

# James Aitken

MB, BS; LRCP, MRCS; MS; FRCS (Edin); FCS(SA); FRACS  
**General and Colorectal Surgery**

Unit 4,  
77 Grand Boulevard,  
Joondalup, 6027

Suite 23,  
Hollywood Specialist Centre,  
95 Monash Avenue,  
Nedlands, 6009

Tel: 6389 0244

Fax: 6389 0255

[www.perthcolorectal.com.au](http://www.perthcolorectal.com.au)

**All correspondence to Hollywood**

email: [info@perthcolorectal.com.au](mailto:info@perthcolorectal.com.au)

## **FLYING, SURGERY AND DEEP VEIN THROMBOSIS,**

This information sheet is designed to provide you with background information on the issues surrounding flying around the time of surgery as it relates to a Deep Vein Thrombosis (DVT). It is important to recognise that there are a number of variable issues and it is not possible to give you exact advice. The aim of this information sheet is to give you the background information that will help you reach a decision. It may not deal with some areas that are of particular concern to you. These can be dealt with individually.

### **What is a Deep Vein Thrombosis?**

A DVT is a blood clot in the deep veins. Although a DVT can occur in any deep vein by far the majority occurs in the legs and pelvis and unless stated otherwise this information sheet only deals with DVT of the legs and pelvis.

### **Why is Deep Vein Thrombosis important?**

There are two reasons:-

1. If a clot forms in the leg, and especially in the pelvis, it may break away from the sidewall of the vein and then float up the main abdominal vein (the inferior vena cava) to the heart, through the heart and into the lungs. This clot that lodges in the lungs is called a pulmonary embolus (PE). A PE may cause few symptoms other than sharp (pleuritic) chest pain and shortness of breath, but in a worst case scenario a large clot may lodge in the main pulmonary artery. This can result in sudden death.
2. A clot in the deep veins will eventually dissolve. However, its mere presence will damage the vein wall and in particular will destroy the valves in the deep veins. This results in the pressure in the veins being higher than normal and over many years will lead to the development of a swollen leg, dilated veins, discomfort and sometime venous ulcers. This is called a post-phlebotic limb and is the cause of a lot of morbidity in the community.

### **What causes a Deep Vein Thrombosis?**

The physiology underlying the development of a DVT is related to three factors (Virchow's triad):-

1. Slow flow in the deep veins
2. An increase in the coagulation factors in the blood
3. Damage to the vein wall

Treatment aims to change these physiological conditions:-

1. Graded compression stockings divert venous blood from the superficial to the deep veins. In order to return the same amount of blood the flow in the deep veins has to be faster.

2. The use of anti-coagulation drugs such as heparin will counter the increase in blood coagulation that occurs with surgery. Note that aspirin is of no value in the prevention of a DVT (see below).
3. Damage to the vein wall is thought to be why the risk after some operations, like hip, knee and pelvic surgery, is particularly great. Little can be done to prevent this damage, but proper and prolonged treatment is essential.

A DVT can occur spontaneously. It is now known that some patients have a genetic predisposition to thrombosis. You should be alert to this if other family members have had a DVT, particularly a spontaneous DVT.

A DVTs is more likely to occur if patients have one or more known risk factors. These known risk factors include age over 40 years, smoking, obesity, oestrogen containing drugs (typically the oral contraceptive pill and HRT), varicose veins, pregnancy and breast feeding. The greatest risk factor is a previous DVT.

### **Deep Vein Thrombosis and surgery**

It has long been known that surgery predisposes to the formation of a DVT. Surgical risk factors include cancer operations, surgery in the pelvis, orthopaedic operations on the leg and operations lasting more than 30 minutes.

Patients undergoing major surgery or otherwise considered at risk are routinely with treated with blood thinning agents (such as Heparin or Clexane), anti-embolic stockings (TEDs) and calf pumps. Early mobilisation is also important. Traditionally this treatment has been maintained until patients leave hospital. However, patients who have had major surgery remain at increased risk of DVT for up to six weeks after surgery. In some cases protection in the form of daily injections may be recommended for up to six weeks after surgery (three months for some orthopaedic operations).

### **Deep Vein Thrombosis and flying**

DVT after flying is sometimes know as the 'economy class syndrome', but in reality can occur in any class and after other modes of transport (e.g. long car or train journeys). Risk factors are dehydration (secondary to alcohol and caffeine ingestion (tea and coffee) and the plane atmosphere) and flights of longer than five hours. The incidence of a flight related PE is one or two cases per million flights that are longer than 5000 km (about five hours).

Prevention of a flight related DVT include adequate hydration, moving around and exercises. All planes carry information about this.

Graduation compression stockings have been proven to reduce flight related DVT. These must be Class 1 stockings. 'Below knee' stockings are adequate. They can be obtained at any chemist, but must be fitted to ensure the correct size. Incorrectly fitted stockings may increase the risk of a DVT.

The TED stockings used in hospitals are designed for non-ambulant patients. They are not adequate protection when flying as they do not provide sufficient compression.

Contrary to popular belief aspirin does not offer any protection against venous thrombosis and is not recommended. The failure of aspirin to protect against venous thrombosis should not be confused with its value in preventing arterial thrombosis that is well proven. Venous and arterial thrombosis do not have the same causes and their treatment is different. Aspirin also carries risk.

If you are at significant risk you need to receive low molecular weight heparin. This can be arranged through your General Practitioner. It should be commenced 24 hours prior to your flight and continued for 72 hours after landing.

## **Deep Vein Thrombosis, surgery and flying.**

It will be clear from the above that surgery has the potential to increase the risk of a DVT if a flight is taken around that time. The difficult question to answer is the magnitude of this risk, and at what point anti-coagulation protection should be provided, or even a flight delayed.

Flights of under four hours carry little risk. Minor operations carry little risk. So a short flight before or after a minor operation probably carries little additional risk. However, if there are other risk factors (e.g. smoking and/or the oral contraceptive pill) this may not be so.

Conversely, an international flight after major surgery, especially some orthopaedic surgery, will undoubtedly carry significant increased risk. In this situation the best option is not to fly for at least six weeks. If the flight cannot be delayed all the above precautions, including the use of low molecular weight heparin, should be used.

In between these two extremes there are many combinations of risk factors. Each will be associated with a variable risk. It is impossible to quantify the risk for each combination of factors. You will need to form a view of your risk and decide what you wish to do.

### **More information.**

Additional advice can be obtained from a number of web sites:-

*UK Department of Health* - [www.dh.gov.uk/en/Publichealth/Healthprotection/Bloodsafety/DVT/DH\\_4123480](http://www.dh.gov.uk/en/Publichealth/Healthprotection/Bloodsafety/DVT/DH_4123480)

*National Travel Health Network and Centre* - [www.nathnac.org/pro/factsheets/trav\\_dvt.htm](http://www.nathnac.org/pro/factsheets/trav_dvt.htm)