

Treating surgical wounds in rural south western Uganda

Health services in developing countries often experience difficulties with limited supplies of equipment, understaffing and overcrowding. This hospital featured in this article demonstrates the problems faced by clinicians working in rural Uganda, where extreme poverty and a lack of funding mean that treating patients' wounds can be a unique challenge.

Authors:

Paul Shepherd, Helen Shepherd, Sarah Mueller

INTRODUCTION

As part of their medical electives the authors spent two months in Kagando Hospital, a rural 250-bed mission hospital in the south west of Uganda. The hospital has very limited supplies of equipment and suffers from understaffing and overcrowding (both from the large number of patients, and also the relatives who have to attend to them). These issues are not uncommon in developing countries and Kagando typifies the challenges faced by rural hospitals in Uganda. There is extreme poverty among the local population and although there are government-funded hospitals, the nearest one is almost an hour away and has a far worse funding situation even than Kagando. Kagando is a not-for-profit hospital with heavily subsidised fees.

There are a number of reasons for differences in wound management techniques between developed and developing countries, the main ones being the cost of healthcare and a lack of resources. In the developing world, patients' inability to afford healthcare often results in late presentation of conditions, which would be easily managed if they could be dealt with earlier in the disease process [Fig 1]. In addition, there is a lack of available technology, skills and general practice such as local family doctors, which limits possibilities for early intervention.

POSTOPERATIVE INFECTION

Postoperative complications are a major problem in Kagando and these are usually caused by postoperative infection and malnutrition, although there is considerable overlap between these two factors. For example, evidence shows that malnutrition leads to reduced cell-mediated immunity^[1], therefore increasing the susceptibility

of a patient to infection. If an infection is established, any energy gained from the little food that an already undernourished patient receives is spent on fighting the infection, causing a vicious cycle of infection and malnutrition that patients do not always recover from.

In 2009 Kagando Hospital performed just over 3,000 operations, the most common of which were:

- Incision and drainage of abscesses [Fig 2]
- Laparotomy – usually performed in order to manage peritonitis, secondary to ileal perforation caused by advanced typhoid
- Surgical toilet and suturing of cuts and scrapes, often as a result of road traffic accidents
- Partial thickness skin grafts [Fig 3]
- Sequestrectomy for chronic osteomyelitis [Fig 4]
- Amputations
- Herniorrhaphy
- Orchidectomy for prostate cancer
- Gynaecological operations, eg total abdominal hysterectomy, removal of ovarian masses.

Reference

1. Chandra RK. Nutrition and the immune system: an introduction. *Am J Clin Nutr* 1997; 66: 460S-463S.



Figure 1 – a 30-year-old woman with a large tumour of unknown origin on her wrist, which had been left untreated. This case was referred to a regional hospital.

Wound infections occur in a large proportion of patients, causing significant problems with wound healing and general recovery. Patients often require repeat surgery, resulting in longer in-patient stays and further hospital-induced complications [Figs 5 and 6]. As described above, wound infection is often made worse by malnutrition, a condition that is far too common in the developing world.

Other factors contributing to the high incidence of wound infection are discussed below.

Sterility

Complete sterility in theatre is difficult to achieve, even in developed countries that have access to advanced technologies such as laminar air flow. For hospitals struggling even to purchase simple equipment such as syringes, such sophisticated measures are simply not an option. These poor facilities impact significantly on the sterility of the operating theatre.

Nonetheless, the Kagando theatre manages to maintain a certain level of sterility – there is a basin for scrubbing-up as well as sterile drapes and equipment. There is also a fairly large supply of gloves so that surgeons can use a new pair on each patient, although surgical gowns are sometimes re-used.

Air flow into the theatre is a problem at the moment because it has slatted windows that are open to the outside. Another unavoidable problem is that during busy periods, two operating tables may be used at the same time [Fig 7].

Overcrowding

Overcrowding, understaffing and lack of equipment on the wards (occasionally the surgical ward runs out of dressings) leads to difficulties with infection control and cleaning and re-dressing wounds – it is not uncommon for a wound to remain without assessment or change of dressing for several days [Fig 8]. While this is not necessarily a problem when stringent hygiene procedures are adhered to, in the context of humid overcrowded wards this greatly increases the risk of infection.

The situation is exacerbated by limitations in the effective management of wound infection. Cultures are difficult to obtain and are almost always contaminated. As the cultures are generally considered to be of limited value, they are often not performed. Instead clinicians use educated guesswork to ascertain the organism most likely to be causing the



Figure 2 – a 6-month old child with a neck abscess. This wound was treated with incision and drainage, then packed with sterile gauze. The wound healed by granulation.



Figure 3 – a 30-year-old man with a partial thickness skin graft after longstanding wound problems due to chronic osteomyelitis. The dressing was removed seven days postoperatively as the wound was malodorous.



Figure 4 – a 10 year-old boy who had chronic osteomyelitis in his right clavicle. The wound was treated with a sequestrectomy and antibiotics. There was a lot of granulation tissue around the bone.



Figure 5 – a 14 year-old girl who had undergone a laparotomy with a resection and anastomosis due to an illeal perforation. This photo was taken 14 days postoperatively and the wound clearly shows wound dehiscence due to ongoing infection.



Figure 6 – the same patient as in Figure 5 after repeat laparotomy and thorough wash out. The tension sutures were fashioned from urinary catheter tubing and the drain was made from the finger of a glove. The wound was dressed with gauze and drained after three days. The wound healed and the patient was discharged 13 days after the repeat operation – treatment duration was 28 days in total.



Figure 7 – the main theatre at Kagando Hospital. This picture clearly shows the scrub sinks at the back of the room, the slatted windows and the two operating tables.

infection and pick the most appropriate drug to use. In effect, patients are usually treated blindly, a situation that often leads to several antibiotics being tried before the appropriate one is established. The antibiotics available are amoxicillin, flucloxacillin, benzylpenicillin, chloramphenicol, co-trimoxazole, metronidazole, ciprofloxacin, gentamicin, doxycycline, erythromycin and ceftriaxone. However, the hospital is frequently without supplies for several days at a time.

Not only does this increase the risk of other complications arising from extended stays in hospital (eg increased risk of malaria), but the inappropriate use of antibiotics also increases the likelihood of bacteria developing resistance.

Useful links

Doctor's Academy

Read the text-based version of this article

Page points

1. Hospitals in developing countries are often without crucial supplies such as antibiotics for days at a time
2. Malnutrition is often prevalent in poverty-stricken areas and this can have a deleterious effect on wound healing
3. A lack of understanding of basic principles such as infection control and wound management principles can also impact on healing rates



Figure 8 – a 45-year-old woman who underwent a lipoma removal. Due to problems with the dressing regimen, the wound developed an infection and subsequent wound dehiscence. Necrotic tissue in the wound was removed, following this the wound was dressed with gauze and left to heal by secondary intention.

Malaria is endemic in the area and mosquito nets are rarely used. Many patients have malaria, whether or not it is their primary complaint and the cramped conditions in the hospital make it easy for mosquitos to spread malaria from one patient to another. Another problem is that prolonged hospital stays and increased treatment costs result in overwhelming financial problems for patients and their families.

Education

In addition to practical problems in healthcare delivery, a lack of understanding of asepsis and the principles of wound management create further difficulties. It is the patient's relatives who undertake the day-to-day care of the patient and educating them about the importance of wound management should be a priority, in the same way that it is important to educate attendants in the management of any condition the patient may have. This, however, takes up precious time and resources on the ward, which is already overcrowded.

Malnutrition

In Kagando, malnutrition arises primarily from poverty – patients are often only able to make simple meals consisting of cassava flour or mashed plantain with very little nutritional value [Fig 9]. If a patient is not receiving the requisite nutrients, minerals and proteins, this has a direct detrimental effect on wound healing. In addition, as previously discussed, poor nutrition causes impairment of cell-mediated immunity and therefore a wound that the body is struggling to heal is much more likely to become infected.

CONCLUSION

There are many challenges facing healthcare delivery in developing countries. However, healthcare professionals from developed countries can play a role in enabling hospitals and staff to better meet the needs of patients. For example, at Kagando, funding has been obtained that will enable new theatres to be built and nurses from Europe have visited and offered to share skills and knowledge on topics such as hand hygiene. Similarly, retired doctors from the UK regularly teach in the nursing school and UK hospitals have offered to provide equipment that they no longer use.

Ultimately, the challenges of effective wound management in an African rural

hospital will not be fully met until the wider issues of poverty and public health have been addressed. Nevertheless, there is much that can be done on a smaller scale.

AUTHOR DETAILS

Dr Paul Shepherd, Foundation Doctor Year 2, Royal Bolton Hospital;
 Dr Helen Shepherd MBChB BSc (Hons), Foundation Doctor Year 2, Royal Bolton Hospital;
 Ms Sarah Mueller, Final Year Student, Medizinische Hochschule Hannover, Germany.

Project Supervisor:

Stuart Enoch, Programme Director, Doctors Academy; Visiting Scientist, University of Manchester; Specialist Registrar in Plastic Surgery and Burns, University Hospitals of Manchester.



Figure 9 – a 12-year-old boy had severe non-oedematous malnutrition. He had a perforated distal ileum, most probably due to typhoid. A resection of the perforated bowel and anastomosis was performed. Due to ongoing peritonitis and the lack of good postoperative nutrition, the patient's condition worsened. After a great deal of nutritional support he recovered and was fit for discharge.

Expert Commentary

Catharine Steer (top) is a Clinical Consultant; **Trish Hall (bottom)** is a Private Nurse Practitioner, Ballito, KwaZulu Natal, South Africa



The authors of this piece have highlighted some of the medical and surgical challenges of wound care in rural Africa. It is encouraging that they have highlighted these issues, but also disheartening that obtaining local, national and international support can be so difficult.

Wounds are a challenge in both developing and developed countries, however, the parameters, such as access to finances, can differ greatly. As the article discusses, wounds complicate treatment and can cause prolonged hospital stays, which in turn increase the social and medical complexities. Although wound care has become a global specialty, within developing countries it is often usurped by more urgent life and death issues, such as undiagnosed cancers and overwhelming multiple traumas as those seen in this article.

The authors chose to focus on post surgical wounds and have correctly identified certain issues that lead to further wound complications, such as sterility, lack of resources and skills and overcrowding as well as intrinsic factors such as malnutrition and other disease processes. It must be stressed, however, that there is still a need to improve basic wound management practices and if these were addressed, patient outcomes would improve.

Rural areas struggle financially when attempting to access advanced dressings, such as the new silver products. However, some of the more traditional and affordable antimicrobials such as chlorhexidine^[1-3] have proven broad spectrum activity and limited resistance, which when used appropriately can combat issues such as a lack of sterility and poor hygiene. Although malnutrition plays an important role in wound healing and yes poverty is a contributor, there are other factors that can be more easily addressed to improve wound care outcomes, especially as malnutrition is unlikely to be resolved during a patient's short period of hospitalisation. Similarly, albumin plays a huge role in wound healing with the formation of collagen and fibroblast activity in post surgical wounds and operations are postponed due to low albumin levels^[4].

This article attempts to address wound care issues in a resource poor area and it certainly identifies some of the unique challenges found in this region. Wound care is a vast topic and skill and knowledge are required in isolated areas if clinicians are to keep abreast with the trends. Evidence-based medicine although often regarded as overly theoretical can often be practically applied and should be considered when addressing wound care.

Further reading

WUWHS. Principles of Best Practice: Wound infection in clinical practice. An international consensus

References

1. World Union of Wound Healing Societies (WUWHS). Principles of Best Practice: Wound infection in clinical practice. An international consensus. London: MEP Ltd, 2008.
2. Drosou A, Falabella A, Kirsner RS. Antiseptics on Wounds: an area of controversy. *Wounds* 2003; 15(5): 149–66.
3. Stokowski LA. Chlorhexidine in Healthcare: your questions answered. 2010; Available at: <http://www.medscape.com/viewarticle/726075>.
4. Pavlidis TE, Galatianos IN, Papaziogas BT, et al. Complete dehiscence of the abdominal wound and incriminating factors. *Eur J Surg* 2001; 167(5): 351–4.