British Military Hospital Dharan: Surgical Experience 1985-86

Lt Col J M Ryan, FRCS, RAMC

Consultant Surgeon

*British Military Hospital Dharan, HQ Brig Nepal, BFPO 4

SUMMARY: The clinical experience of an Army Surgeon in a Military Hospital in East Nepal is discussed. The truly general nature of the work load is highlighted and the need for a broad based general training in surgery for such a task is well illustrated. A high degree of inter-disciplinary co-operation was experienced and was indeed essential for good clinical practice. The health problems of a developing country are glimpsed. The severe limitations imposed on clinical practice as a consequence of limited facilities are particularly noteworthy.

Introduction

British Military Hospital Dharan is situated in the foothills of the Himalayas in East Nepal. Close to the hill region where recruitment of Gurkha soldiers takes place twice yearly, it is well placed to provide medical care for them and for ex-soldiers, pensioners and their families on their return home following military service. Nevertheless some of these families are still many days', and in some cases, up to 2 weeks', walk from the hospital.

The hospital, purpose-built and modern, has 70 beds, 10 cots, 5 maternity beds and 20 hostel spaces. Medical care is provided for local British Servicemen and their families, British Gurkha Servicemen and pensioners. Large numbers of local people are also cared for when beds and resources allow. In addition, the hospital has become a reference centre for doctors and nurses employed in the region who work for such diverse agencies as the Overseas Development Agency, the Save The Children Fund and the Britain Nepal Medical Trust.

Background

BMH Dharan owes its existence to the Brigade of Gurkhas, an integral unit of the British Army. The Brigade traces its origins to 1815 when the first Regiments were raised following a series of wars between Great Britain and Nepal. Such was the admiration of the British for the hardy hill men of Nepal, that recruitment began immediately following the treaty ending the wars. Following the Grant of Indian Independence in 1947 Britain retained 4 of the original 10 Regiments. These 4 Regiments and their supporting units form the British Brigade of Gurkhas.

Prior to 1953, recruitment of Gurkhas soldiers required potential recruits to travel to various British Gurkhas depots in India. Following a request from India to close these, and with the permission of the Nepalese Government, Gurkha recruitment depots were opened in Nepal. Dharan Cantonment, the largest, opened in 1960. Thus ended a long association between British Gurkhas and India; the medical association ended with

the closure of the Medical Reception Station at Ghusré. The British Military Hospital at Dharan opened its doors at the end of October 1960¹.

Facilities and Staffing

The hospital has male and female wards for urgent medical and surgical problems which include osteomyelitis, neglected burns, TB in its many forms, untreated injuries (often with associated compound fractures) and patients with malignant disease. A small children's ward is attached to the female ward and has 10 cots. A 5 bay maternity unit is also maintained. A pulmonary tuberculosis ward and a minimal care ward are available for patients on long term treatment of chronic conditions. A Medical Dharmasla or Hostels are situated in the cantonment grounds providing food and shelter for patients on long term treatment, but who are mobile and capable of self care.

A modern operating theatre with 2 tables is in use. Laboratory, X-ray department and Dispensary are run by senior technicians RAMC. X-ray reporting is the responsibility of individual clinicians, the RAMC radiographer providing a screening and ultrasound service. A well equipped Dental department is maintained by a locally employed dental technician supported, twice yearly, by visits from service dentists from Hong Kong. A REME section provides an electro-medical service and also runs a very efficient limb fitting service using local resources and artificial limbs discarded by the DHSS(UK).

Medical, Surgical, TB, Fracture and Antenatal clinics are held in a large outpatient department. Two general practitioners run a "Villagers' Clinic" for non-entitled local people, which, with hundreds of people attending is one of the highlights of the hospital's day.

Senior Medical and Nursing staff are British and from the Services. A General Physician, General Surgeon and an Anaesthetist run their departments single handed but have Nepali Medical Officer Assistants and from time to time, medical students on elective periods at their disposal. A Matron and 4 QARANC Nursing Sisters supervise all aspects of nursing care including nurse training, and also run a very busy obstetrics service which includes a domiciliary element. (Matron and 2 of the 4 nursing sisters are always midwives). Two locally

*Now Consultant Surgeon, CDE, Porton Down, Salisbury, Wilts and Princess Alexandra Hospital, RAF Wroughton.

employed general practitioners are responsible for primary care. Specialists in Obstetrics and Gynaecology, Orthopaedics and ENT surgery visit from UK and Hong Kong on a regular basis.

All hospital departments have locally trained and competent Nepali staff who fill most of the nursing and technical posts. Among these are radiographers, dispensers, physiotherapists, and laboratory and operating theatre technicians. Many of these have been on the staff since 1960 and are very experienced. It is noteworthy that the valuable Medical Officer Assistant grade has no counterpart in British medical practice.

The hospital has a unique Administrative Officer, Mr Ranjit Singh Rai, MBE. An ex-Gurkha soldier, he has been Administrative Officer since the hospital's opening and played a major role in its conception and construction. His encyclopaedic knowledge of all matters relating to the hospital and his unfailing kindness and friendship has made him an indispensable ally to countless clinicians over the last 25 years.

Clinical Material and Case Load

With no equivalent facility in the region, great demands are placed on the hospital. A local regional hospital exists but it was poorly staffed, and conditions there were described by an eminent British Surgeon during a visit in 1982, as mindful of Scutari before Florence Nightingale².

The wards and outpatients of BMH Dharan were crowded with patients, and the extent and severity of their diseases evoked images of the wards of London teaching hospitals in the nineteenth century. Sitting in outpatients clinics was like opening the pages of an ancient textbook of pathology.

Many patients presented with florid and untreated disease – neglected burns, complex fractures, TB and pyogenic osteomyelitis, disseminated malignancies and untreated congenital malformations. Patients trekked for days and sometimes weeks to seek treatment. Some were beyond help, but all presented surgical challenges.

Crisis management was routine. The working week started with an early morning ward round to clear beds. This was followed by a surgical clinic lasting all day. Referral to this clinic was from Medical Officer Assistants who had earlier sorted potential patients in a "vetting area" close to the hospital entrance. This was, in effect "triage", and was essential to the smooth running of the hospital³. Referral was also from hospital colleagues and from medical workers in the hills working for the Save the Children Fund, Britain Nepal Medical Trust and the Overseas Development Agency.

Clinic size varied with between 60 and 80 new patients presenting, of whom most required urgent treatment. From these Monday clinics, an operating list was compiled. It will be appreciated that clerking and pre-operative investigations had to be kept to a minimum. Blood for transfusion was available only if relatives donated, and most were unwilling to do so. The

operating list for the following day, Tuesday, was partly planned but had to be flexible in that additions were invariably made as the day progressed. Wednesday was reserved for post-operative follow up, X ray reporting and administration. Thursday and Friday were a repetition of Monday and Tuesday, and Saturday was set aside for a combined teaching round involving all hospital staff and visiting doctors and nurses from the Save The Children Fund, Britain Nepal Medical Trust and other agencies.

The case load was in part related to what individuals and available resources could bear. Inevitably follow up was haphazard. It is not surprising that these aspects affected the type and number of patients selected for admission and treatment.

During the author's tenure from October 1985 to November 1986, 3899 patients were seen in clinics. From this group, 1426 patients were operated on, either as inpatients or outpatients.

Analysis of Case Load

The lack of national medical and health statistics make discussion on disease prevalence impossible. The national incidence for individual diseases can only be guessed. The case load was very general and all specialities were represented.

Orthopaedic and trauma problems could have filled all available beds continuously (Table 1). Rigid selection of cases to avoid long term bed occupancy was practised, and patients with an anticipated quick good result were preferred. Gross osteomyelitis of multiple sites was a constant problem with regard to management and length of stay. A conservative approach was adopted and only ill children with an acute exacerbation of their disease were admitted (Fig 1). On the other hand, closed and operative treatment of paediatric fractures, and operative management of congenital abnormalities such as talipes was much practised, and proved very rewarding (Fig 2).

The abdominal cases were varied and differed from British practice in many respects (Table 2). In East Nepal, large bowel malignancy appeared to be very rare, only a handful of cases presenting to the hospital in the year under discussion. Abdominal tuberculosis, usually presenting with ascites and incipient obstruction, was common, but settled on conservative measures, and such cases were managed by the physicians. The high incidence of biliary disease in the practice was noteworthy. Invariably the disease affected obese pensioners' wives and was probably related to their relatively affluent lifestyle. Hepatic and renal hydatid disease was encountered frequently. One nonchalant individual was noticed in clinic as he casually winked a daughter cyst from his external urinary meatus. He later tried to present us with a matchbox full of daughter cysts! Duodenal ulcer disease was rare, our only perforation presenting in a European woman who arrived in a very ill state 24 hours after onset. Gastric

Table 1
Operations – Orthopaedics and Trauma

Manipulation under anaesthetic – Fractures and Dislocations	203	Lengthen <i>Tendo Achilles</i> and Soft Tissue Release	8
Wound Toilet – Soft Tissue and Compound Fractures	73	Potts and Psoas Abscesses (Spinal Tuberculosis)	8
Operative Reduction of Fractures	35	Application of External Fixator	4
Removal of Internal Fixation Devices	29	Repair <i>Tendo Achilles</i>	2
Amputations – All	26	Meniscectomy	1
Above Knee – 6, Below Knee – 5			
UL – 5, Symes – 1, Digit 9			
Sequestrectomy and Saucerisation	21	Application of Skull Tongs	1
Joint Toilet – Septic Arthritis	15	Elevation Depressed Fracture Skull	1
Revision Amputation Stumps	9	Ventriculo-Peritoneal Shunt for Hydrocephalus	1
		Total	437

Fig 1. Osteomyelitis with pathological fracture of femur

Fig 2. Neglected Talipes Equino Varus

ulcers and gastric cancers were common and were picked up at most endoscopy sessions. This service was provided by both physician and surgeon on different days, making it virtually available on demand.

This high incidence of positive findings was unusual and will be the subject of a future paper by both

Table 2

Operations – Abdominal Wall and Gastro-Enterology

Upper Gastrointestinal Tract Endoscopy ± Biopsy (Surgical Figures only)	66	Incisional Hernia Repair	2
Herniotomy	52	Highly Selective Vagotomy	2
Sigmoidoscopy ± Biopsy	47	Oversew Perforation – Duodenal Ulcer	2
Cholecystectomy and Peroperative Cholangiogram	40	Cholecystectomy and Explore Common Bile Duct	2
Laparotomy and Biopsy only Cirrhosis – 16, Inoperable Malignancy – 10	26	Right Hemicolectomy	1
Lords Manual Dilation of Anus	25	Burst Abdomen	1
Herniorrhaphy	22	Truncal Vagotomy and Gastroenterostomy	1
Partial Gastrectomy – Gastric Ulcer	7	Ramstedt's Pyloromyotomy	1
Gastrectomy – All types – Cancer	6	Triple Bypass – Carinoma Pancreas	1
Hepatic Hydatid Cystectomy	5	Partial Hepatectomy	1
Lay Open Fistula in ano	4	Laparotomy – Division Adhesion – Tuberculosis	1
Snare Rectal Polyp	3	Laparotomy – Faecal Fistula – Strangulated Hernia	1
Milligan Morgan Haemorrhoidectomy	3	Laparotomy – Gunshot Wound – Small Bowel + Mesentery	1
Closure Loop Colostomy	3	Laparotomy Repair Ureteric Injury	1
Transverse Loop Colostomy – Perforation – Tuberculosis	3	Anterior Resection	1
Drain Amoebic Liver Abscess	3	Ileostomy and Mucus Fistula	1
Transverse Colectomy	2	Closure Ileostomy	1
		Total	337

clinicians. Endoscopy was practised without sedation and was well tolerated. This approach was not the result of callousness but of necessity; the patients required their full senses to trek to their homes, often a hazardous undertaking.

Urological practice (Table 3) was remarkable for the number of children presenting with bladder stones, often large and multiple. The eliciting of a history of strangury with relief on lying down was invariably diagnostic and was recognised by local people. The relative absence of an older age group affected our practice, and very few patients presented with prostatic disease. Urethral strictures were common, usually presenting with retention. Most responded to regular urethral dilatation. We noted that many traditional healers practised this art and, indeed, many other procedures which brought us into conflict with them from time to time⁴.

Advanced carcinoma of penis often presented at a late stage with patients with severe pain and bleeding, and with an unforgettable smell.

Skin and soft tissue conditions formed a significant group (Table 4). Abscesses, particularly common during the summer monsoon, were unusual by virtue of size, multiplicity of sites and amounts of pus drained, up to 500 ml being common. Tropical pyomyositis, rarely seen in Western practice, accounted for 30% of all abscesses; the condition used to be difficult to diagnose as the pus was deep to the deep fascia, but ultrasound has revolutionised the diagnosis and was highly accurate in localising pus. Breast abscesses in lactating mothers often presented very late with total destruction of breast tissue and causing serious social consequences amongst a population dependent upon breast feeding. Living conditions resulted in frequent and severe burns and scalds to children, usually presenting late with hideous deformity. An almost universal keloid tendency added to their misery and made management difficult and prolonged.

The surgery of cleft lip and palate was particularly rewarding (Fig 3). The hospital has gained a reputation over the last 25 years as a centre for the repair of these

Table 3
Operations – Urological Surgery

Urethro-Cystoscopy – Dilatation – Biopsy	56	Nephrectomy	Pyonephrosis – 1, Hydatid – 1, Wilm's Tumour – 1
Cystolithotomy	16	Radical Amputation of Penis and Castration	
Jaboulay	16	Urethrolithotomy – Children	
<i>Wuscheria Bancrofti</i> – 3			
Circumcision	9	Episadas Repair	] – Same Patient
Pyelolithotomy	5	Closure Bladder Extrophy	
Retropubic Prostatectomy	5	Amputation Penis	
Hypospadas Repair	4	Orchidopexy	
Orchidectomy – Infection	4	Urinary Diversion – Ileal Conduit	
		Spinal Cord Tumour – 1, Carincoma Uterus – 1	
Ureterolithotomy	4	Vasectomy	
		Total	137

Table 4
Operations – Skin, Soft Tissue and Plastic Surgery

Abscesses – All	112	Breast Biopsies
Simple – 52, Pyomositis – 36, Breast – 24		
Split Skin Grafts – including Meshing	60	Revision of Scars
Excision Simple Cysts – All	52	Excision Keloid and Steroid Injection
Millard Repair Cleft Lip	32	Release Syndactyl Fingers
Release Contractures	25	Varicose Vein Surgery
Kilner/Wardill and Veau Repair Cleft Palate	20	Toilet Mastectomy
Excision of Rodent Ulcers and Epitheliomata	15	Advancement Rotation Flap
		Total 341

conditions. All age groups were represented and the whole range of severity was seen from unilateral cleft lip alone to complete bilateral clefts of lip, alveolus and both palates. As a general rule a Millard advancement rotation flap was used for all lip repairs and presented no problems. Palate repair did present difficulties both technically and with regard to follow up. No prosthetic service was available. Palate repairs were after the fashion of Kilner and Wardill for soft palates, and Veau

for hard palate defects. It is sad to relate that most palate defects did not present until late childhood by which time nasal speech and recurrent ear infection were well established. Nevertheless repair of these defects has provided immense satisfaction to many surgeons and patients over the years.

One of the commonest procedures performed at Dharan was split skin grafting. A meshing device was essential due to the extent of many of the defects caused

Fig 3a. Child with unilateral cleft lip (and imperigo)

Fig 3b. Same child after Millard Repair

by burns and serious trauma. Skin cancers were noteworthy by virtue of their extent (Fig 4). Almost all were squamous cell carcinomas and responded well to wide excision and grafting. Carcinoma of breast was unusual in that only 3 cases were seen, all presented late with chest wall involvement and in great distress. It would be interesting to know the true incidence of this disease in Nepal.

Obstetrics and Gynaecology, not usually the domain of the general surgeon, provided some interesting

Fig 4. Keratinising squamous cell carcinoma

challenges. Three midwives ran this department competently, involving the surgeon only when specific procedures were called for such as Caesarean section or ovarian cystectomy (Table 5). Ovarian cystectomy differed from normal practice by virtue of cyst size—10–15 kg on average (Fig 5). Complex gynaecological problems were held over for review by the visiting obstetrician and gynaecologist on his twice yearly visits.

Thoracic problems presenting to the surgeon were few and usually involved bronchoscopy and biopsy (Table 6). Late disease—TB or carcinoma or both—was the usual finding. Carcinoma of the oesophagus presented difficulties. Three oesophagectomies were carried out but proved very costly and time consuming and involved too many nursing staff in the immediate postoperative period.

Colloid goitre was endemic, but few patients presented, most tolerating their often huge goitres with equanimity. The local belief that goitres contained gold may also have had some effect on attendance. Those patients who did present for thyroid surgery had symptomatic multinodular goitres or other tumours including an enormous undifferentiated tumour of neuroendocrine origin. Only 2 parotidectomies were carried out; these were for a pleomorphic adenoma in a 12 year old girl, and an acinous cell tumour in an old man (Table 7).

Ear, nose, throat and oral surgery, and unclassified operations are listed in Tables 8 and 9 respectively. Carcinoma of tongue and nasopharynx generally presented late with the patient distressed and beyond help; opiates were administered liberally. Entitled pensioners were referred to the North Indian University Medical School at Patna, 100 miles south of Dharan, for

Table 5
Operations – Obstetrics and Gynaecology

Ovarian Cystectomy	22	Manual Removal Placenta	2
Caesarean	20	Anterior Repair	2
Dilatation and Curettage	12	Posterior Repair	2
Total Abdominal Hysterectomy	5	Closure of Vesico-Vaginal Fistula	2
Pomeroy Sterilisation	4	Closure of Recto-Vaginal Fistula	1
Evacuation of Retained Products of Conception	4	Salpingo – Oophorectomy – Pyosalpinx	1
		Total	77

Fig 5. One of bilateral ovarian cysts

Fig 6. Cavernous sinus thrombosis

Table 6
Operations – Thoracic Surgery

Bronchoscopy + Biopsy	20	Thoractomy – Excision congenital Bullae and Pleurectomy	1
Thoracoplasty – Drain Empyema	4	Oesophagectomy	3
		Trans-Thoracic – 2, Trans-Hiatal – 1	
		Total	28

Table 7

Operations – Endocrine, Exocrine and Lymph Nodes

Lymph Node Biopsy	36	Superficial Parotidectomy	2
Thyroidectomy Partial – 9, Total – 1	10	Submandibular Gland excision	2
Block Dissection Cervical – 3, Inguinal – 2	5		
Total			55

consideration of radiotherapy and chemotherapy. This Institute gave generously and freely of its time to those of our patients fortunate enough to reach it. Dharan, like all hospitals, produced its share of the unusual and odd during the year under review. The following two paragraphs give some illustrations.

One elderly man presented with an upper limb replaced by a malignant histiocytoma. A 7 year old boy was seen with an enormous tumour invading his scalp and eroding his skull vault at numerous sites, subsequently histology revealing a diagnosis of Histiocytosis X. A one year old baby present *in extremis* having virtually exsanguinated from an infantile fibrosarcoma replacing his hand. Cavernous sinus thrombosis was seen in a young woman who recovered after a very stormy course (Fig 6).

Wild animal attacks still occur sporadically. A 12 year old was seen with half his face avulsed following an attack by a Himalayan black bear. Finally an elderly man appeared having been trampled by a herd of elephants; an old wartime amputee, he could not get out of the way quickly enough.

Postscript

A one year tour of duty as a surgeon in Nepal provided wide-ranging clinical problems and unique experience but this was tempered by limited resources. It was tempting to treat children in preference to other groups. They were numerous, and a delight to treat, and they tolerated surgery well, mobilised quickly and allowed a very rapid turnover.

Table 8

Operations – Ear, Nose, Throat and Oral Surgery

Biopsy Carinoma Tongue – All inoperable	3	Maxillectomy	1
Biopsy Nasal Space for Carinoma	3	Simple Mastoidectomy	1
Tracheostomy	3	Dental Extraction	1
Excision of Branchial Cyst	1		
Total			13

Table 9

Operations – Unclassified

Wide excision of undifferentiated Carinoma of Neck	1	Amputation for Infantile Fibrosarcoma – Hand	1
Excision of Histiocytosis X of Scalp	1	Intra-Abdominal Neurofibroma	1
Excision of Schwannoma Median Nerve	1	Amputation for Vascular Hamartomatous Lesion of whole leg	1
Cut back procedure for Low Imperforate Anus	2	Bear Bite – Plastic Repair Face	1
Total			9

Follow up and surgical audit presented problems; so many patients who had trekked for days or weeks to reach help were reluctant to return simply for review. Patients needing multiple procedures and those on long term treatment were encouraged to stay in the Dharmasala until completion of treatment. For young adult males, who had to return to their small farms and livestock, this was rarely possible. Factors such as these affected acceptance for treatment in the first instance, and caused distress.

It is obvious that a surgeon cannot work in isolation. Working in Dharan required a high degree of co-operation between colleagues and this was a feature of clinical life. The consultant physician during my tour was Lieutenant Colonel Guy Ratcliffe RAMC who was also Senior Medical Officer and Commanding Officer. An old Gurkha and Nepal hand, his guidance, clinical advice and friendship were greatly appreciated, and made working in Dharan a continuing pleasure.

Two anaesthetists, not including leave reliefs, graced Dharan during the period of this review – Major Nicholas Strowbridge RAMC and Colonel Tony Booth L/RAMC. Both provided an excellent anaesthetic service and involved themselves in all aspects of patient care. It is to be noted that the resident anaesthetist,

when not involved in theatre, acts as doctor to the hospital and cantonment staff and their families. Both were also adept at surgery and, during busy periods, gave invaluable help by treating many patients on the operating list.

In conclusion, any surgeon with a Nepal tour in prospect would be well advised to acquaint himself with those areas of clinical surgery not usually dealt with by a general surgeon in Western practice, including gynaecology, obstetrics, general orthopaedics and the surgery of cleft lip and palate.

Acknowledgement

The author wishes to express his thanks to Mrs Cynthia Hughes who kindly typed the manuscript.

REFERENCES

1. LANGLANDS A M. Dharan Cantonment – The Early Days. *Journal of the Brigade of Gurkhas* 1986; 216–217.
2. WAKELEY SIR JOHN. Report of the Hospital Recognition Committee. *Royal College of Surgeons of England* 1982.
3. RYAN J M. The Falklands War: Triage. *Ann R Coll Surg* 1984; 66: 195.
4. STROWBRIDGE N F and RYAN J M. Inappropriate Traditional Treatment Resulting in Limb Amputation. *R Army Med Corps* 1987; 133: 171–174.

NOTICE TO ADVERTISERS

Space orders should be sent to Combined Service Publications Ltd., P.O. Box 4, Farnborough, Hampshire GU14 7LR. Artwork and/or Copy should be forwarded to the same address to arrive by the first day of the month preceding issue, publication dates being February, June and October of each year.

Advertising Rates and Technical Details are as listed in British Rate and Data.