

Distance Education and Postgraduate Surgery:Follow up

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Good Health, for which surgery is a part, is a prerequisite for Community development. There are huge variations in life styles and resources in the Commonwealth (Figs 2-4). The surgical treatment of patients in poorer societies within and outside the Commonwealth is bedevilled by problems of access and quality. The solution to this needs better treatment by available surgical staff, and surgical treatment by trained non-surgeons. For both improved theory and skills training of these groups, the choice lies between the use of face to face or distance/ 'self learning' learning for theory, and apprenticeship or classroom (with simulation) situations. 'Self learning' for theory, and classroom simulation materials which can be sent around and help develop training situations away from major centers are advantageous, as the time involved for centralized training is often not available. The use of these methods also helps even out the adverse effects inadequate library and teacher facilities available in different and particularly less urban hospitals. The Commonwealth of Learning (COL) in collaboration with the Royal College of Surgeons of England (RCS) produced materials to help in both situations (Ref.1,2) (Fig. 5)

At the Commonwealth of Learning Conference in Durban in 2002 two papers described the materials that were used, their distribution, and the initial response to their use (3,4). This paper, summarizes the previous papers so as to orientate the reader, and describes the present position in Sri Lanka, Bangla Desh, and sub-Saharan Africa.

THE THEORY MATERIAL

The English RCS has a Distance Self learning course developed for English postgraduates (Surgeons In Training Education Programme- STEP). This was developed partly to deal with variable facilities even within England! The COL brought this up to date with references to review and similar authoritative articles, and with page references to the new editions of recommended textbooks.

EXAMPLES

Trauma

EXAMPLES OF REFERENCE AND MATERIAL UPDATES

(p.4 C96 c3 p49-51 C99 c2 p49-50, 58. team - no info.), p.7 C96 c2 p7-20; C99 c1 p3-18), (p.10 C96 c2 p15-19 and c3 p40-44, 47-49; C99 c1 p13 -18 and c2 p36-42, 47-49), p.13 C96 c3 p32-37 C99 c2 p31-37)
(see King et al Ch 50, 51, 52)

Mere knowledge about the treatment of trauma is not enough. There is an ethical imperative for surgeons to be involved in the prevention of road and industrial accidents - and to help to activate lethargic officialdom in giving time and money to prevention. This is often difficult, as it is the poor that are mainly affected by at least, bad working conditions. An even more difficult dimension is the matter of inter- and intra - national armed conflict and the terrible trauma (physical and mental) it produces. Do surgeons have a political sensitivity and role in their armamentarium?

Neglected trauma and burns are a huge problem. The number of patients who must die in the very acute phase due to a lack of treatment, or adequate treatment is vast. The numbers who die in the sub-acute phase after delay in treatment is probably larger. Good figures do not exist. Most victims are either children or young adults; trauma being killer number one in most countries between the ages of ten and 40 years. The solution to this must be a combination of primary and secondary prevention. Surgeons are usually not so bothered about trauma as it is less glamorous than say surgery for congenital anomalies, open-heart surgery, or transplants.

The late sequelae of delayed treatment include scarring and other deformities, and present a vast social and surgical problem that is not dealt with in any meaningful way. More specifically for bone and joint deformities the use of osteotomy, bone grafting, and joint replacement with good soft tissue correction are available at hospitals beyond the physical or financial reach of many patients. The use of teams of surgeons visiting places where there are collections of patients is the best method currently available to help treat these patients.

Transport of trauma patients is a huge problem. Immediate and adequate payment to private individuals who bring patients in may be the cheapest solution to the transport difficulty in the poorer countries, given the fact that the commonest cause of death of the young (5-35 years) is trauma, and that delay is an important factor. Education to enable these patients to be kept unfed and semi prone without torsion on the neck from the time of the injury at the site, while being placed in a vehicle or carrier, during transport, while being unloaded into the hospital trolley, on the trolley, while going into the

casualty examination centre, and at every stage thereafter, is essential and neglected. Aspiration of force fed fluids, vomit, or blood, is the commonest cause of death between the incident and the operating theatre or ward.

A different facet is that data collection in trauma patients, particularly in those involved in non-accidental injury, must be complete enough to allow assessment of severity (e.g., grievous, non grievous, life-threatening etc.) in a court of law. The location, direction, nature and depth of all external injuries must be recorded in enough detail to estimate their age, and cause. Injuries noted at operation must similarly accurately be described. The exact legal definitions vary from country to country, but in many jurisdictions it is the junior and senior surgical staff who have to give evidence, not a Forensic specialist.

If a trauma team is formed (surgeons, anaesthetists, nursing staff, and other paramedical staff) this helps in the management of mass trauma in particular. Trauma management in any event is a team effort - and the more used the team is to working together swiftly, the better for the patient.

Effective Health Care (1996) 2;5

Health promotion intervention for the prevention of accidents in younger people. The use of child motor cycle and cycle helmets and child car seat restraints can reduce serious injury to children involved in road traffic accidents. Urban road safety measures such as the provision of crossing patrollers, measures to redistribute traffic and improve the safety of individual roads can reduce the rate and severity of childhood accidents. Pavements reduce the risk of pedestrian injury. Targeting of households at higher risk combined with home visits, education and the free distribution of devices is likely to make the most impact. Educational programmes by themselves appear to have little effect. However, a number of community programmes that involve local participation and use a broad range of interventions have been effective in reducing childhood injuries from a wide variety of causes.

(Comment: - The surgeons of each country need to define a high risk household, and also the kind of action required to improve pedestrian safety. TRAUMA IS THE MAJOR KILLER OF CHILDREN AND YOUNG BETWEEN THE AGES OF FIVE AND FORTY IN MANY COUNTRIES.)

Effective health care 1996 volume 2 number 4 Preventing Falls and Subsequent Injury in Older People.

The risk of falls increases with age. Falls in older people often result in fractures. There is some evidence to suggest that exercise, such as balance training, is effective in reducing the risk of falls in older people. Access to such interventions should be offered and ways of promoting uptake should be investigated. New programmes should be part of controlled evaluations. Home visits and surveillance to assess and where appropriate, modify environmental and personal risk factors can be effective in reducing falls. This can be carried out by health workers or trained volunteers. Soft hip protector pads have been shown to dramatically reduce hip fractures in frail older people in residential care. Their effect and acceptability in the community needs further research. High dose Vitamin D supplementation with or without calcium appears to be effective in reducing fractures. Research is needed to identify the most cost-effective strategy.

(Comment - as the populations in the developing world are increasing, this will become an increasingly important topic. The value of HRT in postmenopausal women, as against or with sunlight, calcium, exercise, and a good diet - is also a matter that surgeons need to address as regards fracture prevention. Whether the elderly will be with family, or in care, also has to be pondered.)

Morikawa-M (1998) The changing role of civilian surgeons in conflicts: a meta-analysis of epidemiological data. *Med-Confl-Surviv.*; 14; 237-242.

The high rates of critical part trauma in studies of recent conflicts show the increasing importance of trauma management skills by civilian surgeons.

Stipancic-I; Zarkovic-N (1997)[The effect of trauma surgery on immune system function]
Lijec-Vjesn. 119; 279-290.

Severe accidental trauma often causes an immunosuppression accompanied by infection and sepsis which may be fatal. Furthermore, elective surgery could also cause dysfunction of the immune system. While physiopathological mechanisms of such post-traumatic immune system dysfunctions are still not sufficiently understood, the scope of research interest is focused particularly on the cytokine network and, recently, on the "non-specific" mediators of oxidative stress. In this article some novel findings about the dysfunction of the immune system caused by trauma, including surgical injury, are briefly summarized, and the involvement of oxidative stress in these changes is emphasized.

The original course manuals and tapes could thus be used. In addition entirely new sections and supplements were written that are relevant to countries where patients present late or facilities are very basic.

EXAMPLE

MODULE 0 - A DIFFERENT ORIENTATION	Error! Bookmark not defined.
0.1 Introductory remarks	Error! Bookmark not defined.
0.2 Problems of poor facilities, late presentation, poor access etc; these comments are applicable to each section of the course	Error! Bookmark not defined.
0.2.1 Availability of staff competent to diagnose and operate	<i>Error! Bookmark not defined.</i>
0.2.2 Resources of patients and the community.....	<i>Error! Bookmark not defined.</i>
0.3. Education and Attitudes.....	Error! Bookmark not defined.
0.3.1. General	<i>Error! Bookmark not defined.</i>
0.3.2. Pre- and Post- operative communication	<i>Error! Bookmark not defined.</i>
0.4 Specially vulnerable groups in developing economies.....	Error! Bookmark not defined.
0.4.1 The old	<i>Error! Bookmark not defined.</i>
0.4.2 Spouses and children	<i>Error! Bookmark not defined.</i>
0.4.3 The very young: general comments and specific problems.	<i>Error! Bookmark not defined.</i>
0.5 Special attitudes from the surgeon	Error! Bookmark not defined.
0.5.1 Pragmatism	<i>Error! Bookmark not defined.</i>
0.5.2 Staging	<i>Error! Bookmark not defined.</i>
0.5.3 A comprehensive approach	<i>Error! Bookmark not defined.</i>
0.5.4 Prevention	<i>Error! Bookmark not defined.</i>
0.5.5 Continuing Education	<i>Error! Bookmark not defined.</i>
0.6 Specific groups of problems.....	Error! Bookmark not defined.
0.6.1 Anaesthesia	<i>Error! Bookmark not defined.</i>
0.6.2 Acute conditions	<i>Error! Bookmark not defined.</i>
0.6.3 Neoplasms	<i>Error! Bookmark not defined.</i>
0.6.4 Non-acute surgical conditions.....	<i>Error! Bookmark not defined.</i>
0.7 Common lacunae	Error! Bookmark not defined.
0.7.1 Pain	<i>Error! Bookmark not defined.</i>
0.7.2 Intercurrent infection	<i>Error! Bookmark not defined.</i>
0.7.3 Replacement of fluid.....	<i>Error! Bookmark not defined.</i>
0.7.4 Nutrition	<i>Error! Bookmark not defined.</i>
0.7.5 Negative criticism	Error! Bookmark not defined.
Unit 1.....	Error! Bookmark not defined.
Unusual Colonic and Rectal problems	Error! Bookmark not defined.
Amoebiasis.....	Error! Bookmark not defined.
Lymphogranuloma venereum (Chlamydia trachomatis)	Error! Bookmark not defined.
Schistosomiasis.....	Error! Bookmark not defined.
Whipworms (Trichiurus).....	Error! Bookmark not defined.
Threadworms.....	Error! Bookmark not defined.

Other new sections deal with the diseases seen in the developing countries, also adding new references with a summary.

EXAMPLE

3.1.1 *The Colon, rectum and anus*..... *Error! Bookmark not defined.*

3.2 UNIT 2

Gooszen AW, Geelkerken RH, Hermans J, Lagaay MB, Gooszen HG. (1998) *Temporary decompression after colorectal surgery: randomized comparison of loop ileostomy and loop colostomy. Br J Surg 85: 76-79.*

Transverse loop colostomy was safer in this study including 76 patients; however both methods had complications, both at construction and subsequent closure.

Merad F, Hay J-M, Fingerhut A, Yahchouchi E, Laborde Y, Pelissier E et al. (1999) *Is prophylactic pelvic drainage useful after elective rectal or anal anastomosis? : A multicenter controlled randomised trial. Surgery 125: 529-535.*

Some 494 patients were randomized; there was no significant difference in anastomotic leak rate (total 6.3 per cent) or death (3.2 per cent drain versus 4 per cent no drain).

Merad F, Yahchouchi E, Hay J-M, Fingerhut A, Laborde Y, Langlois-Zantain O. (1998) *Prophylactic abdominal drainage after elective colonic resection and suprapromontary anastomosis: A multicenter study controlled by randomization. Arch Surg 133: 309-315.*

In this study of 319 patients, drainage did not reduce the risk of complications such as anastomotic leakage - 9% vs 8% with no drain.

1. prevent neuropathy) at 5 mgm/kg/day; and
2. Pyrazinamide given at 20-30 mgm/kg/day. Ethambutol is a bacteriostatic drug given at a dose of 15-20 mgm/kg/day - optic neuritis being a side effect. The use of combinations of drugs has reduced the time for therapy to 6-8 months from 2 years. The favoured regimes are rifampicin and INH for 6 - 8 months with either streptomycin or PZA for the first 2 months as well or ethambutol and PZA for the first four months and then the other two alone for a further four months.

HYDATID DISEASE

This is an infestation by the parasite - *Echinococcus granulosus* whose usual hosts are dogs and sheep. It is a tapeworm. It is frequent in the Middle East, South and East Asia and South America. Australia has virtually eradicated it. Humans ingest the eggs from the faeces of sheep and the cysts - the larval form develops in the lungs, liver, spleen, and other organs. In the lung the condition may be found incidentally, or the patient may have dyspnoea, haemoptysis, or may cough up the lining of the cysts - a grape-skin like membrane and watery fluid. Secondary infection can occur in a cyst. Diagnosis is by chest X-ray that may show the cyst with or without a crescent of air. Infection or collapse can modify the appearance. The most unusual presentation on X-ray is a 'water lily' appearance produced when the collapsed laminated cyst wall floats on the intrapleural fluid. Confirmation is by the Casoni test or a complement fixation test. Treatment is surgical by removal of the cysts without rupturing them, or even lobectomy.

ACTINOMYCOSIS

This disease affects the lungs in about 10% of cases and is usually the result of downward spread from the jaws or upward spread from the abdomen. The lower lobe ends up being full of cavities and fibrous tissue. Differentiation from other causes of lower lobe sepsis may be difficult.

All this was published as a floppy disc book to facilitate distribution and to reduce costs, entitled 'Into the Commonwealth and Millennium with STEP'.

The book is indexed to facilitate its use with the original manuals.

EXAMPLE

1. **MODULE 1 - SURGICAL DIAGNOSIS**..... *Error! Bookmark not defined.*
 - 1.1 Unit 1..... **Error! Bookmark not defined.**
 - Lymph Nodes..... **Error! Bookmark not defined.**
 - 1.1.1 *Clinical History and Examination*..... *Error! Bookmark not defined.*
 - 1.1.2 *Benign and Malignant skin conditions*..... *Error! Bookmark not defined.*
 - 1.1.3 *Gastric cancer* *Error! Bookmark not defined.*
 - 1.2 Unit 2..... **Error! Bookmark not defined.**
 - 1.2.1 *Gastrointestinal bleeding*..... *Error! Bookmark not defined.*
 - 1.2.2 *Pyloric stenosis* *Error! Bookmark not defined.*

1.2.3 Carcinoma of the Tongue..... *Error! Bookmark not defined.*

1.2.4 Carcinoma of the stomach..... *Error! Bookmark not defined.*

1.3 UNIT 3 ERROR! BOOKMARK NOT DEFINED.

Also included are questions designed to stimulate the student to think of his/her own environment and answer appropriately and mentally at least in an interactive manner.

EXAMPLES

QUESTIONS

1. Discuss the differential diagnosis in a patient with fever, abdominal pain, and a mass in the right iliac fossa.
2. Write an essay on hepatomegaly in a/your country/ continent.
3. Is tuberculosis now the great mimic? Discuss this question from the point of view of a surgeon.
4. The surgeon and haematuria. Discuss this subject.
5. Describe the diagnostic measures in 1. a patient with an ulcer of the leg, and 2. skin 'lumps'.
6. "Blood in the stools with abdominal pain". How would you prevent and manage this clinical problem (from both an International and National point of view)?
7. Discuss the pathogenesis and management of strictures.
8. What kinds of 'tropical' diseases may be seen by a surgeon in patients in the developed world subsequent to increases in air travel and also the AIDS epidemic? How are they diagnosed?
9. Write an essay on sinuses and fistulae (this will take 2 hours)
10. As an exercise, take any of the diseases mentioned in this text. Describe the changes in presentation, the problems of diagnosis, and the modification of management needed if you put the disease concerned in to any of the boxes in this matrix (which I am sure you can and must personalize and improve!): -

For Acute Conditions	1	2	3	4	5
<i>Vary the timing and facilities and illnesses</i>	All imaging and lab available	No CT; No Ultrasound at night	As for 2 but no lab or X-ray at night	Only basic lab and X-ray in day time	No lab or imaging

Presented 24 hours after first symptoms (a.f.s)					
Pr. 48 hours a.f.s.					
Pr. 84 hours a.f.s.					
Pr 1 wk. a.f.s.					

(Try for appendicitis, intestinal obstructions of various causes, acute abdomen after trauma, cholecystitis, splenic infarction, Very painful goitre, cold limb etc.)

For Non-Acute Conditions	1	2	3	4	5
<i>Vary the timing and facilities and illnesses</i>	All imaging and lab available	No CT; No Ultrasound at night	As for 2 but basic lab only, no X-ray screening, no ultrasound	Only basic lab and X-ray. Histopath off-site	No lab or imaging. No Histopath
Presented 1 month after first symptoms (a.f.s)					
Pr. 3/12 a.f.s.					
Pr 6/12 a.f.s.					
Pr 12/12 a.f.s.					

(Try for malignancy of hollow organs, solid organs; TB in various sites, inguinal hernia, recent constipation, renal colic, haematuria, subacute obstruction symptoms, epigastric pain, etc.)

The references are few but include several free internet sources.

EXAMPLES

WEB SITES

All these start as <http://www>. To be followed immediately by:

Example is (<http://www.york.ac.uk/inst/crd>)

bmj.com/ (the British Medical Journal in full)

bjs.co.uk (the British Journal of Surgery home page gives access to an excellent collection of reviews from many sources in summary - used extensively in this document; the summaries are free)

cancerbacup.org.uk/guidelines/ukindex.shtml (information on cancer treatment for health professionals)

centreforhiq.demon.co.uk/tb2.htm (guidelines on valid information of patients - to use as a guide as to what can be done)

dundee.ac.uk/MedEd/help/welcome.html (excellent and easy to access advice for surgeons and other health workers about palliative care problems)

evidence.org (about a publication - Clinical Evidence to give a guide to best practice - this is new and will develop; it is a subscription service)

jr2.ox.ac.uk:80/Bandolier (important summary of evidence based medicine issues)

gwent.nhs.gov.uk/trip (information from reviews on primary clinical care effectiveness)

medscape.com/misc/formdrugs.html (A database of drug information searchable by drug names or diseases - very good; registration needed but it is free)

nlm.nih.gov/ (US National Library of Medicine for searches on PubMed or Internet Grateful Med - both of which are free and have sets of related articles, some full text articles, some abstracts etc. The PubMed search system is very useful)

omni.ac.uk (A group developing lists of useful databases - access is free)

talcul.org (David Morley's set of low cost teaching aids - simple material for public education with modifications - most of these are non surgical but they show what can be done at little cost)

thelancet.com/newlancet/eprint/ (the Lancet)

update-software.com/cochrane/htm (Cochrane Library)

york.ac.uk/inst/crd or **nhscred.york.ac.uk/** (Effective Health Care reviews - Data base of Abstracts of Reviews of Effectiveness for the UK government - many of the surgical ones are in the text of this STEP update at suitable places)

The materials were distributed to 12 centres in Africa and Asia. The material was welcome as being an effective way of upgrading the services available to less fortunate communities. Students were taking time to accept the discipline of teaching themselves. I have had the opportunity to review onsite usage in a non quantitative manner in four centers.

In Sri Lanka initially the newer basic science and clinical unmodified newer Royal College of Surgeons (RCS) material was purchased and made available on part payment to surgical trainees after they passed an examination in Basic science at the onset of a 3 year period before they sat an examination in Clinical aspects of Surgery. In the total training period written textual material usage was between 25-75% by 60%- most of this started during the first year. Reference material was read in the first year and all through even though texts not read towards the end. Less than 50% of 'questions and answers' were done even in the whole period. Of what was done most was in the first year- and most in 1 yr. What was read was deemed useful (10% said very useful). 40% wanted more supervision, 60% said no BUT in the cross questions 70% said they were not used to working alone or pacing themselves and doing assignments unsupervised. Some stated that the material did not deal with many problems and facilities relevant to the local situation. These comments lead to the idea of the RCS STEP material being modified with the help of COL before distribution.

Thus it is the COL RCS materials that are the subject of this presentation. In none of the locations was the material felt to be irrelevant and the COL RCS sponsored modifications were felt useful In all places however in the big centers trainees seemed to want much more support than more isolated persons who managed to get the material! The effort on the earlier evaluation appeared justified, and the distribution in future of such material to those doing surgery away from main centers seemed correct.

The theory material has continued to be very useful In Sri Lanka the modified RCS STEP course has been purchased at a nominal fee (this was introduced to create a greater commitment in trainees towards using the material) by 117 trainees. Of these of the 17 who could have finished the course only 4 have using all the course facilities. Of the others the progress rate is about 45% of what could have been achieved. The trainees find the self assessment sections particularly valuable in developing thinking processes (74%). 34% find it difficult to use the material in a modular fashion to match the particular appointments they are doing. However it is encouraging the 51% use it like that; the rest did not respond! 64% found the Floppy disc format for the update useful but of these 52% would have liked a printed version given to them- however of the total 61% actually printed out the floppy on their own.

There was no problem in access to computers (92%). In Bangla Desh the picture is similar but the proportion who uses the material in a modular form is less (41%). The feed back from the sub-Saharan African area does not include figures but the qualitative response indicates that the greatest perceived value is the challenge to trainees to think and work on their own. A general comment from all over is that trainees also find the material useful in teaching them to learn to pace themselves in their studies and make sure that no section of their knowledge base is forgotten as regards the study program. It is difficult to compare central and peripheral institutions in all areas as trainees rotate though both during training- but there is an impression that the use of the material is better away from the very big teaching centres. Overall the theory material is in considerable demand and trainees are getting more accustomed to pacing themselves.

THE SKILLS MATERIAL

Before proceeding further one has to address the matter of Practical skills training by Distance mode. This is a challenge, and often needs supplementation with face to face and mentored experiences. In Clinical Surgery this remains true. But there is no doubt that much theory and thinking can be learnt alone. The same applies to basic skills, and then the time with a mentor is better spent in the application of these skills to a patient. Many surgeons were unhappy with this concept as they believed it might undermine the value of apprenticeship training. Recently however even the more sceptical surgeons appreciate the value of getting apprentices who can carry out the basic psychomotor skills well. The senior surgeons' time is then better used. Many practical skills can be done in a safe or dangerous manner. There may be many safe methods of doing a task- but a person who operates on people must be happy with at least one safe method and know it well. It is to achieve this degree of confidence in a trainee that these materials were developed and are presented. It is also of interest that these materials were developed initially for use in resource rich situations, by very respectable surgical organizations- not industry; how much the more useful they can be in other environments (where there a lot of patients- but patients are not 'guinea pigs' on whom skills can be learnt in a trial and error manner)

The Royal College of Surgeons of England (RCS) has material used for Basic Skills Training to Postgraduates at the commencement of surgical training. These include materials to help develop trainers and suitable centres, and also written and visual material to guide trainees, that can be used with mentors and even alone. However several of the suggestions in the visuals and text can be implemented as shown only in a rich setting. In view of the universal

applicability of the principles in the material in a wider context, the Commonwealth of Learning (COL) and the Royal College of Surgeons of England (RCS) arranged to modify it to include techniques, and scenarios applicable in developing countries. There is also additional footage relevant to basic surgical work in the economic 'South'. The material under the heading Introductory Surgical Skills was launched on 13-9-2001 by the RCS and COL in CD ROM, Text, and Video formats together, sent out now to and used in centers in Asia and Africa at no cost. These centres can reproduce the material for teaching purposes.

The material contains text and illustrations and motion clips (in the CD and Video) that deal with the preparation of the operating environment, scrubbing, handling instruments, tying knots, suturing of various kinds, arrest of bleeding, the cleaning of wounds and application of plaster. There are sections of the suturing of various structures (e.g. blood vessels and intestine). The safe use of diathermy (heat coagulation to arrest bleeding or cut tissue) and safe laparoscopic surgery. The material used for the simulation is supplemented by low cost ideas and techniques, and techniques that are needed in the developing world environment if patients are not to be left untreated. (Many more of these will be illustrated in the presentation)

I add the contents page and examples of content in some detail:-

5 © 2001 The Royal College of Surgeons of England
Introduction to Surgical Skills: a Teaching Resource Pack

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SOME OF THE BASIC SKILLS

Module One

Open Surgery

Introduction to Surgical Skills: a Teaching Resource Pack

For finer work the scalpel may be held like a pen, often steadying the hand by using the little finger as a fulcrum Always pass the scalpel in a kidney dish. Never pass the scalpel point first across the table. The scalpel handle may be worn and the blade loose. If this is the case, do not put your finger on the back of the blade when steadying the scalpel!

Scissors

There are two basic types of scissors, one for soft tissues and one for firmer tissues such as sutures. Insert the thumb and ring fingers into the rings (or bows) of the scissors so that just the distal phalanges are within the rings Any further advancement of the fingers will lead to clumsy handling and difficulty in extricating the fingers at speed. Use the index finger to steady the scissors by placing it over the joint. When cutting tissues or sutures, especially at depth, it often helps to steady the scissors over the index finger of the other hand Approach the item to be cut with the blades closed: only open them at the last moment. Cut with the tips of the scissors for accuracy rather than using the crutch which will run the risk of damaging tissues beyond the item being divided and will also diminish accuracy. Make sure you can see the tips of the scissors when cutting – especially in a cavity. Do not snatch at the object you are cutting with the closing blades.

Dissecting Forceps

Hold gently between thumb and fingers, the middle finger playing the pivotal role

Module One

Open Surgery

HANDLING SUTURES

Basic Principles

Attempt to remove all elements of tension from any anastomosis. Insert the needle at right angles to the tissue and gently advance through the tissue avoiding shearing forces.

As a rough rule of thumb, the distance from the edge of the wound should correspond to the thickness of the tissue and successive sutures should be placed at twice this distance apart, ie approximately double the depth of the tissue sutured. All sutures should be placed at right angles to the line of the wound at the same distance from the wound edge and the same distance apart in order for tension to be equal down the wound length. The only situation where this should not apply is when suturing fascia or aponeuroses when the sutures should be placed at varying distances from the wound edge in order to prevent the fibres parting. For long wounds being closed with interrupted sutures it is often advisable to start in the middle and to keep halving the wound. No suture should be tied under too much tension or the subsequent oedema of the wound may cause the sutures to cut out or to develop ischaemia of the wound edge and delay healing. In most cases it is advisable to only go through one edge of the tissues at a time, but if the edges lie in very close proximity and accuracy can be ensured then it is permissible to go through both edges at the same time. For elliptical wounds following lesion excision, the edges of the wound may be undermined to help closure. However, the length of the wound will need to be approximately three times the width of the wound if closure is to be safe and not under too much tension. Skin hooks may be useful for display of the wound.

Forms of Suturing

You will be taught and asked to demonstrate the following types of suturing: interrupted sutures; continuous sutures (including the art of 'following'); mattress sutures; subcuticular sutures; and inverting and everting techniques.

IMPROVISED SUCTION DRAINS

Fig 6

Arterial suture

Fig.7

This picture shows one of the tricks of closing the abdomen after doing a laparotomy under local anaesthesia- put most of the intestines in at the end when the 'hole' in the tummy is smaller- they do not burst out then when ever the patient strains!

Fig.8

At the end there are sections on technical preparation and delivering the course to help a training establishment, but which have to be modified to suit local needs:-

Improvised practice materials

Fig.9

Low cost laparoscopy trainer

Fig.10

Skin suture practice

Fig. 11

Low cost scrubbing

Fig.12

Technical

Preparation

General Consumables (MODIFY ACCORDING TO LOCATION AND FUNDS)

Module One – Open Surgery & Module Two – Trauma & Orthopaedics

Quantity

Large plastic sheets or drapes to cover work tables 1 per table; (tables should firstly be covered with plastic for protection); Cork boards – approx 10mm thick 12" x 16" 1 per workstation/tutor table; (Pieces of Benchkote to cover cork boards); Latex procedure gloves – sizes small, medium and large; Plastic disposable aprons – white for tutors, green for participants; Wash bottles with tap water 1 per workstation + 1 for tutor

White bin bags – for tables 1 per workstation + 1 for tutor; Disposal bags – black domestic; Sharps containers for disposal 1 per workstation/tutor table; Map pins – for pinning tissues 8 per workstation; 4 per tutor table; 20cm releasable cable ties – for tying tissues to jigs; Slick or other tape; 5 litre buckets for tissue 1 per workstation/tutor table

10 litre buckets for tissues storage 3; 7.5cm square swabs; Trays for surgical instruments 1 per workstation/tutor table; Large trays – for collecting instruments for washing and cleaning 2; Suitable trays for storing legs of lamb and porcine or goat trotters; Kitchen towel or incontinence pads to absorb water from 1 per workstation; wound irrigation

Module Three – Minimal Access Therapy Quantity

Trays for instruments/consumables 1 per workstation; Galley pot with water 1 per workstation; Dried peas, smarties, grapes, foam models, endoloops, endoclips

Inflated examination glove 1 per workstation

Audio Visual Requirements

Quantity

Video – camera on stand on tripod 1; Monitors – one on either side at front of room 2

Video recorder 1; Small monitor on tutor's table 1; Cables and connections 1
Overhead projection facilities 1; 35mm slide projection facilities 1; X-ray box 1
Flip chart 1; Marker pens 2

TEACHING THE COURSE

The Introduction to Surgical Skills course has been designed to take account of the Principles of adult education, in order to maximise the efficiency of the learning process. There are four key elements: setting of objectives; critiquing; practical skills teaching; and attitude.

Setting of Objectives

Each module of the course has a clear set of objectives which define precisely what the trainee should know or be able to do by the end of the session. The course objectives are summarised once more at the end of this section.

Critiquing

The overall aim of the course is to introduce surgical trainees to safe and sound techniques at the outset of their career. It is important for the faculty to understand that their role is to provide a supportive learning experience for the participants, and fundamental to this is the provision of appropriate and timely *feedback* on their performance. The basic sequence for providing the feedback is as follows: Ask the participant what went well. Ask the other participants about the good points.

Ask the participant how he/she could improve. Ask the other participants for suggestions

for improvement. The critiquer sums up the discussion, looking for a maximum of three or four points for improvement. Note that it is important to *listen carefully* whilst the participant states what he/she did well. This may be one of the first indications of

whether or not the participant has any insight into problems s/he is in fact having. If the

question is not asked, you will never know. It is also vitally important to ask for 'points for improvement' rather than simply 'what went badly'. It is easy to give a litany of negative points, but these must be reflected on and the appropriate lessons learnt by thinking positively about ways to improve.

Practical Skills Teaching

Initial teaching of practical skills may incorporate the use of the course video. Tutors

may wish to run a section of the video, using the incorporated sound track, followed by a

brief discussion with the participants, or they may prefer to run the video without the sound and add their own commentary to what is being seen. When demonstrating a technique or tutoring an individual participant the following four-stage approach should be used, whenever possible: Demonstration by the tutor in real time with no explanations. Further demonstration by tutor with full explanations of all stages, and answering of any questions. Third demonstration by the tutor, but this time the participant is required to talk through all the steps before they are carried out.

EVALUATION

The course as used in the RCS, and as modified and used for over ten years in the Department of Surgery at Peradeniya in Sri Lanka for the surgical trainees of the whole country, is immensely valuable. In Sri Lanka it is compulsory (Fig. 13). It helps some of the trainees whose practical experience is almost 'nil' before they embark on the surgical training. In the tests done in Peradeniya on pre and post workshop trainee skills there is a scored two fold improvement in a skill in 48 hours. Sadly trainees seem to need supervision to be made to practise what they see to improve further and maintain the workshop levels of skill, before 'fiddling' with patients. The importance of this self practice is being reinforced by the distribution of the ISS video and CD so that trainees can work at home as well as in the formal workshop setting. This has been invaluable. 82% of the trainees at this level have computer access for this purpose.

In the most recent course three days was found needed for 24 trainees. Only 15% were judged satisfactory on the skin suturing and 23% on knot tying at the first test after two days. 23% and 17% respectively needed three tests to achieve a satisfactory level, and two needed three and a half days. The material was extensively used on an individual basis in the evenings of the course. All trainees left with a CD incorporating the ISS CD and other textual and visual guidelines for self practice during the 3 weeks before beginning their clinical appointments- and 64% had used this material. This experience shows in a quantitative manner what is said less precisely from Bangla Desh, Nepal, and East Africa.

The COL-ISS material was widely distributed in Asia and Subsaharan Africa and is used by AMREF in East Africa, Ibadan, and centres in South Africa. It is also used by non-surgeons. Surgeons who have difficulty with the modular concept of use of this material have on occasion been alarmed at showing some sections of the material to others (e.g the parts about rectal surgery).

There is also some argument as to the extent to which individual centres or trainers should modify and use the material, as compared to the RCS sending teams to run the course with minimal changes from the written text and requirements. In any event there is unanimity on the value of the text, CD, video combination and the modular nature of the material. To get quantitative feedback has proved very difficult!

Finally one has to reiterate that here is a need to recognize that if the poor are to have with any kind of equity some access to basic surgical care innovative methods of training doctors and even non- surgeons and non doctors to operate are needed. The skills courses by providing non face to face teaching learning opportunities are welcome. The material is also going to non surgeons- and this is welcome as the better methodologies that those doing surgical work will learn, can only benefit the poorer patients with less access to formal care. This kind of material also makes it possible to maximize the benefit of any opportunities for face to face training. The COL and the Royal College of Surgeons of England are to be congratulated for their role in this initiative.

The practical material is also being used by trainees to supplement and prepare them for apprenticeship surgical training, saving valuable surgeon time

CONCLUSIONS

This 'Distance mode modular material is very useful in itself and in developing self learning skills. The modular nature of the material is useful. **The decision by the COL and RCS to allow copying of the material for bona fide teaching/ learning purposes is welcomed and widely used.**

FUTURE DEVELOPMENTS

It is hoped that the theory material will be updated soon. The practical material will be supplemented by a section on basic clinical skills. The latter in particular will improve further the chance for those far removed from major centres to learn and offer high quality basic care to patients. The modular basic clinical skills material, once it is ready, will also be of use to paramedical staff who have to carry out basic procedures

REFS:-

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2. Surgeons In Training Education Programme- STEP (1996) London: Royal College of Surgeons of England
- 3 Aluwihare, A.P.R. (2002) Self and distance learning in surgery: a collaborative venture Proceedings of COL Conference Transforming Education for Development Durban South Africa (Published as CD ROM)
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ColCDPics



Fig.1 Kandy Lake



Fig.2 Low cost housing



Fig. 3 Low cost environment

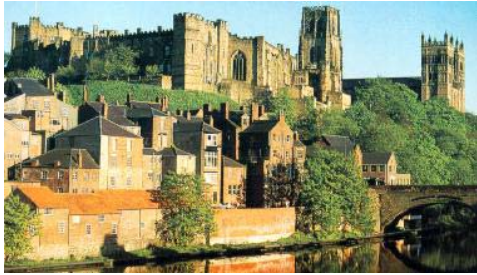


Fig.4 The top end socially

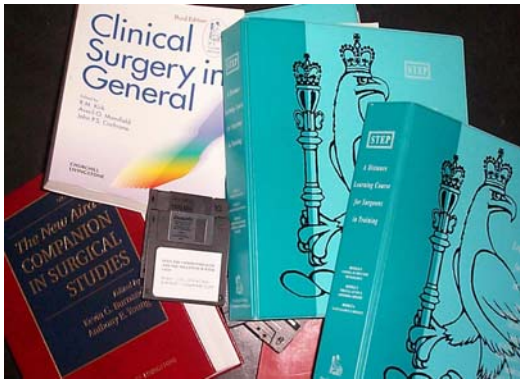


Fig.5 The STEP course and floppy

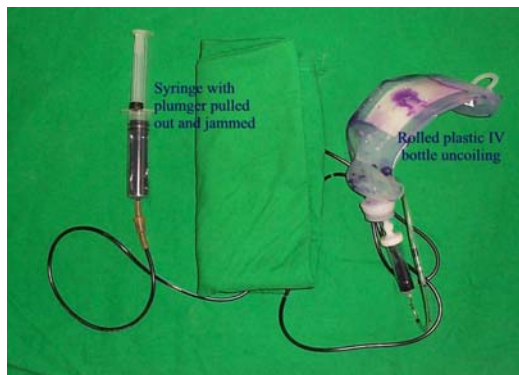


Fig. 6 Low cost suction drains



Fig. 7 Arterial suture practice

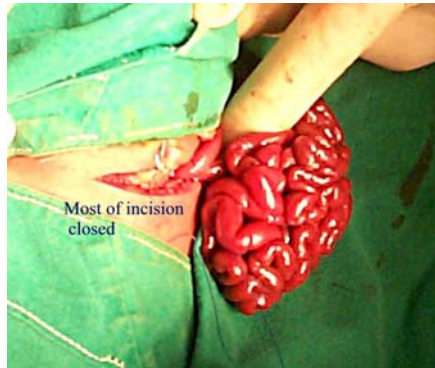


Fig.8 Closing with local anaesthesia



Fig.9 Low cost practice materials



Fig.10 Low cost laparoscopy trainer



Fig. 11 Skin suture practice



Fig.12 Low cost scrubbing



Fig. 13 Skills training sessions