THE CANNON'S MOUTH

MITCHINER MEMORIAL LECTURE*

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The honour which the Director General has bestowed on me in inviting me to give this lecture is enhanced by the fact that I had a slender acquaintance with Philip Mitchiner. I met him across the table in the Final Fellowship Examination, where he condoned my clinical stupidity over a short case that might well have been disastrous in other circumstances, and later observed him in the same examination, where I was a visitor trying to collect information of help in coaching prospective candidates. Even in the distinguished company of the Court of Examiners he stood out and the neat signature on my Certificate is one of which I am proud.

Not long afterwards I met him at Catterick, which he visited as Deputy Director of Medical Services Northern Command with Sir Charles Gordon-Watson, Consulting Surgeon. The occasion was a delightful one with informality in inverse proportion to the eminence of the visitors.

Finally, I remember Mitchiner coming to Guy's after the War to do a Departmental Round on a Saturday morning. He was pleased to arrive by tram and impressed the large audience with trenchant wit and clinical acumen that bespoke a long and distinguished career as a teacher.

Had he lived he would have been ninety years of age on 17th June 1978 and I have been fortunate enough to talk of him to some of his contemporaries at the College of Surgeons, notably Sir Cecil Wakeley, who was President when Mitchiner was Vice-President. They collectively agree — and previous lecturers have underlined the point — that there was a soldier “full of strange oaths” not “bearded like the bard” — crewcut or close cropped in fact, but “with the clear features and piercing eyes of a mediaeval pope” to quote Sir Heneage Ogilvie, with whom I worked for many years.

Shakespeare's soldier in “As You Like It” was “jealous in honour, sudden and quick in quarrel” and though not the first, Mitchiner could easily be the second, “seeking the bubble reputation” never but “in the cannon's mouth” as often as he could be there. His military achievements and decorations in this country and Serbia testify to that and some of his publications underline the importance he attached to surgical experience in War.

That this great character has been honoured by the posthumous naming of a Ward after him at St. Thomas's Hospital seems no more than his due. That we still need men like him is obvious with a regard for discipline which alas is lamentably lacking in some walks of life today, a knowledge of administration and administrators and the courage to stand up to them, where supine acquiescence would be easier.

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I learnt one other lesson from his life, which, might well be fruitful today, as he and Wakeley as Registrars used to do a student round in alternate weeks at St. Thomas's and King's — a principle in keeping with rotation in surgical training and a wide interchange between Medical Schools. I therefore recall the spirit of Mitchiner with nostalgic pleasure, dressed invariably in Army boots with trousers at half mast, a chuckle where appropriate and — what William Webb Ellis at Rugby showed — “a fine disregard of the rules of the game as played in his time, when he first picked up the ball in his hand and ran with it, thus creating the distinctive feature of the Rugby game”.

Many a young man had reason to be grateful for “Mitch's” inspiration and encouragement, for beneath the cynical and critical exterior lay a generous and unstinting nature, ready to help where he discerned the need was genuine.

The Mitchiner Medal at the Royal College of Surgeons, made possible by the generosity of the Carriers Company, goes hand in hand with this Lecture in memory of Mitchiner's distinction in civilian and military surgery.

Abdominal injuries

I turn now to a consideration of abdominal wounds — in peace and war. These terms are almost relative, when you read an American contributor to the British Journal of Surgery in May 1978 who states that “owing to the easy availability of hand guns in the United States more than 28,000 people die each year from gunshot wounds” — or, more simply, more than 76 every day.

This takes no account of those who recover but is fact enough to underline the supreme importance of an understanding of the care of the wounded and the principles that govern their surgical treatment in all walks of life. Both penetrating and closed wounds of the thorax and abdomen are of very high priority and head injuries usually less so only because of the absence of shock. Associated injuries of the limbs and trunk frequently complicate the clinical picture and makes the appraisal of priorities very difficult.

In this context it is proper to allude to the place of triage in the segregation of casualties and to underline the value of experience in carrying it out. I would go so far as to say that the casualty surgeon or his equivalent in dealing with trauma on any scale is as important as the person responsible for pre-operative resuscitation.

Diagnosis

It is very hard to appraise the true value of X-rays in abdominal injury as I had virtually no personal experience of them in Forward Areas. A radiologist and his equipment cannot in the nature of things belong to this level: yet the Royal Victoria Hospital, Belfast is literally in the front line and I am indebted to Dr. McIlrath for the loan of the slides (not reproduced here) which illustrate some of the principles involved. Rather than attempting to decide the level at which this diagnostic measure is of use I will content myself with some basic observations relative to interpretation and help in diagnosis.

For reasons that are evident the quality of the films is unlikely to be high. The time spent in taking them must necessarily be brief. And most important not all patients either need to be or should be X-rayed. Prior consideration of their

clinical condition may make it obvious that time wasted in X-raying the abdomen may be positively prejudicial to the patients' recovery. In rupture of the spleen for example . . . the great majority due to closed injuries . . . arrest of the haemorrhage and splenectomy are the first requirements, with injury to the lower ribs of very secondary importance. Coincident renal injury with fracture of the transverse processes of the upper lumbar vertebrae may have to be taken into consideration but in a very different tempo.

In closed injuries, and those of the liver and spleen in particular, less help is usually forthcoming from radiological studies than in hollow viscus injury. It must be remembered however that the small intestine is the commonest hollow viscus injured and this contains no gas. Injuries of the stomach and colon therefore account for virtually all cases with free gas under the diaphragm. Gastrografen studies in suspected oesophageal or gastric perforation belong, in my view, to the diagnosis of endoscopic rather than missile injury.

Kidney injuries of the closed variety lend themselves to pyelography or arteriography or even both and the soft tissue shadow of the perirenal haematoma obscuring the renal outline may be indicative. The delineation of the supposedly normal kidney on the side contralateral to the injury may likewise provide surprises. Renal injury in the presence of penetrating abdominal or thoraco-abdominal wounds may coincide with damage to the duodenum on the right side and colon on the left. If this is retroperitoneal the clinical signs may be difficult to interpret and the value of intravenous pyelography in such circumstances is of necessity not so great as in renal injury alone.

I have not omitted the question of locating bullet fragments as they are visible on approximately half the films of patients with missile injuries of the abdomen. But I have mentioned them last, because the location of metal fragments and their removal is, by and large, of low priority to the abdominal surgeon. Films in more than one plane are necessary and they may be very time consuming.

Bony injuries of the thoracic cage, spine or pelvis most certainly call for X-rays if possible and spinal injuries are interesting in that they may be indirectly incurred in high velocity injuries. Estimation of the amount or location of intra-peritoneal bleeding is quite impossible from X-rays but the distinction between thoracic and thoraco-abdominal injury may be clearer with them. In the latter group, therefore, the radiologist has much to offer and the anaesthetist in particular much to gain.

Peritoneal lavage and abdominal paracentesis have their advocates as aids to diagnosis particularly in patients with altered consciousness from head injuries or loss of sensation from injuries of the spinal cord. I believe however that both these methods of diagnosis are of limited application, open to the criticism of procrastinating when exploration might be safer even if negative. Of the injection of 60 ml Hypaque or a small dialysis catheter through an infra umbilical incision I have no experience.

Other aids to diagnosis must include auscultation of the abdomen and I would be the last to decry its value—aphorisms such as "The silent abdomen is in need of laparotomy" and "It is safer to look and see than wait and see" must contain

an element of truth but to the surgeon in the field there is nothing to replace clinical experience. High technology medicine, to borrow an American expression, is rarely at his command, an Intensive Care Unit not available and laboratory investigation unknown. But the significance of a steadily rising pulse rate, shoulder pain, vomiting and progressive pallor stand out as landmarks rarely to be ignored.

Laparotomy of course is the final arbiter and this is mandatory in penetrating abdominal injury. This for me includes all cases of herniation of omentum or intestine which, in my limited experience have a good prognosis.

Resuscitation before exploration is undertaken is a *sine qua non* and blood transfusion an axiomatic requirement in blood loss — never to be underestimated from mesenteric tears in abdominal injury. Indeed I have seen mesenteric tears without hollow viscus perforation and a torn splenic vein with minor injury to the pancreas and nothing else: but the vast majority of missile injuries are more likely to kill by blood loss from the mesentery than the consequences of hollow viscus injury that go with it—while it is a cardinal rule that blood transfusion is the simplest and best way of restoring blood loss it must be remembered that there are sophisticated modifications and alternatives more easily applicable at General or Civilian Hospital level. Plasma expanders come high on the list and it may well be that the 3.5 per cent colloidal haemaccel infusions in hypovolaemic states may be an important addition to the crystalloids, with which I for one, am more familiar. Dextran and plasma, preferably purified, are nevertheless immensely valuable in circumstances where blood is either in short supply or not immediately available.

In closed injury the need for and timing of laparotomy is more difficult to define but this likewise depends in some measure on the resources available to carry out conservative or expectant treatment efficiently — Paramount among the yardsticks is the ability to hold and observe the patient without evacuation.

The abdominal wound

I come now to the principles governing laparotomy where the time interval between receipt of injury and operation is of supreme importance — as in the management of hollow viscus perforation in civilian practice. Time spent in pre-operative resuscitation is often well spent but there are occasions when catastrophic bleeding demands laparotomy as the only possible way of controlling it. But the exigencies of abdominal surgery are such that the problem so revealed may be as hazardous in its solution as the management of ruptured aneurysm of the abdominal aorta.

It may of course be insoluble. The technique of abdominal exploration differs little in open or closed injuries, blast or missile wounds and the assessment of the full extent of the damage before embarking on any part of the repair is the most important single lesson to learn. The range of possibilities is infinite and it is virtually true that no two abdominal wounds are quite the same.

Through and through abdominal wounds within the linea semilunaris on each side rarely penetrate the peritoneum but damage to epigastric vessels may produce very large haematomata. Through and through wounds of the flank may likewise fail to penetrate the peritoneal cavity but can result in extraperitoneal injury of

the colon. Late perforation of viscera (notably the small intestine) from blast injury may be the sequel of intramural haematoma formation. Vertical incisions have obvious advantages over oblique or transverse incisions if only because full exploration of the peritoneal cavity can be carried out more rapidly and suction of blood and/or intestinal contents from the pelvis is more efficient.

Wounds of the back and buttock, spinal injuries and fractures and wounds of the thorax often give rise to abdominal rigidity and a decision as to the need for laparotomy may be difficult. Thoracic injuries above the 5th interspace are rarely complicated by diaphragmatic perforation and injury to an abdominal viscus but exceptions occur to every rule — likewise thoraco-abdominal wounds in general are more favourable on the right side than the left owing to the position of the liver but hollow viscus injury on the right side is not uncommon as is solid viscus injury to the spleen or kidney on the other side.

Liver injury

Much progress has been made in the management of liver injuries in the thirty years since World War II and the work of Walt, Rodney Smith and Blumgart among others should be consulted to get an up to date appreciation of the problem. Suffice it to say that conservatism may be justifiable in injury by low velocity missiles and the debridement or segmental resection may be preferred in high velocity missile injury or star shaped fractures following road traffic accidents.

There is no unanimity of opinion about the value of T-tube drainage of the common duct and the precise significance of haemobilia, which it may reveal.

Suture of lacerations of the liver is often far from easy but I have more than once produced more haemorrhage by attempting it than was obvious on opening the peritoneum. The tamponading effect of intraperitoneal blood is in fact lost when the peritoneum is opened and this should always be borne in mind, when exploration of a thoraco-abdominal or abdominal wound with liver injury is undertaken.

Packing of liver wounds only needs mention to condemn it. I have personally seen septicemia as a sequel. Likewise packing with omentum and the use of fibrin foam as an alternative have little to recommend them.

Stab wounds of the liver carry a low mortality and those due to road traffic accidents are frequently more serious than gunshot wounds of all varieties. Driver, pedestrian and passenger suffer in that order of priority in vehicle accidents and ultimate mortality depends mainly on the severity of haemorrhage from the liver and the nature of associated injuries.

The fate of small bullet fragments in the substance of the liver is likely to be that they remain in situ without giving rise to trouble. Abscess formation is possible with larger ones.

Lastly it must be borne in mind that the proximity of the Inferior Vena Cava is of sinister significance, with air embolism a real danger in dealing with tears of its wall. Vascular isolation of the liver by snares above the renal veins and in the intrapericardial part of the Inferior Vena Cava combined with an arterial clamp on the portal triad for 15-20 minutes have been successfully used by McMaster in repairing such tears.

Thoraco-abdominal injuries

Surgical approach is a contentious matter in the management of thoraco-abdominal wounds but certain guiding principles must be recognised. An initial thoracostomy, for example, may be life-saving and allow evacuation of the patient—perhaps by helicopter—to a level at which definitive treatment can be carried out more easily.

While it is generally agreed that right-sided wounds do better than those on the left the severity of the liver injury is often crucial. Splenectomy and the repair of wounds of the stomach on the left side often present little difficulty but coincident wounds of the colon and/or kidney complicate the issue considerably.

The question of adequate exploration of the abdomen has proponents of different methods of laparotomy but it seems reasonable to take the view that exposure and suction are more efficacious through a paramedian than through a subcostal incision.

Division of the costal margin is the natural alternative and this obviously may meet the requirements of exploration, where gross peritoneal contamination by blood or intestinal contents is unlikely. Late complications such as haemothorax, atelectasis, lung abscess and empyema in the chest and subphrenic or liver abscess in the abdomen merit no consideration in this context and the rare though absorbing problem of pleuro-biliary fistula is similarly without my terms of reference.

Hollow viscus injury

I now come to a consideration of injury to hollow viscera and it is universal experience that injury to the small intestine heads the list. It is, however, the mesenteric injury that goes with it that is of the greatest importance—blood loss being so considerable that it is a far greater threat to life than contamination by intestinal contents with peritonitis as a sequel.

Multiple suture is often all that is required and even this may be more difficult and time-consuming than resection and end to end anastomosis.

Surgical opinion is as uniform about small bowel injury as it is diverse about injuries of the large intestine. The practice of suture and exteriorisation or suture and proximal colostomy governed the management of these injuries on the left side in the theatres of War in which I worked, whereas right-sided wounds were treated differently with the claims of primary suture, of ileo-transverse colostomy with exteriorisation, of suture and proximal caecostomy and even ileo-colic resection having their advocates.

In this context however it is virtually impossible to generalise and the interval since wounding, degree of contamination and co-incident injury were perhaps the most important factors in judging the merits of an individual case.

It is however a fact that exteriorisation of the large bowel after injury on the left side was a real advance in World War II on previous experience — with the same principle tempered by a swing to suture with modifications on the right side as surgical experience was gained.

For this — as for many other advances — we had to acclaim the discovery of antibiotics, first made available in North Africa in 1942.

Wounds of the rectum alone demand colostomy and of the bladder supra-pubic cystostomy as primary procedures. Once again however the associated injuries such as diastasis of the symphysis pubis with damage to the sacro-iliac joints or fractures of the spine may be the vital question to be solved. In the presence of a paraplegia the subsequent management of the patient until the establishment of an automatic bladder in approximately eight weeks is critical and the Gibbon catheter alone represents a great advance—as do silastic as opposed to polythene catheters and modern alternatives to tidal drainage.

After treatment

I have said enough, to indicate that the surgery of abdominal injuries is fraught with problems of its own and with the need for basic clinical acumen that has no alternative. Both diagnosis and treatment should be carried out along lines of simplicity and we learned very quickly in World War II that after treatment needs basic nursing skills of the same order. The arrival of trained officers of the Queen Alexandra's Imperial Military Nursing Service—regular and reserve—in forward areas not only improved results out of all recognition but morale likewise.

The retention of patients in Forward Areas for about ten days after laparotomy was shown to be beneficial and to reduce post-operative morbidity. Those wounded in the thorax alone could be moved earlier, once primary treatment had been efficiently carried out.

That the rules of after care should be rigid and stereotyped in such circumstances is no more sensible than the equivalent in civilian practice today. For my part I regret the modern tendency of the young resident to be as tantalised by auscultation of the abdomen as was his predecessor, who inferred so much from it in the chest two or three generations ago.

This is not to denigrate the significance of intestinal sounds or to question the validity of their interpretation but the sphere is limited.

Nil by Mouth on the bed of a patient for more than a few hours after a simple appendicectomy smacks of a blind faith in the theoretical and slavish and rigid devotion to routine. To deny the patient any oral fluid until it is convenient for the house surgeon to hear bowel sounds is a negation of basic clinical principles. Need I add that to do the same thing for the same reason to a patient with an indwelling nasogastric tube is practically a contradiction in clinical terms even after any form of intestinal resection?

I could multiply the examples but will spare you. I regret that the use of needles, catheters and cannulae has now earned the opprobrium of the term "invasive". What else, pray, is the stock in trade of the Forward Surgeon, denied, as he is, the help of anything more sophisticated?

The day is not far ahead when he will march with monitors to mesmerise him, computers to confuse and a medical audit to find him wanting. The wonders of intensive care, isotopes, endoscopies and all manner of electronic advances belong to the same sphere but the surgery of abdominal injuries demands an understanding of first principles, the use of basic faculties, and an ability to make decisions with time so often a vital consideration. Little wonder in "The Cannon's Mouth"—dear to Philip Mitchiner, wherever or whenever it roared.