a complete set of laparoscopic equipment. In the reference hospitals Yaoundé/Douala, laparoscopic surgery is being performed but no data about the number and type of procedures are currently available.
LS at the national level: The two capitals with LS services cover 20-30% of the total territorial population. However, these are referral centres in a system where there still some difficulties in organisation of a viable health referral system.

Current laparoscopic gynaecological surgery and its practice in Cameroon

The laparoscopic procedures carried out in the gynaecologic department at the referral hospitals and consist of:

Extra-uterine pregnancy (EUP)

In Cameroon, Ectopic pregnancy is most often treated by laparotomy because of lack of LS services, late diagnostic and treatment (6). The contribution of LS in the treatment of EUP is not yet clarified in Cameroon. The diagnostic of ectopic pregnancy can often be made by non-invasive sensitive pregnancy tests and high resolution transvaginal sonography and trough integrated algorithms (8). Laparoscopic surgery has been shown to be the cornerstone of ruptured ectopic pregnancy and the systemic methotrexate IM multiples regimen an alternative in women with unruptured tubal pregnancy after proper information about risk and benefits of available options(9). Some studies describe lower rates of pregnancy after laparotomy for tubal pregnancy and higher rate of recurrence in Cameroon (9). A good algorithm adapted to our setting of developing country with the availability of laparoscopic surgery may improve some weakness of the care of patient in our country.

Sterilisation

Sterilisation is one of the most common used methods for family planning. In developed countries, laparoscopy is the most used method for sterilisation (1). In Cameroon, sterilisation is performed by minilaparotomy with promising results (11). Laparoscopy offers the possibility of reversal and is associated with a morbidity of 1-2% compare to 5-10% by laparotomy (1). A Cochrane review on techniques for the interruption of tubal patency sterilisation concludes that less morbidity is associated with electrocoagulation but training, cost and maintenance of the equipment are important factors in deciding which technique to choose (12). The preference of the practitioner and the woman can guide the choice of the technique as well as practical aspects need to be taken into account before implementing the more sophisticated technique in settings with limited resources(13)

Tubo-peritoneal infertility

It is responsible for infertility in 30% in developed and 85% in developing countries (1). It comprises: tubal occlusion, peritubal adherences and pelvic adhesions. The prevalence of chlamydia infection in these patients varies from 11.5 to 77% (14) although there are other possible causes such as pelvic endometriosis or history of previous pelvic surgery. A study carried out in Yaoundé General Hospital (Cameroon) for 194 laparoscopic distal tuboplasties showed that the operative laparoscopy is an alternative to laparotomy in our countries for treatment of distal tubal occlusion (15).

Other surgical interventions

Laparoscopy may be used for the following indications: Second look laparoscopy after myomectomy, adnexal torsion, cystectomy, laparoscopically assisted vaginal hysterectomy, treatment of endometriosis, diagnostic laparoscopy, for submucous myomectomy, polypectomy, treatment of endometrial hyperplasia and endometrial synechias.
All the surgical interventions are carried out in the referral hospitals.

Existing material and personnel (16)

Hospital	Professor	Gynaecologist	technicians	Existing laparoscopic set
Yaoundé General Hospital	1	4	2	2 complete sets
Douala General Hospital	0	2	1	1 complete set
Yaoundé University Teaching Hospital	1*	2*	0	1 incomplete set
Yaoundé Obstertric/Pediatrics Hospital	1	2	1	No set
Yaoundé Central Hospital	1*	1	0	No set

The main observation is that laparoscopic surgery is performed in Douala and Yaoundé only but actually we have no data about the number of procedures perform there.
*concerns practitioners use of diagnostic laparoscopy

Garoua provincial hospital data

The framework form for assessment of the status regardingskills of surgeons, data on hospital setting, number and kind of operations have been sent to these institutions.

Yaoundé university teaching hospital data

The framework form for assessment of the status regarding: skills of surgeons, data on hospital setting, number and kind of operations have been sent to this institutions. The data are waited.
The Yaoundé teaching university hospital (16) has:
total of personnel: 585; nurses: 221; medical practitioners:45; number of beds: 227;
Service of gynaecology:
gynaecologists: 7, nurses: 21, number of beds: 56, residents in gynaecology/obstetrics: 4, total of hospitalised patients: 2831, number of consulted patients per year: 9584, number of gynaecological surgical operations: 325; but types and indications to be specified.

Existing practitioners' training

Training in LS exists in Cameroon who is a pioneer in this field in Africa. The existent training is on continuous amelioration.
One can distinguish training during residency at the FMBS/UYI, comprising theoretical lectures and some observational postings at Yaoundé general hospital. The lack of pelvic trainers for practical learning is a limiting factor.
Once a year at Yaoundé General Hospital, a training session is organised by the CHRR (Centre for Human Reproduction Research) of the FMSB in collaboration with the Clermont Ferrand team for 2 to 3 weeks for gynaecologists of the sub-Saharan region. This course charges 25O000 CFA (500 CH) for gynaecologists but is free of charge for residents. There is a regional centre for training in laparoscopic surgery for the whole sub-Saharan region that is being built up in Yaoundé and the project is in its implementation phase. The training session has tree modules: theoretical lectures, use of pelvic trainers, practice on pigs and the interventions in the theatre done by skilled surgeons assisted by the participant.
Each year in Cameroon, 3 to 5 residents are graduating from the FMBS have had a contact with laparoscopy.

What are the solutions

There are mainly four actions of interest for the improvement of laparoscopic surgery in Cameroon at the provincial hospitals:

1. The health ministry has to show some interest and needs to be strongly implicated in the process of laparoscopy implementation and help to facilitate the introduction of such modern techniques at the level where it is much needed.
2. Improve the training of practitioners/ technicians and the acquisition of laparoscopic equipment. This can be done through the faculty of medicine and the university hospitals with the help of collaborating centres and the industry. The CCRH centre can be of some help with the experience they have gained from almost 10 years of activities in the field of training in laparoscopy in Africa.
3. Developing a pilot centre at the secondary level before eventually generalising to other regions of the country.

Is it feasible to introduce laparoscopic surgery at the provincial hospital?

There is laparoscopic surgery being carried out at the primary and secondary (provincial) health care level. Barriers to the introduction of laparoscopy at this level of care are financial difficulties and lack of trained personnel. There is a need to develop some simple surgical procedures to be carried out at this level at the beginning of the program. There is a need to develop a manual of laparoscopic surgery at that level of care, to conduct and evaluate the training and research programs, assure the supervision by a skilled team from the university hospital and the collaborative centres.
The surgical procedures to be performed at the provincial level should be minors ones at the beginning, such as ectopic pregnancy, tubal ligation, ovarian cystectomy, adnexal torsion, adhesiolysis, diagnostic laparoscopy, cholecystectomy, inguinal hernia, appendicectomy. All these techniques must be contained in a manual that the GFMER is already developing.

Action plan for the setting of a laparoscopic surgery at Garoua provincial hospital

Partners

The partners in the project are the ministry of health, Garoua provincial hospital, Yaoundé university teaching hospital of the FMBS of university of Yaoundé I, GFMER.

Needs assessment

A framework for assessment of the status regarding laparoscopy in developing countries has been already produced (17) to estimate the current capacity and needs of institutions in developing countries. Detailed data on hospital settings, number and kind of surgical intervention, existing training programs and equipments is collected.
Existing programs are described; we are still waiting for equipment needs and vital data from the Garoua Provincial Hospital and the Yaoundé University Teaching hospital.

Practical training and use of a manual for LS

The practical training will consist of laboratory based training with the help of pelvic trainers. In addition, visiting specialist surgeons from GFMER in collaboration with local experts will run the practical training in theatre for a number of LS procedures that will be decided on by

the university staff in FMBS. The first step will be the training of teachers and surgeons at the teaching hospital followed by training courses for the provincial team. The final aim is to provide this training for sub-Saharan countries attaining the course in Cameroon. Cameroonian experts collaborating in this project will participate actively in the development of a manual of laparoscopy which will serve as the guidance applicable to resource-constrained settings to be able at this level to deliver better and standardised care. GFMER have already drawn a draft of this manual (18).

Laparoscopy catalogue

The possible surgical procedures that can be carried out at the provincial level in Cameroon in general surgery, gynaecology, and urology need to be stated according to local needs. Indications will be provided for each of the suggested interventions. All these will be done in collaboration with GFMER coordinators of the project. These interventions will be grouped in accordance to the degree of difficulty.

Advantages and anticipated difficulties

Advantages:
The Yaoundé University and FMBS are already involved in the collaboration with GFMER.GFMER and the FMSB/UYI have already developed a partnership in the field of reproductive health research training courses since one year locally in Yaoundé(19).There are already some trained, local experts in the field of laparoscopy
The possibilities for training of local residents and regional surgeons in Yaoundé can keep the costs at a lower level.
Anticipated difficulties:

- Political involvement of the state in his project
- Financial involvement of local protagonist in the project

Budget

The different partners involved in the project are: University Teaching hospital / FMBS-UYI, the Garoua provincial hospital and GFMER will draw their budget according to their needs and state clearly their contributions at each level of development of the project (what they can afford respectively). It comprises the budget for: equipment, training, evaluation and miscellaneous needs.

Time frame (proposal)

Actions to carry out	Institutions involved	Time frame
Complete proposal	Yaoundé university teaching hospital, Garoua Provincial hospital, GFMER	31 June 2005
Politicians' involvement	Project coordinator in Cameroon	already ongoing
Building of the collaboration protocol	GFMER, CHU,GPH,MINSANTE	31 July 2005
Equipment of the CHU and GPH	GFMER, CHU(FMBS),	31 October 2005
Beginning of training	CHU/GFMER	November 2005
Beginning of a functioning	GFMER,	01 January 2006

programme at the two level of health care	CHU,GPH,MINSANTE	

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