特定疾病病人牙科就醫安全注意事項

牙科就醫安全計畫內之特定疾病病人類別

- 糖尿病病人
- 高血壓病人
- 骨質疏鬆病人(包含即將使用抗骨鬆藥物病人，病歷須記載)
- 心血管疾病病人
- 癌症病人
- 血液透析及腹膜透析病人
- 器官移植病人
- 精神疾病病人
- 其他未明示之疾病病人

病名/藥物	注意事項
一、糖尿病 (降血糖藥物)	1. 查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2. 告知病人使用藥物帶來的影響及相關風險。 3. 掌握病人血糖監控狀況，病人三個月內空腹血糖(AC sugar)或最近一次醣化血紅素(HbA1c)的血糖值病歷評估及追蹤(HbA1c數值，<7%代表血糖值控制良好)。 4. 病人牙科治療前三個月之用藥，含糖尿病用藥、心血管用藥、腎臟性疾病、眼科疾病用藥。 5. 病人牙科治療當天，服藥及用餐狀況了解及詢問。 6. 打胰島素之病人，因降血糖速度較快，要準備糖果或含糖飲料以預防低血糖。 7. 術前預防性投藥(視病情狀況需要)。

1. 確認病人三個月內血糖控制的狀況，AC sugar(空腹血糖)較高但仍在70-200 mg/dL，經由牙醫師評估仍可接受手術。
2. 若AC sugar(空腹血糖)>300mg/dL且HbA1c(醣化血紅素)>9%則不建議執行侵入性治療。
3. 病人年紀偏大、病史較長，若病情需要必須執行侵入性治療，則必須告知病人風險並由牙醫師審慎評估。

病名/藥物	注意事項
二、高血壓 (降血壓藥物)	1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用藥物帶來的影響及相關風險。 3.病人三個月之內的血壓病歷評估及追蹤。 4.病人牙科治療前三個月之用藥，含心血管用藥、抗凝血劑用藥及全身狀況追蹤及評估。 5.病人牙科治療當天高血壓藥物服藥狀況了解及詢問。 6.術後流血狀況監控。

1. 若病人服用3種以上降血壓藥物，建議應謹慎評估及術前先量血壓。
2. 治療前血壓應於150mmHg以內，若高於此數值會有風險產生。(參考資訊：≥140/90mmHg 但 <160/100mmHg)
3. 病人血壓若不容易控制，可考慮使用抗焦慮藥物或以鎮靜配合治療，但醫師須受過相關訓練才可以使用。
4. 血壓高於180/110mmHg不建議做治療。

病名/藥物	注意事項
三、骨質疏鬆症(抗骨質疏鬆藥物)	1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用抗骨質吸收藥物可能帶來的影響及相關風險。 3.遵循開藥醫師對於病人牙科就診的注意事項與醫囑，必要時得使用諮詢單，如單株抗體類用藥針劑三個月內不建議做牙科侵入性治療。 4.雙磷酸鹽類用藥三個月內要做牙科侵入性處置，應多方謹慎評估。 5.術後流血狀況監測。

1. 病人使用的抗骨質疏鬆藥劑，早期為雙磷酸鹽藥物(Bisphosphonate)，近期則是使用單株抗體類之Denosumab(如保骼麗，Prolia)等。目前實務上使用Denosumab的病人，大約是滿五個月的時候，告知病人可能之風險及獲得病人同意後，可以進行手術，同時傷口必須縫合。手術完成一個月左右，若傷口癒合良好，沒有新的骨頭暴露出來或骨壞死的情形，可以接著施打下一次的劑量。
2. 另最近研究，半年之後超過三個月才施打Denosumab，藥物原來的效果就會急速下降。
3. 若是病人剛使用藥物，有緊急狀況需進行手術處置時，需告知病人相關風險，並獲得病人之同意。
4. 進行手術後，建議需完全縫合傷口的原因是基於了解病人骨壞死的原理。避免骨暴露，使骨骼能獲得良好的血液供應，是預防新顎骨壞死的重要因素。
5. 由於雙磷酸鹽藥物是直接存在於顎骨內，甚至從壞死骨脫落後，會再結合到鄰近的骨骼內，繼續抑制破骨細胞，與單株抗體類藥物留存在血液中，且有一定之半衰期不同，因此，使用雙磷酸鹽藥物者接受牙科手術時，相對風險可能比單株抗體類藥物高。但無論如何，如果仍需要進行牙科手術時，最重要的是告知病人接受牙科手術時，仍可能有產生顎骨壞死的風險。
6. 病人使用雙磷酸鹽藥用如果有合併其他多重藥物，應更審慎評估。

病名/藥物	注意事項
四、心血管疾病(藥物)	1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用藥物帶來的影響及相關風險。 3.服用抗凝血劑之一般病人：做監控。 4.服用抗凝血劑之特殊病人：有栓塞、做支架者，徵詢內科醫師建議，必要時得使用諮詢單。

1.抗凝血劑目前有三個大的類型：
(1)與血小板有關：如阿斯匹靈、保栓通(Plavix)或其他藥物等。
(2)預防心房顫動可能造成血栓的Coumadin(Wafarin)等。
(3)針對第十凝血因子及thrombin的新型抗凝血藥物。
2.如果是不複雜且時間小於45分鐘的手術這類藥物建議可不停藥，但沒有把握，可詢問原開藥醫師。
3.醫院通常會做血液凝固狀態監控，若真的太高，會將治療延後。
4.若病人有進行心臟外科手術，建議至原醫院進行相關牙科治療。
5.另抗凝血藥物服用2種以上，是否能減藥或停藥應詢問原開藥醫師。

病名/藥物	注意事項
五、癌症 (抗癌藥物)	1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用藥物帶來的影響及相關風險。

1. 若癌症仍在治療中，若僅為簡單、緊急的處置，院所應自行評估是否有能力執行。如需進行牙科手術或侵入性、大範圍的治療或牽涉到用藥，建議回原治療醫院的牙科進行諮詢及治療。
2. 癌症療程若已結束，半年後病情沒有太大的變化，可考慮於診所進行牙科治療。
3. 若病人長期服用抗癌藥物，需進行牙科治療時，建議轉診回原治療醫院的牙科進行諮詢及治療，或不要進行太侵入性或太久的牙科治療。
4. 病人曾接受放射線治療，如口腔癌等，即便是治療完成後數年的追蹤，侵犯性手術如拔牙等的問題，仍可能造成放射線性骨壞死。
5. 另外如乳癌、多發性骨髓瘤、攝護腺癌、肺癌等，使用抗骨吸收的藥物預防遠端骨轉移時，這與使用預防骨質疏鬆的病人一樣，即便他的癌症相關治療已經結束，進行牙科手術仍可能會造成顎骨壞死。

病名/藥物	注意事項
六、血液透析及腹膜透析病人	(一)血液透析： 1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用藥物帶來的影響及相關風險。 3.術前預防性投藥，要謹慎評估，避免增加腎功能負擔。 4.原則上非洗腎日做牙科處置，洗腎日不建議執行侵入性牙科處置。 5.容易感染，注意術後。 (二)腹膜透析： 1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用藥物帶來的影響及相關風險。 3.術前預防性投藥，要謹慎評估，避免增加腎功能負擔。 4.容易感染，盡量減少傷口範圍，注意術後。

血液透析病人若要進行大範圍、侵入性治療或手術，建議可詢問原腎臟科醫師是否能調整抗凝血劑或非類固醇抗發炎藥NSAID使用的劑量，可以改善其術後凝血的問題。

病名/藥物	注意事項
七、器官移植病人	1. 查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2. 告知病人使用藥物帶來的影響及相關風險。 3. 病人一年之內施打或服用抗排斥藥物、免疫抑制劑、抗凝血用藥狀況評估及追蹤。 4. 病人半年內的內科及系統性用藥及身體狀況追蹤及評估。 5. 術前預防性投藥。 6. 術後流血狀況監控。

若為換心手術病人可進行預防性抗生素投藥。另外，應注意病人是否仍使用抗排斥藥物，並了解該藥物對免疫功能的影響程度，也了解對白血球功能的影響等，或是對造血功能的影響。若移植已經很長一段時間，也沒有使用抗排斥的藥物，屬於穩定病人，除了換心的病人外，可與一般人一樣，可接受常規的牙科處置。

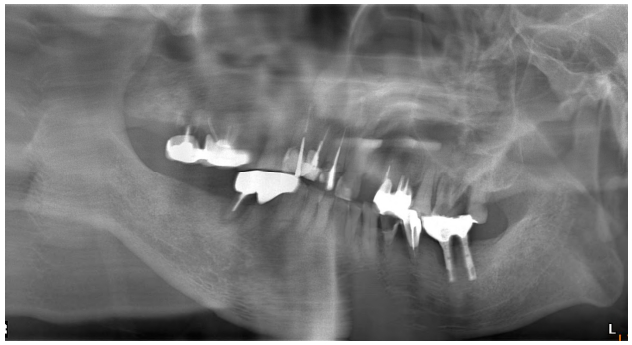
病名/藥物	注意事項
八、精神疾病(鎮靜劑、安眠藥、抗焦慮藥物)	1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用藥物帶來的影響及相關風險。

1. 精神病相關用藥與牙科常用藥物容易產生藥物交互作用
2. 有些精神科藥物具抗膽鹼作用，會造成口乾及唾液分泌減少，易產生蛀牙及念珠菌感染。部分精神科藥物所產生的錐體外路徑症候群(Extrapyramidal symptoms，EPS)副作用及遲發性運動異常，其行為特徵包括肢體僵直、無力，舌頭靈活控制度不足，食物容易殘留在雙頰或溢出，可能使食物誤入氣管引發嗆咳，嚴重時出現喉部肌肉不自主收縮，乃至無法吞嚥的情形產生。
3. Clozapine-非典型抗精神病藥物(Atypical antipsychotic drugs)，臨床上應用於治療難治型精神分裂症(refractory schizophrenia)。相較於第一代抗精神病藥物，Clozapine的錐體外症狀(EPS)較少，在臨床上較常見的副作用為口水外流。根據Praharaj等人的研究，發現經Clozapine藥物治療的病人，約有30%的個案有流口水(Clozapine induced sialorrhea，CIS)症狀。
4. 早期癲通（Tegretol）與帝拔癲（Depakine）主要用於癲症的治療，但後來（1970年代）發現對躁鬱症也有急性治療和預防效果。另外對於陣發性衝動控制不良或具攻擊傾向的病患也有療效。療效與鋰鹽相近，約有50%至70% 的躁鬱症患者會有良好反應，尤其是那些有較特殊發作型式的人。它們產生療效的時間比鋰鹽更快，約在一週左右。長期服用癲通會影響白血球，少數人可能較易感冒或口腔潰瘍；而帝拔癲則因影響血小板凝集功能，要小心是否止血較慢。

病名/藥物	注意事項
九、其他未明示之疾病	1.查詢健保醫療資訊雲端查詢系統並詢問病人用藥(病史詢問)且記載於病歷。 2.告知病人使用藥物帶來的影響及相關風險。 3.遵循原開藥醫師開立之醫囑。

Case Discussion

糖尿病
心血管疾病



病史：

The 70y8m male patient was the victim of Parkinsonism.

過去病史：

Parkinsonism

Coronary arterial disease

Diabetes mellitus

Hyperlipidemia

22, 27 retained roots, periodontitis, extraction requested

目前用藥：

Methycobal 500 mcg/cap 1 cap TID

SeroQuel 25 mg/tab 0.5 tab HSPRN

(管4) Rivotril 0.5 mg/tab 1 tab HS

250 Madopar /tab 1 tab TIDAC30

PR 1.5 Mirapex Prolonged-Release 1.5 mg/tab 1 tab Q8HAC

Equfina 50 mg/tab 1 tab QD

4.5 Exelon 4.5 mg/cap 1 cap BIDPC

Lasix 40 mg/tab 0.5 tab QD

COZAAR 50 mg/tab 0.5 tab QD

Sigmart 5 mg/tab 0.5 tab BID

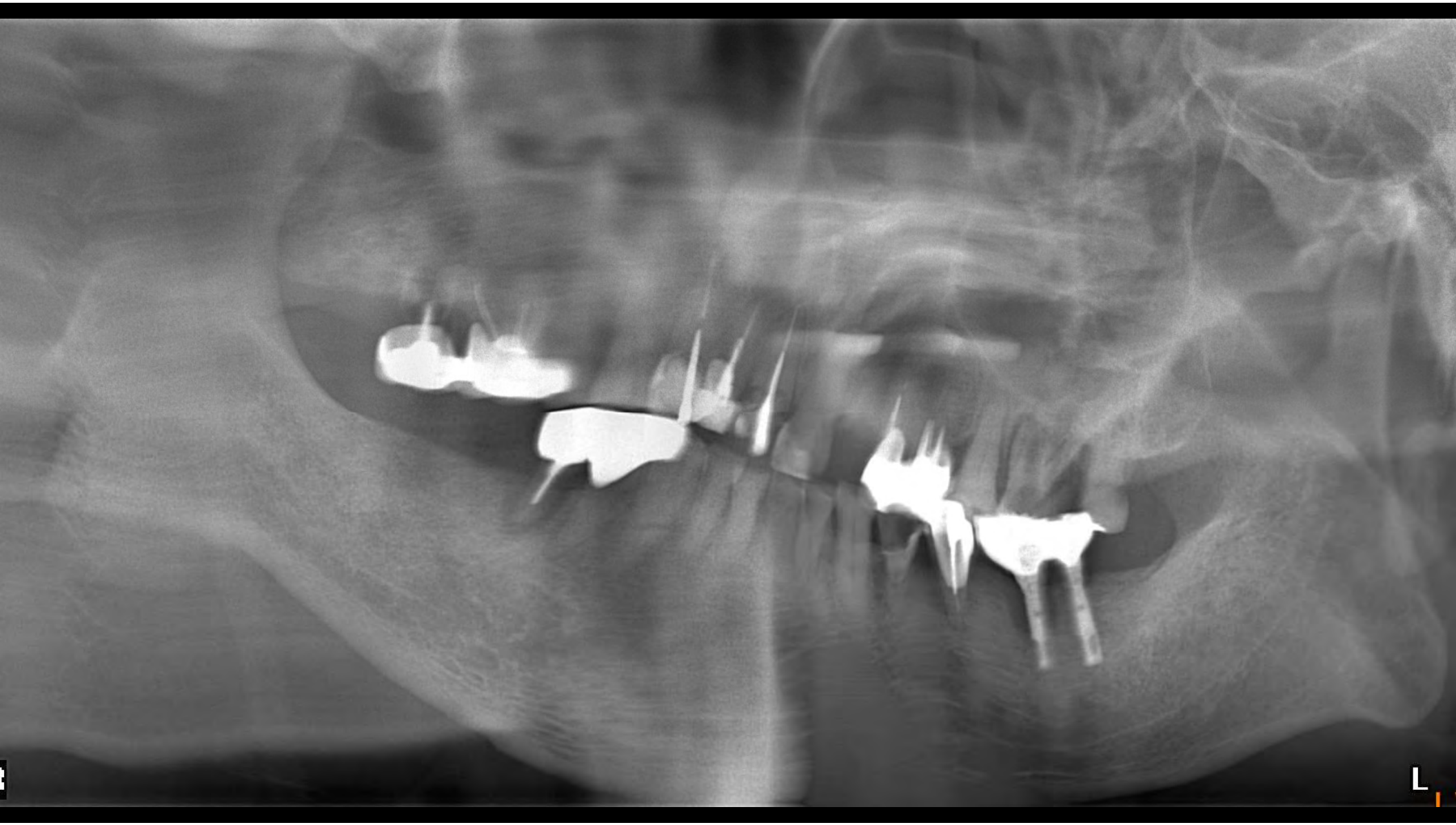
Lipitor 20 mg/tab 1 tab HS

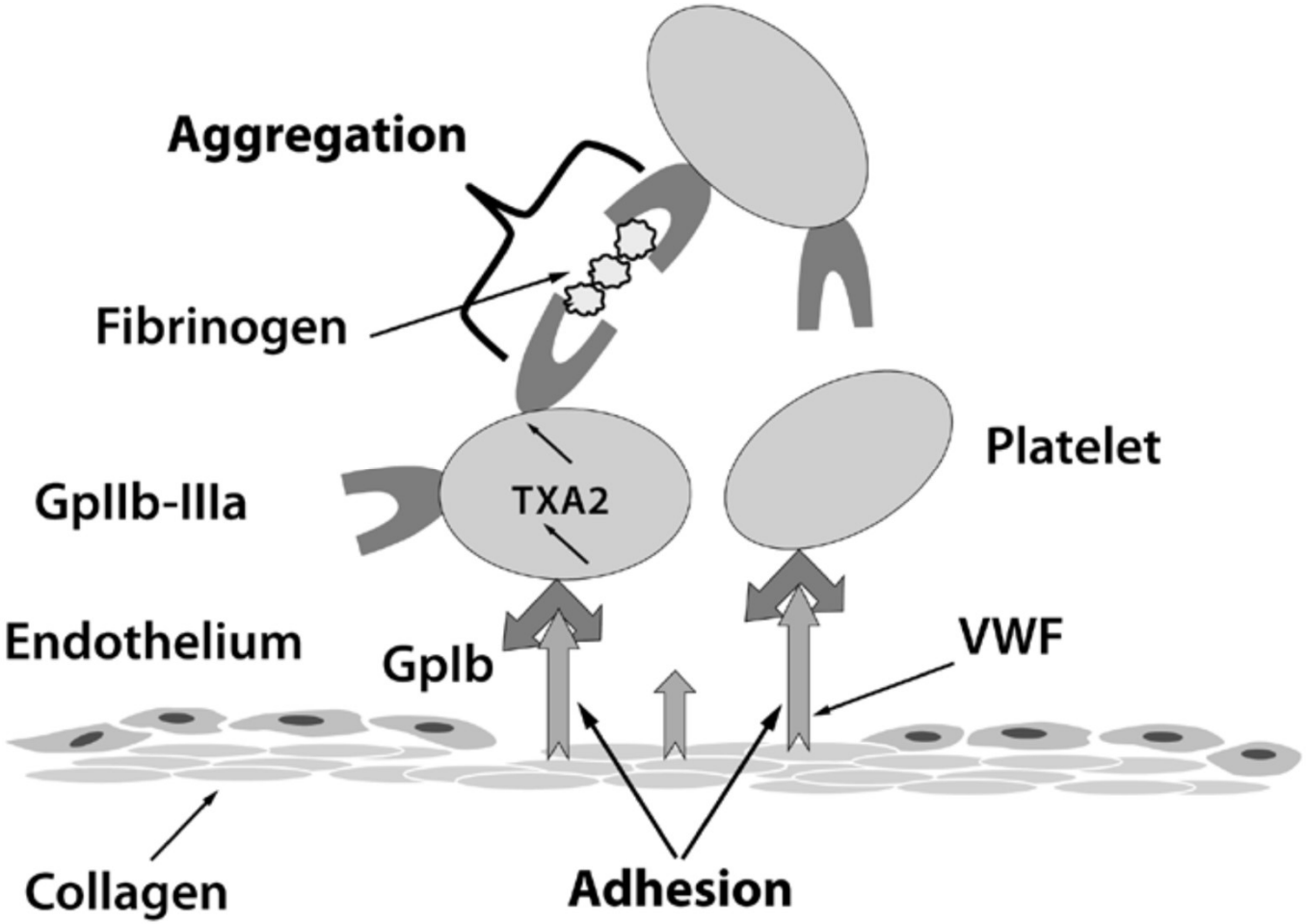
***Aspirin 100 mg/tab 1 tab QDPC**

Amaryl 2 mg/tab 2 tab QD

850 Glucophage 850 mg/tab 1 tab BIDPC

Qtern FC /tab 1 tab QAM





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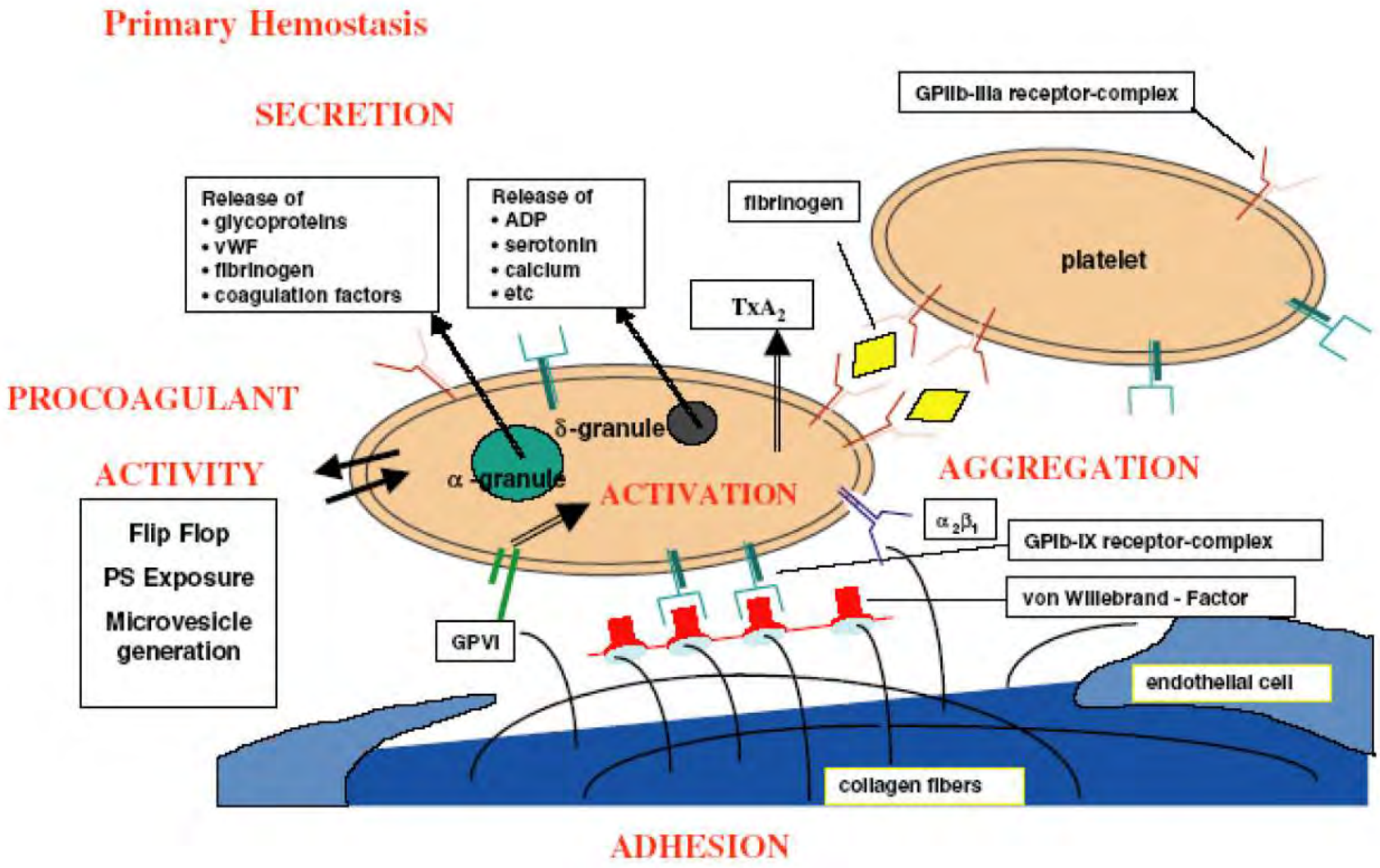

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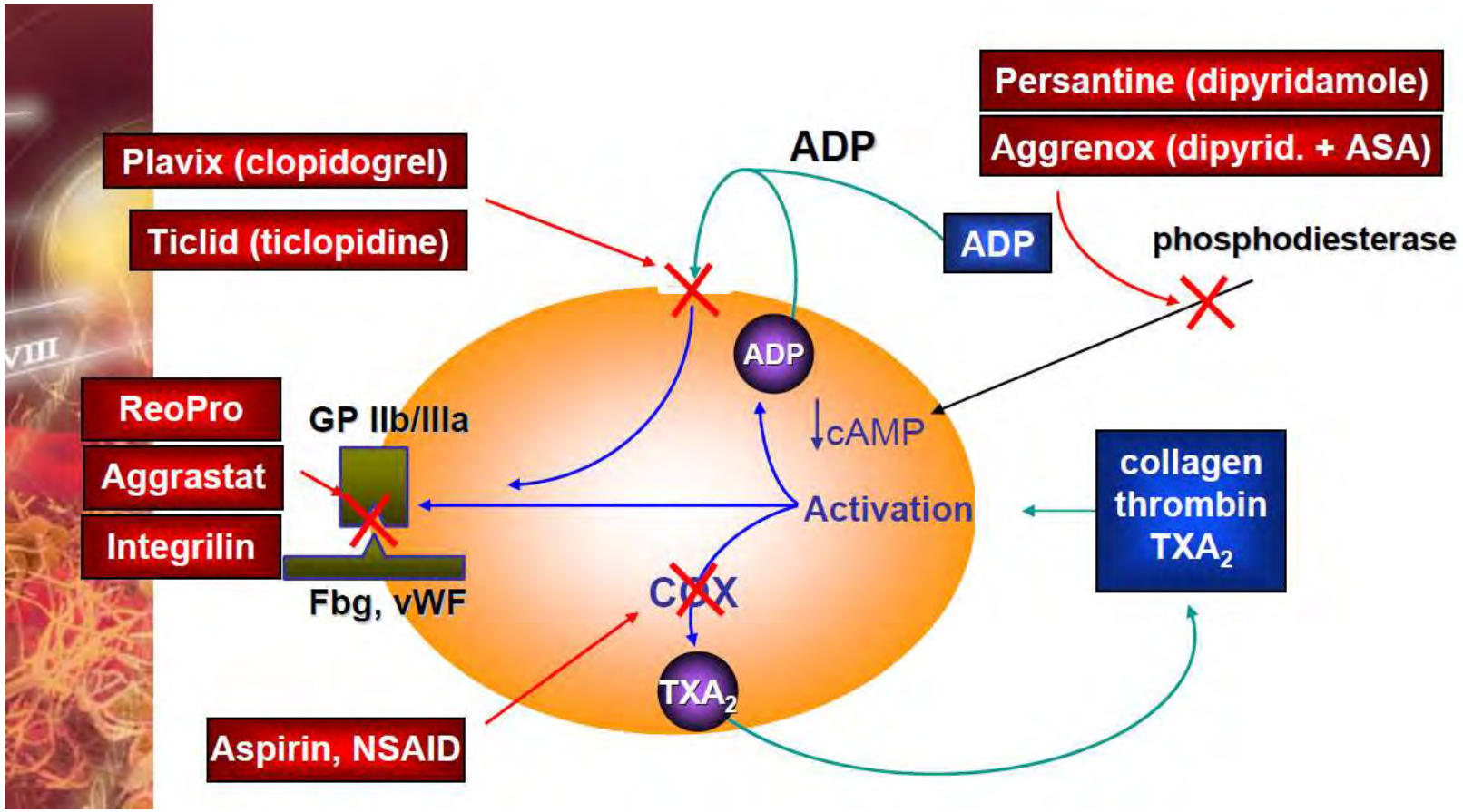
The Effect of Anti-platelet Drugs



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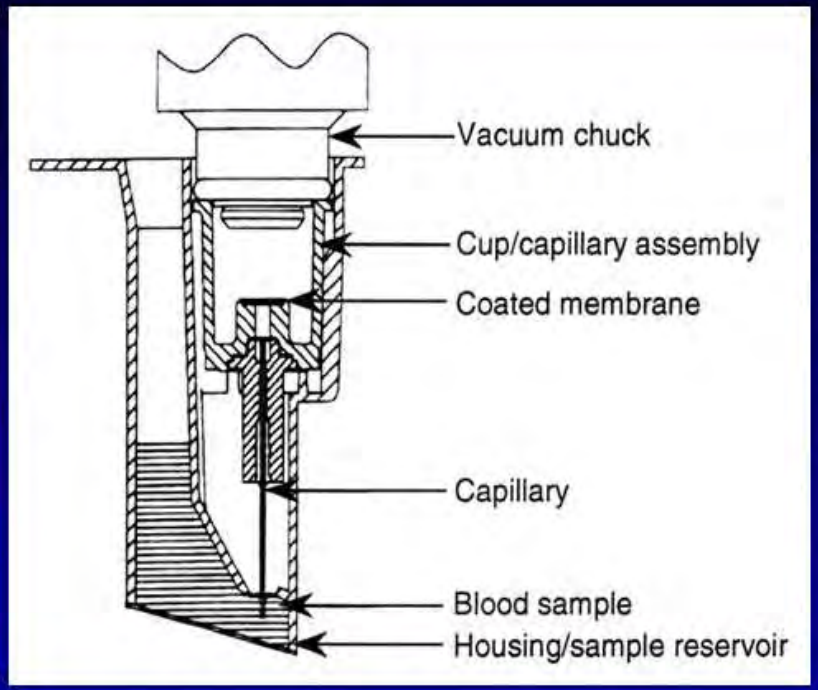
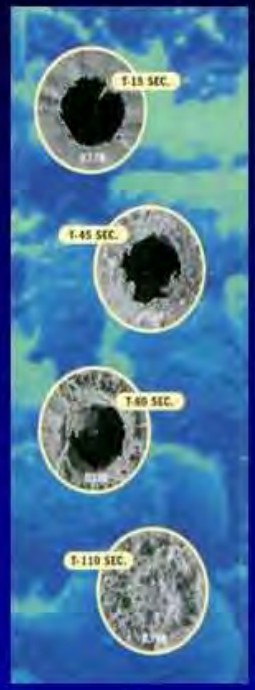
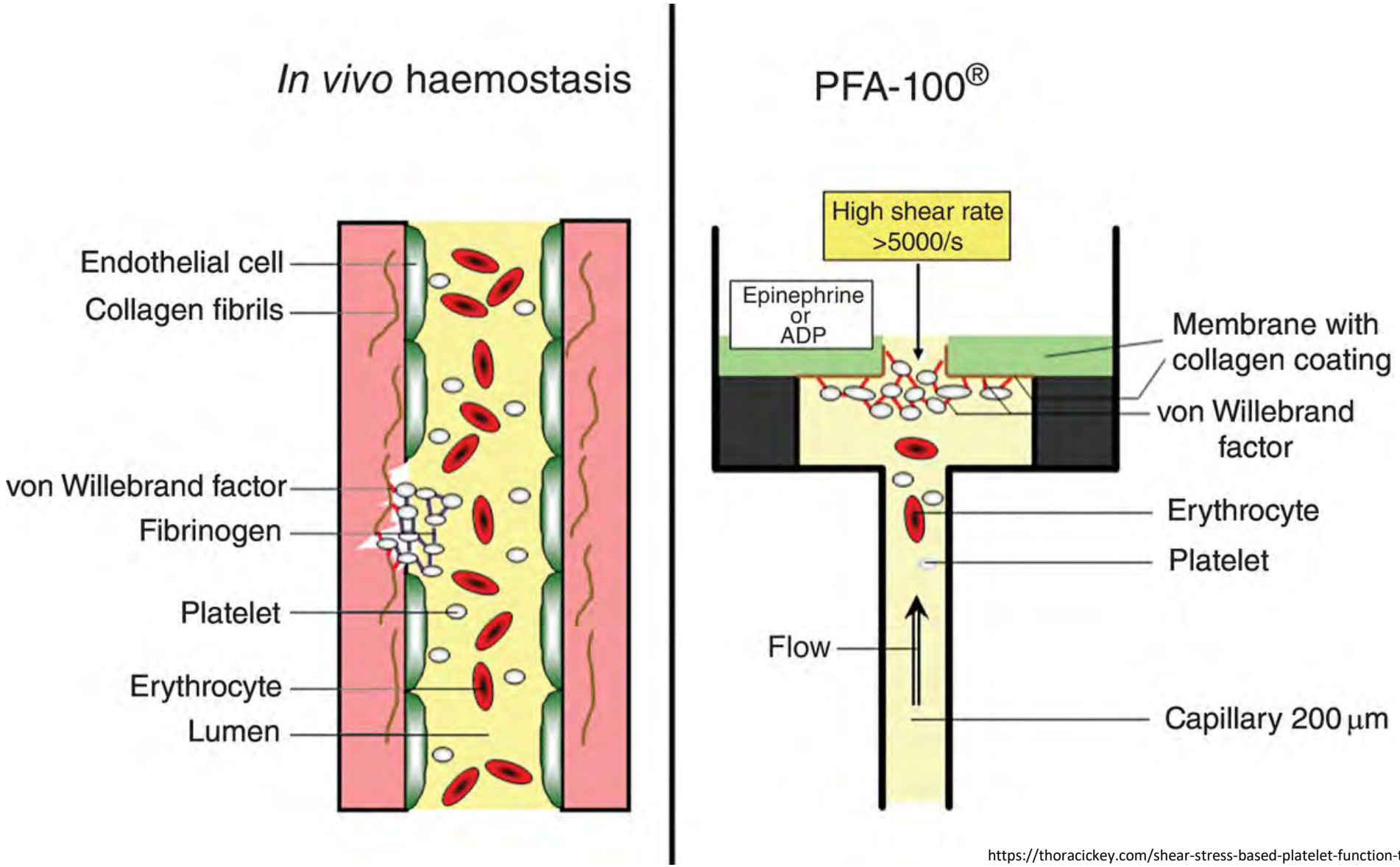
Principle of the PFA-100®





- **Collagen/Epinephrine (CEPI)** — primary screening cartridge
- **Collagen/ADP (CADP)** — differentiates dysfunction due to aspirin



https://thoracickey.com/shear-stress-based-platelet-function-tests/

TABLE 1: Interpretation of PFA-100 results*

Epinephrine	ADP	Interpretation
>200	normal	aspirin effect
<200 to normal	normal	aspirin resistant
abnormal	abnormal	von Willebrand Disease
>300	>300	GPIIb/IIIa inhibitors

* Results are valid if the hematocrit is > 30% and platelet count is > 100×10^9/L.

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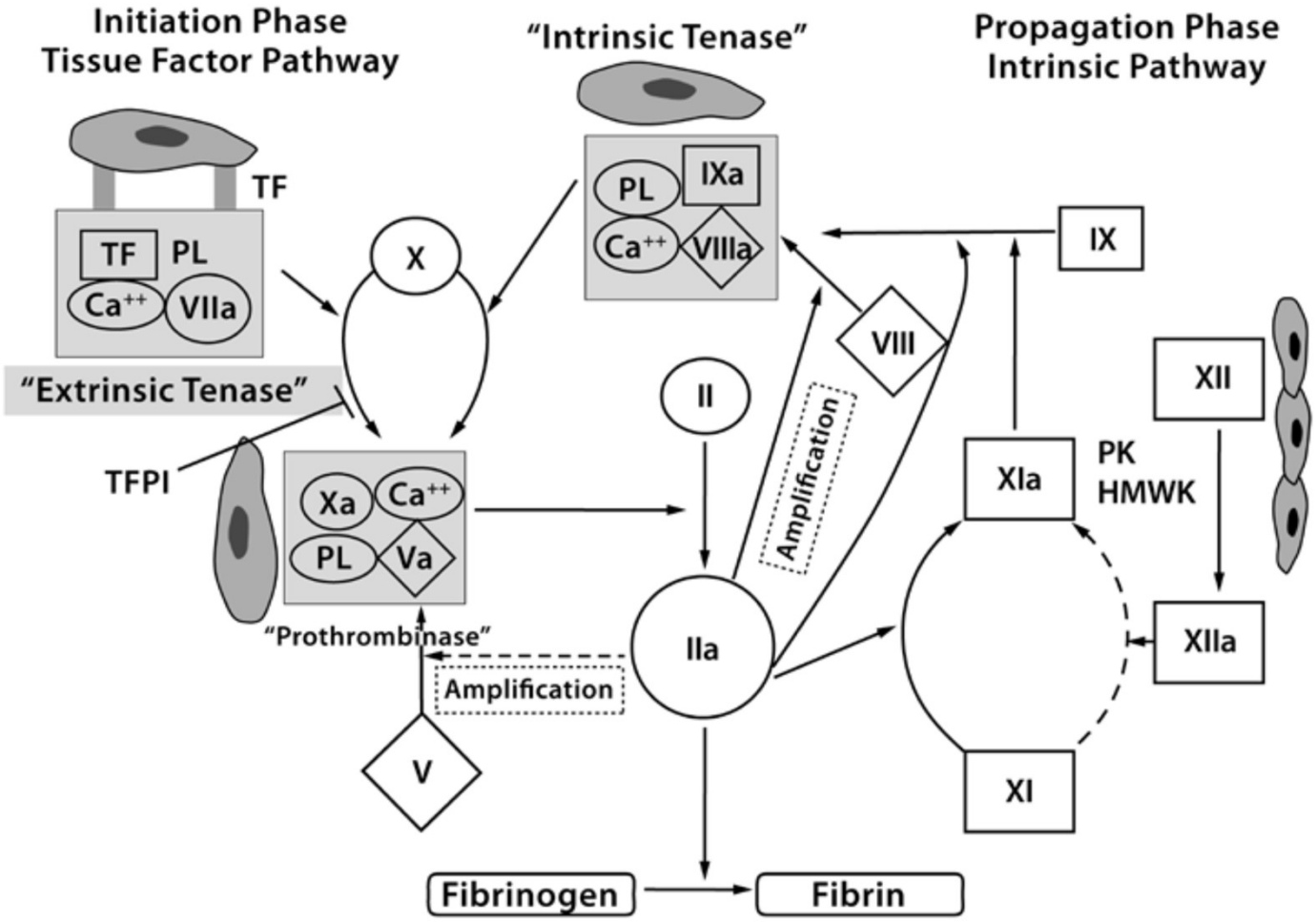

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Anti-platelet and Anti-coagulation Medicine

Drug Class	Drug Names
Anticoagulant*	•warfarin (Coumadin®)
Antiplatelet agents*	•clopidogrel (Plavix®) •ticlopidine (Ticlid®) •prasugrel (Effient®) •ticagrelor (Brilinta®) •aspirin
Direct-acting oral anticoagulants**	•dabigatran (Pradaxa®) •rivaroxaban (Xarelto®) •apixaban (Eliquis®) •edoxaban (Savaysa® [Lixiana® in Europe, Japan, elsewhere])

https://www.ada.org/resources/research/science-and-research-institute/oral-health-topics/oral-anticoagulant-and-antiplatelet-medications-and-dental-procedures

檢驗項目	檢驗值	單位	參考值
HbA1c	5.9 %		4.0~6.0
GLU AC	81	mg/dL	70~100

檢驗項目	檢驗值	單位	參考值	說明	特別醫囑
PT	10.9	sec	9.8~11.5		
PT INR	1.01		0.92 ~ 1.09		
aPTT	32.3	sec	參考值:25.6~32.6; aPTT (Heparin monitoring) therapeutic range: 53.9 ~ 74.5 sec. (equivalent to plasma heparin concentration of 0.3 ~0.7 U/mL by the anti-Xa assay) .		

科室:CT No:240108028478 BLOOD 採檢:2024/01/08 12:55 登入:2024/01/08 13:55 最後報告:2024/01/08 14:26

檢驗項目	檢驗值	單位	參考值	說明	特別醫囑
Platelet function closure time-Col/EPI	>300	sec	91~175	(血小板功能可能異常),	
Platelet function closure time-Col/ADP	165	sec	61~109		

Oral Anticoagulant and Antiplatelet Medications and Dental Procedures

- There is **strong evidence** for the older medications (i.e., warfarin, antiplatelet agents), as well as limited evidence for the newer direct-acting oral anticoagulants medications that, for most patients, it is **not necessary to alter** **anticoagulation** or **antiplatelet therapy** prior to **dental intervention**.(*Research Services and Scientific Information, ADA Library & Archives, September 28, 2022.*)

https://www.ada.org/resources/research/science-and-research-institute/oral-health-topics/oral-anticoagulant-and-antiplatelet-medications-and-dental-procedures

心血管疾病

病史：This 20y1m male patient came to our OPD asking **for evaluation of tooth 38 extraction**. He felt discomfort at tooth 38 region and tooth 38 partial eruption was noted. He went to a LDC for help and the dentist there suggested that he had tooth 38 extraction. Therefore he came to our OPD

過去病史：

1. **CoA with ruptured mycotic aneurysm** s/p thoracic aortic bypass grafting with mild **junctional stenosis beween transverse arch and DsAo graft**
2. Trivial MR. Mild TR. Trivial PR
3. All major systemic diseases were denied
4. hepatitis(-)
5. osteoporosis(-)

過敏史：

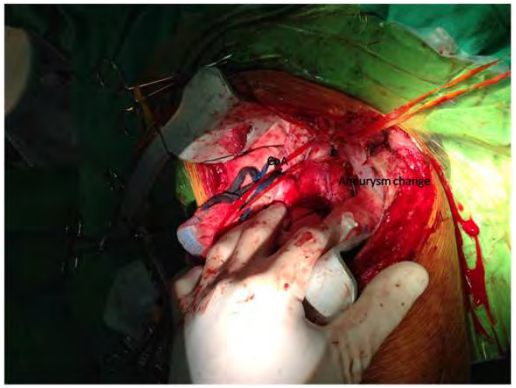
No known food or drug allergy

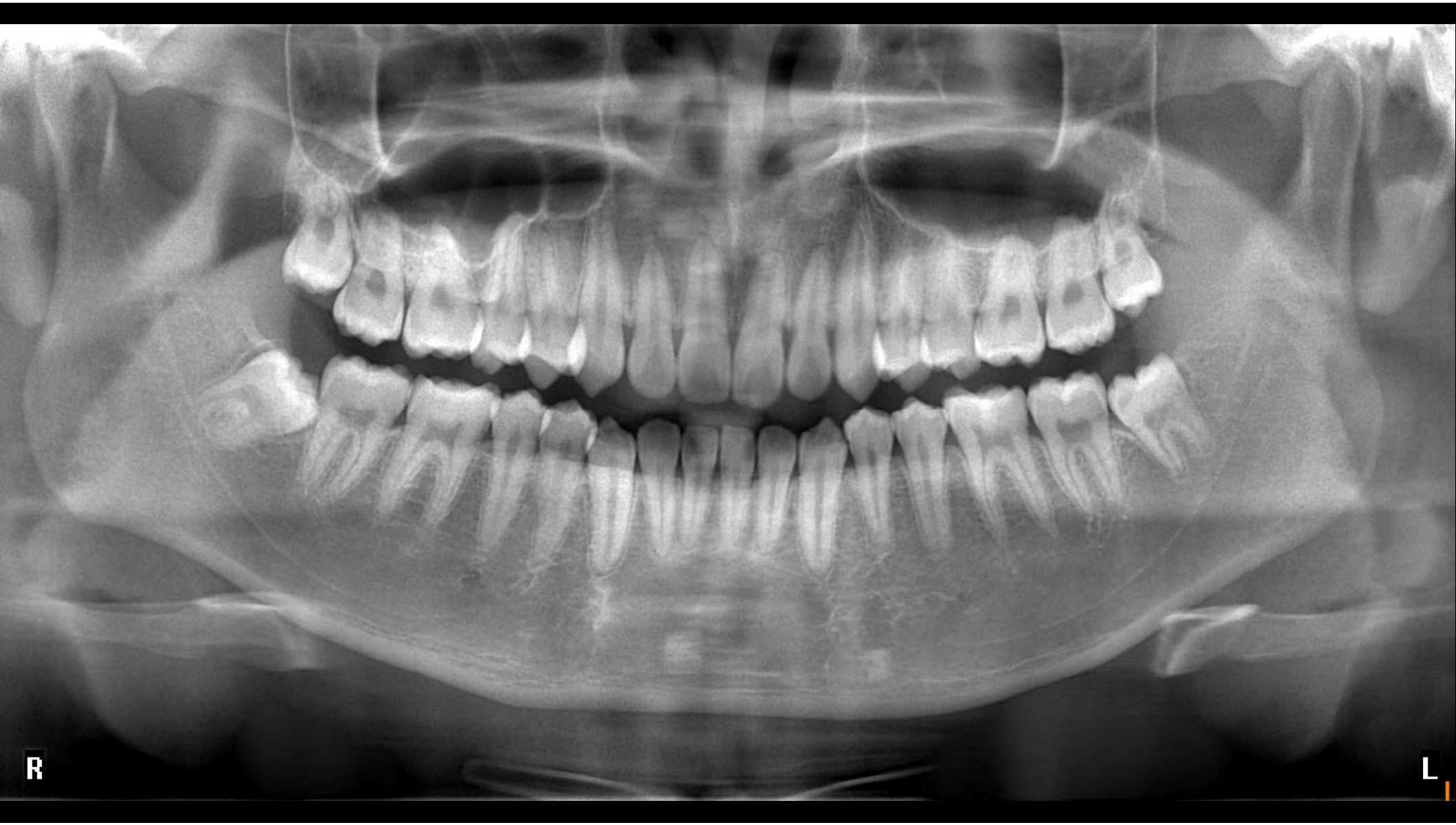
目前用藥：

Nil

主動脈缺血性危象 (Coarctation of the Aorta, CoA)：這是指主動脈在某處收縮或狹窄的情況。主動脈是將血液從心臟泵送到身體各部分的主要血管。當主動脈狹窄時，血液流動受到限制，可能導致心臟和其他器官的問題。

破裂的真菌性動脈瘤 (ruptured mycotic aneurysm)：動脈瘤是血管牆的腫脹或擴張，形成一個袋狀結構。真菌性動脈瘤是由真菌感染引起的動脈瘤，這種狀況可能使動脈牆變得脆弱，容易破裂。

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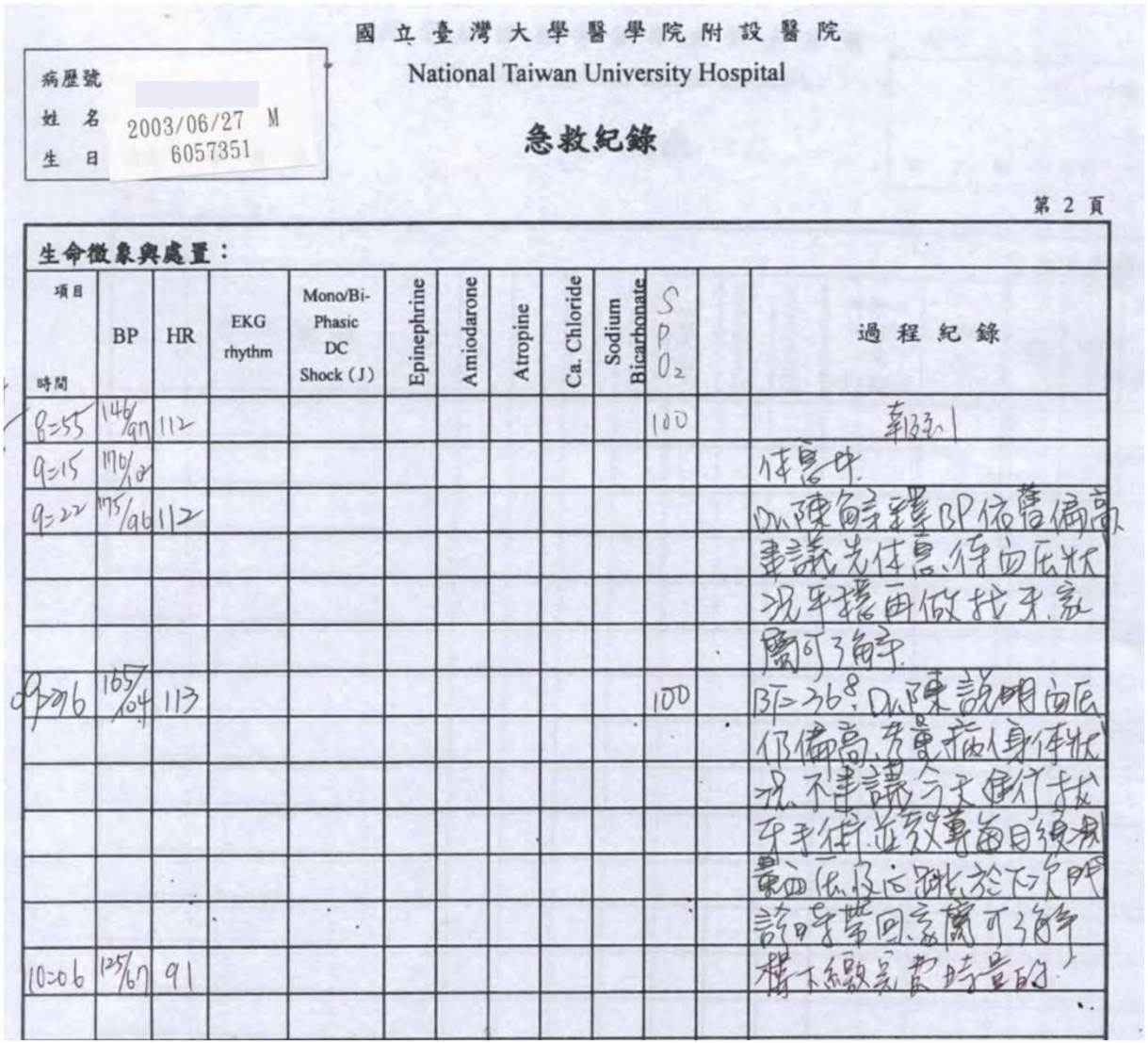
Antibiotics Regimens for Prophylaxis of Infective Endocarditis before Dental Procedures

TABLE 2
American Heart Association regimens for prophylaxis of infective endocarditis before dental procedures

			Single dose before procedure	
Patient group	**Antibiotic**	**Route**	**Adults**	**Children**
Usual antibiotic	Amoxicillin	Oral	2 g	50 mg/kg
Unable to take oral medication	Ampicillin	Intravenous or intramuscular*	2 g	50 mg/kg
	Cephazolin or ceftriaxone†	Intravenous or intramuscular	1 g	50 mg/kg
Allergic to penicillin/ampicillin	Clindamycin	Oral	600 mg	20 mg/kg
	Cephalexin	Oral	2 g	50 mg/kg
	Azithromycin or clarithromycin	Oral	500 mg	15 mg/kg
Allergic to penicillin/ampicillin and unable to take oral medications	Clindamycin	Intravenous	600 mg	200 mg/kg
	Cefazolin or ceftriaxone	Intravenous or intramuscular	1 g	50 mg/kg

**Intramuscular injections should be avoided in persons receiving anticoagulants; †Cephalosporins should be avoided in persons with a history of anaphylaxis to beta-lactam-related antibiotics. Data from reference 1*

Can J Cardiol 2008, 24(9): 673-675.



國立臺灣大學醫學院附設醫院
National Taiwan University Hospital

病歷號
姓名 2003/06/27 M
生日 6057351

急救紀錄

第 2 頁

生命徵象與處置：

時間	BP	HR	EKG rhythm	Mono/Bi-Phasic DC Shock (J)	Epinephrine	Amiodarone	Atropine	Ca. Chloride	Sodium Bicarbonate	SPO2		過程紀錄
9:55	146/91	112								100		新設1
9:15	170/											休息中
9:22	175/96	112										DR陳師建議BP估計偏高
												建議先休息，待血壓狀
												況平穩再做拔牙.家
												屬可陪伴.
9:36	165/104	113								100		BT=36.8. DR陳說明血壓
												仍偏高，考量病人身體狀
												況不建議今天進行拔
												牙手術.並教導每日須測
												量血壓及心跳，於下次門
												診時帶回.家屬可陪伴
10:06	125/67	91										離下繳完費時量的.

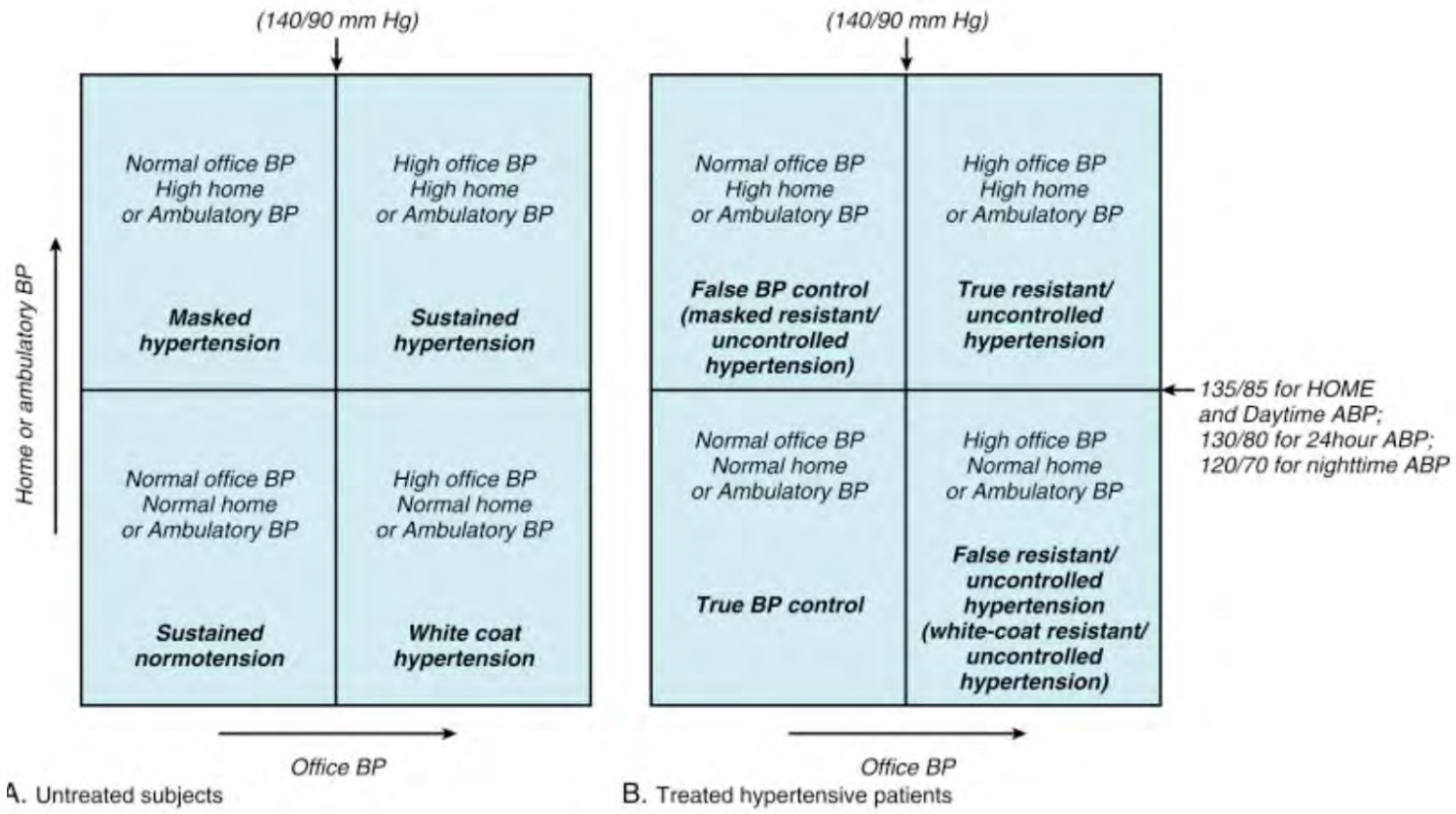
S: for extraction of 18 and 48
O: 65, 38, 28 s/p extraction
A: White coat hypertension
P: 1. postpone extraction
2. Record daily BP
3. If white coat hypertension persisting, extraction under nitrous oxide/oxygen, sedation or GA

Cutoff BP Values for the Diagnosis of White-Coat and Masked Hypertension in International Guidelines

Guideline	White-Coat Hypertension		Masked Hypertension	
	Office SBP/DBP, mm Hg	Out-of-Office SBP/DBP, mm Hg	Office SBP/DBP, mm Hg	Out-of-Office SBP/DBP, mm Hg
ACC/AHA[2]	≥130/80	<130/80	120–129/<80	≥130/80 (daytime BP/HBPM)
ESH/ESC[3]	≥140/90	<135/85	<140/90	≥135/85 (daytime BP/HBPM); ≥130/80 (24-hour BP)
Canada[4]	≥135/85	<135/85	≤135/85	>135/85
Taiwan[5]	≥140/90	<130/80 (ABPM); <135/85 (HBPM)	<140/90	≥130/80 (ABPM); ≥135/85 (HBPM)
JSH[6]	≥140/90	<130/80 (ABPM); <135/85 (HBPM)	<140/90	≥130/80 (24-hour BP); ≥135/85 (daytime BP); ≥120/80 (nighttime BP); ≥135/85 (HBPM)
CHL[7,8]	≥140/90	<130/80 (ABPM); <135/85 (HBPM)	<140/90	≥130/80 (24-hour BP); ≥135/85 (daytime BP); ≥120/70 (nighttime BP); ≥135/85 (HBPM)

ABPM indicates ambulatory BP monitoring; ACC, American College of Cardiology; AHA, American Heart Association; BP, blood pressure; CHL, China Hypertension League; DBP, diastolic BP; ESC, European Society of Cardiology; ESH, European Society of Hypertension; HBPM, home BP monitoring; JSH, Japanese Society of Hypertension; and SBP, systolic BP.

White-Coat and Masked Hypertension



Ambulatory Blood Pressure (ABP)

https://thoracickey.com/white-coat-and-masked-hypertension/

心血管疾病
骨質疏鬆

Antiresorptive Agents

現病史：This 66y/o female came for evaluation of tooth 17 fractured for half month. The patient stated that she found tooth **17 fracture** when flossing about half month ago. She went to LDC for help and the dentist considered tooth 17 extraction may be indicated. However, due to **antiresorptive drug usage**, the dentist suggest her went to hospital for evaluation.

過去病史：

1. GERD w/ esophagitis and gastritis, on medication
2. **HTN**, home BP: 13X/8X, on Norvasc 0.5#QD and Diovan 1#QD
3. Hypothyroidism, on Thyroid-s tablets 100ug 1#QW1-6, under regular f/u at 遠東
4. **Osteoporosis**, s/p **Aclasta** injection once on 2012/12/28
5. Hyperlipidemia, on Crestor 1#QD, under regular f/u at 遠東
6. Insomnia, on Dupin tablet 0.25#QD, under regular f/u at 遠東
7. Denied all major systemic diseases
8. Drug allergy:
9. Hepatitis(-)

PDH:

I16 implantation at LDC on 2018

目前用藥：

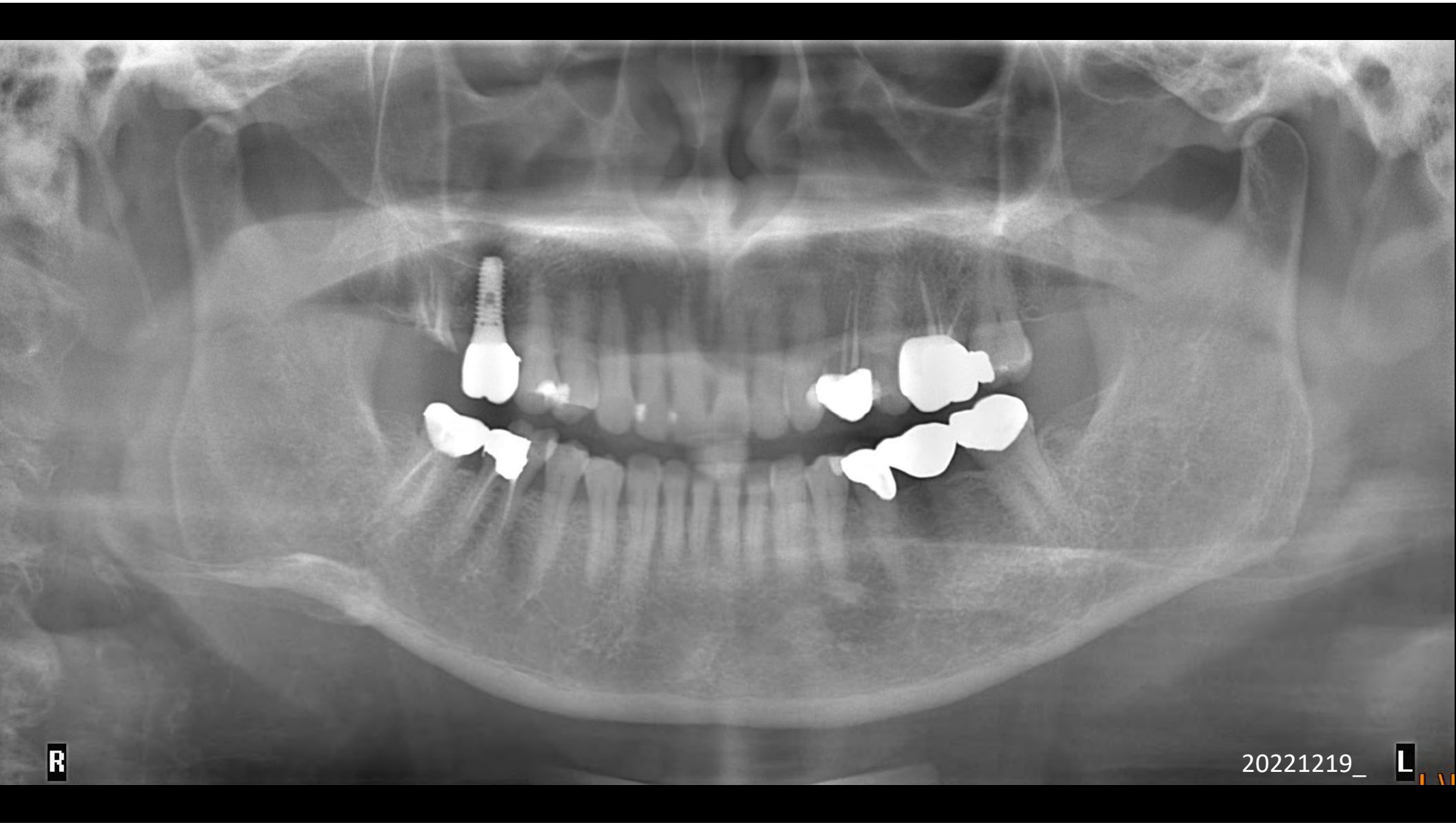
1. Strocain /tab 1 tab TIDAC15 PO
2. DOSIN 10 mg/tab 1 tab TID PO
3. Algitab Chewable 200 mg/tab 1 tab TIDPC PO
4. Dogmatyl 50 mg/tab 1 tab TID PO
5. Diovan FC 160 mg/tab 1 tab QD PO
6. Norvasc 5 mg/tab 0.5 tab QD PO
7. Thyroid-s tablets 100ug 1tab QW1-6 PO
8. Crestor 10mg 1tab QD
9. Dupin tablet 0.25tab QD

List of Antiresorptive Drugs

Generic name	Brand name	Manufacture	Dosage (application)	Indication
Bisphosphonate				
Zoledronic acid	Zometa	Novartis pharmaceuticals (Novartis Korea)	4 mg/100 mL (IV)	Hypercalcemia of malignancy, bone complication due to multiple myeloma and bone metastases from solid tumors
	Reclat/Aclasta		5 mg/100 mL (IV)	Osteoporosis, Paget's disease
Alendronate sodium	Fosamax	Merck & Co. (MSD Korea)	1, 10, 35, 40, 70 mg (PO)	Osteoporosis, Paget's disease
	Fosamax Plus D		70 mg (PO)	Osteoporosis
Ibandronate sodium	Boniva/Bonviva	Genentech/Roche (Roche Korea)	150 mg (PO)	Osteoporosis
			3 mg (IV)	Osteoporosis
	Bonviva plus	(Alvogen Korea)	150 mg (PO)	Osteoporosis
Risedronate sodium	Actonel	Warner Chilcott (Handok)	5, 35, 75, 150 mg (PO)	Osteoporosis, Paget's disease
Clodronate disodium	Bonefos	Bayer	400, 800 mg (PO)	Osteoporosis, hypercalcemia and osteolysis due to malignancy
				Paget's disease, hypercalcemia due to metastatic bone disease, multiple myeloma
Tiludronate disodium	Skelid	Sanofi-Aventis	240 mg (PO)	Paget's disease
Pamidronate disodium	Aredia	Novatis Pharmaceuticals (Novartis Korea)	30, 60, 90 mg (IV)	Hypercalcemia with malignancy, bone metastases, Paget's disease
Denosumab	Prolia	Amgen (Amgen Korea)	60 mg (SC)	Osteoporosis
	Xgeva		120 mg (SC)	Skeletal related event with bone metastases

IV, intravenous injection; PO, per os; SC, subcutaneous injection.

Song, M. S. (2019). Restorative Dentistry & Endodontics 44.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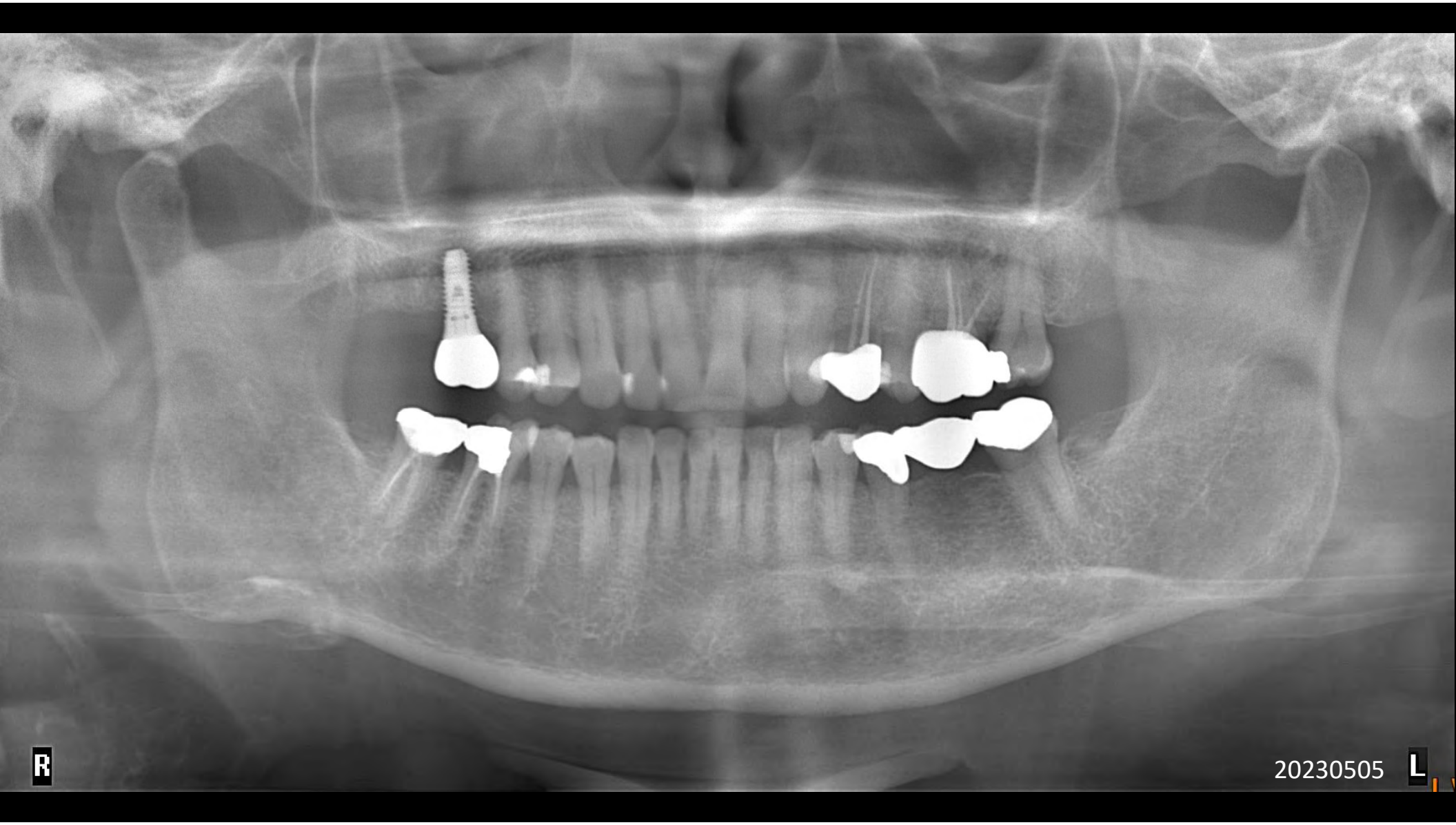
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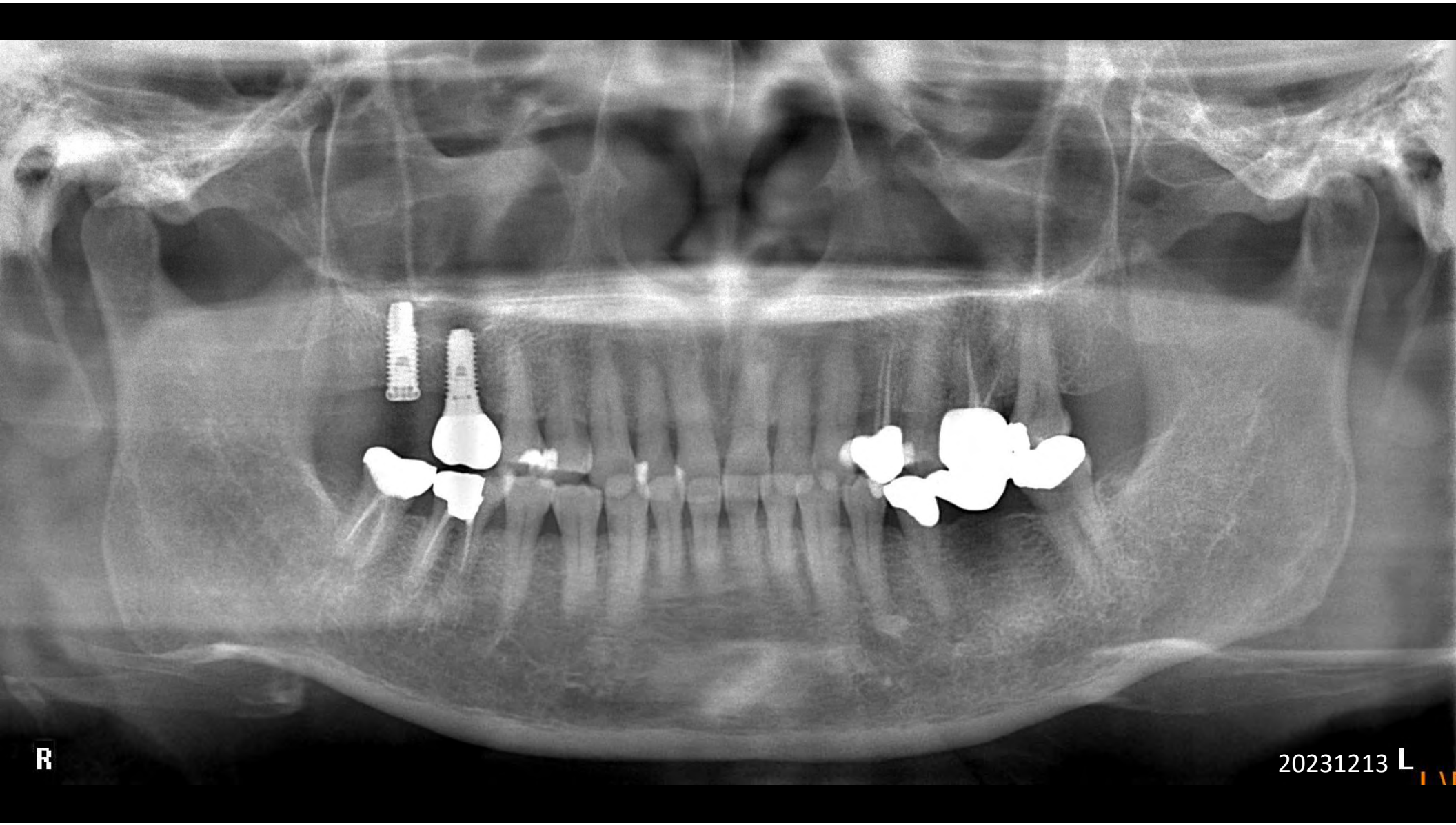
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糖尿病
癌症
骨質疏鬆

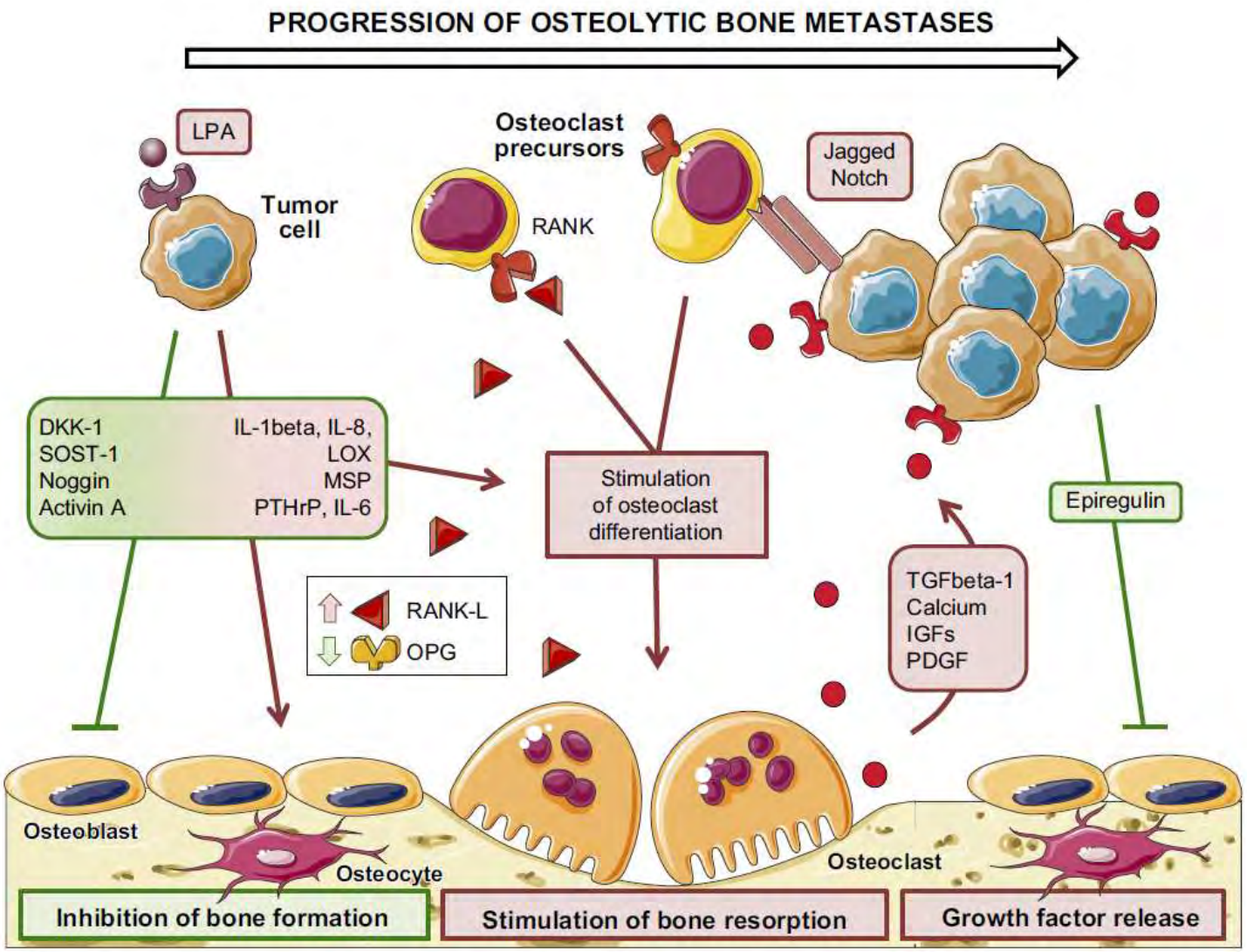
Breast Cancer

病史：
This 79y/o female patient came to our OPD for un-healing wound after tooth 37 extraction on 2023/12/15. She was a victim of breast cancer under Xgeva injection.

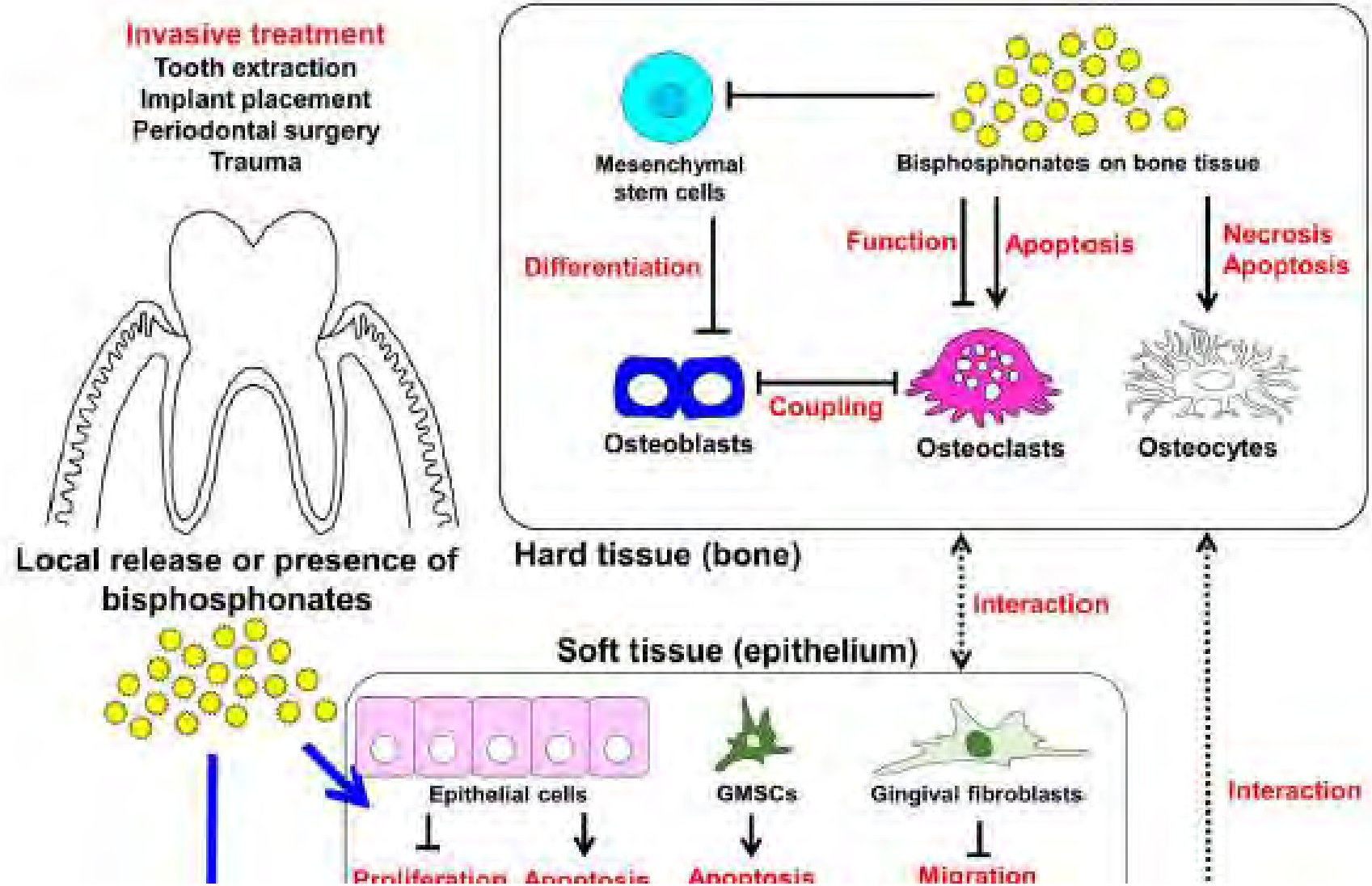
過去病史：
1. Pancreatic fibrosing papillitis with main pancreatic duct dilation, status post Whipple operation on 2007/12/29
2. Left breast infiltrating ductal carcinoma, grade I, ER(+), PR(+)
- status post modified radical mastectomy in 1998/12/23,
- status post Tamoxifen (1999/1/14~2003/11/21)
- status post Femara (2004/8/6~2008/11/6), with multiple liver metastases
- status post Ibrance (C1D1=2020/09/21, C9D1=2021/05/10), with increased liver metastases
- status post AFINITOR (C1D1=2021/06/24, C6D1=2021/11/15)
- status post Nab-paclitaxel (C1D1=2022/01/25, C2D1=2022/02/21)
- with progressive liver metastases, status post S2 liver tumor core needle biopsy on 2022/03/11
- status post liposomal Doxorubicin (C1D1=2022/03/31, C19D1=2023/09/04)
3. Type 2 diabetes mellitus, under Trajenta, Metformin

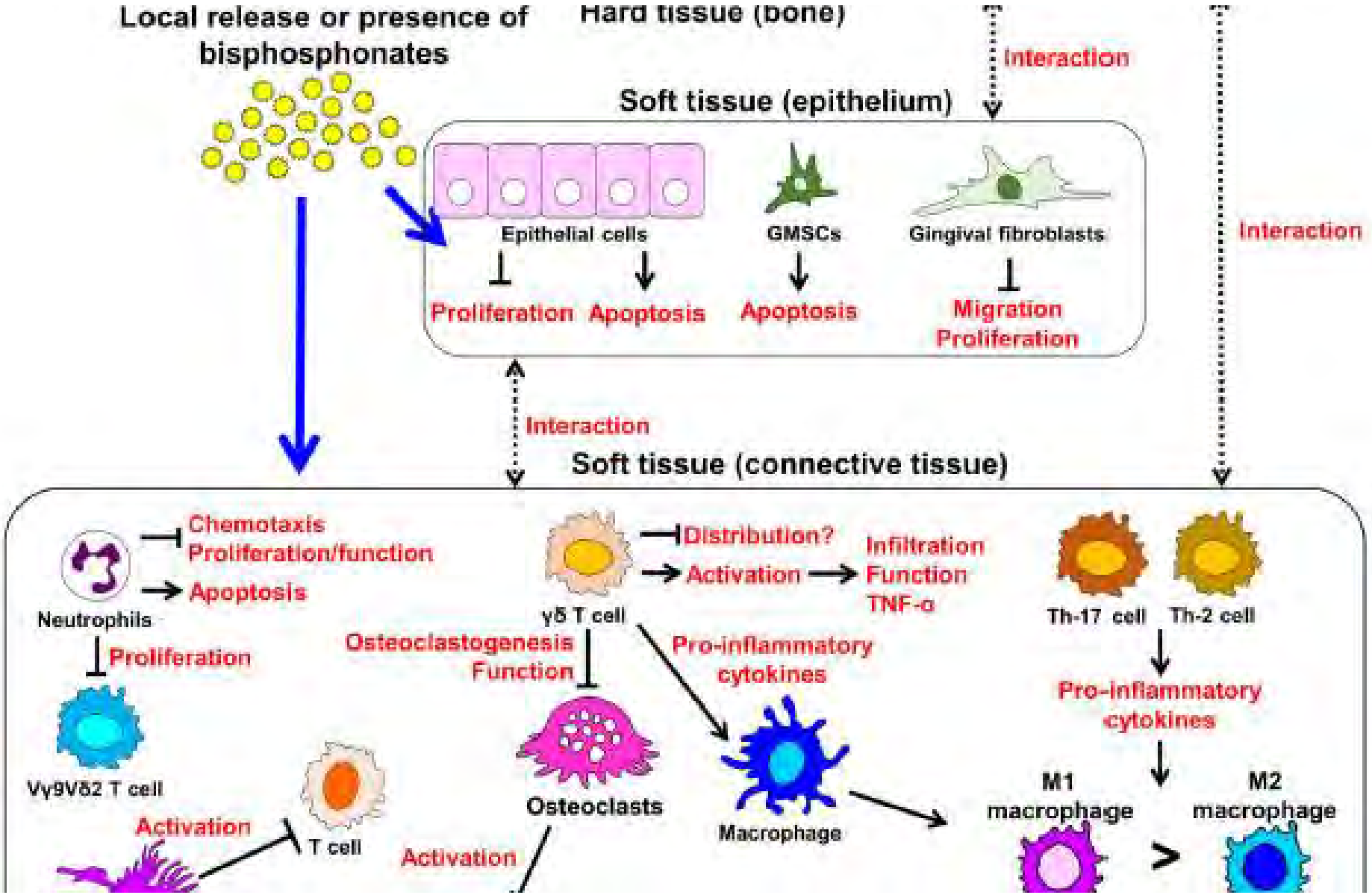
The last Xgeva injection on 20231221

目前用藥：
XGEVA 120 mg/1.7 mL /vial (20231221, 120 mg, Q4W, 1day) (20230803, 120 mg, Q4W, 1day)
20 Navelbine Soft Cap 20 mg/cap (20240201, 1 cap, TIW, 21days)
Nexium 40 mg/tab (20240102, 0.5 tab, QOD, 28days)
Kascoal 40 mg/tab (20240102, 1 tab, BID, 7days)
口服 Dulcolax EC 5 mg/tab (20231115, 3 tab, HS, 28days)
Protase EC /cap (20231115, 2 cap, TID, 28days)



Clézardin, P., et al. (2021Physiological Reviews 101(3): 797-855.


Invasive treatment
Tooth extraction
Implant placement
Periodontal surgery
Trauma
Local release or presence of bisphosphonates
Mesenchymal stem cells
Bisphosphonates on bone tissue
Differentiation
Function
Apoptosis
Necrosis
Apoptosis
Coupling
Osteoblasts
Osteoclasts
Osteocytes
Hard tissue (bone)
Interaction
Soft tissue (epithelium)
Epithelial cells
GMSCs
Gingival fibroblasts
Interaction
Proliferation
Apoptosis
Apoptosis
Migration


Local release or presence of bisphosphonates
Hard tissue (bone)
Interaction
Soft tissue (epithelium)
Epithelial cells
GMSCs
Gingival fibroblasts
Proliferation
Apoptosis
Apoptosis
Migration
Proliferation
Interaction
Interaction
Soft tissue (connective tissue)
Chemotaxis
Proliferation/function
Apoptosis
Neutrophils
Proliferation
Vγ9Vδ2 T cell
Activation
T cell
Distribution?
Activation
Infiltration
Function
TNF-α
γδ T cell
Osteoclastogenesis
Function
Osteoclasts
Activation
Pro-inflammatory
cytokines
Macrophage
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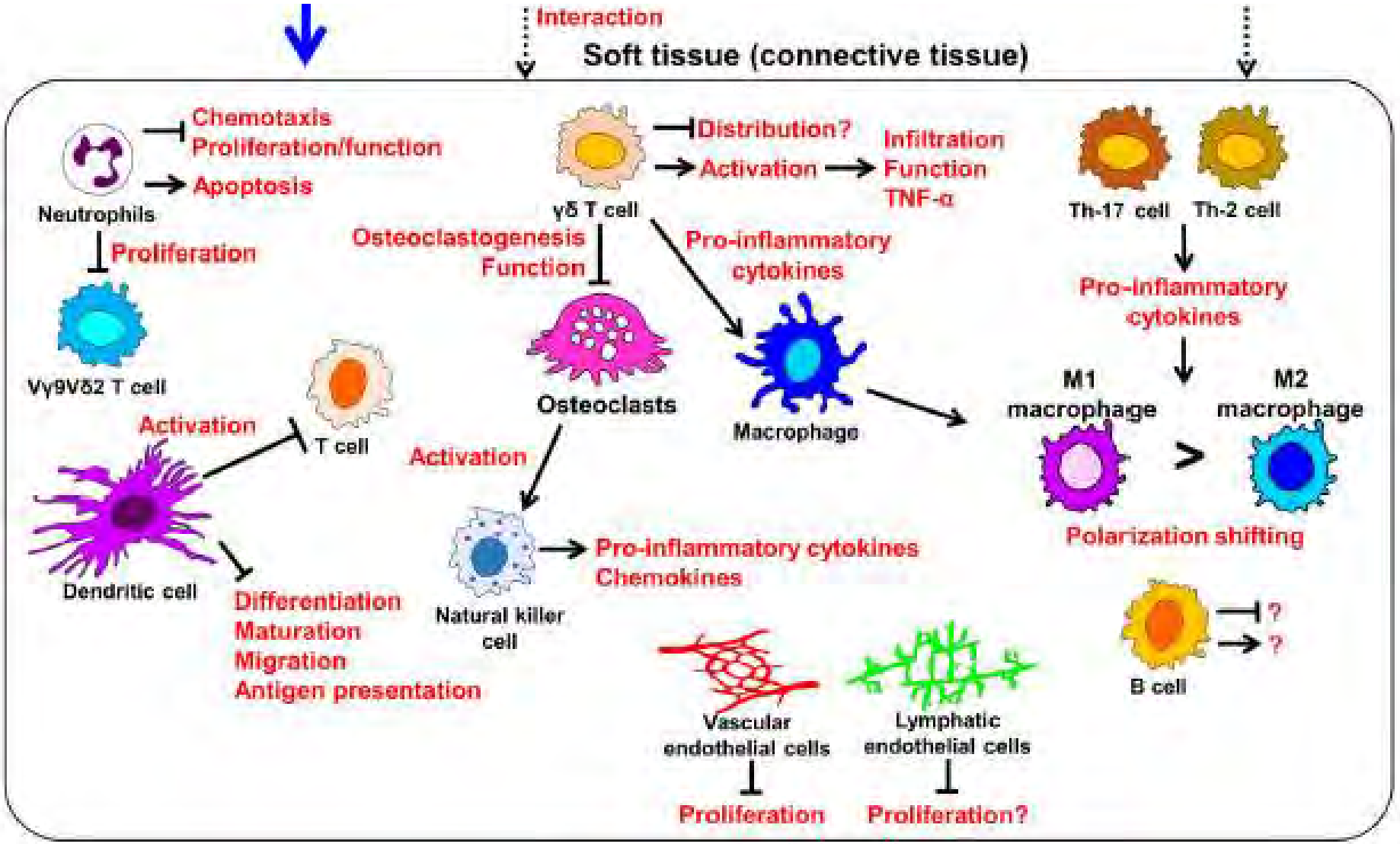
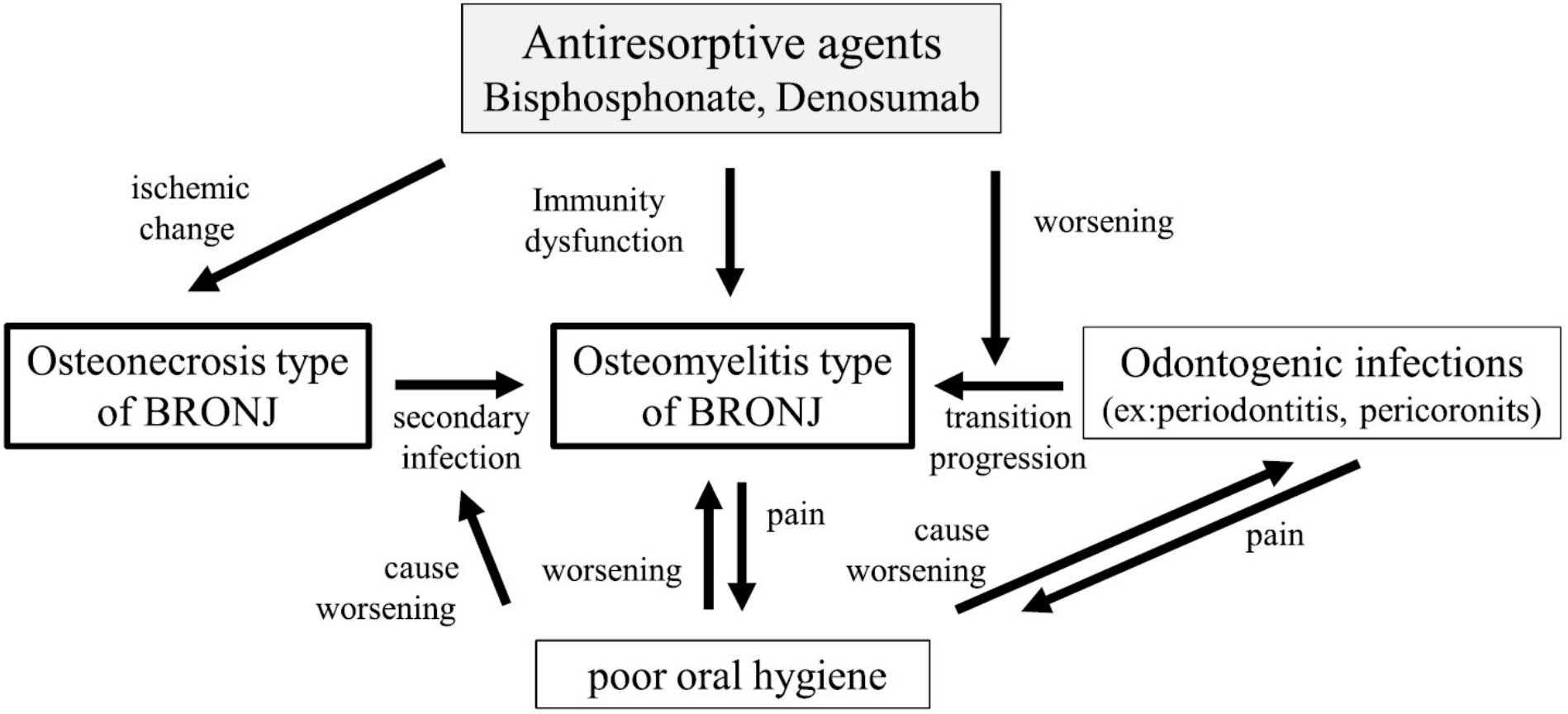
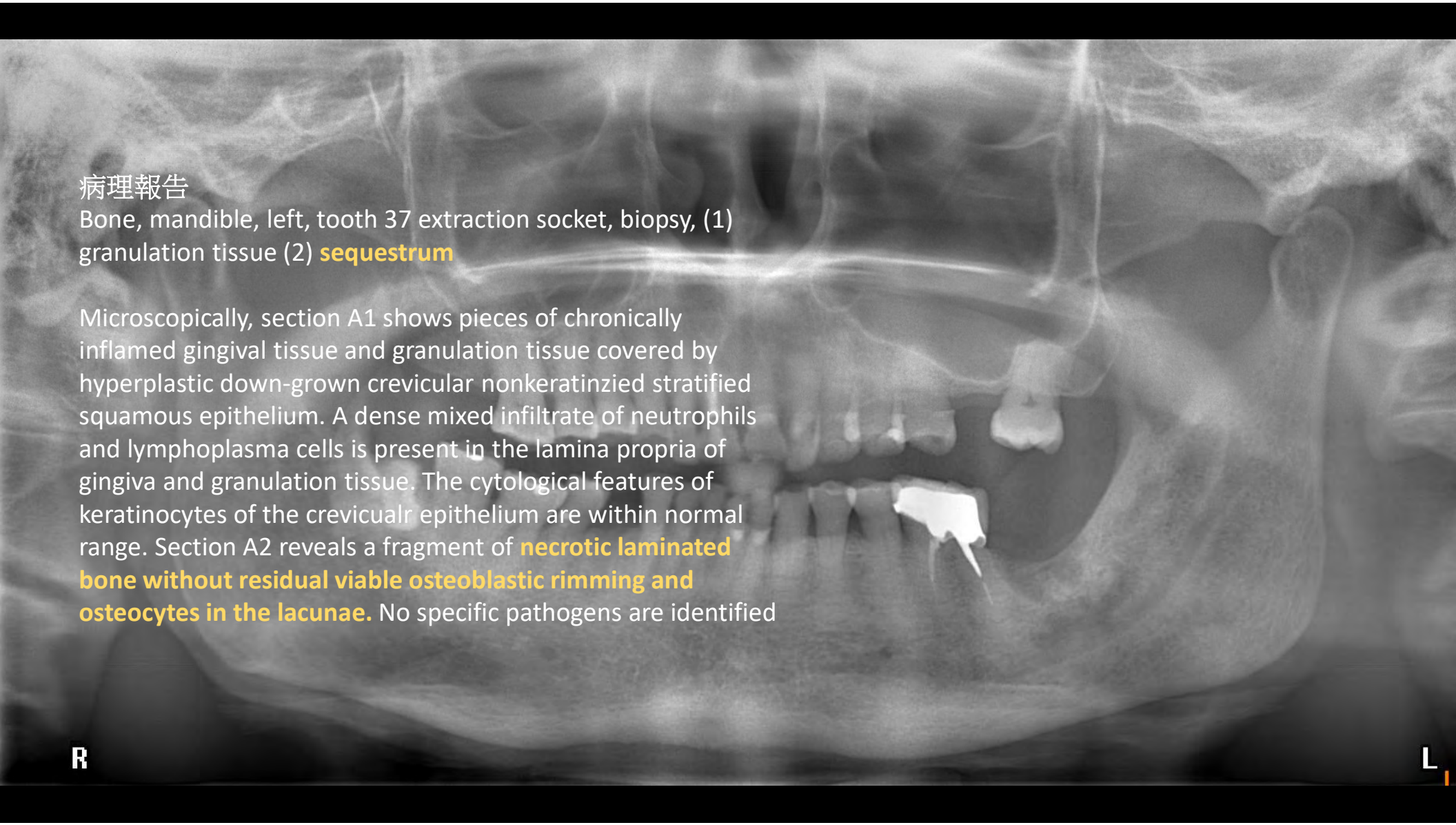
Th-2 cell
Pro-inflammatory
cytokines
M1
macrophage
M2
macrophage


Interaction
Soft tissue (connective tissue)
Chemotaxis
Proliferation/function
Apoptosis
Neutrophils
Proliferation
Vγ9Vδ2 T cell
Activation
T cell
Dendritic cell
Differentiation
Maturation
Migration
Antigen presentation
γδ T cell
Distribution?
Activation
Infiltration
Function
TNF-α
Osteoclastogenesis
Function
Osteoclasts
Pro-inflammatory
cytokines
Macrophage
Activation
Natural killer
cell
Pro-inflammatory cytokines
Chemokines
Th-17 cell
Th-2 cell
Pro-inflammatory
cytokines
M1
macrophage
M2
macrophage
Polarization shifting
B cell
?
?
Vascular
endothelial cells
Proliferation
Lymphatic
endothelial cells
Proliferation?

Relationship between osteonecrosis type and osteomyelitis type of BRONJ



Kishimoto, H., et al. (2019). The Japanese Dental Science Review 55: 95 - 102.

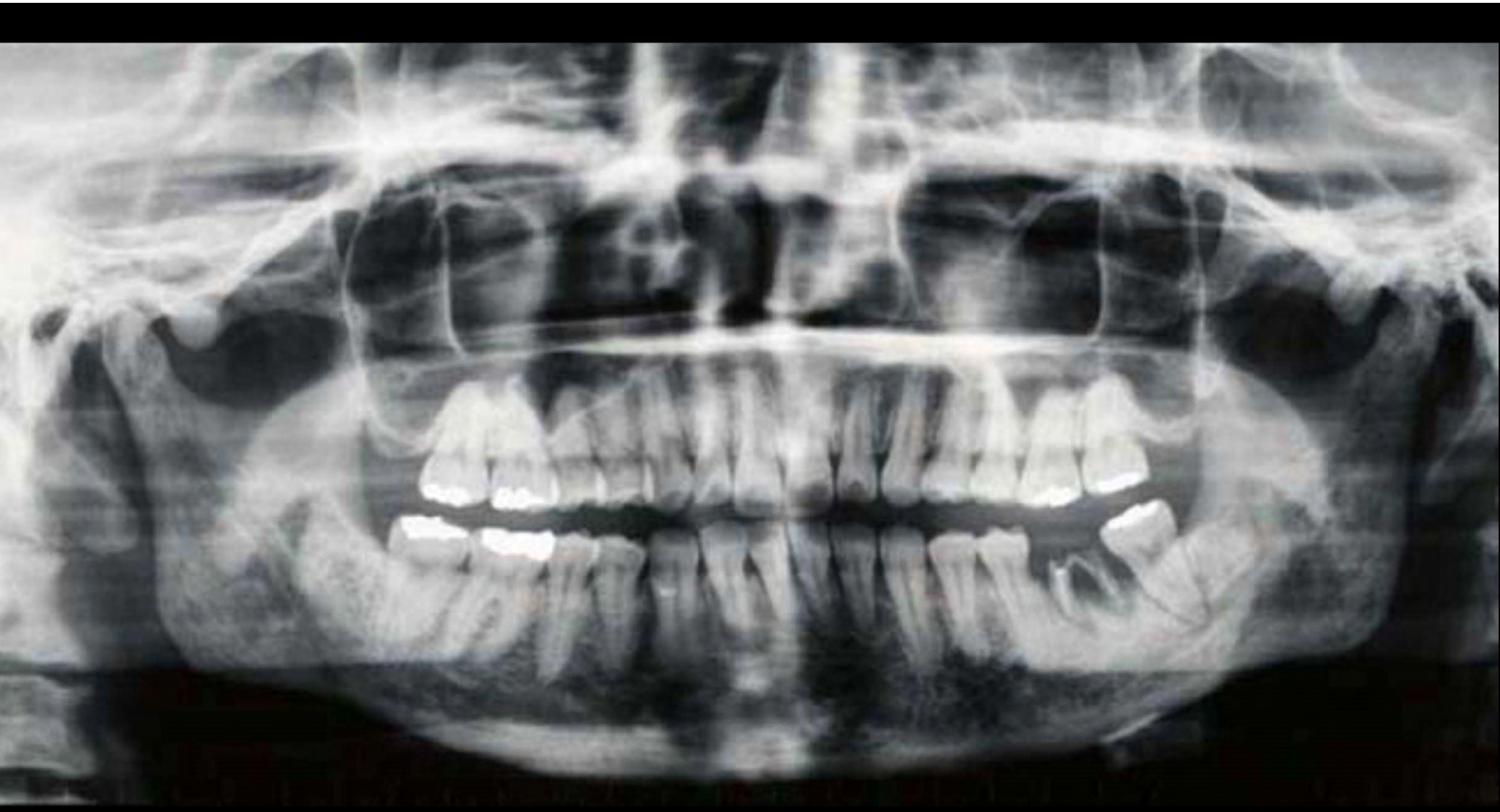

病理報告
Bone, mandible, left, tooth 37 extraction socket, biopsy, (1) granulation tissue (2) sequestrum
Microscopically, section A1 shows pieces of chronically inflamed gingival tissue and granulation tissue covered by hyperplastic down-grown crevicular nonkeratinzied stratified squamous epithelium. A dense mixed infiltrate of neutrophils and lymphoplasma cells is present in the lamina propria of gingiva and granulation tissue. The cytological features of keratinocytes of the crevicualr epithelium are within normal range. Section A2 reveals a fragment of necrotic laminated bone without residual viable osteoblastic rimming and osteocytes in the lacunae. No specific pathogens are identified
R
L

Antiresorptive Drug-related Changes of the Mandibular Bone Density in Medication-related Osteonecrosis of the Jaw Patients

- Alveolar bone mineral density (BMD) was **significantly higher around osteonecrosis lesions** than in control cases in a pilot case–control study.
- The bone density values measured at both locations were found to be **significantly higher in the bp-group** compared to the db-group ($p = 0.027$) and to the reference-group ($p = 0.016$). Almost no difference ($p = 0.84$) in bone density value was found between the db and reference-groups
- Bisphosphonates change the microarchitecture of the alveolar bone by being embedded in the mandible, which may subsequently lead to a **bp-specific corticalization**, and a decrease in vascularization of the lower jaw.

Takaishi, Y., et al. (2010). Osteoporosis International 21(5): 815-825.

Dentomaxillofacial Radiology (2019) 48, 20190132.



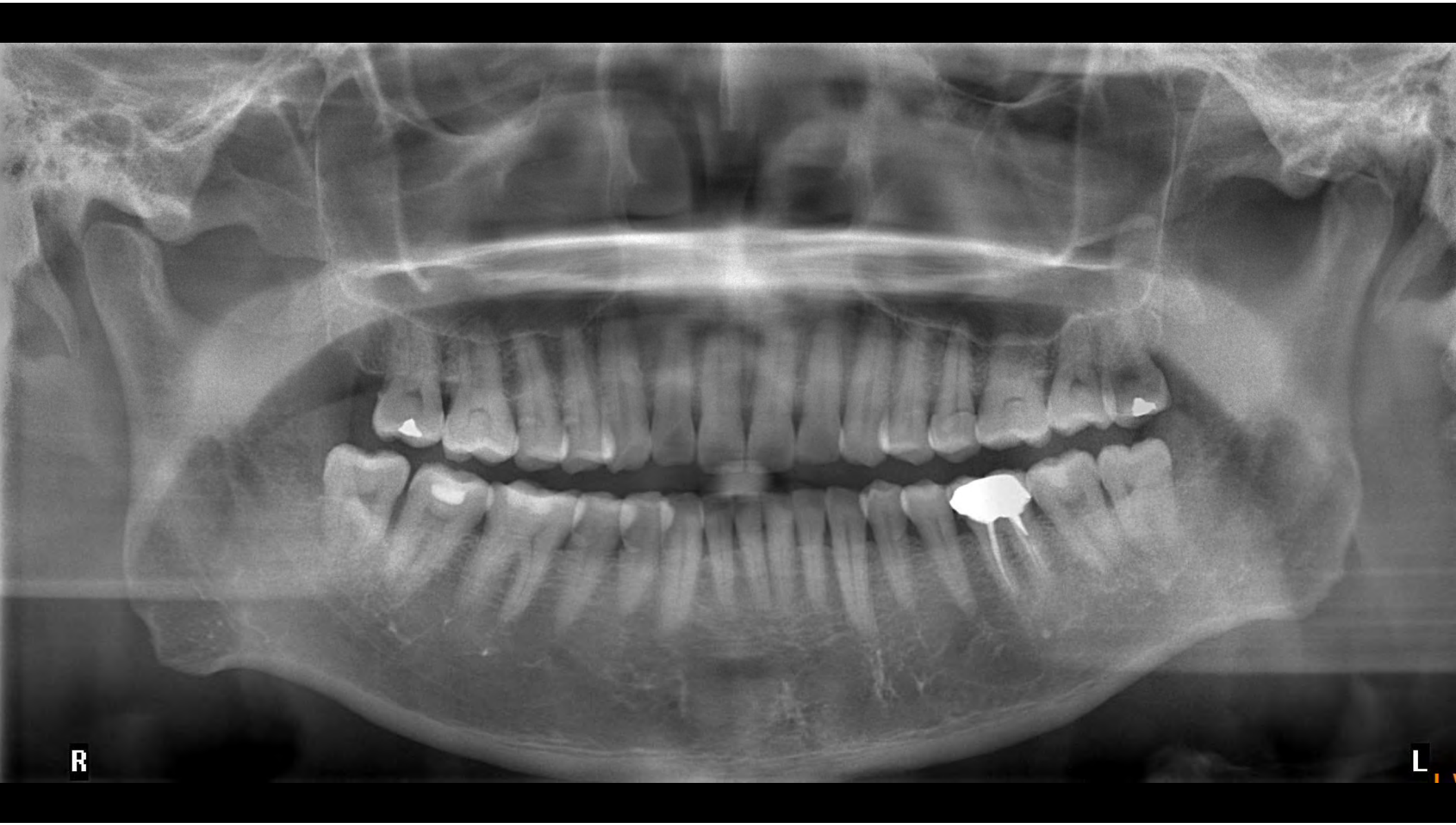
Takaishi, Y., et al. (2010). Osteoporosis International 21(5): 815-825.

癌症

Acute Myeloid Leukemia

58 y/o man with
Acute myeloid leukemia (initial presentation of WBC 183.01k/uL on 2023/11/21) , FAB M4 subtype, NPM1 (-), FLT3-ITD (+, mutant signal/wild signal=0.90), FLT3/TKD (-), BCR::ABL (-)
- status post (s/p) hydrea (2023/11/21-11/24)
- s/p I3A7 (C1D1=2023/11/24)
- s/p midostaurin (2023/12/1- for 14 days' course)
- complete remission with incomplete hematologic recovery (CRp) (BM examination on 2023/12/22) FLT3/ITD (-)
- s/p BM study on 2024/1/17, favor CRi
- s/p HDAC with midostaurin (C1D1=2024/2/1)
Neutropenic fever with Escherichia coli bacteremia (PB culture on 2024/2/14), complicated with septic shock on 2024/2/16, under ceftriaxone(2024/2/20-), mepem (2024/2/16-2/20), cefepime (2024/2/14-2/16)

Penile ulcer, favor herpes simplex, r/o poorly managed wound, s/p acycolvir, stable
Sacral pain with grade I pressure sore under wound care
IVC to left femur thrombus (12/14 CT), no clexane due to high bleeding tendency
HBV carrier, under baraclude
pericarditis, with mild pericardial effusion noted, idiopathic, under colchicine, stable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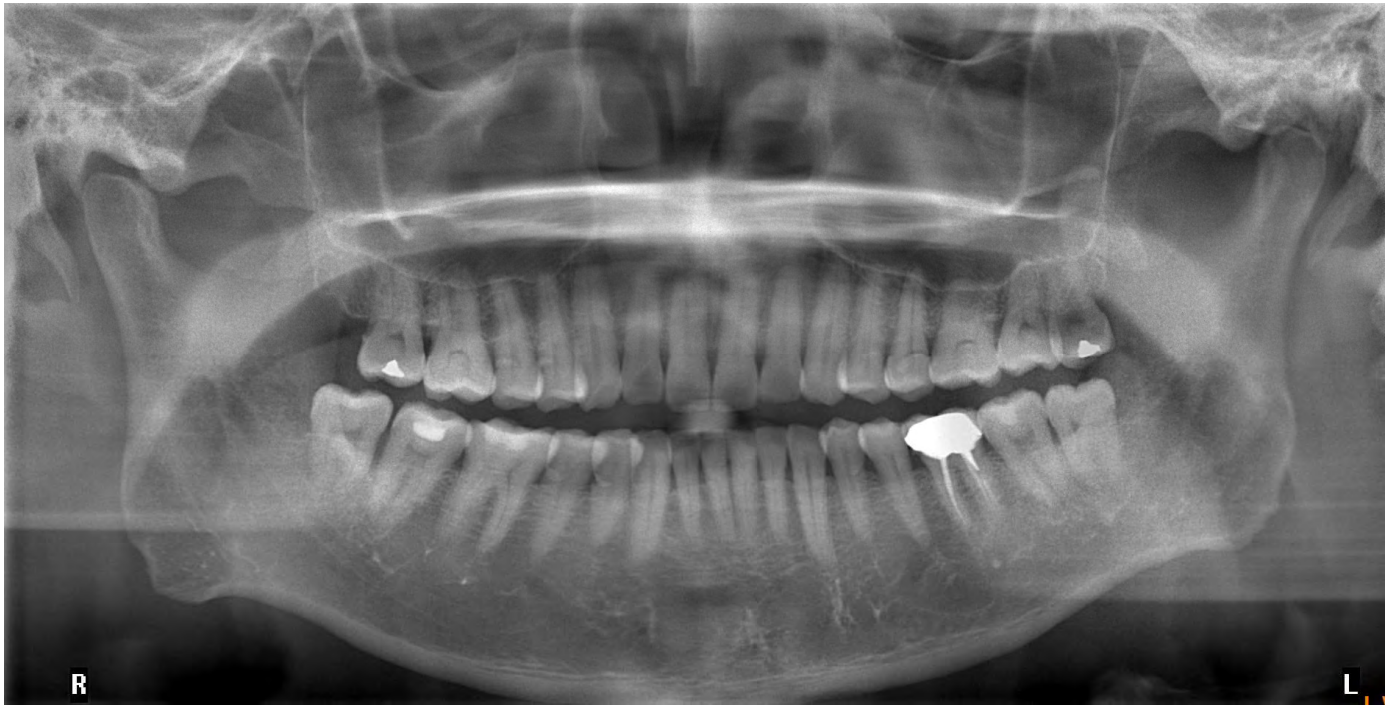
Acute Myeloid Leukemia

CC:
for pre BMT dental evaluation

Lab data[20240226]
WBC 2.55k/µL
PLT 105 k/µL
Bnad 0
Seg 42.4%
ANC: 1081.2

LF:
present dentition:
 7654321 | 12345678
87654321 | 12345678
- tooth 28 D dental caries
- generalized plaque deposition



Suggest full mouth scaling (please keep ANC>500, PLT>80k

Minimum Hematological Values for Performance of Invasive Dental Procedures in Prechemotherapy Treatment Patients

Authors	Platelet count	Neutrophil count
Eversole et al., 2001 [33]	**<50,000 cell/mm^3**: not perform dental or periodontal surgery in office setting.	—
Little et al., 2007 [5]	**<50,000 cell/mm^3**: avoid invasive procedures. **<40,000 cell/mm^3**: perform transfusions in invasive procedures.	**<500 cell/mm^3**: antimicrobial prophylaxis (or with leukocytes <2,000 cells/mm^3).
American Academy of Pediatric Dentistry, 2013 [1]	**>75,000 cell/mm^3**: without additional support. **40,000 to 75,000 cell/mm^3**: Platelet transfusion may be considered in the preoperative and postoperative (24 hours). **<40,000 cell/mm^3**: Postpone the dental treatment. In the case of dental emergency, contact the patient's physician before dental treatment to discuss supportive measures, such as platelet transfusion, control of bleeding, and need for hospitalization. Other coagulation tests may be necessary in some cases.	**>1,000 cell/mm^3**: no need for antibiotic prophylaxis. Some authors suggest that prophylaxis is performed with values between 1,000 and 2,000cell/mm^3 (following recommendations of the American Heart Association). If infection is present or there is doubt, more aggressive antibiotic prophylaxis may be indicated and should be discussed with the medical team. **<1,000 cell/mm^3**: Postpone the dental treatment. In cases of emergency, discuss antibiotic coverage and endocarditis prophylaxis before treatment with the medical team. Hospitalization may be required.
US National Cancer Institute, 2011 [2]	**>60,000 cell/mm^3**: without additional support. **30,000 to 60,000 cell/mm^3**: optional transfusion for noninvasive procedure. **<30,000 cell/mm^3**: Platelets should be transfused 1 h before the procedure. Obtain immediate postinfusion platelet count; transfuse regularly to maintain counts >30,000–40,000 cell/mm^3 until the start of healing.	**>2,000 cell/mm^3**: without the need for antibiotic prophylaxis. **1,000 to 2,000 cell/mm^3**: antibiotic prophylaxis (low risk). **<1,000 cell/mm^3**: antibiotic prophylaxis with Amikacin 150 mg/m^2 1 h before surgery and Ticarcillin 75 mg/Kg IV 1 h before surgery. Repeat both 6 h postoperative.

Minimum Hematological Values for Performing Invasive Dental Procedures in Patients Undergoing Chemotherapy

Authors	Platelet count	Neutrophil count
Sonis et al., 1995 [3]	**<100,000 cell/mm^3**: elective dental treatment should be postponed.	**<3,500 cell/mm^3** (leukocytes): elective dental treatment should be postponed.
Haytac et al., 2004 [32]	**<40,000 cell/mm^3**: periodontal probing and dental extractions contraindicated.	**<1,500 cell/mm^3**: periodontal probing and dental extractions contraindicated.
Brennan et al., 2008 [22]	**<50,000 cell/mm^3**: contraindication to perform invasive procedures.	**<1,000 cell/mm^3**: contraindication to perform invasive procedures.
Koulocheris et al., 2009 [34]	**>60,000 cell/mm^3**: acceptable for oral surgery.	**>1,000 cell/mm^3**: acceptable for oral surgery.

Possibility of Dental Procedures in the Prechemotherapy Phase

Procedure	Considerations and restrictions	Time before the start of CT
Type I		
Exam		
Clinical		
Radiographic	No restrictions.	—
Hygiene instructions		
Molding	Elective procedure, postpone	—
Type II		
Simple restorations (ART)	No restrictions.	—
Prophylaxis and supragingival scaling		
Orthodontics	Elective treatment, postpone. Consider removing orthodontic appliances.	—
Type III		
More complex restorations	Solely for adequacy of the oral environment. Consider use of provisional restorative materials (e.g., glass ionomer).	—
Scaling and root planning (subgingival)	Invasive procedure of high-risk carried out carefully. To evaluate hematological indices of platelets and neutrophils. Need for antibiotic prophylaxis.	—
Endodontics		
Symptomatic tooth	Evaluate hematological indices of platelets and neutrophils. Need for antibiotic prophylaxis. Consider extraction if endodontics fail.	At least 1 week [1]
Asymptomatic tooth	Postpone (tricresol formalin) OR Evaluate hematological indices of platelets and neutrophils. Need for antibiotic prophylaxis.	At least 1 week [1]

Asymptomatic tooth	Postpone (tricresol formalin) OR Evaluate hematological indices of platelets and neutrophils. Need for antibiotic prophylaxis.	At least 1 week [1]
Type IV		
Simple extractions	Invasive procedure of high-risk. Evaluate hematological indices of platelets and neutrophils. Need for antibiotic prophylaxis.	3 weeks; minimum 10–14 days [5] 2 weeks; minimum 7–10 days [1]
Curettage (gingivoplasty)	Elective procedure, invasive and high-risk. Postpone.	—
Type V		
Multiple extractions	If for adequacy of the oral environment, evaluate hematological indices of platelets and neutrophils. Need for antibiotic prophylaxis. If elective, postpone.	3 weeks; minimum 10–14 days [5] 2 weeks; minimum 7–10 days [1]
Flap surgery/gingivectomy Extraction of impacted tooth Apicoectomy Single implant placement	Elective procedure, invasive and high-risk. Postpone.	—
Type VI		
Extraction of an entire arch or both	If adequacy of the oral environment, evaluate hematological indices of platelets and neutrophils. Need for antibiotic prophylaxis. If elective, postpone.	3 weeks; minimum 10–14 days [5] 2 weeks; minimum 7–10 days [1]
Extraction of multiple impacted teeth Flap surgery Orthognathic surgery Placement of multiple implants	Elective procedure, invasive and high-risk. Postpone.	—

Possibility of Dental Procedures in Postchemotherapy Phase.

Intervention in postchemotherapy	Considerations and restrictions
Type I	
Exam	
Clinic	
Radiographic	No restrictions.
Hygiene instructions	
Molding	
Type II	
Simple restorations (ART)	No restrictions.
Prophylaxis and supragingival cell scaling	
Orthodontics	Completed chemotherapy and after two years free of disease, one can restart the orthodontic treatment
Type III	
More complex restorations	
Scaling and root planning cell (subgingival)	
Endodontics	No restrictions.
Symptomatic tooth	
Asymptomatic tooth	
Type IV	
Simple extractions	Need for antibiotic prophylaxis until six months after completion of chemotherapy.
Curettage (gingivoplasty)	
Type V	

Prophylaxis and supragingival cell scaling	
Orthodontics	Completed chemotherapy and after two years free of disease, one can restart the orthodontic treatment
Type III	
More complex restorations	
Scaling and root planning cell (subgingival)	
Endodontics	No restrictions.
Symptomatic tooth	
Asymptomatic tooth	
Type IV	
Simple extractions	Need for antibiotic prophylaxis until six months after completion of chemotherapy.
Curettage (gingivoplasty)	
Type V	
Multiple extractions	
Flap surgery/gingivectomy	
Extraction of impacted tooth	Need for antibiotic prophylaxis until six months after completion of chemotherapy.
Apicoectomy	
Single implant placement	
Type VI	
Extraction of an entire arch or both	
Extraction of multiple impacted cell teeth	
Flap surgery	Need for antibiotic prophylaxis until six months after completion of chemotherapy.
Orthognathic surgery	
Placement of multiple implants	

Special Considerations Regarding Oral Complications, Oral Health, and Dental Treatment in Pre-, Immediate Post-, and Late Post-HSCT

Special considerations	Pre-HSCT (preconditioning)	Immediate post-HSCT (neutropenic conditioning phase and engraftment to hematopoietic recovery)	Late post-HCST (immune reconstitution/recovery from systemic toxicity and long-term survival)
Oral manifestations	(i) Oral infections (ii) Soreness (iii) Bleeding (iv) Temporomandibular dysfunction.	(i) Mucositis (ii) Dysgeusia (iii) Xerostomia (iv) Hemorrhage (v) Oral pain (vi) Opportunistic infections (vii) Neurotoxicity (viii) Temporomandibular dysfunction (ix) Acute GVHD.	(i) Chronic GVHD (ii) Late viral infections (iii) Salivary dysfunction (iv) Squamous cell carcinoma (v) Craniofacial growth abnormalities (children) (vi) Impairment of bones and teeth (children).
Oral health	(i) Identify and eliminate sources of existing or potential infection. (ii) Orientate the patient about the importance of maintaining oral health. (iii) Warn about the possible effects of antineoplastic therapy in the oral cavity.	(i) Maintain and reinforce the importance of optimal oral health. (ii) Treat side effects of HSCT therapy. (iii) Pay attention to periodontitis and gingivitis as potential sources of bacteremia.	(i) Diagnosis and treatment of mucosal lesions and lichen-type features with symptoms (ii) Caries prevention and reestablishment of oral health in case of rampant caries (iii) Treatment of hyposalivation and xerostomia (iv) Early detection of oral cancer and precursor lesions.
Dental treatment	(i) Complete necessary dental treatment (ii) Elective treatment should be delayed until the re-establishment of immunity (at least 100 days after transplant, or more in the case of oral complications or other cGVHD).	*Neutropenic conditioning phase* (i) Dental procedures should not be performed at this stage (ii) If emergencies, perform the necessary dental approach, with the participation of medical staff. *Engraftment to hematopoietic recovery* (i) Monitoring and management of oral complications of HSCT (ii) Invasive procedures only with the approval of the medical team (iii) Strengthening the maintenance guidelines of good oral hygiene and noncariogenic diet (iv) Special attention to xerostomia and GVHD.	*Immune reconstitution/recovery from systemic toxicity* (i) Periodic dental evaluation (ii) Avoid invasive procedures (iii) Clarify risks and benefits of orthodontic appliances. *Long-term survival* (i) Periodic dental evaluation (ii) In the first 12 months after HSCT: (a) avoid routine dental care, including scaling and periodontal planning; (b) if emergencies, strategies to reduce inhalation of aerosols and antibiotic prophylaxis; (c) before invasive procedures, consider the use of IgG, antibiotics, corticosteroids, and/or platelet transfusion.

Possibility of Dental Procedures at Various Stages of Chemotherapy

Intervention	Pre	Trans	Post
Type I			
Exam			
Clinical	NR	NR	NR
Radiographic	NR	NR	NR
Oral hygiene instruction	NR	NR	NR
Molding	E	E	NR
Type II			
Simple restorations (ARTs)	NR	NR	NR
Prophylaxis and supragingival scaling	NR	NR	NR
Orthodontics	E	E	R
Type III			
More complex restorations	R	R	NR
Scaling and root planning	R	R	NR

Possibility o

Orthodontics	E	E	R
Type III			
More complex restorations	R	R	NR
Scaling and root planning (subgingival)	R HI, AP	R HI, AP	NR
Endodontics			
Symptomatic teeth	R HI, AP	R HI, AP	NR
Asymptomatic teeth	E, R HI, AP	E, R HI, AP	NR
Type IV			
Simple extractions	R, HI, AP	R, HI, AP	R
Curettage (gingivoplasty)	EIHR	EIHR	R
Type V			
Multiple extractions	R, HI, AP	R, HI, AP	R
Flap surgery/gingivectomy	EIHR	EIHR	R
Extraction of impacted tooth	EIHR	EIHR	R

Possibility o

[illegible]	HI, AP	HI, AP	[illegible]
Type IV			
Simple extractions	R, HI, AP	R, HI, AP	R
Curettage (gingivoplasty)	EIHR	EIHR	R
Type V			
Multiple extractions	R, HI, AP	R, HI, AP	R
Flap surgery/gingivectomy	EIHR	EIHR	R
Extraction of impacted tooth	EIHR	EIHR	R
Apicoectomy	EIHR	EIHR	R
Single implant placement	EIHR	EIHR	R
Type VI			
Extraction of an entire arch or both	R, HI, AP	R, HI, AP	R
Extraction of multiple impacted teeth	EIHR	EIHR	R
Flap surgery	EIHR	EIHR	R
[illegible]	[illegible]	[illegible]	[illegible]

Possibility o

Curettage (gingivoplasty)	EIHR	EIHR	R
Type V			
Multiple extractions	R, HI, AP	R, HI, AP	R
Flap surgery/gingivectomy	EIHR	EIHR	R
Extraction of impacted tooth	EIHR	EIHR	R
Apicoectomy	EIHR	EIHR	R
Single implant placement	EIHR	EIHR	R
Type VI			
Extraction of an entire arch or both	R, HI, AP	R, HI, AP	R
Extraction of multiple impacted teeth	EIHR	EIHR	R
Flap surgery	EIHR	EIHR	R
Orthognathic surgery	EIHR	EIHR	R
Placement of multiple implants	EIHR	EIHR	R

NR: no restriction, R: with restriction, E: elective, EIHR: elective, invasive, and high-risk, HI: need for evaluation of hematological indices, and AP: antibiotic prophylaxis.

透析

Dialysis in Patients with Renal Diseases

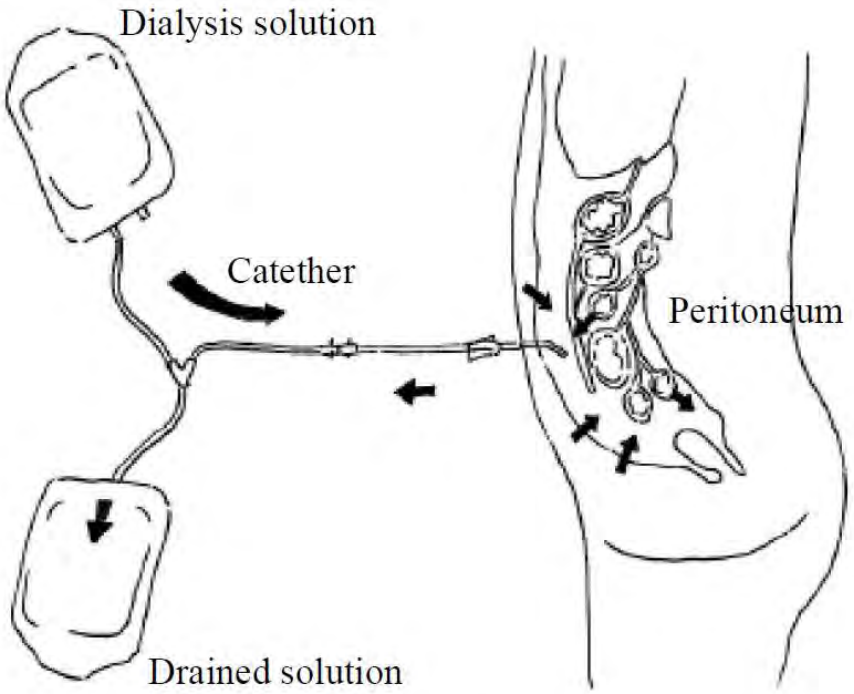


Fig. 1. *Peritoneal dialysis process diagram.*

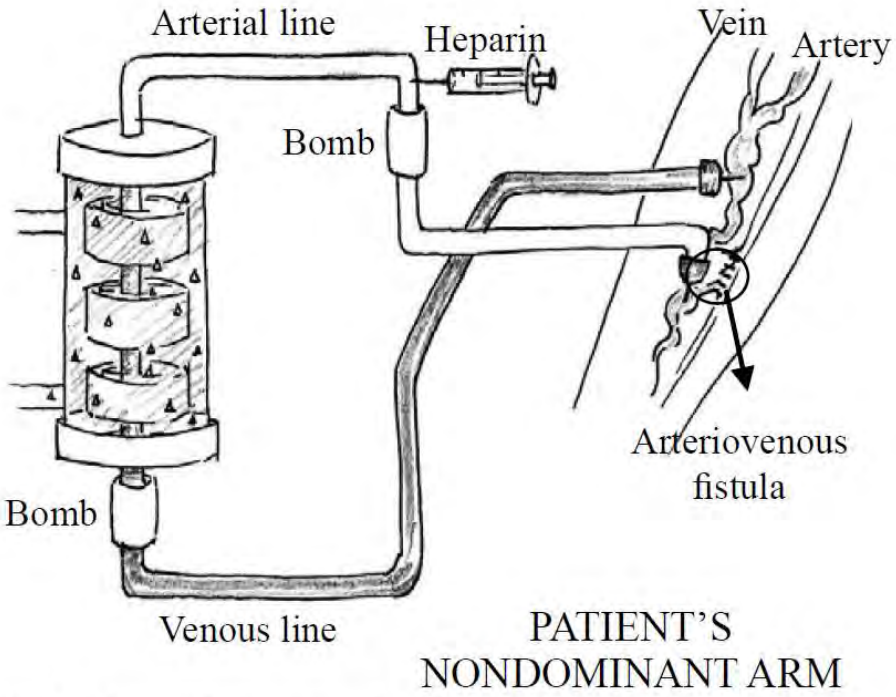


Fig. 2. *Hemodialysis process diagram.*

J Clin Exp Dent. 2011;3(2):e112-9.

Dental Management of the Patient Receiving Hemodialysis

DENTAL MANAGEMENT OF THE PATIENT RECEIVING HEMODIALYSIS	
SITUATION	**ATTITUDE**
Patient with medical problems treated by other professionals	- Consultation with the nephrologist - Accurate medical history (medication prescribed)
High prevalence of arterial hypertension	Monitorization of blood pressure pre and postoperatively
Platelet dysfunction and anemia (bleeding tendency)	- Request hemostatic study before planning the surgery (time of bleeding, platelet recount, hematocrite, hemoglobin) - Local hemostatic measures
Heparin anticoagulation	Perform dental treatment the day not receiving dialysis, to be sure that there is no heparin in the blood (mean life of 4 hours)
Vascular access for hemodialysis	Avoid compression on the arm with the vascular access and never use it to measure blood pressure nor administering drugs intravenously
Disturbances in the metabolism and removal of drugs	Some drugs must not be prescribed and some need dose adjustment. Request the CC to estimate the GFR (see Table 1)
Renal osteodystrophy due to secondary hyperparathyroidism (late sign of chronic renal insufficiency)	- Bone more susceptible to fractures - Careful dental extraction technique to avoid fractures

CC: Creatinin clearance.
GFR: Glomerular filtrarion rate.

Álamo, S. M., et al. (2011**).** Journal of Clinical and Experimental Dentistry 3: 112-119.

Dose Adjustment According to Creatinin Clearance of the Drugs more Frequently Prescribed in Dentistry

DRUGS	DOSE ADJUSTMENT ACCORDING TO CREATININ CLEARANCE		
	Normal dose	Dose with CC 10- 50 ml/ min	Dose with CC <10 ml/ min
ANTIBIOTIC			
Amoxicillin	500/ 1000 mg/ 8 h	500/ 1000 mg/ 8-12 h	500/ 1000 mg/ 12- 24 h
Amoxicillin/clavulanate	500/ 875 mg/ 8 h	No need for dose adjustment	500/ 875 mg/ 12- 24 h
Penicillin G	0'3- 1'2 million IU/ 6-12 h	50- 100% of the dose every 8- 12 h	25- 50% of the dose every 12 h
Clindamycin	300 mg/ 8 h	No need for dose adjustment	No need for dose adjustment
Doxiciclin	100 mg/ 24 h	No need for dose adjustment	No need for dose adjustment
Erythromycin	250- 500 mg/ 6 h	No need for dose adjustment	No need for dose adjustment
Metronidazole	250- 500 mg/ 6 h	Every 8-12 h	Every 12- 14 h

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Metronidazole	250- 500 mg/ 6 h	Every 8-12 h	Every 12- 14 h
Azithromycin	500 mg/ 24 h, 3 days	No need for dose adjustment	No need for dose adjustment
ANTIFUNGALS			
Anfotericin	0'3- 1 mg/kg/ 24 h	No need for dose adjustment	0'3- 1 mg/ kg/ 24- 48 h
Fluconazol	100- 200 mg/ 24 h	50- 200 every 24 h	50- 100 every 24 h
ANALGESICS			
Paracetamol	500- 1000 mg/ 4- 6 h	No need for dose adjustment	No need for dose adjustment
Aspirin	Contraindicated (produces water retention, deterioration of renal function and risk of gastric hemorrhage)		
Ibuprofen	200- 600 mg/ 4- 6 h	No need for dose adjustment	No need for dose adjustment
Dihidrocodeine	10- 30 mg/ 4- 6 h	Decrease dose 25%	Decrease dose 25%

CC: Creatinin clearance.

器官移植

Dental Management in Transplant Patients

General dental management before transplant.

General dental management BEFORE transplant
1. A consultation with the physician is recommended to discuss overall condition of the patient.
2. We must give oral hygiene instructions and recommend the use of fluorinated compounds and antiseptic mouthwashes such as chlorhexidine.
3. Dental status should be evaluated. For dental treatment planning, we must carry out a radiographic study. The main objectives of dental treatment are: - To maintain adequate periodontal health. We must remove supra- and subgingival plaque with dental scaling and curettage. - Filling of teeth with caries with favorable prognosis. - Extraction of teeth with poor prognosis or uncertain prognosis, periodontally compromised teeth with deeper pockets than 5-6 mm, teeth with furcation involvement or endoperiodontal lesions, teeth with periapical lesions and teeth with a root canal are technically difficult or with uncertain prognosis and teeth with very deep or extensive caries. - Endodontic treatments. - Implants treatment must be postponed until the stable period of the transplant and when patient's condition has improved.
4. Control of gingival hyperplasia in patients receiving cyclosporine.
5. Patients who have been treated with corticosteroids for a long time or in stressful situations may require supplementation before dental treatment.
6. We must be careful with the use of certain drugs (1,5):

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- Endodontic treatments. - Implants treatment must be postponed until the stable period of the transplant and when patient's condition has improved.
4. Control of gingival hyperplasia in patients receiving cyclosporine.
5. Patients who have been treated with corticosteroids for a long time or in stressful situations may require supplementation before dental treatment.
6. We must be careful with the use of certain drugs (1,5): - General anesthesia. - Nonsteroidal anti-inflammatory drugs (NSAIDs). - Aspirin. - Antibiotics (erythromycin, clarithromycin, tetracyclines, aminoglycosides and quinolones). - Azole antifungals (ketoconazole, fluconazole and itraconazole). - Co-trimoxazole.

- General anesthesia.
- Nonsteroidal anti-inflammatory drugs (NSAIDs): these drugs enhance the nephrotoxicity of cyclosporine and tacrolimus and may increase bleeding and exacerbate peptic ulcer disease in patients treated with corticosteroids.
- Aspirin increases the risk of bleeding.

- Antibiotics (erythromycin and clarithromycin), azole antifungals (ketoconazole, fluconazole and itraconazole) and NSAIDs can alter the levels of cyclosporine and consequently there is an increase in serum levels, rendering patients with a greater immnosuppresion than we desire.
- Co-trimoxazole, tetracyclines, aminoglycosides and quinolones increase risk of nephrotoxicity.

Dental Management in Transplant Patients

Corticosteroid supplementation with a conservative dental procedure

A CONSERVATIVE dental procedure		
Patient's situation		Therapeutic approach
Present corticoid use		No supplementing required
Regular corticoid use	Low-dose corticotherapy (< 30mg of hydrocortisone/day)	No supplementing required
	High-dose corticotherapy for a month if the patient has discontinued use less than two weeks ago	Daily maintenance dose on the day of treatment
	High-dose corticotherapy for more than a month	No established regimen
If less than one month with discontinued treatment with corticosteroids		No supplementing required

J Clin Exp Dent. 2011;3(1):e43-52.

Dental Management in Transplant Patients

Corticosteroid supplementation with a dental surgical procedure

A dental SURGICAL procedure		
Patient's situation		Therapeutic approach
1. Present corticoid use	Up to 30 mg / day of hydrocortisone	No supplementing required
	More than 40 mg/day of hydrocortisone for a month	We must double the daily dose on the day of treatment. If postoperative pain is expected, we should also double the daily dose on the first postoperative day.
	30-40 mg/ day of hydrocortisone	
2. Regular corticoid use	Low-dose corticotherapy	No supplementing required
	High-dose corticotherapy for a two weeks	
	High-dose corticotherapy for a month if the patient has discontinued use less than two weeks ago	Daily maintenance dose on the day of treatment
	High-dose corticotherapy for more than a month	No supplementing required

Dental Management in Transplant Patients

General dental management after transplant.

General dental management AFTER transplant	
Period of time	Dental management
1. Immediate (first three months after surgery)	• It is recommended that emergency dental treatment be carried out in a hospital, and that specialist be consulted and treated with antibiotic prophylaxis. • The dental treatment will be essentially palliative and local, the aim is to: - Prevent hyposalivation and xerostomia: mouthrinses with 0.5% of aqueous solution of sodium carboxy cellulose, every two hours. - Educate the patient about oral higiene: use of very soft toothbrush, fluoride toothpaste and antiseptic mouthrinses such as clorhexidine. - Eliminate risk factors and improve the diet. - Remove dentures and orthodontic appliances. - Dental examination by the risk of developing malignant lesions. - Prevention of infections.
	• After three months after transplant, elective dental treatment can be performed

1. Immediate (first three months after surgery)	solution of sodium carboxy cellulose, every two hours. - Educate the patient about oral higiene: use of very soft toothbrush, fluoride toothpaste and antiseptic mouthrinses such as clorhexidine. - Eliminate risk factors and improve the diet. - Remove dentures and orthodontic appliances. - Dental examination by the risk of developing malignant lesions. - Prevention of infections.
2. Stable	• After three months after transplant, elective dental treatment can be performed. • Six months after transplant is the best time considered for dental treatment. • If invasive dental treatment is necessary, we must give prophylactic antibiotic and a complete blood count is recommended.
3. Transplant rejection: (acute or chronic)	• Dental treatment should be postponed. • Only emergency dental treatment should be performed. • Prophylactic treatment with antibiotics may be useful to prevent sepsis.

精神疾病

The Adverse Effects of Psychotropic Drugs may Cause Dental Problems

- Xerostomia
  - The lack of saliva can lead to dental caries and candidosis
- Bruxism
  - May also occur independently of medication in patients suffering symptoms of anxiety associated with mental illness.
- Surgical bleeding
  - Sodium valproate, an anticonvulsant used in patients with bipolar disorders, is associated with a relatively high incidence of thrombocytopenia and it impairs platelet aggregation.
  - Antidepressants, in particular the SSRIs (selective serotonin reuptake inhibitors), also impair platelet aggregation due to their effects on platelet serotonin uptake.
- Drug-induced excess salivation
  - Clozapine has many adverse effects, including cholinergic agonism which leads to hypersalivation
  - A risk of aspiration

Page, M. and L. Somerville-Brown (2007). Australian Prescriber 30: 98-101.

Psychotropic Drugs and Dentistry

Examples of interactions between drugs used in dentistry and psychotropic drugs [2]

Dental drugs	Interacting drug(s)	Details of interaction
Non-steroidal anti-inflammatory drugs	Lithium	NSAIDs (including COX-2 selective) all have the capacity to decrease renal lithium excretion, potentially resulting in lithium toxicity
	SSRIs	Increased risk of pathological or surgery-related bleeding when combined with NSAIDs
	Sodium valproate	Combination with aspirin may have a synergistic effect on bleeding time
Opioids and tramadol	Antidepressants	Most antidepressants have the potential to cause serotonin syndrome when combined with tramadol. This effect is not necessarily dose dependent and is unpredictable and the combination should be avoided.
		Monoamine oxidase inhibitors are contraindicated in combination with tramadol and pethidine due to hypertensive and other autonomic reactions.
	Antipsychotics or tricyclic antidepressants	Tramadol may lower the seizure threshold unpredictably and should not be used.
Antibiotics	Lithium	Metronidazole has the potential to increase lithium concentrations via a decrease in renal excretion. Avoid combination.

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		avoided.
		Monoamine oxidase inhibitors are contraindicated in combination with tramadol and pethidine due to hypertensive and other autonomic reactions.
	Antipsychotics or tricyclic antidepressants	Tramadol may lower the seizure threshold unpredictably and should not be used.
Antibiotics	Lithium	Metronidazole has the potential to increase lithium concentrations via a decrease in renal excretion. Avoid combination.
	Carbamazepine	Macrolides increase carbamazepine concentration by CYP3A4 inhibition. Avoid combination.
		Carbamazepine decreases doxycycline half-life by up to 50%. Use alternative antibiotic.
	Sodium valproate	Macrolides increase valproate concentration via CYP3A4 inhibition. Avoid combination.
	Some antipsychotics, tricyclic antidepressants, fluoxetine or venlafaxine	Combination with macrolides can potentiate QT prolongation. Avoid combination.

NSAIDs	non-steroidal anti-inflammatory drugs
COX	cyclo-oxygenase
SSRIs	selective serotonin reuptake inhibitors
CYP	cytochrome P450