

PAPER FOR DISCUSSION

Can primary health care staff be trained in basic life-saving surgery?

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The following article by Leet *et al* advocates training rural PHC staff in basic emergency surgery in those areas of South Sudan where there is no access to secondary or tertiary level facilities (i.e. surgical task-shifting). Based on their experience, the authors describe and recommend the type of on-the-job training that they feel is most suitable for this level of staff.

Task-shifting at this time in South Sudan is a controversial topic and is not presently government policy. Please send us your views and tell us if you agree with the authors of this article. For example: Can rural middle level non-medical health staff be trained to safely carry out basic emergency surgical procedures? If so, what type of training is best? Should there be a recognized curriculum and accreditation? What further information would you like the authors to provide? Is your organisation training non-medical health staff in surgery (or other medical procedures)? If so, what are the results? Write to the editor at: opikiza@yahoo.com

Introduction

Two billion people in low- and middle-income countries have no access to basic surgical care. Surgical conditions account for a significant proportion of the global health burden. Surgery is still not considered a public health priority even though surgical services may be as cost-effective as other well-accepted preventive procedures (1).

In South Sudan many patients arrive at Primary Health Care (PHC) Units or Centres requiring surgical treatment for obstetric, abdominal or other emergencies. Often safe surgical care cannot be provided locally because of untrained staff, poor equipment and limited supplies of drugs, and other essential items. In many places there are no secondary or a tertiary-level hospitals to which to refer the patient. "Secondary health care services are few and inaccessible to the majority of the population; they have inadequate facilities and suffer from severe shortage of qualified health care professionals" (2, 3).

It is well known in rural sub-Saharan Africa that, where there are no doctors, a wide range of surgical procedures (e.g. Caesarean section or repair of strangulated hernia) are performed by non-medical personnel often with inadequate training and little supervision (4).

Several international organizations such as the International Committee of the Red Cross, Médecins Sans Frontières and Christian Blind Mission have delegated

surgical skills to middle level health workers (5) as has been done for the management of HIV/AIDS. The Textbook of Primary Surgery (6) and the WHO Emergency and Essential Surgical Care (EESC) programme (7) are examples of efforts to promote life-saving surgical care in rural areas of low-income countries.

We believe that a few life-saving procedures can be safely performed by non-medical health staff. In this paper we draw on our experience in South Sudan (particularly at Adior Rural Hospital, Lakes State) to advocate the type of training best suited for training local rural para-medics in simple surgery.

The aim of this article, which is targeted at Ministries of Health, policy-makers and all levels of health professionals, is to:

- advocate policies aimed to broaden the range of those who can provide basic surgery and anesthesia in order to compensate for the severe shortage of qualified doctors which South Sudan is going to face for several years and
- promote a gentle, sympathetic and understanding method of training local non-medical health staff.

Our experiences in South Sudan

In two reports 'Rural surgery in Southern Sudan' (8) and 'Primary surgery in rural areas of Southern Sudan' (9), we have analysed our 11-year experience of providing surgical care and training through mobile surgical missions in remote areas of South Sudan. During each mission, we provided PHC facilities with basic equipment and trained local non-medical health staff on-the-job. See Figure 1.

Teams of volunteer expatriate consultants (one surgeon, one anesthetist and one scrub nurse) carried

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Figure 1. Training on-the-job in surgery. (credit Comitato Collaborazione Medica)

out 51 surgical missions and operated on a total of 3,185 patients. In some of these the anesthesia and surgery were performed by local non-medical staff who had been trained partly during previous missions and partly by the War Wounded Referral Hospital (managed by the International Committee of the Red Cross in Lopidin, Kenya). See Figures 2 and 3.

The total mortality rate over the 51 missions was 0.72% (23/3185 patients). The majority of operations (77%) were elective procedures which probably explains the low mortality. Analysis of the cases through exact logistic regression did not indicate any significant statistical difference in mortality rates observed in patients operated on by the expatriate specialists and patients operated on by local personnel trained on-the-job (8, 9).

These results have been confirmed by our recent experience of training non-medical health staff in primary surgery at Adior Rural Hospital, Lakes State, under a project co-funded by Regione Toscana, Italy.

Discussion

Our experience in South Sudan leads us to believe that even under-staffed and under-equipped first-referral facilities can provide minimum acceptable standards of surgical care provided selected non-medical health care staff is adequately trained. We have found that these workers can quickly learn the fundamental principles of surgery and anesthesia, and how to perform basic surgical techniques. **The essential precondition for the success is proper training on-the-job.**

Servant leadership means the teacher listens to each learner, and aims to 'get in touch with' and understand what the learner is communicating. The teacher makes a great effort to empathize with the learner, and to use a persuasive rather than authoritative manner – aiming for the group of learners to reach an agreed decision. This is especially important in remote facilities operating with poorly trained staff living under the adverse conditions that are still found in South Sudan.

Traditional vs. on-the-job training

The 'on-the-job' training carried out in our missions proved to be both appropriate and effective. We believe that this was due the training being based on the theory of "Constructionism" (10) and to the connected principles of the 'servant leadership'.

Traditional teaching is based on the abstract principle of an 'outside authority'. Constructionist learning is based on the authority of the teacher and is inspired by a kind of leadership called 'servant leadership'.

Why our training in South Sudan was successful

Three factors found in the culture of rural South Sudan contributed to the success of this training.

1. Our training centres on the learner and the community of learners. The role of the consultant surgeon is as a tutor and a facilitator (i.e. 'servant leadership'). What is also vital is to see the existing difficult situation in South Sudan within a vision of a better future. Among all our trainees there is the desire to build a new country, and this triggers a deep commitment to personal and professional growth within the organization and in the community.



Figure 2. "Any task which has to be repeated many times, even though it is comparatively intricate, should if possible be taught to an auxiliary" M. King in *Medical Care in Developing Countries*, Oxford Medical Publications. (credit Comitato Collaborazione Medica)

2. Learning is easier when the outcome is a 'tangible product' that can be examined and admired (10). The 'concreteness' of surgery helps to explain why local health workers, who are unaccustomed to theoretical learning because of their poor formal education, are able to quickly learn surgical skills.
3. The intense desire to have a social role in the community also helps to explain why our training, which increased social standing, was successful.

Conclusion

On the basis of our experience, we believe that rural



Figure 3. Spinal anaesthesia is the commonest technique in rural surgery. (credit Comitato Collaborazione Medica)

primary health care units can be cost-effectively staffed, equipped and organized, and can acquire the capacity to provide satisfactory, basic, emergency surgical care. An essential prerequisite is on-the-job training of local non-medical health staff. We consider that the principles of 'servant leadership' are particularly appropriate to this historic moment of South Sudan.

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CASE STUDY – LEFT ICA ANEURYSM

Clinical History

Right hemiplegia and right facial weakness; smoked more than 20 cigarettes a day for several years.



Figure 1.



Figure 2.

Picture 1: Non enhanced CT of the brain. This image features a fusiform dilatation of the basilar artery (BA).

Picture 2: Non enhanced CT of the brain. This picture shows a round slightly hyperdense extra-axial intracranial mass lesion abutting left internal carotid artery (ICA) and posterior vertebral artery (PCA) measuring about 9mm in maximum diameter. Additionally, there is a chronic left sided striatum infarct demonstrated.

Radiological Report

A non enhanced CT of the brain has been acquired at patient admission (Pictures 1 and 2). There is no evidence of an intracranial haemorrhage or haematoma. There is also no evidence of midline shift or of signs of raised intracranial pressure. No recent ischaemic changes are identified. However, a hypodense secondary porencephalic defect area is noted involving the left sided striatum being in keeping with a chronic striatum infarct.

Additionally, there is evidence of two vascular changes. Firstly, the basilar artery appears to be dilated being suggestive of a fusiform aneurysm. And more importantly, there is evidence of a round, slightly hyperdense intracranial extra-axial mass lesion abutting left internal carotid artery and left posterior cerebral artery measuring about 9mm in maximum diameter in keeping with an internal carotid artery aneurysm (A1 segment).

A subsequent conventional angiogram confirms both vascular findings, and the left internal carotid artery aneurysm has been clipped successfully.

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