HAEMORRHAGE & HAEMOSTASIS
Basic Science and pathological disorder

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HAEMORRHAGE & HAEMOSTASIS

Back to Basic
Not too long ago, I was referred a patient suffering from low platelet count for routine dental care. The patient informed me that he had had extraction done at a private dental clinic. She did inform the dentist of her low platelet count and the dentist reassured her that everything will be alright once he had done suturing and placement of Surgicel® into the socket. Unfortunately, the bleeding did not stop and the patient had to be admitted to the Universiti Kebangsaan Malaysia Hospital. The bleeding only stopped after she received platelet transfusion. As you can see, this unfortunate incidence happened because the dentist forgot his applied basic science.

What went wrong?
Prolonged bleeding after dental extraction is one of the most common complications encountered in the general dental practice. Sometimes underlying bleeding disorder will only surface once trauma is inflicted, as in the case of people suffering from very mild haemophilia. Haemorrhage can be caused by either local factors or underlying haemorrhagic disorder.

Thus, the application of basic science is very important in the care of medically compromised patients. In order to manage bleeding problems, one must understand and apply the basic behind it.

Let’s go back to basic.

Basic
The main components in haemostasis are the blood vessel, platelets and clotting factors. Damage to blood vessels and surrounding tissues initiates a series of events that lead to clot formation and haemostasis. They are local vasoconstriction, platelet plug formation and conversion of it into a definitive clot. Let’s try to make it simple by comparing a blood vessel with a brick wall at your garden. Imagine that the platelets are the bricks and the clotting factors are the cement holding them together. Thus any damage to the wall (vessel) will necessitate the use of bricks (platelets) to close the hole and the use of cement (clotting factors) to hold them together. I believe this analogy is a simple way to understand the basic of haemostasis and haemorrhagic problem. The concept may be applied where appropriate.

Once one is able to understand the basic of haemostasis, all the pathological disorder associated with haemorrhagic problem can be easily deduced and eventually dealt with. As of the case of low platelet count mentioned earlier, the lack of platelet will definitely cause haemorrhagic disorder as there is not enough platelet (analog: brick) to plug the bleeding vessel (analog: broken wall).

So, the management will basically involve platelet transfusion. Merely placing sutures (for achieving local pressure) and Surgicel® will not be sufficient in further details, haemorrhagic disorders can be caused by:

A. Vascular disease (*not common)
B. Platelet disorders
   a. Thrombocytopenia
   b. Idiopathic thrombocytopenia purpura (ITP)
   c. Leukemia
   d. von Willerbrand’s disease
C. Drugs:
   i. Aspirin
   ii. Cytotoxics
   iii. β-Lactam antibiotics
   iv. Valproate
D. Disorder of the clotting mechanism
   a. Haemophilia
   b. Von Willerbrand’s disease
   c. Liver disease including obstructive jaundice
   d. Anticoagulants and thrombolytic agents
E. Other uncommon causes
   a. Disseminated intravascular coagulation
   b. Aplastic anaemia
   c. Chronic liver failure
   d. Lupus erythematosus