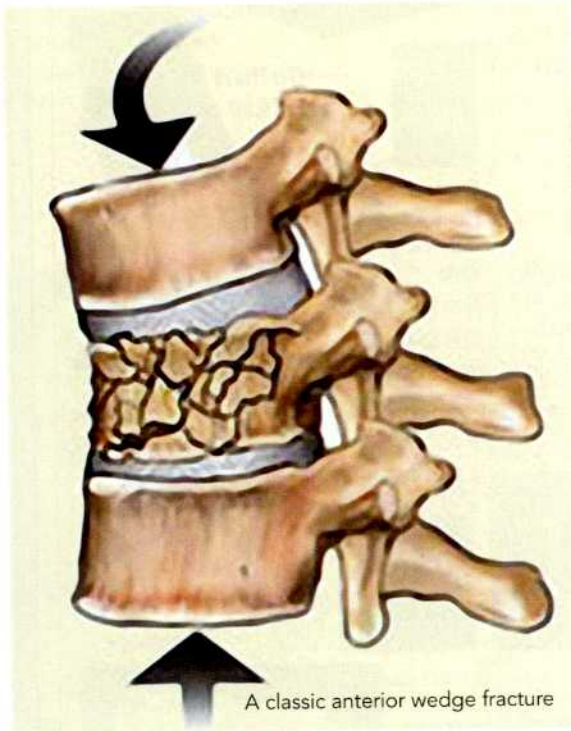


INITIAL CARE OF A SPINAL INJURY

Dr Peter Saundby and Dr Tony Segal advise how to deal with a potential spine injury in the event of a heavy landing or accident



A classic anterior wedge fracture

SO LONG AS A SPINAL INJURY IS PROPERLY RECOGNISED, TRANSPORTED AND TREATED, THE OUTLOOK IS VERY GOOD

A GLIDER pilot is liable to suffer a spinal injury in the event of a heavy landing, or an accident involving a vertical impact.

The immediate care of the pilot can be divided into three stages – removal from the cockpit, transport to hospital, and diagnosis at the hospital.

Following an injury to the spinal column, bones will repair, but the spinal cord does not. With an unstable fracture, there is the possibility that the spinal cord has survived the accident intact, but could be irreparably damaged by unwise attempts at extracting the casualty from the cockpit.

Removal from cockpit

The pilot is worth far more than the aircraft and so there should never be any inhibition about cutting away the structure in order to release the pilot. Civil ambulance and fire crews carry the necessary equipment.

Call the professionals, the casualty will survive in place if conscious and not bleeding, but take precautions against fire and cold. Disconnect and remove batteries, remove oxygen if carried, turn off fuel and have fire extinguishers at hand. Also, protect the casualty from hypothermia with coats or blankets.

Transport to hospital

For transport to hospital, the pilot should always be treated as having a possible spinal injury and travel by ambulance on a properly designed horizontal stretcher. The pilot should not be taken to hospital by private car because this requires bending the back.

Speed is only important if there are other injuries, such as severe internal or external bleeding.

Diagnosis at the hospital

Gliders pilots are by nature uncomplaining individuals and this can lead to a failure by hospital staff to fully investigate their condition.

Two heavy landing glider accidents have been witnessed, both of which resulted in the pilots concerned receiving an unstable spinal fracture.

The first pilot did not receive a spinal x-ray or a spinal scan until going to a different hospital the following morning. In the second case, one of us travelled in the ambulance to the hospital with the pilot and had to insist that a scan be carried out. This scan showed the presence of an unstable fracture and the pilot was then admitted to the hospital.

Medical diagnosis of an unstable fracture of the spine may not be simple. The spine may be considered to comprise three vertical columns – front (anterior), middle and rear (posterior). If any two of these three columns are fractured the spine is unstable.

A vertical impact often results in a compression load together with a forward rotation load on the spine, resulting in a classic "anterior wedge fracture". Thus the front (anterior) and middle spinal columns may be fractured, leaving the rear (posterior) column intact.

When the back of the pilot is examined there may be no pain felt because the rear (posterior) column is intact, so that diagnosis is notoriously difficult.

The dynamics of motor vehicle accidents are different with less vertical loading but greater risk of whiplash injury. Therefore it is suggested a senior member of the gliding club, if possible a doctor member, travel with the casualty to the hospital to explain the risks of vertical impacts.

Military experience following crash landings or seat ejections has shown that, so long as a spinal injury is properly recognised, transported and treated, the outlook is very good, most returning to operational flying within a few months.

RISK OF SPINAL INJURY

I AGREE that all glider pilots involved in accidents are at risk of spinal injury (*Initial care of a spinal injury*, p20, Oct/Nov 11). I disagree that they have special risks. An uncushioned fall from a standing position onto a hard floor can cause compression fractures of the lumbar spine in susceptible persons and falls are the commonest cause of trauma. The real issue here is what to do about the immediate management of the victims. Confusion reigns supreme, as the only thing that anybody remembers is 'Don't move the patient!' Does anyone know the answer why? The single reason is that they may have a grossly unstable fracture of the cervical spine, putting the spinal cord at risk. Spinal fractures, particularly compression fractures are stable and, whilst painful, they are unlikely to cause damage to the spinal cord. Thoracic and lumbar fractures are seldom acutely unstable.

The recommendations of the authors will cause confusion and complete paralysis of the assistants, not the pilot. In the conscious human, there are built-in eloquent systems to check the various functions of the body and simple interrogation will give you huge amounts of useful information. By simply talking to the pilot you can very quickly ascertain the risk or actuality of a serious spine or spinal cord injury. If they do not have serious pain in the back, chest or neck and they can

move their arms and legs with near normal sensation, then you can invite them to exit the wreckage.

Spinal fractures are always very painful, but not always unstable. They are frequently missed, pilots or not! The consequences are not always dire. Unfortunately, most people are terrified of the consequences of 'doing the wrong thing' and common sense is eliminated from the equation. The 'professionals' are all protocol-driven, hence everyone gets a cervical collar and roofs get torn off vehicles for no good reason.

In the unconscious or multiply-injured victim then I agree about taking all precautions.

James Kellerman FRCS
Neurosurgeon and spinal specialist

Dr Tony Segal (MB BS, DAVMed, FRAeS Hon Fellow Brunel Univ) responds: *A cervical spine fracture may follow on a whiplash injury incurred in a motor vehicle accident. This represents a two-dimensional situation.*

In a glider accident with a significant vertical component, and in the situation of a pilot ejecting from a fast jet aircraft, the result is a compression and a forward rotation load on the lumbar and lower thoracic spine.

Denis' three column theory of stable and unstable fractures of the spine was discussed in the article. Thus the front and middle columns of the spine may be fractured leaving the rear column intact. There will be no pain on pressing on the back of the spine, despite a possible unstable fracture being present.

The presence of normal sensation and normal movement in the legs signifies that the spinal cord is intact at that particular time. The spinal cord could still be at risk of damage in the future following mishandling of the pilot.

The only certain method of diagnosing a spinal fracture is by an X-ray or preferably by a scan. Until this has been carried out at a hospital, the pilot should be treated as having a possible unstable fracture of the spine. The risk of a pilot spending the rest of his or her life in a wheelchair due to unnecessary damage to the spinal cord cannot be justified.

Decline of the areodrome?

Mike Bird (*Making a stand for the written word*, letters, p6, Oct/Nov 2011) may be worrying unduly!

As a result of an outbreak of extreme bureaucracy, Surrey Hills GC has been forced to amend its postal address. As a result of the enforced change, the only words unchanged are *Kenley* and *Surrey*. However, the site description has been changed from *airfield* to *aerodrome*.

Perhaps *The Spectator* is not the best authority on the matter - Croydon was always an airport (when not in military hands), but bizarrely boasts the fine art-deco Aerodrome Hotel!

Adrian Hewlett, Croydon

Please send letters (marked 'for publication') to the editor at editor@sailplaneandgliding.co.uk or the address on p3, including your full contact details. The deadline for the next issue is 5 December

Why don't British pilots use FLARM?

I HAVE just returned from three months gliding in Spain at Jaca and Fuentemilanos and was surprised by one of my observations.

Out of hundreds of gliders, almost all Spanish, French and German gliders were equipped with FLARM and yet hardly any British gliders were so equipped. I have discovered from the FLARM website that more than 75 per cent of gliders in France and Germany have FLARM and less than 25 per cent in Britain. Why is the difference so large? Do British pilots perceive risk differently to their European colleagues or do we consider the FLARM solution to be less effective? Or are the British simply less well informed about FLARM?

I did discover, however, in discussion with the Spanish, French and German pilots that their representative gliding bodies are much more active in promoting safety in general and FLARM in particular. The French, for example, now demand red hivi markings on all gliders flown in the French Alps and even make it a rule in some competitions that all gliders competing be equipped with FLARM.

Why is it that British glider pilots do not agree?

DM Hope, Alford, Scotland

BGA Chief Executive Pete Stratten comments: *The BGA probably leads the field in understanding and educating pilots of the actual, measured risks associated with gliding and regularly provides guidance on how to operate safely. Where agreed necessary to maintain risk at an acceptable level, the BGA has incorporated operational regulations. Mid-air collision facts are published annually and effective lookout is a BGA training priority. The BGA believes that FLARM is helpful and, like other technology available in our sport, its considered use is encouraged. The BGA only mandates equipment with, or use of, any particular equipment if there is a safety case for doing so.*