Vol 2 No 6 June 2000

TRAUMA Grapevine

Contents:

Introduction

Three Major Trauma Services, two in NSW and one in Victoria recently underwent the process of a trial external verification and consultation visit of their trauma services. This process, a pilot under the auspices of the Royal Australasian College of Surgeons, with multidisciplinary involvement, was an extremely rewarding experience for our Trauma Service at Liverpool. It provided through the incisive critique of the review team, an opportunity for us to identify areas of trauma care that need to be addressed. It is a process I would commend to all Trauma Services.

Better Practice is a term that we are increasingly exposed to in medicine. Particularly good examples have been developed in Breast Surgery and Colorectal cancer care. Due to the continuing evolution of care the term "Best practice" is probably best replaced with "Better practice". A key question that we must answer in Australasia is; Do we need minimum standards in trauma care delivery?

Michael Sugrue

Duodenal and Pancreatic Injuries Complex and Lethal Injuries

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I. Introduction

Duodenal and pancreatic injuries are uncommon, but not rare. Delays in the diagnosis and repair can make surgical management a more complex and technically challenging task, and increase morbidity and mortality. Because these injuries are uncommon few surgeons and centers develop adequate expertise in their management.

II. Historical Perspective

Larrey reported the first successful outcome from a penetrating duodenal injury in 1811. Summers in 1904 described the treatment of a retroperitoneal perforation of the duodenum secondary to a gunshot wound of the back and performed the first pyloric exclusion. The first case of a pancreatic injury was reported in 1827 by Travers during an autopsy in the records of St. Thomas Hospital in London. Laborderie in 1856 reported the first penetrating pancreatic injury in the literature.

III. Incidence, Associated Injuries

Pancreatic and duodenal injuries occur with a frequency of 3 to 5% of all abdominal injuries. Penetrating injuries account for 70-80% of these injuries.

Associated injuries occur with a frequency of 87%. Multiple associated

Continued next page

Duodenal and Pancreatic Injuries Complex and Lethal Injuries

Continued

injuries are the rule rather than the exception. The most frequently injured organs found in association with duodenal and pancreatic injuries include the liver-18%, stomach-16%, small bowel and colon-10%, spleen-11%, and vascular injuries, which breakdown into venous-10%, arterial-7%.

The most frequent site of duodenal injury is the second portion-33%, followed by third and fourth portions- 20%, while the first portion is the least frequently injured -14%. Multiple injuries occur in-14% of the cases. The most frequent anatomical site of pancreatic injury is the head and neck-37%, followed by the body-36%, the least injured is the tail-26%. Multiple sites occur with the frequency of 3%.

IV. Diagnosis

The diagnosis of pancreatic and duodenal injuries requires a high index of suspicion. The clinical presentation may range from a patient presenting "in extremis", to a picture of perfect haemodynamic stability. Because of the retroperitoneal location of these organs, early manifestations of injury may be absent. Physical examination may be characterized by minimal findings. Tenderness in the right upper quadrant, mid epigastrium or left upper quadrant as well as rebound tenderness, or acute peritoneal signs may be present.

The serum amylase level is a useful diagnostic tool. It is a measure of ductal obstruction, therefore the more proximal the obstruction, the greater the rise of the amylase level. The serum amylase level can also be very unpredictable, and should not be used as the sole indicator for exploratory laparotomy. Up to 40% of patients that sustain a pancreatic injury may have a normal initial serum amylase level. A persistently elevated or rising level may be of prognostic significance for both pancreatic and duodenal injuries.

In the diagnosis of duodenal injuries plain films of the abdomen are generally of little value, or useful only if positive. Findings such as air collections outlining the upper pole of the right kidney, retroperitoneal gas, air around the right psoas and in the retrocaecal region or transverse process fractures of L1-L2 may suggest possible injury. UGI contrast studies can diagnose duodenal leaks secondary to injury or haematomas. Ultrasound is valuable in detecting free intraabdominal fluid and solid organ injury, but is not reliable for the diagnosis of duodenal or pancreatic injuries.

CT scan of the abdomen is a valuable investigational device, with intraluminal and intravascular contrast it may show an increase in the space between the duodenum and right kidney, extra- luminal gas, duodenal wall thickening, pancreatic edema, gross enlargement of the gland, direct visualization of a parenchymal fracture or haematoma, fluid separating the splenic vein or pancreatic body and thickened left anterior renal fascia. All of the these findings are consistent with the presence of duodenal and/or pancreatic injuries.

Diagnostic peritoneal lavage may be positive in a high number of patients, however it's positivity is due to associated intraperitoneal injuries, as the duodenum and pancreas are retroperitoneal organs. MRI has been described as a diagnostic tool, but remains unproven. ERCP can be used preoperatively to identify the presence of a pancreatic ductal disruption. This has been reported infrequently. Its use in the acute stage is not feasible.

V. Management

All trauma patients should be evaluated and resuscitated per ATLS protocols. Clinical findings consistent with acute hemoperitoneum or peritonitis demand an immediate exploratory laparotomy. Broad spectrum antibiotics should be administered prior to surgical intervention.

Approximately 75-85% of all duodenal injuries can be repaired primarily utilizing simple surgical techniques.

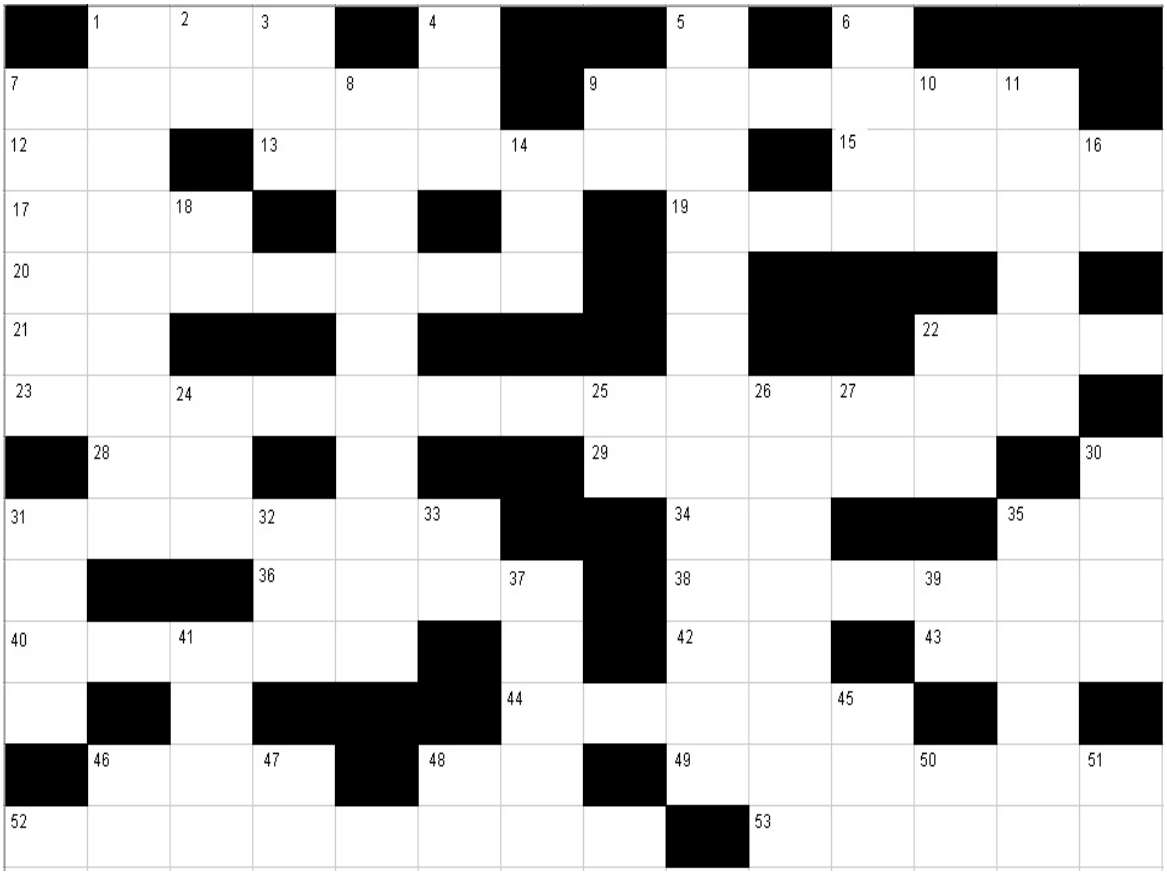
The duodenum (all four portions) and the pancreas (anterior/posterior aspects) must be visualized directly. The duodenum should be mobilized by a Kocher maneuver, transection of the ligament of Treitz, and occasionally the Cattell and Braasch maneuver. The pancreas can be exposed by three basic and two advanced maneuvers. Basic maneuvers include a Kocher maneuver, division of the gastrohepatic ligament to gain access to the lesser sac, and transection of the gastrocolic ligament which permits full inspection of the anterior aspect of the pancreas. The Aird maneuver involves mobilizing the splenic flexure of the colon and splenic ligaments to rotate the spleen and the pancreas from lateral to medial to visualize the posterior aspect of the tail. For exposure of the posterior aspect of the pancreas transection of the retroperitoneal attachments at the inferior border of the pancreas with cephalad rotation of the pancreas is recommended.

Intraoperative findings that raise suspicion for the presence of a duodenal injury include: crepitus along the doudenal sweep, bile staining of paraduodenal tissues, documented bile leak, or the presence of a right sided retroperitoneal or pararenal haematoma. Findings consistent with a pancreatic injury include: a central retroperitoneal haematoma, bile staining in the retroperitoneum, edema surrounding the pancreas and lesser sac or any pancreatic hematoma or perforation. The sine qua non of pancreatic injury is the presence of a ductal injury.

Approximately 75-85% of all duodenal injuries can be repaired primarily utilizing simple surgical techniques. Duodenal injuries should be drained with closed systems not directly in juxtaposition to the suture line to avoid fistula formation. Surgical techniques for the repair of duodenal injuries include: duodenorraphy with or without external

Crossword

Send your answers to Nadia Nocera c/o Trauma Department Liverpool Hospital
Prize: Trauma Rules Book for first 2 correct answers



ACROSS

1. Resin is made from this
7. Third tunic of the eye
9. 4 articular processes on a vertebral arch
12. Before meals (latin)
13. Pertaining to the body's largest vessel
15. A large public show or exhibition
17. Particle carrying an electric charge
19. When trauma patients are given lots of pills they make this noise
20. Annoying sound made by sleeping drunks who have entered the ED following a fall
21. Emergency Department (abbrev.)
22. A hot one of these is offered to the significant others of a trauma victim
23. Vessel in the leg, anatomically constant in trauma victims (2 words)
28. About; pertaining to
29. A sharp process of bone
31. Cell produced by union of two gametes
34. Position
35. "Et ____, Brute?"
36. Ruptured
38. A pulse in the distal upper limb
40. Odour, reek, scent
42. Intramuscular (abbrev.)
43. Trauma victims often ingest a lot of this prior to injury
44. Enzyme stored in kidneys
46. Approximation of time to elapse before a trauma patient is brought in to the ED by pre-hospital personnel
48. Intravenous (abbrev.)
49. GOMERS often look like these after spending the night in ED
52. To take a trauma patient from one place to another
53. Sign of referred left shoulder pain associated with splenic rupture

DOWN

1. The assessment of trauma patient which takes place after the ABC's are stabilized
2. In the direction of
3. Tender, soft; also one of the meninges
4. Sticky substance difficult to remove from a burns victim
5. Shown in incomplete spinal cord injury where the patient retains perianal sensation, anal sphincter tone and great toe flexor activity
6. Navicular bones are found in these
7. A surgeon does this to a depressed zygomatic fracture
8. Receptor for pain from tissue damage
9. For investigation (abbrev.)
10. Computer file extension
11. Largest collection of reticuloendothelial cells in the body
14. To pull forcibly, say, on a limb to reduce a fracture or dislocation
16. On examination (abbrev.)
18. Refusal (eg to be examined following trauma)
22. To put a knot in a suture
24. Dens
25. We, the trauma team
26. Necessary to promote the formation of prothrombin, factor VII, factor IX and factor X
27. Enrolled Nurse (abbrev.)
30. Prior to motor vehicles, these were used to help transport trauma victims from the scene to a hospital / infirmary
31. For the purpose of anatomical description, the neck is described as having three of these (sing.)
32. Prefix pertaining to the ear
33. Emergency Department (American abbrev.)
35. Less vertically challenged
37. A sensory receptor
39. Intra Arterial (abbrev.)
41. Information
45. Noah (other name)
46. Chemical symbol for erbium
47. Prefix 17 across, removing the charge from the particle
48. Supposition
50. Mercy Hospital (abbrev.)
51. A Third Reich army responsible for millions of traumatic murders

Review of last issue's case of the Month

19 year old train passenger

Pre-Hospital information

(M)Mechanism	Stab left para - umbilical region
(I)Injury	Abdomen
(S)Signs	RR 18/m, P 96/m, BP 100mmHg, GCS 15
(T)Treatment	Oxygen, scoop and run, cannula en route

Resus Room:

Primary Survey

A Talking
B Breathing - RR 22/m
C P 100/mm, BP 105 mmHg

No external blood loss. Patient alert and co-operative.

Secondary Survey

There was some tenderness and guarding in the region of the stab wound. The rest of the abdomen was soft. The stab wound is 1cm in length.

The questions raised were:

What is your management plan going to be? CT Scan? Diagnostic Peritoneal Lavage? Wound exploration? FAST? Laparotomy? Clinical examination? Laparoscopy?

Outcome

The patient is in that grey area between stability and instability with the potential to have lost up to 1.5 L of blood. He is probably hypotensive and has a pulse of 100/m. The following offers a safe approach to management -

- Assume there is significant bleeding
- Assume there is a viscus perforation
- Remember about the kidneys (especially the other one!)

Early (<45min) transfer to theatre is important. The approach I would recommend is -

- GA, preping the patient from neck to groin
- Laparoscopy set up
- Digital exploration and if there is entry to peritoneal cavity then immediate laparotomy rather than proceeding with laparoscopy. If there is no obvious tract into the peritoneal cavity on digital exploration then proceed with laparoscopy. This will prevent 30% of negative laparotomies as 30% of these stab wound end in the abdominal wall.

DPL can be used, remember the value for a positive red cell count is 10,000/mm^3 not 100,000/mm^3 used in blunt trauma. FAST will tell you if there is free fluid but will not identify a viscus injury. CT scanning is of little use in anterior wall stab wounds but will tell you if the contra lateral kidney is functioning. The patient proceeded to urgent Laparoscopy (with laparotomy instruments open). After prepping the patient the stab on digital palpation did not appear to enter the peritoneal cavity. Laparoscopy however found there was about 40mls of blood in the left paracolic gutter in association with a small 1cm peritoneal breach. Surprisingly at laparotomy there was a 3 mm hole in the small bowel (figure 1), which was primarily repaired. The patient made a good recovery. The case highlights the needs for a cautious approach for patients with abdominal stab wounds.

Figure 1. Small bowel perforation

Case of the Month

By Helen Cameron Elective Trauma Student, Edinburgh, UK

19 year old motor cyclist

Pre-Hospital information

(M) Mechanism

A 26 year old male had crashed his motorcycle. Wearing a helmet.

(I) Injury

RUQ pain, a painful R knee, Grazes to R shoulder, R hip, R elbow, paraesthesia in R foot.

(S) Signs

Clear airway, RR 30, Ø AE on R side, P 100-110/m, BP 140/90, GCS 15

(T) Treatment

Cervical splint, oxygen

Resus Room

Primary Survey at 1525 hours

A Intact
B RR 18/m, SaO2 100% on 10L, AE equal and BS decreased on R
C P115/m, BP 156/82, all pulses intact and symmetrical.
D GCS 15, pupils equal and reactive.

Secondary Survey

Abdomen	- Tender RUQ
	- Marked Guarding in the Upper Abdomen
	- BS reduced
	- PR NAD
Extremities	- RUL shoulder pain
	- RLL abrasions to R hip

Summary of Investigations

C Spine	Normal
CXR	See (Figure 2)
Pelvic X-ray	Normal

Management?

What would you do from here?

What are the key priorities?

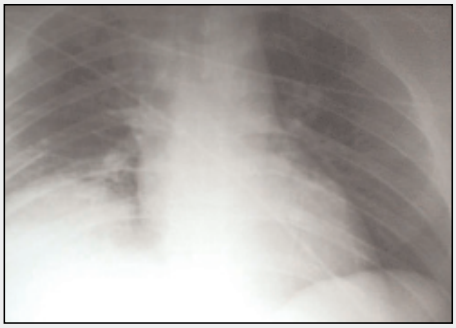


Figure 2

drainage, this is the most frecuently employed technique whereas duodenorraphy with tube duodenostomy (primary, antegrade or retrogade), triple ostomy(gastrostomy, antegrade and retrograde jejunostomies), jejunal serosal patch, pedicled grafts, segmental resection, duodenal diverticulization are rarely indicated. Pyloric exclusion entails closure of the pylorus with a non-absorbable suture and gastrojejunostomy. This technique is used for duodenal injuries involving greater than 50% of the circumference.

Approximately 60% of all pancreatic injuries can be treated by external drainage alone, and 70% by simple pancreatorraphy plus drainage. Basic surgical principles include debridment of devitalized tissue, conservation of pancreatic tissue to preserve function, and meticulous repair when necessary of pancreatic lacerations with non-absorbable sutures. All pancreatic injuries must have their ductal integrity evaluated. When pancreatic resections are performed, all attempts should be made to locate the pancreatic duct and individually ligate it. Surgical techniques for the repair of pancreatic injuries are as follows: simple drainage, simple pancreatorraphy and distal pancreatectomy with or without splenic preservation.

Combined pancreaticoduodenal injuries can be treated either by pyloric exclusion, or in rare cases duodenal diverticulization, provided that the duodenum can be repaired primarily. Pancreaticoduodenectomy is a formidable procedure and is uncommonly needed. The indications for the Whipple's procedure are: massive and uncontrollable bleeding from the head of the pancreas, adjacent vascular structures, or both, unreconstructable ductal injury in the head of the pancreas and combined unreconstructable injuries of the duodenum, head of the pancreas, and common bile duct.

VI. Mortality

Duodenal and pancreatic injuries carry a significant mortality rate, ranging from 5-30% and 5-55% respectively. Most intraoperative deaths are caused by exsanguination from associated vascular injuries, and during the first 24 hours by hemorrhagic shock, prolonged bleeding, hypothermia, coagulopathy, and the sequelae of massive blood replacement. Late mortality can generally be attributed to the duodenal or pancreatic injury itself and associated complications such as sepsis, fistulas and multiple systems organ failure.

VII. Morbidity

Approximately 64% of all duodenal injury cases will experience complications, primarily duodenal fistula formation resulting from failure of surgical repair secondary to suture line dehiscence and occasionally by duodenal obstruction. Intraabdominal abscesses occur with a frequency of 11 to 18%. Approximately 37% of all pancreatic injury cases will experience complications, primarily fistula formation defined as drainage of greater than 50mls persisting greater than two weeks with elevated amylase and lipase levels since the last surgical intervention. Most are treated with bowel rest, hyperalimentation and a somatostatin analogue. Post- traumatic fistulas occur in approximately 14% of the cases.

Surgical re-intervention is needed for the definitive treatment of unresolving fistulas in less than 2% of the cases. However, re-intervention should be considered for fistulas of greater than two months duration with unrelenting production of high volumes. Pancreatic abscess is the second most frequent complication with an incidence of 8%. Post-traumatic pancreatitis 4%, pseudocysts in 3% and late hemorrhage occurs in 1%. Pancreatic exocrine and endocrine insufficiency occurs uncommonly.

Most intraoperative deaths are caused by exsanguination from associated vascular injuries...

VIII. Conclusions

- Duodenal and pancreatic injuries are uncommon and difficult to manage.
- The trauma surgeon must possess a vast surgical armamentarium and be an expert operator to deal with these injuries.
- Delays in the diagnosis and surgical repair of duodenal and pancreatic injuries results in increased morbidity and mortality.

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What's New

Joshua Tobin Visiting Medical Student Boston University

Marion DW, Spiegal TP. Changes in the Management of Severe Traumatic Brain Injury 1991-1997. Crit Care Med 28:1 (16-8); Jan 2000

In this study the authors sent a questionnaire to all North American neurosurgeons in an effort to quantify changes that had evolved during the early and mid-1990's in the management of patients with traumatic brain injury. The Brain Trauma Foundation published Guidelines for the Management of Severe Head Injury in 1995 so it is reasonable to expect that this may have affected management of this patient population.

Forty percent of the questionnaires were returned for a total of 1,262. Of those neurosurgeons who returned the questionnaire, 44% felt that severely head injured patients should be treated at a level I trauma center, 52% felt that a neurosurgeon should be in-house at a level I trauma center and 83% reported that they would use intracranial pressure (ICP) monitoring for patients severe head injuries. Forty-eight percent of respondents would use a transducer tip with a white matter probe for ICP monitoring. The greatest consensus among neurosurgeons regarded maintaining the cerebral perfusion pressure greater than 70 mm Hg; 97% agreed that that was a part of their management strategy.

Significant changes occurred in the use of ventriculostomy (from 72% to 50%), prophylactic hyperventilation (from 83% to 36%), steroids (from 64% to 19%) and the use of ICP monitoring (from 83% to 40%).

The authors compare their results to the results of a telephone interview of randomly selected major trauma centers published by Ghajar et al. These interviews were conducted with nurse managers, clinical specialists and staff nurses. This may be a limitation of the present study. It would have been more appropriate to compare neurosurgeon responses to neurosurgeon responses, or nurse to nurse. The results remain useful, however, as they demonstrate broad trends in the care of severe brain injury. It seems that the current management strategy is aimed at optimizing cerebral perfusion by maintaining CPP > 70 mm Hg and refraining from enthusiastic hyperventilation, which can compromise cerebral perfusion.

Offner PJ, Haenel JB, Moore EE, et al. Complications of Prone Ventilation in Patients with Multisystem Trauma with Fulminant Acute Respiratory Distress Syndrome. J Trauma 48:2 (224-8); Feb 2000-04-04

The authors report on their experience with prone ventilation in nine acutely injured patients with acute respiratory distress syndrome (ARDS).

Prone ventilation has been reported to benefit ventilated patients with ARDS by shifting the fluid load away from the more dependant posterior-inferior regions of the lung. Alveolar recruitment can be optimized and oxygenation improved. Offner et al. report on patients with injuries due to blunt trauma who had ARDS as defined by acute bilateral infiltrates on chest x-ray, a PaO2/FiO2 ratio of <200 and no evidence of left atrial hypertension (defined as a pulmonary artery occlusion pressure less than eight-teen).

Patients included in the study had failed standard treatment for ARDS. This included assist control ventilation during resuscitation titrated to a PaCO2 of 35-40 and a pH of 7.4-7.45. After resuscitation, synchronized intermittent mandatory ventilation with pressure support

Meetings

Trauma 2001: A Joint Meeting of the Australasian Trauma Society and the Trauma Association of Canada (incorporating the 3rd Australasian Fluid Symposium) to be held 2-4 March 2001 at the Sydney Convention Centre.
Themes will include: State of the Art Trauma Care, Latest in Fluid Therapy, Trauma Systems, Paediatric Trauma, Difficult Trauma Areas and Free Paper / Poster Sessions.
For further information please contact Trauma 2001 Secretariat: Conference Action Pty Ltd. PO Box 1231 North Sydney NSW 2059.
Tel: 02-99568333. Fax: 02-9956 5154
Email: confact@conferenceaction.com.au

Definitive Surgical Trauma Care Course (DSTC) Sydney
(For Surgeons Only Very limited)
2nd and 3nd August, 2000
Email: charmaine.miranda@swsahs.nsw.gov.au

Definitive Surgical Trauma Care Course (DSTC) Melbourne
(For Surgeons Only)
11th 12th 13th August, 2000
Email: 'peter.danne@nwhcn.org.au'

SWAN 8
SWAN 8 will be held on the 4th and 5th of August, 2000, bringing to you a number of world leaders in trauma care from overseas.
Sorry registration is limited, so get in early!
Contact: Thelma Allen
Email: thelma.allen@swsahs.nsw.gov.au
Phone: 02 9828 3927
http:// www.swsahs.nsw.gov.au/livtrauma

in Trauma

was used. If patients developed ARDS on this regimen they were begun on ventilatory management aimed at ensuring a target plateau airway pressure less than 40 cm H2O. Tidal volume was decreased and the inspiratory:expiratory ratio was increased to limits of 5 mL/kg and 1:1 respectively.
Prone ventilation increased the PaO2/FiO2 ratio from 75 to 147. In six patients the FiO2 could be decreased form 0.9 to 0.63. Four major complications occurred. Abdominal wound dehiscence occurred in one of four patients with midline incisions, cardiac arrest while moving to the prone
position occurred in one patient and two patients with extensive edema & vasopressor requirements experienced severe facial & upper chest wall necrosis.

The authors report improved ventilation in patients given prone ventilation. In six patients the FiO2 requirements were decreased almost to a non-toxic level of 0.6. They did, however, report several serious complications. This may be due to the presence of extensive co-morbidities.
In the case of the severe tissue necrosis, the authors speculate that extensive vasopressor requirements, and the associated vasoconstrictive effect, may have played a role in that complication. It remains encouraging to see that innovative approaches to old problems like ARDS are being explored and tested in well documented reports.

Douzinas EE, Pitaridis MT, Louris G, et al. Prevention of Infection in the Multiple Trauma Patient by High Dose Intravenous Immunoglobulins. Crit Care Med 28:1 (8-18); Jan 2000

This prospective, randomized, double blind, placebo controlled clinical trial examined the effect of intravenous immunoglobulins (IVIG) on multiple trauma patients in an intensive care setting. Thirty-nine patients were assigned to either an IVIG group or an albumin control group. All patients received penicillin upon admission and for four days after that. Patients also received either IVIG or albumin on days 1, 2, 3 and 6. Blood was assayed for complement components C3c, C4, CH50, IgG and IgG fractions. Serum bactericidal activity (SBA), measured as percent change per minute in bactericidal activity, was also assayed at 37C and 40C.
The authors found that the patients who had received IVIG had fewer pneumonias and non-catheter related infections. Catheter infections, ICU length of stay, antibiotic days and infection mortality were no different in the two groups. SBA was similar for the two groups on day 1, but increased on days 4 and 7 in the IVIG group. SBA was also higher in all groups at 37C than at 40C. A lower SBA was shown to be associated with increased risk for pneumonia and non-catheter related infections.

Douzinas et al. present a well designed and controlled study. They have clearly demonstrated the benefit of giving an IVIG "innoculation" to multiple trauma patients in the ICU. It is concerning, however, that, although the IVIG group had fewer pneumonias and non-catheter related infections, infection related mortality did not change in the two groups. Perhaps, as the authors speculate, IVIG has some complimentary effect with appropriately selected antibiotics without affecting infection directly. Increased SBA at higher temperatures raises an interesting question. Is it advisable to allow febrile patients to remain so, if, in fact, the SBA is more effective at higher temperatures? These questions demonstrate the underlying complexity of immune modulation in trauma and the need to explore that complexity in the future.

Letter to the Editor

The article by Sarah Ramer in Trauma Grapevine Vol 2, No 5 entitled "Blood Transfusion Requirements in Critically Ill Trauma Patients" refers to "A multicentre, randomised controlled clinical trial of transfusion requirements in critical care." Herbert & Wells NEJM 1999.

It is important to note that this trial involved euvolemic patients after initial treatment up to 72 hours after admission to ICU. The finding that a "cut off" Hb concentration of 70g/L was acceptable may not be applicable to "the golden hour" or subsequent hours till full stability is reached. In other words, these patients were post resuscitation.

Although Ramer refers to this in her last paragraph ("only those patients who are euvolemic, not actively bleeding" etc) it would have been best to point this out where the paper by Herbert et al is first quoted, as the implication is that the paper is directly applicable to trauma resuscitation. Many of us would be reluctant to accept such a low Hb concentration in the course of resuscitation where there is any likelihood of continued bleeding.
Paul Cunningham
Staff Specialist Emergency Dept
Concord Hospital

Editor's comment. Dr Cunningham points are well made in particular the potential hazard of further falls in Hb in the presence of potential continued blood loss.

BACKCHAT

We would like to wish Dr Kenth Johannson and him family a safe return to Sweden where he will take up his specialist position in Vastervik after his year in as Trauma Fellow. Kenth has the unique (world) record for a trauma surgeon of making many friends and no enemies.

We will be joined by Scott D'Amour a specialist surgeon from Canada in July and our current honary fellow Hasnain Zafar will be undertaking a further fellowship in the UK.