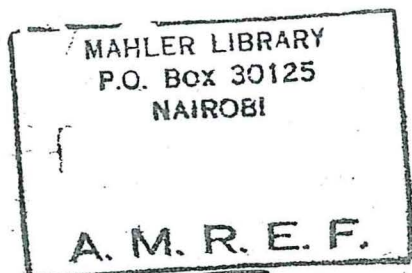


**"SUPPLYING THE SURGICAL NEEDS
OF DEVELOPING COUNTRIES"**



**The proceedings of a Symposium held at the XIXth
Annual Meeting of the International Federation of
Surgical Colleges in Dallas, Texas, 1977.**

"The Epidemiology of Surgical Disease in Rural Hospitals"Michael WoodIntroduction

It has been my good fortune over the last 30 years to have connections with some 75 rural hospitals in East Africa and I have been able to visit others in different parts of Africa and the Middle East and briefly in South America and Asia. Looking through the annual reports of a representative group of these hospitals in East Africa I have tried to discover the pattern of surgical disease which occurs. These hospitals may be Government hospitals or Mission hospitals, usually have an average of around 100 beds and serve a population of 250,000 people. They are staffed by one, two or three doctors assisted by nurses and medical auxiliaries. The one doctor hospital is something we would like to see disappear and this will occur directly recruitment is adequate which in turn depends on the number of graduates being turned out by the Medical School. I shall concentrate my remarks on the district and mission hospitals as these are the institutions which take the brunt of the surgical load. The situation of provincial hospitals and central reference hospitals is a somewhat different problem.

General Considerations

Before showing some slides which show a break down of cases requiring surgical care, certain general considerations must be mentioned in order to set the scene.

1. Surgical patients in the developing world tend to report their complaint rather late when the pathology tends to be very advanced. This is due to the distance of the patient's home from the hospital and his or her natural inclination to prevaricate and let things take their course.
2. Concomitant disease is often present which complicates both the diagnosis and treatment of the condition about which the patient is complaining. Anaemia, malnutrition, malaria, schistosomiasis and intestinal parasites are common findings while there are many other diseases such as tuberculosis which must be considered during the time when the diagnosis is being made.

3. Laboratory facilities tend to be scarce and only routine examinations of blood, urine and stools can be performed by a laboratory technician or assistant. This makes the diagnosis of disease depend very largely on clinical acumen.

4. Blood transfusions are undertaken routinely though the supply of blood is often in short supply. In some areas relatives will give blood for a patient but not for anyone else.

5. Simple Xrays can usually be taken but the doctor must be his own radiologist and more complicated radiological techniques are not usually undertaken. Straight Xrays of the chest and Xrays of fractures are those most commonly taken. The servicing and maintenance of Xray equipment is often a problem due to the scarcity of technicians so Xray units may remain unserviceable for protracted periods.

6. Surgical instruments and equipment are often barely adequate for even uncomplicated cases and replacement of equipment is often very slow.

7. The frequency of particular surgical diseases will, naturally, vary from place to place which makes the geographical pathology an interesting study. It used to be said that certain diseases did not occur in Africa but they can nearly always be found if looked for. The types of case which report to a rural hospital will depend on the leanings and studies of the particular medical officer. If a man has a particular bent for surgery, surgical patients will report to him as his reputation grows in the district. If, however, he does not undertake much surgery patients will go elsewhere. Patients will travel hundreds of miles to a hospital where the doctor has earned a good reputation as a surgeon.

8. The amount of trauma seen in any particular hospital will depend on whether the hospital is located near a main road. Those situated in the more isolated areas will obviously see less road accidents as there is less traffic but they may well see injuries from other causes such as wild animals or tribal fighting.

9. Climatic considerations play a major part in the type of disease pattern in any particular place. In East Africa altitude has to be taken into account - for example malaria does not usually occur over 6000 ft. above sea level due to the fact that the anopheles mosquito does not breed. The medical officer even learns to find out which diseases are common in his area and this information is eventually passed on by his predecessor, or by nurses or medical assistants who know the local conditions well.

Many areas have special problems of their own and a classic example of this is the frequency of hydatid cysts in North Western Kenya among the Turkana tribe where it is many times more common than in other areas of Kenya.

10. The availability of anaesthesia has an effect on the pattern of surgical disease dealt with at any particular hospital. This has improved greatly in recent years due to the training of a cadre of medical auxiliaries who attain a high degree of proficiency. Competent general anaesthetics can now be given in most district and mission hospitals though Spinal anaesthesia is common particularly where the surgeon has to give the anaesthetic himself. Many procedures are also done under local anaesthesia.

11. Consideration must be given to the question of referral as it has such an important bearing on what can or should be done in these rural hospitals. Referral is largely a myth which helps the doctor salvage his conscience but rarely takes place. A doctor may wish to refer a patient from a rural hospital to a central hospital but there are many reasons why the patient often fails to go. These include the distances involved, the cost of transportation (though a system of travel warrants helps to overcome this), the difficulty of leaving a family at home and the use of different languages in different areas. The fear of moving to a big town and the inability of relatives to visit the patient are other formidable obstacles which tend to preclude patients from accepting the well meant advice from the doctor. Added to this one must consider that the central reference hospitals are usually overloaded and overcrowded, have long waiting lists and may have to refuse the patient anyhow.

12. The question of follow up must be mentioned. This is often highly unsatisfactory in rural areas and prevents us knowing the diagnosis and the post-operative course after patients leave hospital. This reflects in the inadequacy of statistics.

Pattern of Disease

With these considerations in mind we can turn to a closer analysis of the disease pattern. The six slides which I shall show now illustrate where the main problems lie.

Surgical safaris carried out from January to June 1976

Abdominal (excluding hydatid)	14%	48
Hydatid disease (abdominal)	16%	55
Genito-urinary	24%	85
Orthopaedic	15%	52
Skin and reparative soft tissue	10%	36
Thyroid and breast	6%	22
Vascular	5%	19
ENT & eye	3%	9
Respiratory system (tracheostomy)	0%	1
Others: EUA & biopsy	7%	25
Total operations		<u>352</u>

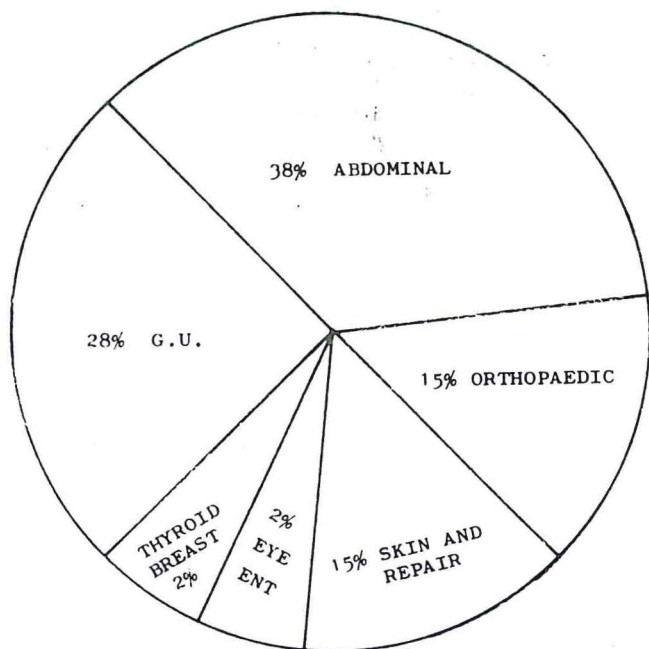
Flying hours - 201

Breakdown of 352 operations performed during the period from January to June 1976

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Selective list of operations performed - January to June 1976

Orthopaedic	Open operation	
	Fracture-simple	2
	- compound	6
	Kuntscher nail	1
	S.P. pinning	2
	Osteomyelitis	6
Skin		
grafting	S/S	9
Abdominal	Laparotomy (hydatid disease)	60
Urogenital	Prostatectomy	12
	Urethra	6
	Hysterectomy	13



Flight distances and flying times

Hours flown - surgical team	1975	496
Aviation miles	1975	60,004

Operations performed by the surgical general safari and Garissa teams in 1975: 1006

Other cases seen and advice given or referral arranged: 4427

I would like to make the following points:-

1. General surgery, orthopaedics and obstetrics and gynaecology probably form 75% of the surgical cases in most hospitals.
2. Minor conditions such as abscesses, lacerations, teeth extractions, D's and C's form a considerable volume of the total.
3. Osteomyelitis is still a prevalent disease.
4. The common emergencies which find their way to district hospitals are as follows:-
 - (a) Trauma of all kinds including burns, fractures.
 - (b) Obstetric emergencies.
 - (c) Acute abdominal cases such as strangulated herniae, retention of urine.
 - (d) More rarely, respiratory obstruction.

From this list it is obvious that the medical officer must be able to have a thorough knowledge of certain basic surgical techniques such as dealing with wounds of all kinds, setting of fractures, control of haemorrhage, Caesarean section, laparotomy and bowel resection, tracheostomy, suprapubic Cystotomy and of course skin grafting.

When it comes to a visiting general surgeon going to one of these rural hospitals, he will be asked to undertake a rather different range of cases which may have been beyond the power of the medical officer. These visits are to be encouraged because inservice training can take place, the more difficult cases seen and hopefully diagnosed and the medical officer can assist at operations and increase his own knowledge and techniques. It is usually good for the morale of the hospital staff and also makes the visiting surgeon aware of the problems occurring in the district.

The following slides give a breakdown of cases done by a colleague of mine over a period of 6 months. It will be seen that there is a higher proportion of such operations as hysterectomy and prostatectomy. During these visits the general surgeon takes a consultant anaesthetist with him and a senior theatre nurse both of whom spend some of their time in teaching the staff thereby helping to raise standards.

Surgical operations - Ndala Hospital, Tanzania, 1976

General Surgery		Sequestrectomy	1*
Inguinal hernia - unilateral	53	Removal of exostosis	1
- incarcerated		Removal of very big lipoma	1
- bilateral	5	Skin graft	4*
Fistula in ano	1	Osteosynthesis	1
Appendectomy	3	Removal of osteosynthesis material	2*
Suturing tendons	2	Bone cyst	1
Explorative laparotomy	4	Tumor of umbilicus	1
Bowel resection	2	Closure of exomphalos	1
Epigastric hernia	3	Amputation of fingers	1
Femoral hernia	1	Synovectomy	1
Inspection cervical cyst	1*	Cholecystectomy	1
Amputation of leg	1*	Hernia cicatricialis	1

*operations performed by visiting surgeon (5)

continued

Surgical operations - Ndala Hospital, Tanzania, 1976

Urology		Hysterectomy-partial or total	10*
Spermatocoele	1	Oophorectomy (unilateral)	4
Hydrocele - unilateral	34	Tubal ligation	2
- bilateral	18	Ectopic pregnancy	1
Urethrotomy	8*	Ruptured uterus	2
Cystotomy	3*	Eye surgery	
Orchidectomy	5	Suturing cornea	1
Torsion of testis	1	Cataract	9'
Gynaecology/Obstetrics		Excision of lacrimal sac	1'
Caesarean section	23	Iridectomy	1'
Salpingectomy	1	Entropion	1'
		Trabeculectomy	1'

*operations performed by visiting surgeon (7)

'operations performed by visiting eye specialist (13)

Surgical operations - Ndala Hospital, Tanzania, 1976

Others		Reduction of fractures and POP	67
Incision of abscesses	330	Biopsies	11
Removal of nail	18	Tracheostomy	1
Curettages	98	Venesection	3
Urethral dilatations	59	Exploration for foreign body	31
Suturing wounds	97	Other planned procedures	92
Circumcisions	24	Other acute procedures	7

Total of all procedures 1087

Surgical operations - Turiani Hospital, Tanzania, 1975

Inguinal hernia-unilateral	33	Appendectomy	1
-bilateral	6	Bowel resection	1
Inguinal hernia + hydrocele	4	Tumor extirpation	4
Strangulated hernia	3	Mastectomy	1
Femoral hernia	1	Major lacerations	9
Epigastric hernia	3	Hemorrhoidectomy	5
Umbilical hernia	2	Evisceration of eye	2
Hydrocele-unilateral	30	Lower segment Caesarean	
-bilateral	16	section	18
Hydrocele + partial scrotum		Ectopic pregnancy	2
amputation		Hysterectomy	1
Partial scrotum amputation	1	Colporrhaphy	1
Orchidectomy	2	Bartholin cyst	2
Cystostomy	3	Ovarian tumor	3
Prostatectomy	7	Achilles tendon suture	2
Laparotomy	10	Miscellaneous	20

continued

Surgical operations - Turiani Hospital, Tanzania, 1975

Incision of abscesses	372	Lumbar puncture	104
Nail extraction	7	Knee puncture	51
Sequestrectomy	1	Paracentesis - tympany	23
Liver puncture	18	thoracic	11
Hydrocele puncture	6	abdominis	22
Supra pubic puncture	1	Lacerations	121
Rectoscopy	16	Circumcisions	95
Cystoscopy	5	Tumor extirpation	56
Tendon suturing	2	Biopsies	44
Excision ulcer	8	D and C Diagnostic	30
Skin graft	24	D and C Therapeutic	51
Venous cut-down	19	Foreign body extirpation	37
Kirschner wire	11	Tooth extractions	314
Passing of bougies	8	Dental abscess	1
		Miscellaneous	70

Total operations 1723

Surgical operations - St. Joseph's Hospital, Kilgoris, Kenya, 1976

General or spinal anesthesia*		Laparotomy - explorative	11
Incision of abscesses and drainage	82	- gynecological	6
Amputations	5	Miscellaneous	7
Ano-rectal	4	Nephrectomy	1
Biopsies	18	Orthopedic procedures	4
Burns debridement	6	Osteomyelitis	24
Caesarean section	12	Osteosynthesis	4
Circumcision	2	Phimosis	4
Dental/jaw	6	Placenta-manual removal	6
D & C	170	Plastic/skin grafts	19
Extopic pregnancy	6	Scrotal operations	4
Foreign body	16	Splenectomy	1
Fractures/dislocations	33	Tendons	4
Gastrointestinal operations	10	Thoracic drainage	1
Hernia (all types)	16	Thoracotomy	1
Hysterectomy	5	Thyroid	3
Internal podalic version/extr.	12	Tonsillectomy	3
Lacerations	14	Tumors/cysts	15
		Urological procedures	4
Total operations with general or spinal anesthesia	539		
Total operations with local anesthesia	1220		
<u>Total operations</u>		<u>1759</u>	

*27 operations were performed by the Flying Doctors' Service
Operations by the Mobile Eye Unit are not included.