Sheet 25

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**Please refer to the slides or handouts and the recommended chapter for butter understanding**

when you injure yourself you don’t see bleeding because the first response is vasoconstriction , then vasodilatation and then you will see bleeding

**Coagulation process** : exposure of the subendothelial tissue(injury)→activation of the platelet→ platelet plug →activation of trigger cascade of coagulation factor

Platelet plug alone insufficient to withstand the blood flow so we need fibroclot that is done by 13 intrinsic and extrinsic factor

Hemophilia pt at the beginning don’t bleed but after one minute the pt start bleeding

**Causes of bleeding :-**

1.the platelet don’t function well

2.coagulation factor don’t function because :**A**.missing(hemophilia) **B**.drugs **C**.other rare causes

**Platelet defects** :

thrombocytopenia (we should read about it from any book or any website except Wikipedia)

-most people take **aspirin** or NSAID and the difference between them that :

**Aspirin :** drug that affect the function of the platelet irreversibly (life span of platelet 10 to 12 days)

**NSAID :** drug that have relation with the life span as a drug

\*so its better to prescribe other drug than NSAID with aspirin , cause they work together

**Plavix**(clopidogrel bisulfate) **:** very potent antiplatelet drug , for pt who had open heart surgery or prosthetic heart valves , it works irreversibly on platelets , so any pt with cardiac condition don’t ask him to move to aspirin

**MOA** of these drugs act on **adenophosphate** (which is a receptor that makes the platelets adhere to each other and with the subendothelial lining) irreversibly block these receptor

So special consideration must been taken , that’s why is important to know the history of drug of pt because these drugs might be relevant but sometimes its irrelevant to minor procedure ( Minor oral surgery :up to 3 simple extraction )

Test that used to know the function or platelet number:-

1.bleeding time : to know the function and the quality of the platelet

2.full blood count : to know the platelet count(quantity) , less than 50 is dangerous , 100-150 is normal

You should adopt local hemostatic measure to minimize bleeding postoperatively

**How to minimize bleeding postoperatively ?**

**A.Atraumatic extraction :** does not mean nonsurgical extraction , sometimes you have to do surgical extraction to end up with non traumatic extraction , by avoiding scratch the soft tissue , don’t tear the gingiva while using the forceps

**B.gauze pressure** (the best way to stop bleeding any were in the body is by applying pressure with gauze for few minutes cause the gauze will act as a fibrin network by enhance the platelets and coagulation factor to work)

**C.local hemostatic agent**

1.surgyseal (oxidized regenerated cellulose)it’s a resorbable material act like hub for platelets and coagulation process ((the dr wants us to google it and see how it does work))

2. suturing to premote hemostasis

3.you can use local anesthesia on the gauze

4.using electrosurgery by electric coagulation device

\*so pt take antiplatelet and you want to do minor surgical procedure you can do it without stopping the drug and use the local haemostatic agent

\*pt you want to do surgical extraction (implant,3 anterior teeth, extraction of 6 ,couple of teeth) ,you have to do bleeding time test , if it normal you can do the surgery

**Coagulation defects** :

-genetic : hemophilia can be (mild , moderate , sever)

-acquired : as a result of drugs mostly warfarin >>>> more common

Its very important because we as dentists could be the first to discover a coagulation defect in a patient

non-invasive dentistry is Safe , but don’t ever treat these patients in clinics , they should be treated in hospitals or referred to MF , because you need multiple systemic approaches if any complication happens and to reverse any complication it is very expensive and very traumatic.

So how to deal with patients with coagulation defect ?

Simply by replacing missing factors , and there is 2 ways :

Either by giving a mass for the whole coagulation factors which is by **fresh frozen plasma** (Cryoprecipitate) : more available , cheep , used when multiple factors are missing

Or by giving specific factors **(Recombinant factors)**

Advantage :

-synthetic not animal or human derived so does not promote any immune or allergic reaction

- replacing a single factor so avoiding blood born diseases

But it's very expensive

Most common type of hemophilia is type A >> missing factor VIIIc

Other types read them by your own

Other drugs :

-Desmopressin + tranexamic acid ( Anti-fibrinolytic )

These drugs promote fibrin formation

tranexamic acid given IV or orally

Desmopressin must be given with tranexamic acid

tranexamic acid could be given alone

 does not replace missing factors , so it could be used as alternative in mild cases and its advantage is to decrease amount of replacement factors to be given which are very expensive

these patients should have extensive preventive dental practice with nutritional advice and should NOT end up in a dental chair , because even in simple extraction the patient need to be admitted into hospital 24 hrs before given recombinant factors until it reach 100% spending lots of money and also there is a chance to transmitte blood born disease

if you did an extraction , the patient will go with no bleeding because of the effect of vasoconstrictor , but after they go home they will start bleeding so never underestimate if you get a call from your patient , he might be hemophilic without knowing

**hemophilia** :

mild : factor VIII >6% , its different categories

if more than 25% usually not discovered only if they did a wisdom extraction

moderate : factor VIII 1-5% , usually discovered at first year

sever : factor VIII less than 1% , once you touch them they will brose and bleed and sometime its spontaneous

in general these patient has a dental neglect and poor oral hygiene so their treatment is problematic, even ID block anesthesia could kill them , ID block also is a problem for patient that take warfarin because bleeding goes to pterygomandibular space then spread to the lateral and posterior pharyngeal then cause suffocation and death , so in these patients use infiltration with articane and supplemantary intraligementary anesthesia , and don’t give in the floor of the mouth because there is sublingual , submandibualr , submental spaces then it spread to pterygomandibular space then to the lateral and posterior pharyngeal

**How to manage ?**

Consult a hematologist and admit patient in hospital, tell the hematologist about the extent of your procedure, the hematologist should restore all missing factors to 100% and maintain this 100% for initial treatment period Which is at least 5 days (very expensive and very extensive), so you need to maintain same level of replacement for few days above

Anything that can induce bleeding aggressive or simple like matrix band placement you need to consult the hematologist

In minor surgery up to 75 % replacement is Ok but the hematologist always try to aim to 100% >>>> safer

-Desmopressin they induce the release of factor VIII but you should give them along with antifibrinolytic agents.

Factor VIII replacement has short half-life and should be given twice a day-

-Causes of hemophilia is trauma and infection, so give prophylactic antibiotic to prevent bleeding later , and treat them as high risk patients to infection because they receive blood replacements a lot (may prone to diseases because of blood replacement)

And as we said if you want to give a local anesthesia, give it infiltration supplemented with Interaligmentary

-Even if you do a vital pulptomy you should be aware, for example you may reach apex and cause bleeding

-Even in orthodontics you should be aware for the brackets or the wires from causing cut and bleeding.

-in periodontal, supragingival and subgingival scaling are also causing problem in bleeding

- **acquired coagulopathy**: most common

As you know anticoagulants is either heparin or warfarin

The difference between them that heparin only given as injection (subcutaneous), and warfarin is orally administered (most of patient take it), especially those who has prosthetic valves or those with deep venous thrombosis or those with history of pulmonary embolism, they stay on warfarin for their lives.

Patients who did coronary artery bypass graft they give them warfarin for 7 weeks

2 tests you should be aware for (PT and PTT):

1- PT or INR now (more standardized value = PT of patient/normal PT , in normal ppl it equal 1) >>> it moniter warfarin

" patents on wafrarin INR is between 3 and 4"

PTT (to monitor heparin)-2

-warfarin work on(1972)2,7,9,10 (factors of Vit K drivened)

If you want to reverse the action of warfarin 🡪 give Vit K🡪 stimulation for synthesis

-never stop warfarin as a dentist only cardiologist and hematologist do this .

-because stopping warfarin🡪 cause rebound phenomena (coagulation)

-Normal range of INR that I can work with : up to 3 or 3.5 with the use of local hemostatic measures

As we mentioned before about local hemostatic measures depends on:-

1-range of INR

2-extent of surgery (minor or major procedure)

**+Minor surgery**(up to 3 simple extraction)

\*so up to 3 or 3.5 I can work on the local hemostatic measures

But if it's more than 3 or 3.5 🡪 patients should have multiple visits and communicate with hematologist.

**+Major surgery:** (full arch extraction, clearance of upper and lower teeth, or removal of cyst)

we need to consult the hematologist

" If INR was more than 3.5 the hematologist should know the cause it might be an overshoot in the dose🡪 may cause intracranial bleeding"

\*What the hematologist will do?

They will stop warfarin (warfarin effect persist for 72 hrs)🡪 so it's should be stopped 2 to 3 days before and after you finish the surgery prescribe it because it needs 2 to 3 days to work back.

\*How to know if INR is decreased or how long is the validity of INR ?

if I want to do a procedure I should take the INR at the same day not 1 week before because there's fluctuation in the coagulation and its effected by many factors

- don’t prescribe antibiotic with warfarin, espacialyy flagyl

-Don't prescribe ibuprofen (work on platelets) with warfarin (work on coagulation factors) 🡪because this will cause synergism effect 🡪 cause stroke (intercranial bleeding)

- **heparin** taken only in hospital , even some pregnant ladies take heparin injections, heparin work on other factors than the warfarin works on.

-Heparin has wide range of injections🡪 (short or long acting) use especially by pregnant ladies who have tendency to coagulate

-Patient can't stop warfarin completely because it might kill the patient , but they can replace it with heparin (by cardiologist), why?

Because heparin is short acting drug

-when you give heparin (short acting) you only need to stop warfarin for 6 hours

Renal dialysis:

Its common nowadays , so when you can do dental extraction ?

The day after dialysis , because of :

1. the system become clean
2. less effect of anticoagulant , so less risk of bleeding

**good luck**