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Tubes, Drains, Lines and Frames

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Forty years ago when I qualified from Guy’s Hospital, the
day-to-day activities of medical students and house officers were
very different from those of current graduates. As ‘surgical dress-
ers’ and ‘medical ward clerks’ we had significant responsibility for
a range of patient management tasks that were regarded as essen-
tial for the smooth running of the clinical service. Student doctors
and nurses learned to dress wounds, keep accurate fluid balance
charts and update patient progress notes on a regular basis under
the watchful eyes of the ward sister and our immediate seniors. We
were participants rather than observers. The skills and knowledge
obtained from the regular performance of mundane, but essential
tasks, was an important apprenticeship for the acquisition of new
skills during specialist professional training. As a surgical trainee in
Sheffield I was expected to have an in-depth knowledge of wound
care, the management of tubes, stomas and drains, pain control and
practical applications of nutritional support. My consultants and
senior registrars would ask me to justify any therapeutic decisions,
such as the timing of nasogastric tube removal, during ward rounds
and teaching sessions. Much of the discussion about ‘ward lore’ was
surgical dogma passed from one generation of trainee to the next.
The evidence base was weak and rudimentary. Subsequently, the
high dependency and intensive care units introduced new tech-
nology and innovations. This strengthened the evidence base and
ensured that the most sick patients were monitored more closely
using more invasive methods. Experts emerged and developed
highly tuned approaches to the care of the critically ill patient. This
led to ‘de-skilling’ of segments of the health care team especially
amongst nursing staff, medical students and junior ward staff. They
could not easily embrace these advances and were disenfranchised
from the continuum of surgical care.

This book is an attempt to restore interest in the evidence base
for routine ward care and high dependency care. The germ was the
realization that even in the ‘high tech’ areas there is ignorance and
confusion about the principles of good surgical practice such as
wound care and stoma management. This has grown into a doc-
ument that sets out the knowledge, skills and evidence base that
underpins good medical care on the surgical wards. The content is
basic and practical and will encourage a reawakening of interest in
the practical aspects of ward management. Recently, a session on
‘Tubes, wounds, stents, stomas and drains’ at the Annual Meeting
of the Association of the Surgeons of Great Britain and Ireland
(ASGBI) in Manchester in April 2007 attracted over 200 participants,
the majority of whom were surgical trainees. Their enthusiasm for
the topics underscored the necessity for this type of information
among trainees. Once the principles of optimal patient manage-
ment have been embraced, students, nurses and trainees should
be encouraged to return to the ward environment to appreciate
‘on the job’ applications of these simple techniques that improve
patient care. Attention to these details should improve outcomes
for many patients. Read, learn and enjoy making a difference.

Brian Rowlands
We wish to thank the following for their valuable comments on the manuscript and their assistance during the development of the project: Dr Katherine Rice MSc MRCP MRCGP; Mr Andrew Love, Charge Nurse Surgical High Dependency Unit, Queen’s Medical Centre; The Staff of the Surgical High Dependency Unit, Queen’s Medical Centre, Nottingham; Mr Ed Fitzgerald MRCS.

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CHAPTER 1

The Complex Abdomen

Tracy R. Bilski, Brian Rowlands and Adam Brooks

OVERVIEW

- Damage control is the staged operative care of the patient to prevent or interrupt the lethal triad of hypothermia, coagulopathy and acidosis
- Initial damage control surgery focuses solely on the control of haemorrhage and contamination
- Temporary abdominal closure techniques are applied if fascial closure is not possible or inadvisable
- Abdominal compartment syndrome is raised intra-abdominal pressure that leads to impaired perfusion of the viscera and systemic sequelae
- The complex abdomen patient requires the coordination of multiple therapies, investigations and interventions over a protracted time

Introduction

The abdomen is a common source of complications in surgical patients (Box 1.1). Perioperative wound problems and issues with abdominal drains can occur as a result of patient disease as well as problems with postoperative care. Treatment of these patients requires meticulous wound and drain care as well as a high index of suspicion for complications. Recent changes to the approach of injured, seriously ill or septic surgical patients has led to an increasing number of patients initially managed with multiple staged procedures and open abdomens. These patients require great commitment from medical and nursing teams, which must span the duration of the hospitalization as well as re-integration and care in the community.

The open abdomen

Definitions

When the abdominal fascia is unable to be re-approximated following laparotomy the result is an open abdomen. Typically, this occurs following major trauma and a damage control procedure or with intra-abdominal catastrophes and frank abdominal sepsis. The open abdomen may also be a result of a decompressive laparotomy for abdominal compartment syndrome (ACS) (Figure 1.1).

Damage control is the staged operative care of the patient to prevent or interrupt the lethal triad of hypothermia, coagulopathy and acidosis. Damage control surgery for the abdomen refers to an abbreviated laparotomy for trauma or emergency surgery that focuses solely on the control of hemorrhage and contamination (Figure 1.2). There are three phases:

- Phase I. Control of hemorrhage and contamination – definitive reconstruction is delayed. Temporary abdominal dressing or skin closure performed.
- Phase II. Restoration of physiology in the intensive care unit (ICU).
- Phase III. Re-operation for removal of packing, definitive repair of injury and closure if possible. At this stage fascial closure may not be possible.

Reasons for leaving the abdomen open

- In trauma or emergency surgery, unstable physiology necessitating a truncated laparotomy with expedited move of the patient to the ICU for correction of physiological derangement.

Box 1.1 Case study

A 44-year-old male was involved in a motor vehicle crash sustaining injuries to the colon and a laceration to the spleen. At laparotomy he underwent resection and anastomosis of the colon and a splenectomy. On postoperative day 8 he spiked a fever with a discharge from the lower aspect of his wound. Later that day the surgeon was urgently called as bowel was clearly protruding through the skin. The bowel was covered with saline-soaked gauze and the patient urgently taken to the operating room where a complete breakdown of the anastomosis with free pus and faecal spillage was discovered. He underwent an abdominal washout and diversion procedure (end colostomy) with a VAC dressing and the placement of two tube drains. His critical care course was very unstable and involved numerous abdominal procedures to control sepsis. Eventually a Vicryl™ mesh was placed over the bowel and allowed to granulate before the placement of a split thickness skin graft. He was finally discharged home 45 days after his initial injuries requiring continuing wound care to his skin-grafted abdomen and an abdominal binder to support his large abdominal hernia.