The Rahima Dawood Memorial Lecture

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A profile of Paediatric Surgery in Africa with special reference to the Tanzanian Experience: 1975-2000.

KEY WORDS: Paediatric Surgery, Africa, Tropical Africa, developing countries, Idiopathic megacolon.

Introduction

Africa is a vast continent. It covers an estimated area of some 11,530,000 square miles, which is more than three times the size of Europe[2]. Its population of well over 750 million is divided into more than 50 Independent Countries (Nation States) and comprises over one thousand Societies or Ethnic groups[3]. For that reason, and the fact that there are various geographical, climatic, socio-economic, and political systems throughout the continent, it is virtually impossible to present *"African Paediatric Surgery"* as a single entity, as no one person is likely to have the required overall experience of the whole of Africa to be able to do so. Therefore, for the purposes of this Lecture I will confine myself to what is referred to as Tropical Africa, or Sub-Saharan Africa, as Tanzania is an integral part of it, and most of my experiences of Paediatric Surgery are derived from this part of the continent.

2. It is my view that the vast and varied Paediatric Surgical material that abounds in Africa is little known outside the continent, and perhaps little appreciated within[4]! Overview of my experiences in the practice of Paediatric Surgery over the past 25 years or so, and to The main Objective of this communication, therefore, is to give a brief highlight some of the Common, Unique or Challenging problems encountered in this part of Africa. Because of the vastness of the subject, this paper will only provide no more than an outline or "Thumb-Nail-Sketch" or the Paediatric Surgical scene on the continent of Africa.

Details on any of the specific issues raised can be found in the references that are given at the end of the Paper. Most of the presentation is based on my own published work over that period, including my two books, A Handbook Of Paediatric Surgical Care For Developing Countries (Heinemann Kenya, 1989) and An Atlas Of

Paediatric Surgical Problems In The Tropics (E.A Educational Publishers, Nairobi, 1992). I have also drawn from the publications and experiences of colleagues working in Eastern, Southern and West Africa, notably the recent publication by Bickler and his colleagues, as well as from relevant published material from elsewhere in the world. It is hoped that these reflections will provide the Stimulus and Basis for the further development of the speciality of Paediatric Surgery in this and other parts of Africa, for the benefit of the Children Of Africa!

GENERAL CONSIDERATIONS

The following are some of the Major factors that influence the Practice of Paediatric Surgery in Tropical Africa:

Paediatric Surgery is a relatively new speciality in most counties of Tropical Africa, having been established within the last 20-30 years, with the possible exception of South Africa and, perhaps, Ghana and Nigeria, where it may have existed for a little longer. As a result there is still a Scarcity of Paediatric Surgeons (estimated to be around 40 in the whole of Sub-Saharan Africa[5]) so that -of necessity - general Surgeons or even general medical practitioners, particularly in provincial, district and rural hospitals, perform much of the routine paediatric surgical work. Special Handbooks and Manuals are therefore needed to guide such practitioners and their staff on the proper handling and management of Paediatric Surgical patients.

Much of Tropical Africa is characterised by Poverty, as a result of which there are scarce Health and other Facilities as well as limited Human, Financial and Material Resources. At the same time most African Countries have young and rapidly growing Populations, with an average of 40-50% of their people being under the age of 15 years. It is therefore not surprising that Paediatric Surgical Cases account for a considerable proportion of the Surgical Workload in Hospital Practice. For example previous studies have shown that nearly 25% of the Annual Surgical Procedures in Tanzania's National Referral Hospital[4] and about 20% of the Annual Surgical Operations in one of the Central Hospitals in Zimbabwe were on children under the age of ten years[6]. Due to the scarcity of Resources the working conditions, including Operating Facilities, are usually less than ideal and therefore have a limiting effect on the quantity and quality of work done.

2. For mostly Environmental and Socio-Economic reasons, as well as due to Genetic factors, the Incidence and Pattern of paediatric surgical disorders in most African countries are significantly different from those pertaining in developed countries, particularly those of Europe and North America. Infective Disorders will play a prominent role in the Disease Pattern of most Tropical countries, much in the same way as it used to be in today's developed world (e.g. the United Kingdom) about a Century or so ago[7], although the incidences of Trauma, Congenital Anomalies, and even Malignant Tumours, presently seem to be increasing particularly in the Urban areas.

3. Due to the scarcity of Medical Facilities and other factors relating to underdevelopment, patients tend to present late with Gross or Advanced Disease so that the management of such cases is often more Difficult and Less Effective than it would have been, had they presented sooner in the course of the disease[5,8]. This is particularly so with respect to Infective Disorders, certain Congenital

Anomalies and Malignant Disease. A further peculiarity of Tropical Africa is the frequent coexistence of Multiple Disease, such as Malaria, Malnutrition and Sickle Cell Disease, which adds to the enormity of the task of managing such a patient.

4. The current Political and Economic situation in many African Countries is rather unsatisfactory and therefore has an adverse effect on the provision of Social Services, Including Health Services. There is also a tendency by many Governments to ignore the advice of Professionals and other Experts in determining Development Priorities, with the result that the establishment of Specialised medical care, such as Paediatric Surgical services, gets dismissed as a luxury which only the rich and developed countries of the world can afford! For this reason, up to the present time there are only very few African countries (mostly outside the Tropics) which have separate Children's Hospitals, and in the rest of the Continent children still have to be treated within General Hospitals - with all the attendant limitations on the quality of paediatric care which such a situation imposes upon paediatricians as well as paediatric surgeons.

In many African countries the provision of Funds for Professional and Academic activities, e.g. Research and Publications, Conference participation, Refresher Courses, etc., is severely curtailed or non-existent, with the result that professional self-advancement becomes very difficult to achieve under such circumstances due to the lack of official support. This financial constraint also makes it virtually impossible for many African professionals to attend international meetings and other activities, to the detriment of their professional development and the quality of the services they can offer.

DISEASE PROFILE

To some extent the Incidence and Pattern of Paediatric Surgical disorders observed in Hospital Practice depend upon the set up of Clinical Services as well as on the Age limit of Paediatric Surgical Admissions and Outpatients. For example, in Tanzania the age limit is 10 years and the Paediatric Surgical Service takes care of all Paediatric surgical patients (including Trauma Cases) except Dental, Eye, E.N.T. and, more recently, Neurosurgical cases. In other countries, including Kenya and Zimbabwe, the age limit may be different and cases of Trauma, Plastic Surgery, as well as neurosurgery, are usually managed outside the Paediatric Surgical Service. Bearing that in mind, the Major or Challenging problems at present in Tanzania are Trauma (including burns), Septic disorders (including osteomyelitis and pyomyositis), neonatal intestinal Obstruction, Anorectal Malformations, Hydrocephalus, Facial Clefts and Malignant Tumours, whereas the corresponding problems in Zimbabwe during 1984-1987 were Anorectal Malformations, Megacolon, Neonatal Intestinal Obstruction, Oesophageal Atresia, Trauma (including Burns), Congenital Cervico-Facial Anomalies and Masses (Mostly Cystic hygromas), and Foreign bodies[6].

CONGENITAL ANOMALIES

Congenital Anomalies or Malformations may be as common in Africa as in other Continents but, because of the limited and selective nature of available statistics, it appears that - with few exceptions - the Incidence is generally lower than in the developed world e.g. Europe [9,10]. It also appears that the Pattern is significantly different from that observed in developed countries e.g. the United Kingdom [10,11]. Why this is so is yet unknown, but it could very well be due to either

Genetic or Environmental factors, or both. Congenital anomalies pose the greatest challenge in the Neonatal period, as they constitute the bulk of the most serious Neonatal Surgical Emergencies. They may account for up to 20% of Perinatal Deaths[12]. Of the three most common Neonatal Surgical Emergencies in Tanzania and Zimbabwe Intestinal Obstruction is the most frequent[13], while the Comparative Causes of Neonatal Intestinal Obstruction in Tanzania, Zimbabwe and the United Kingdom, show that Anorectal Malformations and Small Bowel Atresia are the leading causes in all three countries[10].

It is interesting to note that the Incidence and Pattern of Congenital Anomalies varies between Africa and the rest of the World, as well as between the African countries themselves[10]. For reasons that are not yet fully understood the variation seems to be on a geographical, national, racial or even regional basis. For example, whereas Neural Tube Defects seem to be commoner in Caucasians than in Blacks[11] the reverse appears to be true with regard to Polydactyly[14]. At the same time Anorectal Malformations appear to be relatively commoner in southwestern Zimbabwe (Matabeleland) than in the rest of the country (Mashonaland) where congenital Megacolon seems to be more prevalent[15].

It is also of interest to note that the Comparative Frequency of Congenital Anomalies (according to the body systems) in five African countries shows that, apart from Zimbabwe where the Alimentary System is the most affected, the Musculo-Skeletal System is the leading System affected in the other 4 countries, namely, Tanzania, Uganda, Kenya and South Africa[10]. However, that situation is already changing in Tanzania and South Africa where recent studies have shown that CNS anomalies have now taken pride of place[5,16].

MALIGNANT TUMOURS

Although Malignancies presently constitute only a small proportion (less than 5%) of the total Paediatric Surgical Admissions in Tanzania[17] and other African countries5 they are nevertheless an important diagnostic group because they are often *Lethal*, and their importance is expected to increase as the incidence of Infections and Nutritional disorders declines. Their management is often hampered by late presentation with advanced disease, as well as by the scarcity of Resources and Drugs, and inadequate follow-up due to unfavourable socio-economic factors.

Various studies from Eastern Africa [17,18,19,20] and that of A.O. Williams from Nigeria[21] have demonstrated conclusively the predominance of Lymphomas, in particular Burkitt's lymphoma, as the leading Paediatric Malignancy in Tropical Africa. In a classic histopathological study of paediatric neoplasms in Ibadan, Williams[21] has further shown that the pattern of paediatric malignant disease in Africans is markedly different from that which is prevalent in Causasians of Europe and North America for reasons, which are not yet known. In particular, he has shown that Lymphomas (mainly the Burkitt type) and orbital tumours (mainly retinoblastoma) are much more common in Africans, in contrast to the higher incidence of the leukemias and gliomas in Caucasians[22]. Other paediatric malignancies encountered with variable frequencies in African practice include: (i) embryonal tumours e.g. nephroblastoma, neuroblastoma and rhabdomyosarcoma, (ii) teratomas e.g. sacrococygeal teratoma, and (iii) various sarcomas e.g. Kaposi's sarcoma, osterosarcoma, and fibrosarcoma[13].

It is interesting to note that while the general pattern of paediatric malignancies within Tropical Africa is similar, there are wide differences in the actual Incidence of the various Tumours in individual countries. For example, neuroblsatoma is much less common in Tanzania (where it is much rarer than nephroblastoma) than it is in Kenya, Zimbabwe or Nigeria[17]. Also of interest is the fact that in both Kenya[19] and Zimbabwe Burkitt's Lymphoma is not the leading Paediatric Tumour. Why this is so is not clear, but may be due to the fact that Zimbabwe is at the edge of the (southern) Tropics and therefore does not experience a typical Tropical Climate throughout the year, while the main Referral Hospital in Kenya is situated within the densely populated Central Highlands where the High Altitude considerably modifies the Tropical Climate. After all Burkitt's lymphoma is presumed to be a Vector Borne Disorder (caused by the Epstein-Barr Virus), Prevalent in the Tropics.

IDIOPATHIC (AFRICAN) MEGACOLON

One of the most interesting and unique conditions that I have encountered in my paediatric surgical practice is a form of paediatric megacolon, which I call "Idiopathic", or "African" megacolon (IMC/AMC)[23]. I first encountered it during my three-year practice in Zimbabwe from 1984 to 1987, and it has the following characteristics:

(i) It resembles Hirschsprung's Disease (HD) in its clinical and radiological features, but has entirely ganglionic bowel on histological examination

(ii) It appears to be confined to the Black Population of Southern Africa (and has been observed in South Africa as well as Zimbabwe) - hence the suggested terminology of "African" Megacolon.

(iii) Its Aetiology is as yet unknown

(iv) The treatment, whether surgical or otherwise, is also as yet unknown. Palliation may sometimes be achieved with Colostomy or Bowel Washouts.

(v) The onset may be in Infancy or Childhood, tends to be Insidious rather than Acute, and in most cases takes a relentless course until Death.

An analysis of 34 Zimbabwean cases of Paediatric Megacolon seen during a three-year period shows that 8 (24%) had idiopathic megacolon and 17 (50%) had Hirschsprung's disease[24]. It is worth noting that as early as 1958 and 1966 numerous "non-aganglionic" varieties of megacolon had been encountered, and numerous terminologies, including "pseudo - Hirschprung's disease" and "Idiopathic Megacolon" had been used by Ravitch[25], Bentley, Ehrenpreis and others[26] to categorise some of these cases, but there was no unanimity on the criteria for such categorisation. It is also worth noting that even with cases of Hirschsprung's disease (i.e. aganglionic megacolon) those in Africa seem to differ from their (Caucasian) counterparts in Europe and North America in that:

(i) A relatively small proportion (usually less than a third) of the African cases present in the neonatal period - perhaps due to milder symptoms of the disease - whereas nearly all of the European and North American cases do so.

(ii) The total absence of necrotising enterocolitis (NEC) among African patients[24], some of whom present late in childhood with gross megacolon, is in marked contrast to the European and North American experience where this dreaded complication of HD is not uncommon. Again, is it because it is a milder disease in the African?

It would therefore be reasonable to conclude that not only is HD in the African rather different

from the form of HD commonly seen in the Caucasian, but also that at least in Southern Africa there is a unique type of "African" megacolon which closely resembles HD without having the feature of aganglionosis, and for which neither the aetiology nor the treatment is as yet known. Whether this African megacolon is due to non-functional intra-mural ganglion cells, or whether histochemistry, electronmicroscopy or other sophisticated tests could elucidate this fact, remains to be seen.

In the meantime a fresh re-appraisal of the apparently Enigmatic HD Syndrome in the African (with or without the IMC/AMC syndrome) is urgently needed in order to resolve the issue of the possibility that not only aganglionosis but also the presence of functionally abnormal or non-functional intra-mural ganglion cells may both represent the extreme features of a single but wide - ranging HD Syndrome. Until then both the African form of HD and the "African Megacolon" of Southern Africa remain an Enigma!

Surgical Profile

While the Disease Profile of Paediatric Surgery in Africa is varied, and may have unique features due to various factors - genetic, environmental, socio-economic, limited access to health facilities, and others - the type of surgery performed is comparable to that of other parts of the world, only that it is often undertaken under less than ideal circumstances. With only a handful of qualified paediatric surgeons in sub-Saharan Africa (around 40 or so in a vast continent), a good deal of the surgery on children is performed by general surgeons and even general medical practitioners.

The preponderance of Trauma in most urban areas means that a large proportion of emergency procedures are for various types of injuries and their aftermath, whereas intestinal obstruction being the most common surgical emergency in neonates and infants makes emergency laparotomy a relatively more frequent procedure undertaken for that age group (table 17).

In a paediatric surgical service such as the one in Dar es Salaam, Tanzania, where the set up brings together most of the paediatric surgical patients under the care of a single unit, the scope of elective surgical procedures covers a wide field of specialities, including general surgery, plastic surgery, neurosurgery, and orthopaedics & trauma surgery (Table 18).

Another consequence of the scarcity of paediatric surgeons in Africa is that more of their time is taken up with procedures on emergencies and referrals (often previously operated cases from elsewhere), rather than on routine or so-called "bread - and - butter" paediatric surgery.

Some interesting Problems

In the course of the past 25 years or so I have encountered a number of unusual but interesting paediatric surgical problems which I would like to share with the audience, despite the fact that most of them have already been reported in the medical literature. The following is a brief account of the cases:

i) In 1973 I saw a Newborn male baby in Tanzania who presented with pneumoperitoneum with (partial) intestinal obstruction, associated with meconium peritonitis without calcification, and who recovered within a few days on Conservative (non-operative) treatment[1]. In 1985 in Zimbabwe I encountered a newborn female baby who had meconium peritonitis with (partial)

intestinal obstruction and calcification, and who - despite an unsuccessful laparotomy - also recovered on further conservative treatment[27]. These two cases represent a rare condition, which had hitherto been regarded as Lethal unless aggressively managed by Operative Surgery.

ii) In 1984 in Zimbabwe one of the six patients with oesophageal atresia with tracheo-oesophageal fistula (T.O.F) that I saw was a referral case from a rural hospital, which had been misdiagnosed and mis-managed, and yet survived for about 4 weeks without surgical treatment. I believe that this is a record survival in this disorder, which has ever been documented[28].

ii) Another case from Zimbabwe that I saw in 1984 was a male Neonate who had been born by normal vaginal delivery at a peripheral hospital, and who presented with a large (10cm x 8cm), round Congenital Ulcer on the right anterior abdominal wall the cause of which could not be determined, and was therefore presumed to have occurred Spontaneously and hence was Idiopathic. The case was treated conservatively and the ulcer healed completely within 8 weeks[29]. As far as I know this Rare Anomaly has only once before been described in the United Kingdom, by Spitz and his colleagues[30], but in their case the ulcer (which was similarly situated) was presumed to have been caused by the subcutaneous injection of radiopaque contrast material into the foetus during an improperly performed foetoamniography.

iii) In 1986 I reported (in the Journal of the *Royal College of Surgeons of* Edinburgh)[31] an unusual case of a female infant that I had encountered *in Tanzania,* that presented with a "finger-like" organ protruding from an abnormally - looking umbilicus. At operation it was discovered that the organ was part of the appendix that had herniated through an umbilical defect by an intussusception mechanism, which also produced an appendiceal - cutaneous fistula that had been observed clinically. This Rare and Unusual congenital anomaly may well be the first case of its kind ever to be reported in the medical literature. It certainly is a marvellous Embryological puzzle!

iv) In 1994 a Tanzanian infant was referred to Dar es Salaam from another consultant Hospital upcountry with a diagnosis of "Hirschsprung's Disease" (HD), and turned out to have a Pre-Sacral Teratoma which was the presumed cause of the observed "HD" Symptoms. The patient was cured after the Teratoma was excised.

Some Unusually Rare Problems

Every Paediatric Surgeon practising in Tropical Africa must often wonder, as I do, as to WHY certain problems which are commonly or not infrequently seen by our colleagues elsewhere, especially in Europe and North America, are so rarely - if at all - encountered in African patients[34]. Is the disparity due to genetic or environmental or other factors? Here is a short list of some of those conditions that I wish to invite members of the audience to think about:

i) Congenital Dislocation of The Hip
ii) Cystic Fibrosis And Meconium Ileus
iii) Inflammatory Bowel Disease, e.g. Crohn's Disease and Ulcerative Colitis.
iv) Necrotising Enterocolitis
v) Gastro-Oesophageal Reflux

The Future Of Paediatric Surgery

I have already alluded to the significant proportion of the surgical work - load in Africa, which is accounted for by Paediatric Surgical patients even when the age limit is kept as low as Ten years. This fact alone would amply justify the establishment and expansion of full - time Paediatric Surgical Services in African countries in order to cope with the expected increase in the work - load as the population continues to grow. But there are also other reasons:

i) **The special and delicate nature of neonatal** physiology and anatomy calls for special facilities and expertise in order to achieve uniformly successful results in the management of such patients[32].

ii) Certain congenital anomalies, e.g. oesophageal atreasia, anorectal malformations, and Hirschsprung's disease, are difficult to treat successfully unless the surgeon has the proper training and experience (rather than as an "occasionalist") and is able to provide long-term follow-up of his patients.

iii) Research and teaching on paediatric surgical problems are eminently facilitated when a full-time paediatric surgical service exists. With the vast and varied paediatric surgical material that abounds in Africa I can confidently state that the scope of paediatric surgery is wide and its future is bright as well as exciting! It is a challenge to African paediatric surgeons and their professional colleagues! Indeed, in my view, there is no viable alternative to the recognition and firm establishment of paediatric surgery in Africa, provided there is the NATIONAL political and financial will to do so!

TABLE 1: COMPARATIVE ANNUAL MMC (DSM, TANZANIA) ADMISSIONS: 1972 - 1978.

YEAR	TOTAL	PAEDIATRIC SURGERY	PERCENTAGE
1972/73*	27,826	440	1.58
1974	30,655	-	-
1975**	36,218	1,529	4.22
1976	33,972	1,815	5.34
1977	42,157	2,334	5.54
1978	42,033	2,822	6.71

*Total Admissions Represent 1973 Figure

****Paediatric Surgical Unit** Established In **January 1975**

TABLE 2: RELATIVE CLINICAL/OPERATIVE WORKLOADS DUE TO PAEDIATRIC SURGICAL CASES IN TANZANIA & ZIMBABWE

DAR ES SALAAM, TANZANIA (1978)	HARARE, ZIMBABWE (1984)
There were 2,822 P.S.	There were 1,043 P.S.
Admissions = 6.71% of	Operations = 19.2% of
Total Hospital Admissions	Total Surgical Operations

TABLE 3: COMPARATIVE PATTERNS OF PAEDIATRIC SURGICAL ADMISSIONS IN TANZANIA AND GAMBIA (IN PERCENTAGES).

CATEGORY	TANZANIA (Shija, et al, 1998)	TANZANIA (Shija, 1975)	GAMBIA (Bickler et al, 2000)
Trauma (including burns)	40.45	46.2	48.0
Surgical infections	24.50	14.8	14.0
Congenital anomalies	16.36	13.0	24.0
Neoplasms	2.73	3.0	2.0
Others	15.96	23.0	12.0
TOTAL	100.00	100.0	100.0

TABLE 4: AGE & SEX DISTRIBUTION OF PAEDIATRIC SURGICAL ADMISSIONS AT MMC (DSM), TANZANIA, (1998)

AGE GROUP	MALES	FEMALES	% Of MALES	TOTAL	% Of TOTAL
INFANTS	835	765	52.19	1600	23.04
1-5 YEARS	1475	1115	56.95	2590	37.29
6-10 YEARS	1290	1055	55.01	2345	33.77
>10 YEARS	255	155	62.20	410	5.90

TABLE 5: COMPARATIVE CHALLENGING PAEDIATRIC SURGICAL PROBLEMS IN TANZANIA AND ZIMBABWE (1986).

Rank	Tanzania	Rank	Zimbabwe
1.	Trauma (inc. Burns)	1.	Anorectal malformations
2.	Septic disorders	2.	Megacolon
3.	Neonatal intestinal obstruction	3.	Neonatal intestinal obstruction
4.	Anorectal malformations	4.	Oesophageal atresia
5.	Hydrocephalus	5.	Trauma (inc. Burns)
6.	Facial clefts	6.	Cong. Cervico - facial anomalies & masses
7.	Malignant tumours	7.	Foreign bodies

TABLE 6: THE PATTERN OF NEONATAL SURGICAL PROBLEMS IN TANZANIA (1980)

ORDER OF FREQUENCY	TYPE OF DISORDER	PERCENTAGE
1	Congenital Anomalies: External (50.6%) , Alimentary (20.0%)	70.6
2	Birth Injuries	27.6
3	Others	1.8
	TOTAL	100.00

TABLE 7: COMMON PAEDIATRIC SURGICAL EMMERGENCIES (TANZANIA & ZIMBABWE) (1989)

ORDER OF FREQUENCY	NEONATAL	INFANCY	CHILDHOOD
1.	Intestinal obstruction	Intestinal obstruction	Trauma
2.	Exomphalos/Gastroschisis	Surgical infections	Surgical infections
3.	Oesophageal Atresia	Pyloric stenosis	Foreign bodies
4.	Other disorders	Foreign bodies	Intestinal obstruction
5.	-	Other disorders	Other disorders

TABLE 8: COMPARATIVE FREQUENCIES OF MAJOR CONGENITAL ANOMALIES (IN AFRICA)

ANOMALY (SYSTEM)	ZIMBABWE Shija & Kingo, 1985	TANZANIA Shija 1977*	UGANDA Simpkiss et al, 1961	KENYA Khan, 1965	S/AFRICA Kromberg et 1982*
MSS	2	1	1	1	1
ALIMENTARY	1	3	2	2	3
CVS		5	5	4	
CNS	5	2	4	3	2
GUT	4		3		
OTHER	3	4			

* More recent studies show the emergence of CNS Anomalies as the leading problem in Tanzania (1998) and South Africa (2000)

TABLE 9: COMPARATIVE FREQUENCIES OF THE CAUSES OF NEONATAL INTESTINAL OBSTRUCTION

CAUSE	RELATIVE ORDER OF FREQUENCY		
	U.K (1978)	TANZANIA (1980)	ZIMBABWE (1984)
*Anorectal Malformation	*1	*1	*1
*Small Bowel Atresia	*2	*2	*2
Intraluminal "Plugs"	3	-	4
Functional	4	4	3
Volvulus/Bands/Herniae	5	3	5
Others	6		

*These two disorders together account for over 50% of the causes in all three countries

TABLE 10: RELATIVE FREQUENCIES OF EMERGENCY AND ELECTIVE NEONATAL SURGICAL PROBLEMS IN DSM, TANZANIA (1998): PATTERN OF NEONATAL SURGICAL PROBLEMS.

**EMERGENCIES (63)			ELECTIVES (143)		
TYPE	NO.	%	TYPE	NO.	%
1. Anorectal Malformations	22	34.9	1. Spinabifida ± Hdc	56	39.2
2. Birth Trauma	15	23.8	2. Cleft Lip/Palate	34	23.8
3. Small Bowel Obstruction	13	20.6	3. Talipes (C.T.E.V.)	15	10.5
4. Pyloric Stenosis	4	6.4	4. Exomphalos	15	10.5
5. Surgical Infections	4	6.4	5. Hydrocephalus Only	14	9.8
6. Others*	5*	7.9	6. Others	9	6.2
TOTAL	63	100.00	TOTAL	143	100.00

*Including 3 cases of **oesophageal atresia**, 1 case of **gastroshisis**, and 1 case of **conjoined twins**
**__Emergencies constitute 30.6%__ of the Neonatal Surgical Problems

TABLE 11: COMPARATIVE INCIDENCES OF SOME MAJOR CONGENITAL MALFORMATIONS PER 1000 BIRTHS

MALFORMATION	WORLD 1978	LIVERPOOL (UK) 1978	DAR ES SALAAM (TANZANIA) 1977	HARARE (ZIMBABWE) 1985
Mongolism	0.83	1.11		-
Anencephalus	1.05	2.57	-	
Spina bifida + hydrocephalus	0.81	3.15	0.32	0.22
Hydrocephalus only	0.61	0.51	0.04	-
Alimentary tract malformations	0.37	1.65	0.16	1.28
Exomphalos	0.10	0.44	0.16	0.33
Cleft lip/palate	1.21	1.59	0.16	0.28
Congenital heart disease		8.68	0.12	-

TABLE 12: COMPARATIVE OVERALL INCIDENCES OF MAJOR CONGENITAL ANOMALIES

COUNTRY/AUTHOR	PERCENTAGE (OF BIRTHS)
UK-1 (CARTER, 1950)	1.47
UK-2 (RICKHAM et al, 1978)	2.00
IRELAND (COFFEY et al, 1955)	1.63
GERMANY-1 (NOWAK, 1950)	1.11
*UGANDA (SIMPKISS et al, 1961)	5.40
TANZANIA (SHIJA, 1977)	0.58
ZIMBABWE (SHIJA et al, 1984)	0.48

*All figures are quoted from SIMPKISS et al (1961) except for UK-2, TANZANIA and ZIMBABWE

TABLE 13: RELATIVE FREQUENCIES OF HISTOLOGIC TYPES OF PAEDIATRIC NEOPLASMS IN IBADAN, NIGERIA (1975)

ORDER OF FREQUENCY	NEOPLASM	PERCENTAGE
1	lymphomas (Burkitt = 433/509)	59.0
2	Retinoblastoma	7.4
3	Wilms' Tumour (Nephroblastoma)	5.6
4	Leukemias	4.5
5	Sympathetic Nervous System (Neuroblastoma 33/34)	2.6
6	Bone Tumours	2.5
7	Central Nervous System (Including Gliomas)	2.2
8	Others	16.2
TOTAL	-	100.0

TABLE 14: COMPARATIVE PATTERNS OF PAEDIATRIC MALIGNANT TUMOURS IN SEVERAL COUNTRIES (1989)

	BURKITT'S LYMPHOMA	RETINO-BLASTOMA	NEPHRO-BLASTOMA	NEURO-BLASTOM	GLIOMA
TANZANIA (Shija, 1981)	1	2	3	4	-
KENYA (Kyambi et al, 1980)	3	-	1	2	-
NIGERIA (O.A. Williams, 1975)*	1	2	3	4	5
UK (I.G. Williams, 1972)	-	-	1	2	3
USA (O.Swenson, 1969)	-	-	1	2	(3)
DSM, TANZANIA (Shija, 1984)	2	(3)	1	4	-

*A classic study of 1325 cases published in CANCER, August 1975.

TABLE 15: ANALYSIS OF 34 ZIMBABWEAN CASES OF PAEDIATRIC MEGACOLON (1988)

AGE AT PRESENTATION TYPE OF MEGACOLON

	HD	IMC	SMC	OTHER*
NEONATAL	5	3	-	-
INFANCY	7	-	-	-
CHILDHOOD	5	5	4	5
TOTAL	17 (50%)	8 (24%)	4 (12%)	5 (14%)

*Uncategorized Cases.
KEY: HD = Hirschsprung's disease. IMC = Idiopathic (African) Megacolon.
SMC = Secondary Megacolon.

TABLE 16: SOME COMPARATIVE FEATURES OF PAEDIATRIC MEGACOLON*

FEATURE Onset	H.D (USA) Birth (ZW 4/9)	PSYCHOGENIC After 2 years	IDIOPATHIC (ZW) NB2 INE2 CH2
FC-Soiling	None	Common	? Common
ABD. Pain	Rare	Common	Rare
ABD. Dist.	Common	Rare	Common
Malnutrition	Common	Rare	Common
Course	Serious	Benign	Serious
Stool in Rect.	None	Packed	Packed/empty
BA Enema	HD Type	Large rectum	Usually HD type
R-Biopsy	Aganglionosis	Ganglionic	Ganglionic
Mode of Onset	Acute: CHR 6: 3	Insidious/CHR	Acute/Chronic 3: 2

*JKS/NJTG Project results awaited on ELECTRON MICROSCOPY (1985/86)

TABLE 17: COMMON NEONATAL SURGICAL PROCEDURES IN DSM, TANZANIA (1998) (120 CONSECUTIVE CASES)

TYPE OF PROCEDURE	NUMBER OF CASES	PERCENTAGE
1. Colostomy	31	25.8
2. Laparotomy	26**	21.7
3. Meningocoele Repair	12	8.3
4. Circumcision	10	7.5
5. Exomphalos Repair	5	4.2
6. Ramstedt's Pyloromyotomy	4	3.3
7. Thoracotomy (T.O.F.)	3*	2.5
8. Others	20	16.7
TOTAL	120	100.00

* **Oesophageal atresia** is a rare clinical presentation
** Mainly for **small bowel** obstruction

TABLE 18: THE TOP 10 MAJOR PAEDIATRIC SURGICAL PROCEDURES IN DSM, TANZANIA (1998)

TYPE OF PROCEDURE	NUMBER	AVERAGE ANNUAL	RATE
1. Inguinal herniotomy	186	37	
2. Hydrocephalus (vp) shunts	101	20	
3. Cleft lip repair	87	17	
4. Laparotomy (general)	80	16	
5. Colostomy	68	14	
6. Hydrocoelectomy	55	11	
7. Umbilical Hernia Repair	49	10	
8. Open Reduction and I.F	45	9	
9. Contracture Release ± Skin Graft	43	9	
10. Intestinal Obstruction (Laparotomy)	38	8	

TABLE 19: PAEDIATRIC SURGICAL PROCEDURES, BARAGWANATH HOSPITAL, JOHANNESBURG, SOUTH AFRICA (2000)

TYPE OF PROCEDURE	PERCENTAGE
Ambulatory Surgery	50
Elective Surgery	26
Emergency Surgery	15
Emergency Trauma	6
Neonatal Surgery	3

TABLE 20: PAEDIATRIC SURGICAL MORTALITY* DAR ES SALAAM, TANZANIA (1998)

CAUSE OF DEATH	PERCENTAGE
Burns	35
Infections	22
Hydrocephalus/Spina Bifida	15
Malignancies	15
Other Trauma	9
Other Causes	4

*There was an Overall Mortality of 4.45% among 2114 cases

TABLE 21. SOME INTERESTING PAEDIATRIC SURGICAL CASES ENCOUNTERED BY JKS (1970 - 1995)

1.	1973:	SM: A Tanzanian New Born Baby with Congenital PNEUMOPERITONEUM and (partial) Intestinal Obstruction, associated with MECONIUM PERITONI TIS without CALCIFICATION (EAMJ, 1974)
2.	1984:	AZ: A Zimbabwean Baby born with Congenital OESOPHAGEAL ATRESIA with T.O.F. who survived 29 days without Surgical Treatment. (EAMJ, 1986)
3.	1984:	BY: A Zimbabwean Baby born with a large (10cm x8cm) round congenital ULCER on the right Anterior Abdominal wall of UNKNOWN AETIOLOGY? Spontaneous, IDIOPATHIC, Cong. Ulcer. (JPS, 1987)
4.	1986:	RS: A Tanzanian Baby born with a "Finger-like" organ protruding from the umbilicus, and turned out to be an Intussuscepted APPENDIX projecting thro an Umbilical Defect. (JRCSEd, 1986)
5.	1994:	BZ: A Tanzanian Infant who was suspected to present with "Hirschsprung's Disease" and turned out to have a PRE-SACRAL TERATOMA. (EAMJ, 1995)

TABLE 22: SOME UNUSUALLY RARE PAEDIATRIC SURGICAL PROBLEMS IN TROPICAL AFRICA (1973 - 1993)

1.	Congenital Dislocation Of The Hip
2.	Cystic Fibrosis & Meconium Ileus
3.	Inflammatory bowel disease e.g. Crohn's disease & ulcerative colitis
4.	Necrotising Enterocolitis (Nec)
5.	Gastro - Oesophageal Reflux

TABLE 23: THEY MADE MY DAY !!! *

1.	AS (F2 yrs): 1st HYDROCEPHALUS CASE attended in DSM, 1975 (referred to Nairobi)
2.	OJ (M6 yrs): 1st Case of "CEPHALIC" BURKITT'S LYMPHOMA seen in DSM preferred for Neurosurgery in Lusaka), 1976.
3.	K&D (New born males): The 1st set of CONJOINED TWINS (OMPHALOPAGUS Type), born in SHINYANGA, Tanzania, and success fully separated in DAR ES SALAAM on 10 FEBRUARY, 1994. *BY: JKS

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