UVM Project ECHO: Bone Health

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Didactic presentation is recorded. Registered participants will receive the link.

The University of Vermont
LARNER COLLEGE OF MEDICINE
OFFICE OF PRIMARY CARE & AHEC PROGRAM

Project ECHO
University of Vermont

Session Agenda

- Welcome Participants and Presenters
- Objectives
- Didactic Presentation (20-30 min)
  - Q&A
- Case presentation(s)
  - Clarifying questions
  - Discussion
  - Recommendations
- Closing Announcements
  - Submission of new cases
  - Completion of evaluations

ECHO Model: All Teach, All Learn

Cohort-based learning on ZOOM

- Have your camera on as much as possible, especially when joining the meeting and during discussions
- Questions and comments are welcome – use the “raise hand” feature or put them in the chat
- This is not a webinar! Participation is key

Case-based learning

- 1-2 participant cases each session using provided template
- Contact Jennifer Kelly to present a case

Series Objectives

Learning objectives for this ECHO series include the ability to:

- Identify which patients to screen for fracture risk
- Determine who to recommend for treatment
- Discuss the different medications available to treat osteoporosis and their potential side effects

CMIE Disclosures

- University of Vermont (UVM) Office of Continuing Medical and Interprofessional Education (CMIE) is approved as a provider of Continuing Medical Education (CME) by the ACCME. UVM designates this internet live activity for a maximum of 1 ***AMA Category 1 credit***™.
- UVM CMIE is accredited by the American Nurses Credentialing Center (ANCC) to provide CE for the healthcare team. This program has been reviewed and is acceptable for up to **1 Nursing Contact Hour**.
- Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to earn up to: **1 MOC point** in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program; It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABIM or ABP MOC credit.

Participants should claim only the credit commensurate with the extent of their participation in the activity.

CMIE Disclosures

Interest Disclosures: As an organization accredited by the ACCME to sponsor continuing medical education activities, UVMCMIE is required to disclose any real or apparent conflicts of interest (COI) that any speakers may have related to the content of their presentations.

Meeting Disclaimer: Regarding materials and information received during this educational event, the views, statements, and recommendations expressed during this activity represent those of the authors and speakers and do not necessarily represent the views of the University of Vermont.

MRONJ: A Dental Perspective

Justin Hurlburt, DMD

2/17/23

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Session Objectives

- Identify the drugs which are at the highest risk to cause MRONJ
- Discuss the risk factors for MRONJ and how to educate patients about these factors
- Understand risk percentages of MRONJ for different drugs
- Understand which patients should have a dental exam and clearance prior to starting medication therapy

Overview of Medications:

- Bisphosphonates:
  - Oral- Fosamax (alendronate)-96% of cases from oral Bps are related to Fosamax according to Marx, Actonel (risendronate)- used for fracture reduction in patients with osteoporosis/osteopenia
  - Parenteral- Reclast (zolendronate), Boniva (ibandronate)- same uses as above, plus Paget's disease, Osteogenesis Imperfecta
  - **Half life - 11+ years**

- Rank-L Inhibitors:
  - Xgeva (denosumab)/ Prolia- antiresorptive- inhibits osteoclasts in resorption sites, PLUS in blood and other tissue spaces such as marrow to kill osteoclast precursors as well. Therefore- MRONJ cases will be sooner and more severe.
    - Given Sub Q every 1-6 months- reduces pathologic fractures and skeletal related events in patients with solid tumors
    - Do not bind to bone- effects mostly gone after the 6 months
    - **Half life 26 days, so drug holidays are wise.**

MRONJ Definitions:

1) Current or previous treatment with antiresportives or combo with immune modulators or antiangiogenics

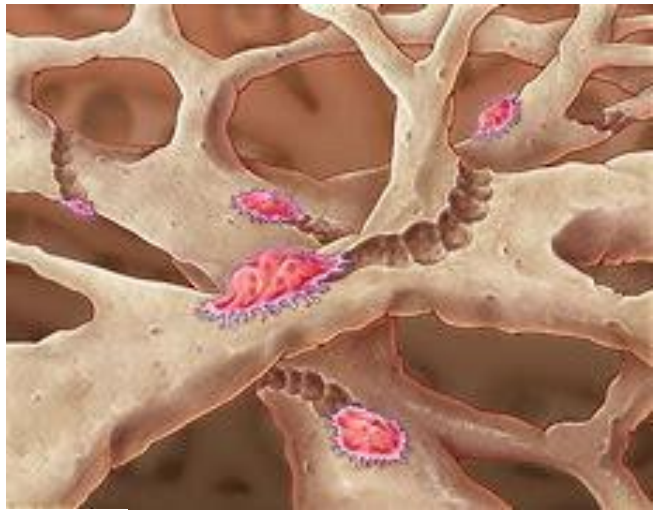
2) Exposed bone or bone that can be probed through a fistula that has been persistent for 8 weeks

3) No history of radiation or metastatic disease of the jaws

Cause/Physiology:

Causes:

- Multifactorial
- Definitive causality very difficult to prove
- This is a rare disease process



Pathophysiology(?):

- Bone remodeling inhibition (direct effect)
- Inflammation or infection (teeth with preexisting PARL)
- Angiogenesis inhibition
- Immune dysfunction
- Genetic predisposition
- (likely need Antiresportive med PLUS inflammation or infection for disease progression)

Four Critical Risk Factors:
1) THE DRUG

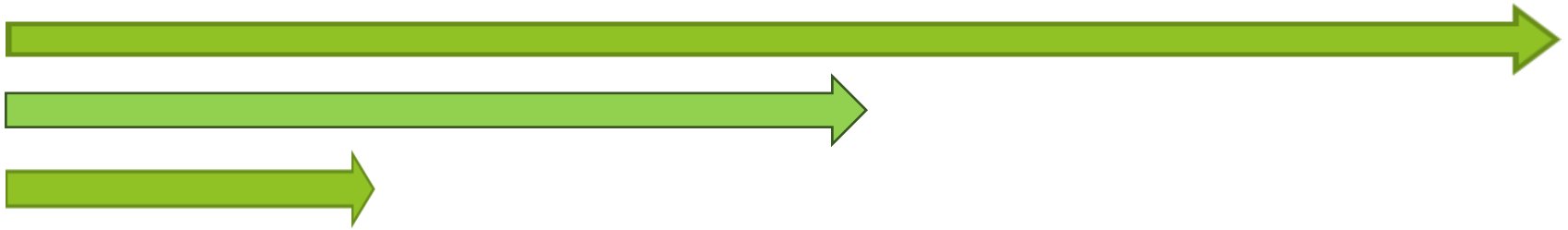
- Dose/potency-
  - (ie- Fosamax (alendronate) is high dose, highest potency-→ more MRONJ cases)
- Frequency
- Half life
- Duration of Use:
  - for oral BPs-under 2 years is safest
  - For IV BPs- **4 doses is the line for very increased risk**

Relative Risk according to Marx:

- HIGH RISK:
  - Denosumab (Prolia) 120mg
  - Alendronate (Fosamax) 70mg
  - Zolendronate (Reclast, Zometa) 4mg
- LOW RISK
  - Ibandronate 150mg
  - Risendronate 35 mg
- NO RISK
  - ➢Vit d plus calcium, Raloxifene, Strontium, rhPTH class

Duration of medication as a risk factor:

- Reclast: 1 year .5% 2 years 1.0% 3 years 1.3%
- DMB 1 year .5% 2 years 1.8% 3 years 1.8%



- For oral BPs - duration may be a risk factor, but overall risk remains low, so:

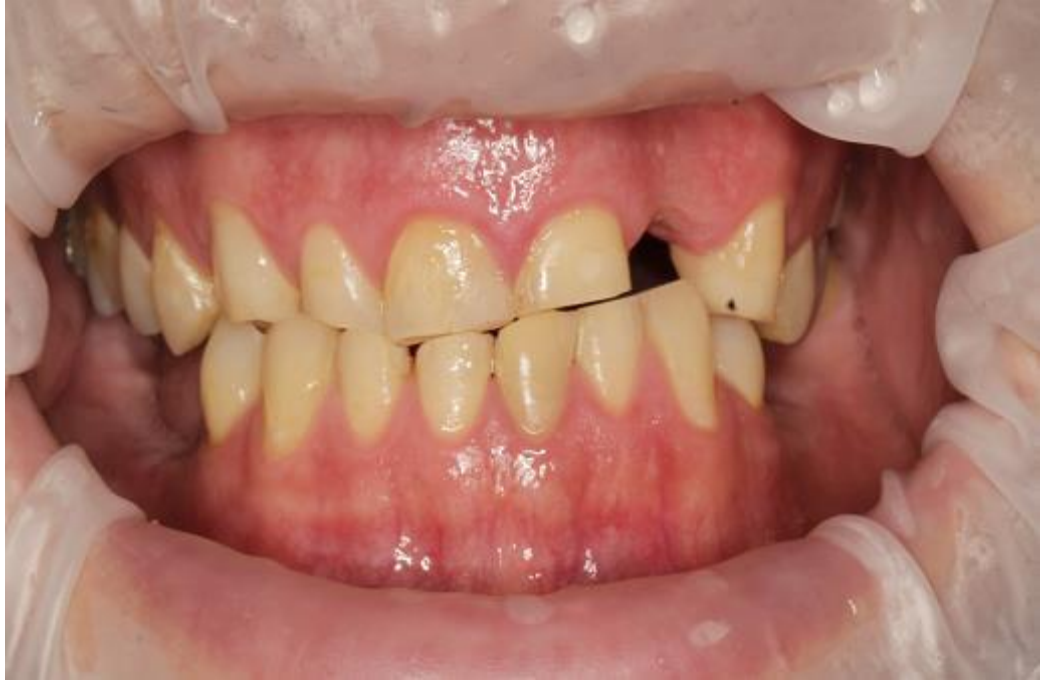
  *****very low risk for any oral BP for osteoporosis******

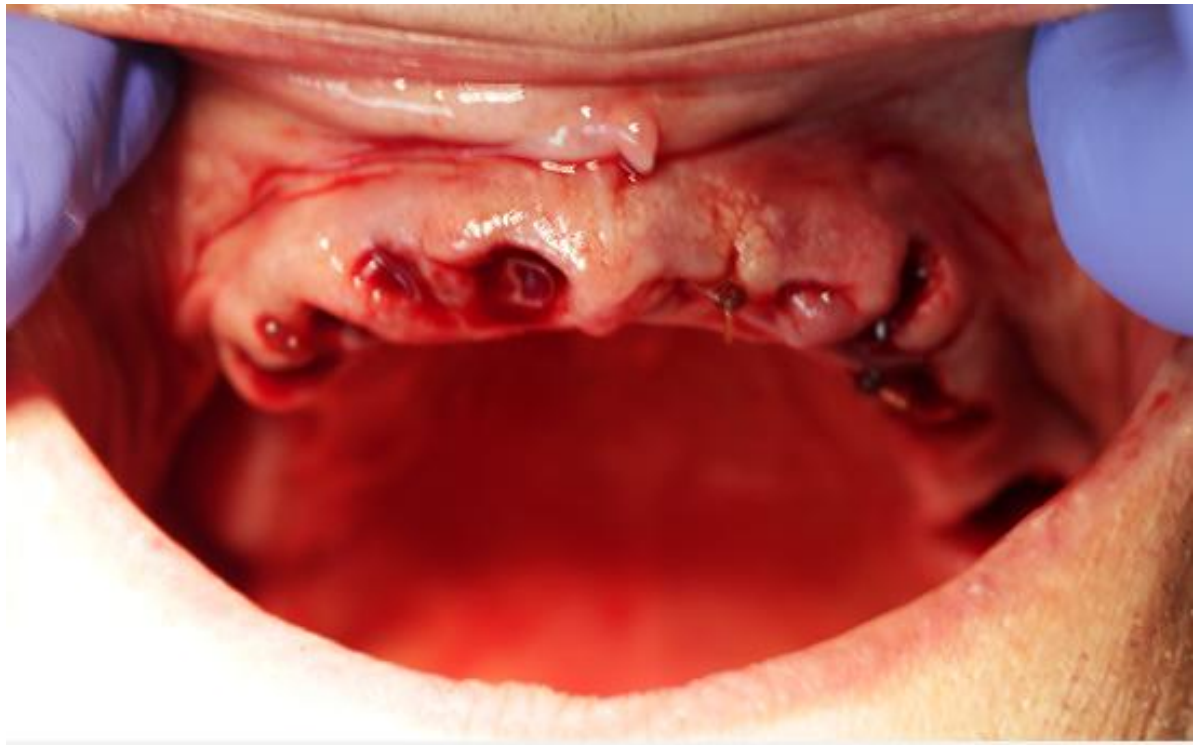
Four Critical Risk Factors: 2) THE Precipitating factor

- Occlusion
- Extraction

Over 94% of cases in hospital OMFS practice were cause by these two

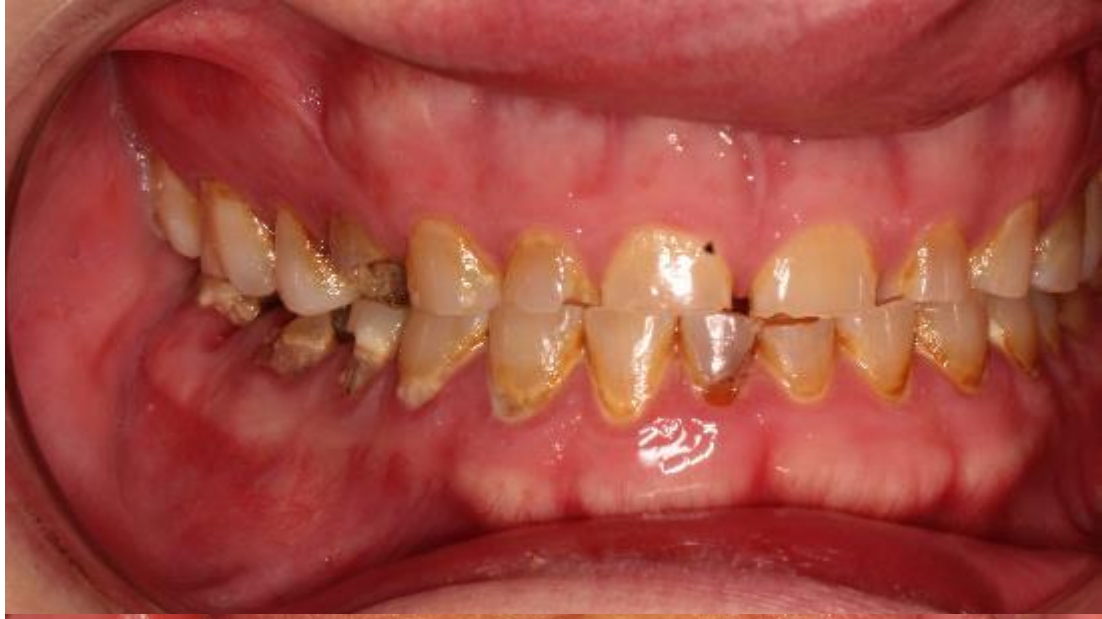
- Implant placement
- Periodontal Surgery
- Biopsy
- Apicoectomy

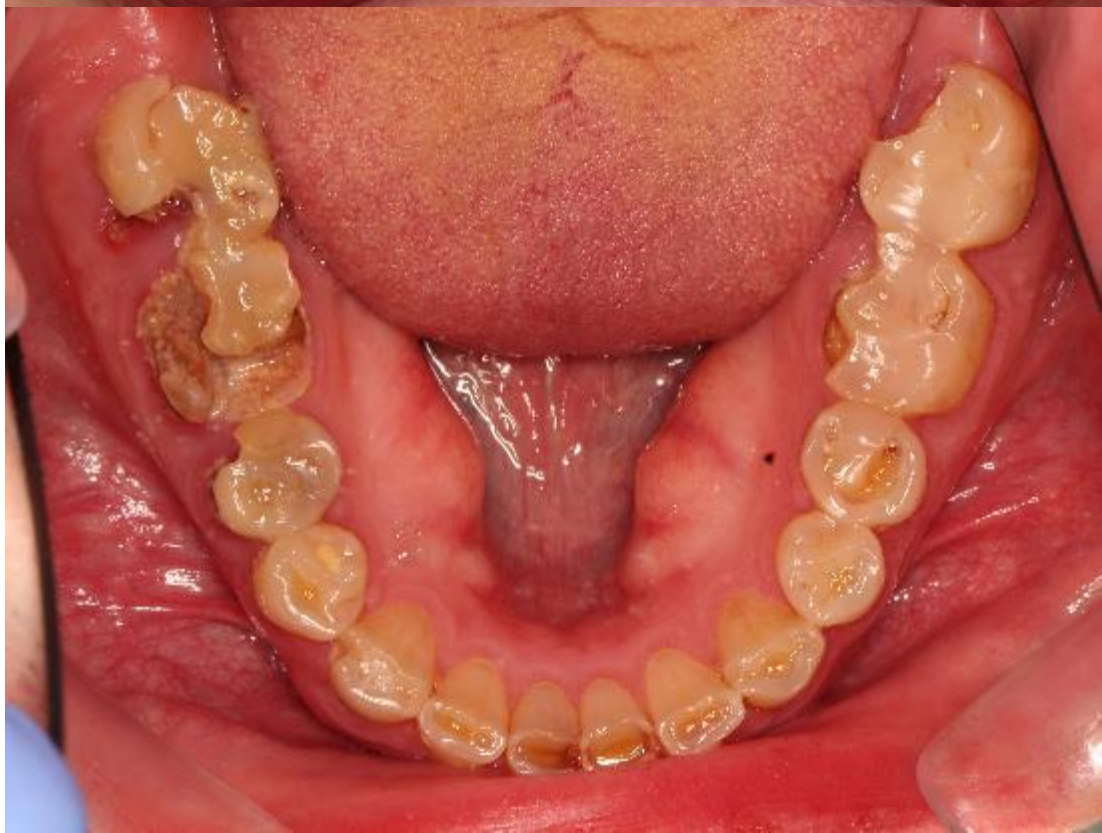




Four Critical Risk Factors: 3) THE SITE

- Alveolar bone
- Tori
- Mandible (specifically lingual cortex)





3) THE SITE

Anatomic Factors:

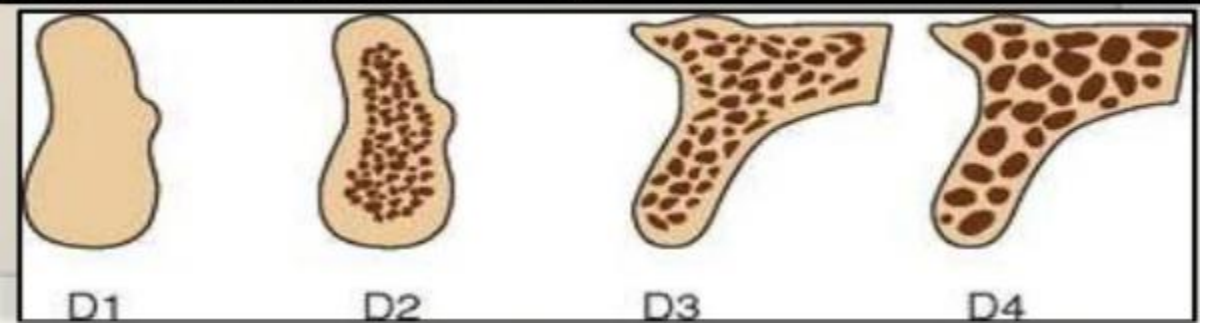
- 75% in mandible (thicker, dense bone), 25% in maxilla
- 4.5% of cases in both jaws
- Dentures INCREASE risk

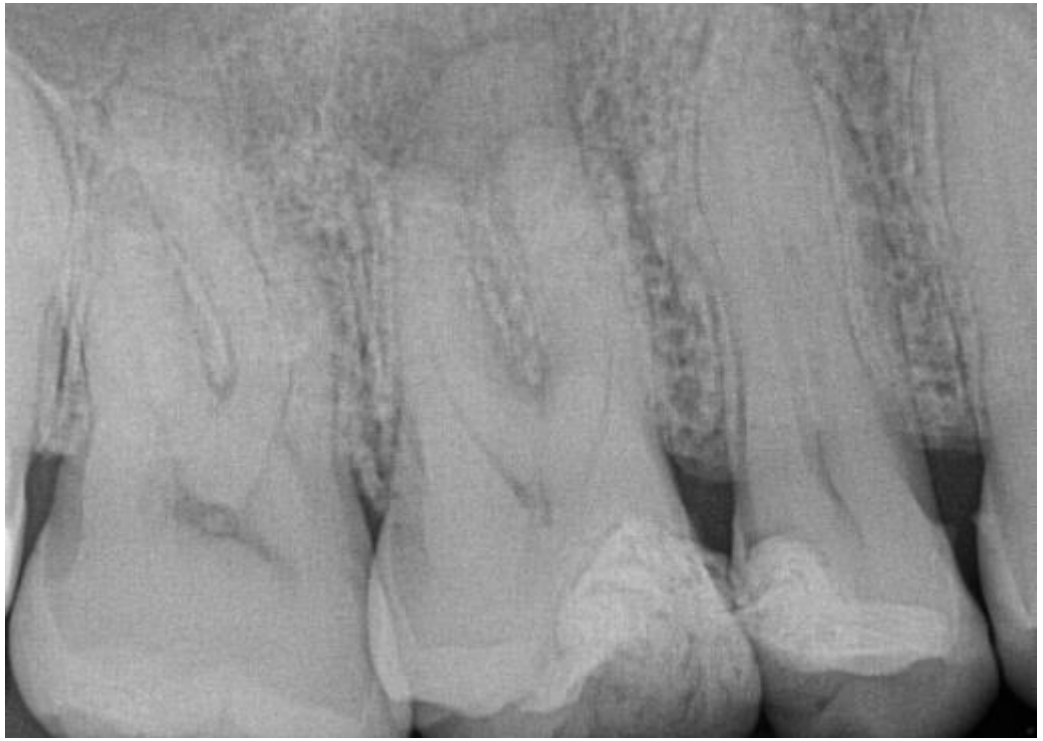
Preexisting Dental Disease:

- Increases possibilities on MRONJ
- Extraction may just “expose” areas of MRONJ as opposed to being cause
- PARL/infection/inflammation possible causation

MISCH BONE DENSITY CLASSIFICATION:

D1	Dense cortical bone	Anterior mandible Posterior mandible
D2	Dense to porous cortical bone surrounding dense trabecular bone	Anterior mandible Posterior mandible Anterior maxilla
D3	Thin porous cortical bone surrounding fine trabecular bone	Anterior maxilla Posterior maxilla
D4	Fine trabecular bone	Posterior maxilla
D5	Immature, nonmineralized bone	





Four Critical Risk Factors:
4) Co-Morbidities

- Other drugs
- Obesity
- Smoking
- Diabetes
- Periodontitis

THESE ONLY CAUSE ONJ TO OCCUR SOONER, MORE SEVERE, AND MORE EXTENSIVE

Prevention of ONJ in the Osteoporosis (BP) patient:

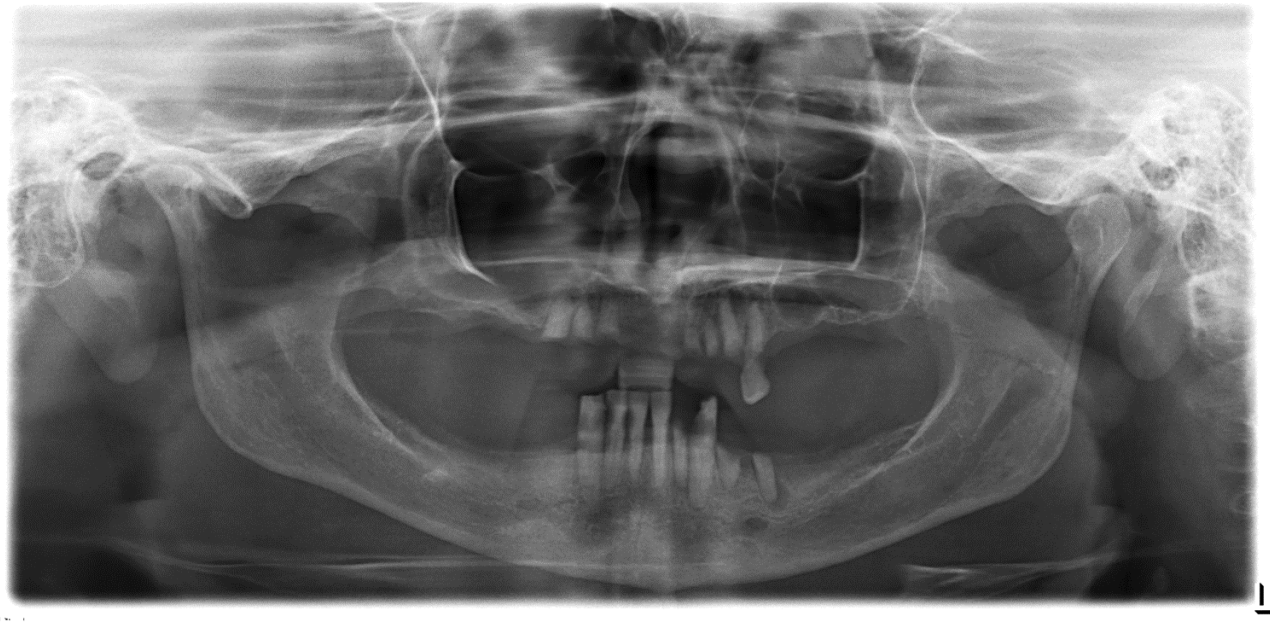
(typically mid 50s Caucasian or Asian female)

- **Non-invasive dentistry is safe at all times**
- Possible Drug holidays for procedure involving bony manipulation:
  - RANKL inhibtors: 4 month drug holiday- wait 3 months after
  - BPs (Fosamax especially): 9 month drug holiday- wait 3 months after
  - Combo therapy of BP and then RANKL- holidays won't do any good due to amount of affected bone present.
  - Will do most surgeries (implants, exos, etc) while clearly explaining the possibilities and risk of the procedures.

Prevention of ONJ in the Cancer patient:

PRIOR TO BP/RANKL INHIBITOR THERAPY:

- remove any questionable or hopeless teeth
- cleaning and periodontal treatment
- treat any dental caries
- No Heroics!
- splint mobile teeth, equilibrate occlusion, Night guards for clenching/grinding



Other “Simple” Prevention Strategies:

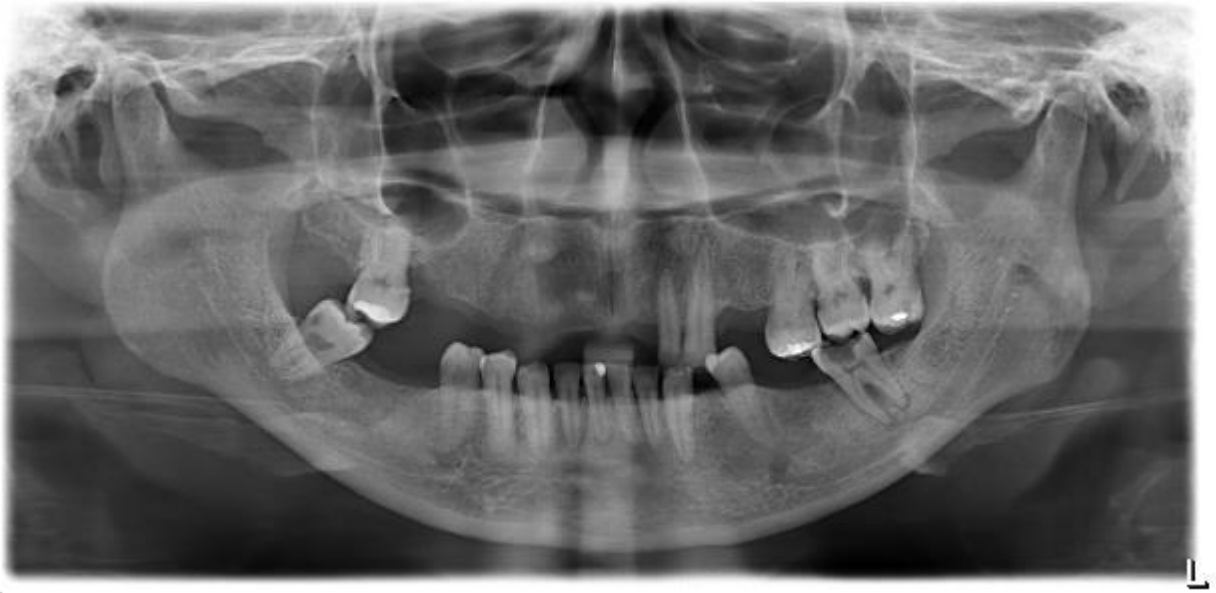
1) Perform high risk surgeries prior to therapy when possible

2) Consider pre/post op antibiotics and antimicrobial rinses

3) Goal would be primary closure in all surgical sites

4) MAINTENANCE OF IMMACULATE ORAL HYGIENE

5) maintenance of good overall health- for example: quitting smoking, controlled diabetes and HTN, etc.



Management of MRONJ According to Marx:

- The goals of management of MRONJ should be prevention, along with prioritization and support of continuation of oncological treatment. Also including prioritization and support of continued bone health to prevent fractures and skeletal related events to preserve quality of life.

(Surgical goals: Remove necrotic bone, remove sources of discomfort (secondary infection), rebuild, reconstruct)

For the Patient:

Educate about Symptoms, Risk Factors, and Risk Stratification

RISK FACTORS

Researchers estimate that 10 of 100 people with cancer who have taken these medications develop MRONJ.[1] For those taking these medications for osteoporosis this number drops to 1 in 10,000.[2]

Other factors that increase the risk of developing MRONJ include[3]

- being older than 65 years
- periodontitis
- smoking
- ill-fitting dentures
- diabetes

SYMPTOMS OF MRONJ

Symptoms of MRONJ include[4]

- pain, swelling, or infection of the gums or jaw
- loose teeth
- numbness or a feeling of heaviness in the jaw
- gums that do not heal or bone that does not have gum tissue protecting it

Educate about Prevention Strategies

In addition to seeing your dentist, good dental care at home is important:

- brush your teeth twice a day with a fluoride toothpaste
- clean between your teeth daily
- eat a healthy diet that is low in sugar

"**What is MRONJ- For the Patient." JADA 152(8). August 2021. p. 710.**

Other risk factors:

"What is the risk of my patient getting MRONJ?"

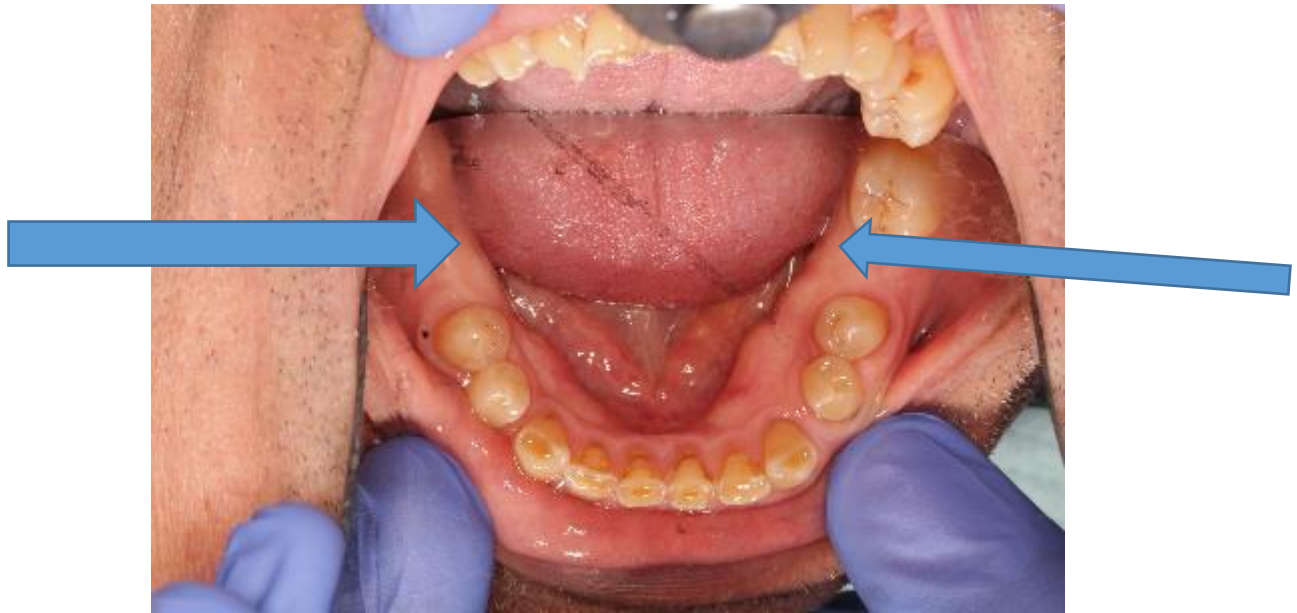
- Osteoporotic patients: 0-.15%
- Xgeva (DMB) patients : 1%
- Cancer pts exposed to BPs: 1.6-14.8% (most results cluster from 1-5%)

"So what do we tell the patients about risks?"

- endo/perio procedures, unknown risk
- Caution implant placement and similar surgeries in cancer patients, and osteoporosis patients should be notified of potential risks- although low, and notify them of possible MRONJ development, or early/late implant failure.

Final Overall considerations:

- Preop dental evaluation is a must!
- Delay antiresorptives IF POSSIBLE until sockets/sites are closed
- Pay close attention to these patients, decreased recall intervals, even for those with dentures. (Specifically mandibular lingual flange areas)



References:

1) AAOMS Position Paper: Medication Related Osteonecrosis of the Jaw-2022 Update. Ruggerio, S et al. released 2022.

2) Marx, Robert E. Osteonecrosis of the Jaw and What to do About it. www.aaoms.org/ce/products/osteonecrosisofthejawsandwhattodoaboutit. Released 2020, October.

3) Carlson, Eric. Medication Related Osteonecrosis of the Jaws Update. www.aaoms.org/ce/products/medicationrelatedosteonecrosisofthejaws. Released 2021, October.

4) https://www.ada.org/resources/research/science-and-research-institute/oral-health-topics/osteoporosis-medications

5) What is MRONJ- For the Patient." JADA 152(8). August 2021. p. 710

Questions??

Case Presentation

Bringing Knowledge to Action through interactive, case-based discussions

Participant presents the case and poses the question(s) for the group

↓

Clarifying questions about the case from group to case presenter

↓

Ideas, suggestions, recommendations from participants

↓

Ideas, suggestions, recommendations from ECHO faculty team

↓

Full group discussion

↓

Summary and wrap-up by facilitator

Case Presentation

DO <u>NOT</u> INCLUDE:

Names, Address, DOB, Phone/Fax #, Email address, Social Security #, Medical Record #

Consider the level of detail necessary. Go with less when possible.

The discussion and materials included in this conference are confidential and privileged pursuant to 26VSA Section 1441-1443. This material is intended for use in improving patient care. It is privileged and strictly confidential and is to be used only for the evaluation and improvement of patient care.

Case

DATES	SESSION	DIDACTIC TOPICS (in addition to case review)
January 20	TeleECHO Session #1	**Osteoporosis in Men** (Ugis Gruntmanis, MD)
February 17	TeleECHO Session #2	**Dental perspective on Osteonecrosis of the Jaw** (Justin Hurlburt, DMD)
March 17	TeleECHO Session #3	**Parathyroid disorders/bone health** (Samantha Steinmetz-Wood, MD)
April 21	TeleECHO Session #4	**Update on Vitamin D** (David Felske, MD)
May 19	TeleECHO Session #5	**Stress fractures** (Ayesha Arif, MD)
June 16	TeleECHO Session #6	**Metabolic Bone changes after bariatric surgery** (Donald Skor, MD)

Closing Announcements

- Confirm case presenter(s) for next session
- Slides are posted at www.vtahec.org
- Recording of didactic portion will be sent by email to the full cohort
  - For the use of registered participants only
- Please complete evaluation survey after each session
- CE information and QR Code will be sent once evaluation is received
- Please contact us with any questions, concerns, or suggestions:
  - Jennifer.Kelly@uvmhealth.org
  - Patti.Smith-Urie@uvm.edu