



## EDITORIAL

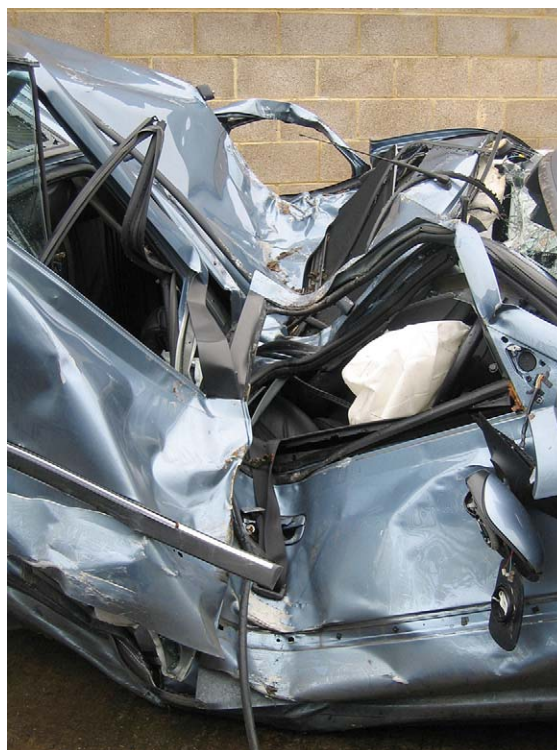
## Amuart—Trauma from the wrong end

It is rare for an experienced trauma surgeon to be given the opportunity of being on the receiving end of trauma care. This is a detailed account of such an experience. Following a serious and high energy car crash, the Editor-in-Chief of Injury experienced the highs and lows of hospital care, shares the insights this gave him, and raises some questions as a result of his experiences.

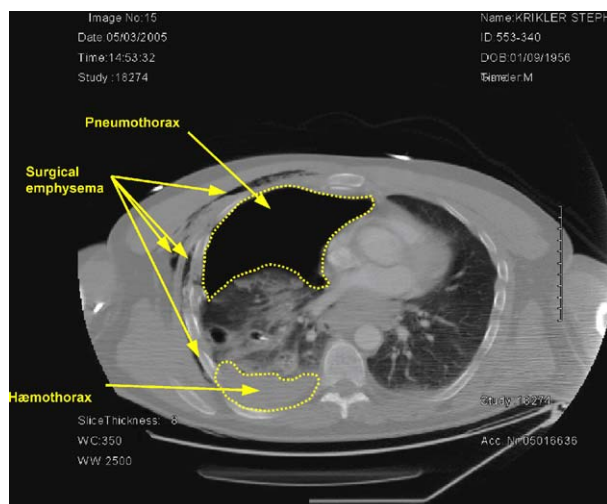
Saturday 5 March 2005 did not seem, in itself, a particularly unusual day. After some shopping and errands, I drove from Leamington to London for lunch, taking my 16-year-old son. As I was driving south on the M1, something happened. I have amnesia for the accident, so I shall never know exactly what happened; maybe a car tyre burst, maybe I fell asleep. I am told the car left the road, crossed over the hard shoulder onto the verge, where it ended up lying on the driver's side wrapped around a tree. The driver's side and roof had both been stove in (Fig. 1). The air bags had deployed and I was restrained by my seat belt. I have a brief memory of hurtling along on the grass. My next memory is regaining consciousness with the car on its side.

My priority was to move myself away from the pressure on my right side to enable me to breathe more easily. My son, who had fallen asleep in the front passenger seat as we set off, had sustained a scratch on the dorsum of his right hand. He too had no recollection of the crash. His first memory is standing outside the car having climbed out through the passenger window. He looked back into the wreckage of the car to see me silent, motionless, and with blood around my face. Not unreasonably, his initial thought was that I was dead. Fairly quickly, I started groaning then talking. I could not reach my seat belt buckle, so I asked him to undo it. I remember wriggling and struggling to extricate myself, while hearing the voice of a passing motorist, who had stopped to help, shouting at me "Don't move". Maybe he was right, maybe there was a significant risk of cervical spine injury, but I

had to be able to breathe. I do not remember actually getting myself out of the car, I have no clear recollection of the ambulance ride to the local district general hospital, my initial assessment and resuscitation in A&E, or the CT scan. My first memory is seeing my father and brother at the foot of the trolley, while a chest drain was being inserted. I had by then received 20 mg of morphine, so pain was not a problem. But, to be honest, pain does not feature in my memory of the event anyway. Subsequent CT scans showed my injuries were a possible, undisplaced fracture of the spinous process of C7, fractures of the posterior right ribs 3–7, lateral fractures of the right ribs 4–7, associated with a haemopneumothorax (Fig. 2). There was also a



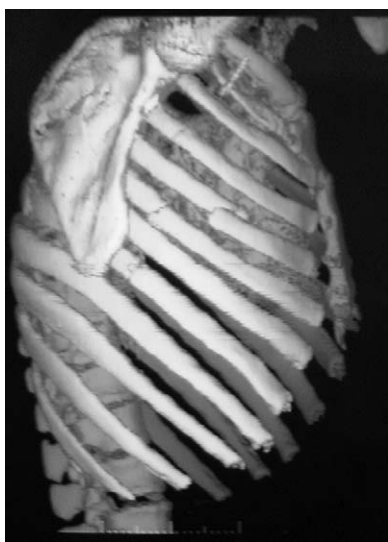
**Fig. 1** The driver's side, showing the stove in door and roof.



**Fig. 2** Initial CT, showing haemopneumothorax and surgical emphysema.

fracture of the sternum, a comminuted fracture of the right scapula (Fig. 3) and a complete disruption of the right acromioclavicular joint, as well as small lacerations of the liver and right kidney. From the sore area on the back of my head for the next few days, I assume the roof had rendered me unconscious as it stove in.

I was admitted to the Critical Care Unit (CCU), where I started the process of becoming a patient. Lying in bed in CCU with a chest drain, IV line, PCA, pulse oxymeter, ECG leads and oxygen, even if the pain from my chest injuries had not limited my movements, I found myself feeling very tethered. I was determined not to be a doctor, the staff should treat me as they would any other injured patient. I was numb in my right axilla, over much of my right



**Fig. 3** 3D reconstruction showing scapular fracture and multiple rib fractures.

chest wall and the medial aspect of my right arm. I had to have the bedside table on the left, so that I could reach my bed bottle, water glass, etc., with my left hand and I had to drink lying down, using a flexible straw. The pneumothorax drained almost immediately, and the drain was no longer bubbling by Day 2, but the bleeding continued, and by Day 3 it had drained 1600 ml. I was started on low molecular weight heparin and my drain continued to drain. Analgesia was adequate, and although I could feel the broken ribs crunching as I was moved when the nurses made the bed, the sensation was more unpleasant than painful. It is strange, as a patient in these circumstance one feels completely helpless, but as long as I felt the staff looking after me were competent and caring I was perfectly happy to abdicate all responsibility, and I felt very comfortable with the care I was receiving on the Critical Care Unit. I was allowed to rest and I learned to adjust the backrest and knee break in the bed to minimise the discomfort. I also mastered the art of urinating into a bed bottle while lying on my back. On Day 3 I had my first bed bath. It is interesting how personal hygiene changes, and most noticeably dental hygiene. I normally brush my teeth twice a day and floss once a day, but during my first week in hospital, tooth brushing never happened more than once a day, and flossing was completely abandoned.

By Day 3 my Hb had dropped from 14.6 on admission to 9.4. I had mounted a brisk systemic response to trauma, with a white count of 19.5 on admission, but this had returned to 8.5. My CRP on Day 1 was elevated at 91.5, but by Day 3 it had fallen to 19. The chest drain continued to drain and I had massive swelling around my right shoulder; I felt I would like to arrange a transfer back to my own hospital as soon as the chest drain was removed. I was on oxygen by nasal speculum, and my oxygen saturation remained 98% or better, which was reassuring. By Day 4 everything seemed to be progressing well, so in the late afternoon I was transferred to a general surgical ward. The gulf in the standard and intensity of the care was enormous, but I was feeling reasonably well, so I did not feel too insecure. I was still unable to sit up, but I was getting used to drinking and using a bed bottle lying down. When I was given my first jug of water and glass on the ward, I asked for a straw. On the CCU I was used to drinking through a flexible straw. On the ward I was given no straw until I asked. A straw was then provided, but it was not a flexible one, so it was still awkward to drink lying down. It seems flexible straws are only available on the CCU!

We tend to laugh at how patients are all obsessed by their bowels. Let me assure you, when you cannot sit up or push and you are doped to the eyeballs with opiates, bowels cease to function. I was on lactulose

and senna, but by Day 4 I felt I was in my third trimester and was very uncomfortable. Suppositories were tried a couple of times overnight, but to no avail, so on Day 5 I experienced my first phosphate enema; the relief was immense, as was the result.

On Day 5 my oxygen saturation was still satisfactory so I had stopped wearing the nasal specula. However, on Day 6 I was feeling less well, I was developing episodes of sweating associated with low grade pyrexia, and my white count was 13.6, my CRP had risen from 19 on Day 3 to 32.7 and I had a new pain in the region of my costal margin. The chest drain was still in and I was told it was still swinging. I had replaced the nasal specula, but when a nurse checked my observations my saturation was 93%, despite being on oxygen. "That's not very good, is it?" I commented, but she simply wrote the observation on my chart and walked away.

On Day 7 the junior doctors saw me on their daily round; there was some confusion about whether or not the drain had drained much, and they did not comment on whether or not it was still swinging. In the afternoon one of the CCU doctors saw me on an outreach visit and said that, as the drain was no longer swinging, and it seemed to have only drained 50 ml since yesterday, it should be removed. An SHO came and asked if I minded him removing the drain. I asked him if he had done it before, and he said he had a couple of times. I suggested he talk me through what he planned to do; he forgot to tell me to hold my breath, but otherwise he seemed to know what to do, so I thought it would be good for his training. After removing the drain I asked him what he felt had been done well, then what he felt he might have done better. Once an ATLS instructor, always an ATLS instructor!

My chest had remained absolutely clear throughout, and I had managed to cough, after a fashion, but I was concerned by my pyrexias, and sweats so I had suggested the tip of the drain be sent for culture. About half an hour later, I felt myself becoming feverish again, so I asked the nurse to call an SHO to take some blood cultures, which he duly did, before going off duty. A little while later, I saw the houseman on the ward, so I called him over:

"Shouldn't I be started on some antibiotics?"

"We haven't got any results".

"No, but I am feeling ill and we have sent specimens, so wouldn't it be worth starting some now? Do you have any differential diagnosis?"

"I suppose you might have a chest infection".

My chest had been absolutely clear, and I raised my concerns over the possibility of infection in the drain and the risk of empyema.

He suggested cefuroxime, but I wondered if it might be better to start with a broader spectrum antibiotic such as coamoxiclav. He was adamant that the departmental policy was cefuroxime, so I suggested it might be worth adding metronidazole. This conversation took place at about 6 pm. A little while later I called a passing nurse over:

"Aren't I supposed to be getting some antibiotics?"

"We'll do them on the 10 pm drug round."

While I had the chest drain in situ, I had been in a bed close to the nursing station, but once the drain was removed, I was deemed less serious so I was moved round the corner to a general, low dependency area of the ward.

My temperature remained elevated all night and I felt very ill, sweaty and toxic. I had a dose of antibiotics at 22:00 h and again in the morning, but I still felt terrible. At 08:00 h on Day 8 I asked a nurse to call one of the doctors as I felt so ill. "OK" she said, continuing to give out the breakfasts. The doctors did not come round till 10:00 h. I was still feeling terrible when the registrar examined me. At least I assume she was a registrar, but she did not introduce herself. I was seriously worried about my condition, and a CT seemed to me the obvious investigation to show whether I had a pleural effusion in addition to the obvious pulmonary contusions. She insisted on a plain chest X-ray. A little while later the on call consultant general surgeon came round and saw me. He agreed a CT scan would be best, but the scanner had broken down the day before and would not be seen by a technician for 2 days. As I went down for my chest X-ray, I saw one of my CCU doctors who was surprised and concerned to see me looking so ill. I came back from the X-ray dept to find the CCU doctors asking if I minded being transferred back to their care. I felt an enormous sense of relief; as I said earlier, being powerless as a patient is fine when you have confidence in the staff caring for you, but I had become seriously concerned about the lack of realisation by the nursing and medical staff about how ill I had become.

So on Day 8 I found myself back in the CCU. I had become dehydrated and my base excess was 7. I was back on intravenous fluids, warmed moistened oxygen,  $pO_2$  and ECG monitoring. I was still having swings of pyrexia, associated with a feeling of tox-aemia. I was becoming used to this, but now that I could watch my ECG on the monitor, I found an alarming new dimension. My ECG suddenly started to show ventricular ectopic beats. At their most frequent, they were coming after every three normal beats. This would last for ten minutes or so, and

recurred from time to time. The registrar assured me it was not affecting my blood pressure and it was not a dangerous dysrhythmia. I hoped he was right. In addition to all this, my bowels had remained on strike after the phosphate enema on Day 5, and I had reacquired that laden feeling, so once again I found myself on the wrong end of a phosphate enema, with similarly spectacular results. On that day we received preliminary results from both the drain tip and the blood cultures; both had grown a streptococcus, and I was changed to coamoxiclav. After all this supportive and therapeutic attention, on Day 9 I felt much better, though my CRP was still 213.1. All in all, Day 9 was a much better day, but in the evening I began to develop much more severe costal margin pain, with occasional agonising spasms, so I was restarted on a PCA.

On Day 10, with the CT scanner still out of action, arrangements were made to transfer me to the care of the thoracic surgeons in my own hospital. The pain was gradually worsening, and I was still having small temperature swings.

The ambulance ride was one of the less pleasant experiences. Although the driver drove very gently and did his best to avoid bumps, I felt every imperfection on the road and I was pressing the PCA button as often as I could. It was a relief to arrive, and more of a relief to feel I was now under the care of an attentive thoracic surgeon who was familiar with sorting out chest problems. I had a CT scan that afternoon, which confirmed the various injuries and showed a large fluid collection (Fig. 4).

On Day 12 I still felt unwell; my WBC was 17.97 and my CRP was 259. My chest surgeon had an unsuccessful attempt at inserting a chest drain under local anaesthetic and sedation in the anaesthetic room. This was followed by a trip to the X-ray department for insertion of a drain under ultrasound

guidance. I was awake for this, and although the local anaesthetic worked, after much pushing I felt the drain go in, accompanied by a searing pain. Only 200 ml were drained before the drain blocked.

On Day 12 I felt much worse again, toxæmic, pyrexial and breathless, and my WBC had risen to 27.83. My consultant decided there was no alternative to a thoracotomy. The anaesthetist saw me, did the usual pre-anaesthetic checks and set up another intravenous infusion. The nurses then got me ready for theatre. Ill though I was, I couldn't help wondering about the absurdity of some of the routine. My chest and forearm were shaved, the sheets were changed, and now included a canvas, and I had to be dressed in a theatre gown. My left arm had two canulae, one for the PCA and one for the infusion. This was running through an Ivac, so to get the gown on, the drip counter was removed, the gate opened, the bag and giving set removed and passed through the sleeve of the gown, along with the PCA. Once my arm was in the sleeve, the bag was hung back on the drip stand, the giving set fed back into the machine and the drip counter reattached. I couldn't help picturing the anaesthetist in due course grumbling about the nuisance of feeding it all back through the sleeve to get the gown off.

That wait for theatre was probably the nadir of the whole experience. I felt desperately ill, and I also felt I was gradually going downhill. I knew I had to hang on till I got to the anaesthetic room, where someone else would take over and I could relax. I remember the relief I felt at having survived long enough to get there.

I came round from the anaesthetic sometime in the afternoon. Initially, I was in severe pain, but once some morphine had been given and taken effect, I felt great. The toxic feeling was gone, my breathing was relaxed and my saturation (on oxygen by mask) was 98% or more. Admittedly, I had two large chest drains which were uncomfortable, particularly the posterior one which I tended to lie on, and I also had a multilumen canula in my right jugular vein, a radial artery line in my right wrist, and, ignominy of ignominies, a urinary catheter. This was interesting, I knew it was there and there was no need to pass urine, but I was also aware of a continuous irritation making me feel I needed to pass urine. My anaesthetist was pleased to see that I had no sore throat as he had used a double lumen endotracheal tube, the size of which he described in unprintable terms. My surgeon came to visit and told me he had removed 1.5 l of loculated fluid with a fibrous membrane developing along the lung surface. I had been warned about post-thoracotomy pain, but as my incision was situated over an anaesthetic area of my chest, this was not a problem.

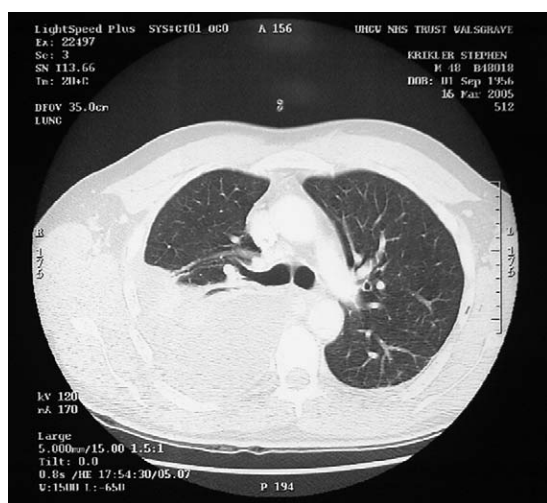


Fig. 4 CT at 10 days showing empyema.

I passed a good night and had the catheter removed the following morning, another uncomfortable experience. My Hb was 8.8, so I received a couple of units of blood via my neck line. After a few days on the thoracic intensive care unit, I was transferred to a private room. It was now some two weeks since my accident. I had the first attempt at shaving myself, though I had to do it entirely left handed. It was something of a shock to see myself in the mirror, my cheeks and eyes looked very sunken and I had clearly lost a fair bit of weight. I was coughing better now, though it was still painful, and following the thoracotomy I was bringing up some clear sputum. My surgeon visited every day, was suitably laid back in response to my minor setbacks, and generally reassuring about my progress.

After a few days, the drains were removed. This was surprisingly painful, despite several presses on my PCA, and the deep, purse string sutures were also very painful. These had to stay in for the next 5 days, but I was definitely on the mend. As I was weaned off the opiates, perhaps partly due to the antibiotics, my bowels seemed to demonstrate a rebound phenomenon. Getting to a toilet in time while on the general ward was something of a challenge, but I was able to walk, albeit slowly, and I was determined not to depend on bedpans.

Once the chest drains were out, I had my first shower. It was a wonderful feeling to have warm water cascading over my body, though I was unable to wash myself independently. I was troubled by odd episodes of mild pyrexia (not associated with the toxic feeling of the previous pyrexia), associated with feeling hot and cold and sweating profusely and a complete, debilitating lassitude. This might come on fairly abruptly, last for a few hours, then lift suddenly leaving me tired but active. The sweating was profound, and I would regularly need to have the sheets changed. This was exacerbated by the plastic hospital mattress. Gradually, these episodes faded over the next week or so. I also had one hot bath while in hospital. It was a wonderful feeling, the warmth eased the pain from all my broken ribs and being weightless also helped. My blood pressure seems to be low at rest, and had fairly consistently had a systolic pressure between 100 and 110 mmHg. This had never been a problem, but as I stood up from my hot bath I felt decidedly light headed, and just managed to make it to lie down on my bed.

While medical staff may feel they have the prime role in the treatment of the injured patient the attitude and skill of all staff, medical, nursing and allied health, is vital. As a consultant surgeon, I may

be under the illusion that my role is of paramount importance. Certainly, without my thoracotomy I might not have survived and I cannot adequately express my gratitude to the anaesthetist and surgeon who saved me as I was deteriorating that morning, but the care and commitment of everyone involved really did emphasise the importance of the entire team who were involved in my care. I remember during one of my more emotional episodes, returning from a visit to the toilet to find my sweaty sheets had been changed and almost bursting into tears of gratitude for this little kindness. Within minutes, or even seconds, of meeting a new doctor or nurse, an impression is formed as to their care and competence. I would like to think I was good at empathising with my patients, and the cards and other wishes suggest that in many cases I succeeded, but I am now more than ever aware of the importance of this aspect of care. As a patient, it is surprising how important trivial things become. As my right arm was not very useful, and I could not move about easily in bed, I depended on items being within reach of my left arm; water jug, glass, bed bottle, call bell. I also liked to be able to listen to the radio. If a phlebotomist took blood from my left arm, or a nurse did the routine observations on my left arm, they would push the bed table out of the way. If they forgot to push it back when they left, I was in trouble.

My biggest plea, the most harrowing aspect of my whole experience, was the feeling that I had 'gone off' seriously, but no one seemed to be aware of this. Attention to detail is important, showing care and empathy matters, but it is absolutely vital to spot a patient who is sick and to react accordingly.

According to Nietzsche, "That which does not destroy me makes me stronger." I came harrowingly close to destruction at the time of the accident, and I came closer than comfortable when I 'went off' with infection and again while I was lying waiting for my thoracotomy. I hope it has made me stronger, but it has been an expensive lesson for me; by sharing the experience maybe I can help strengthen others without their having to experience it all first hand.

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