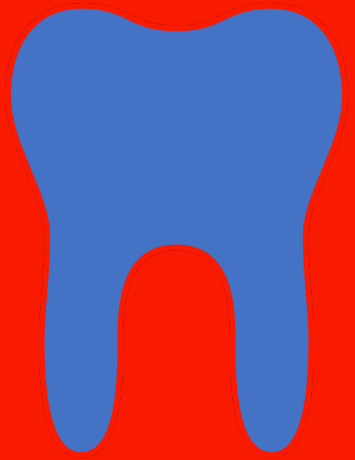
Evidence Based Dentistry Rounds

Collaborative Care

Group 8A-2

11/18/2020



Rounds Team

- **Group Leader: Dr. Toburen**
- **Specialty Leader: Dr. Yale**
- **Project Team Leader: Ardit Haxhia**
- **Project Team Participants: Claudia VanOpdorp, Megan Hunjadi, Matthew Boeker**

Patient Background

- 68yo African American female
- Chief Complaint: comprehensive care
- Patient has visited the school for routine care, periodontal, and prophylactic maintenance
- Unilateral firm mass was palpated in lower right mandible

Medical History

- Multiple sclerosis
- Asthma
- Hypertension
- High cholesterol
- History of:
  - Pulmonary embolism
  - Cervical cancer
  - Cardiac catheterization
  - Shingles
  - Knee pain
  - Smoking

Medications

- Benazepril
- Doxazocin
- Apixaban
- Topiramate
- Gabapentin
- Teriflunomide
- Albuterol
- Pravastatin
- Methylphenidate
- Fluticasone
- Calcium and Multivitamin

Dental History

- Patient wears maxillary RPD
- History of:
  - Extraction
  - Implants
  - RCT
  - Crowns, FPD, RPD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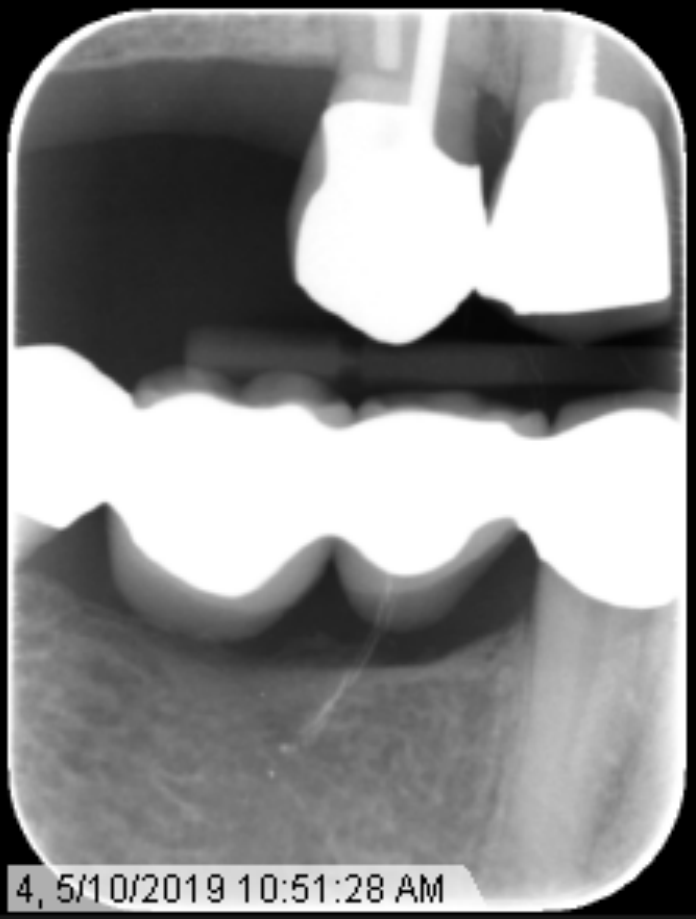
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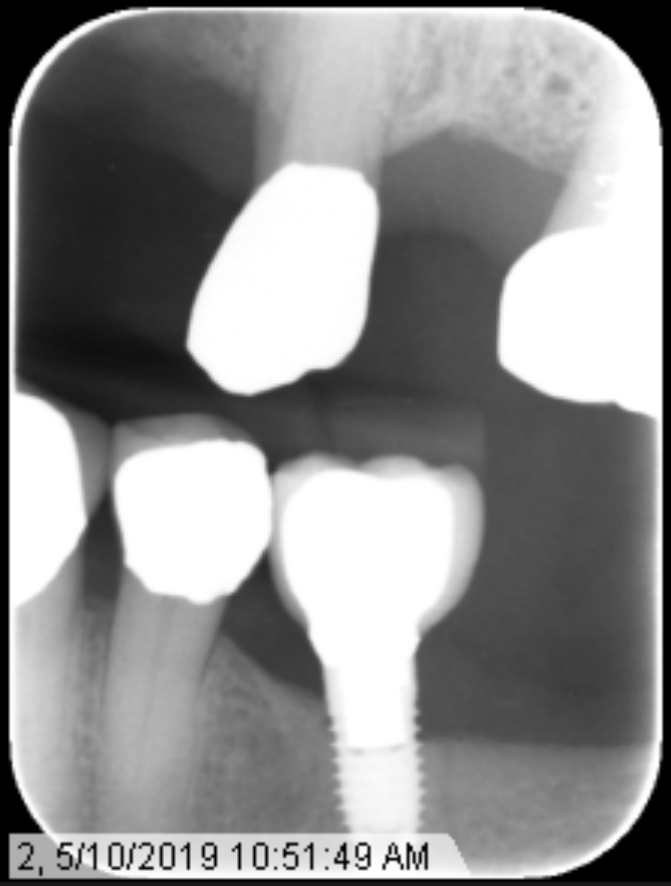
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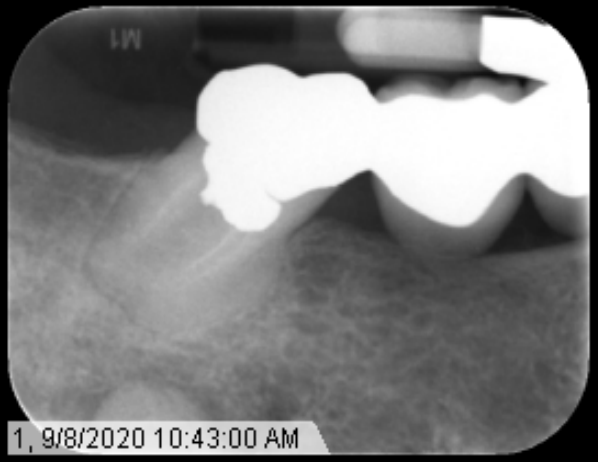
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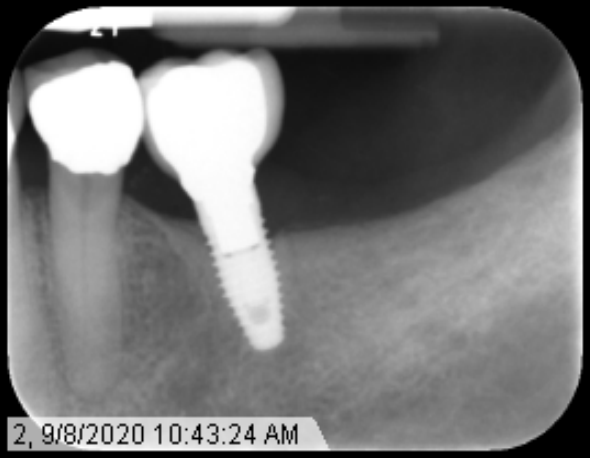
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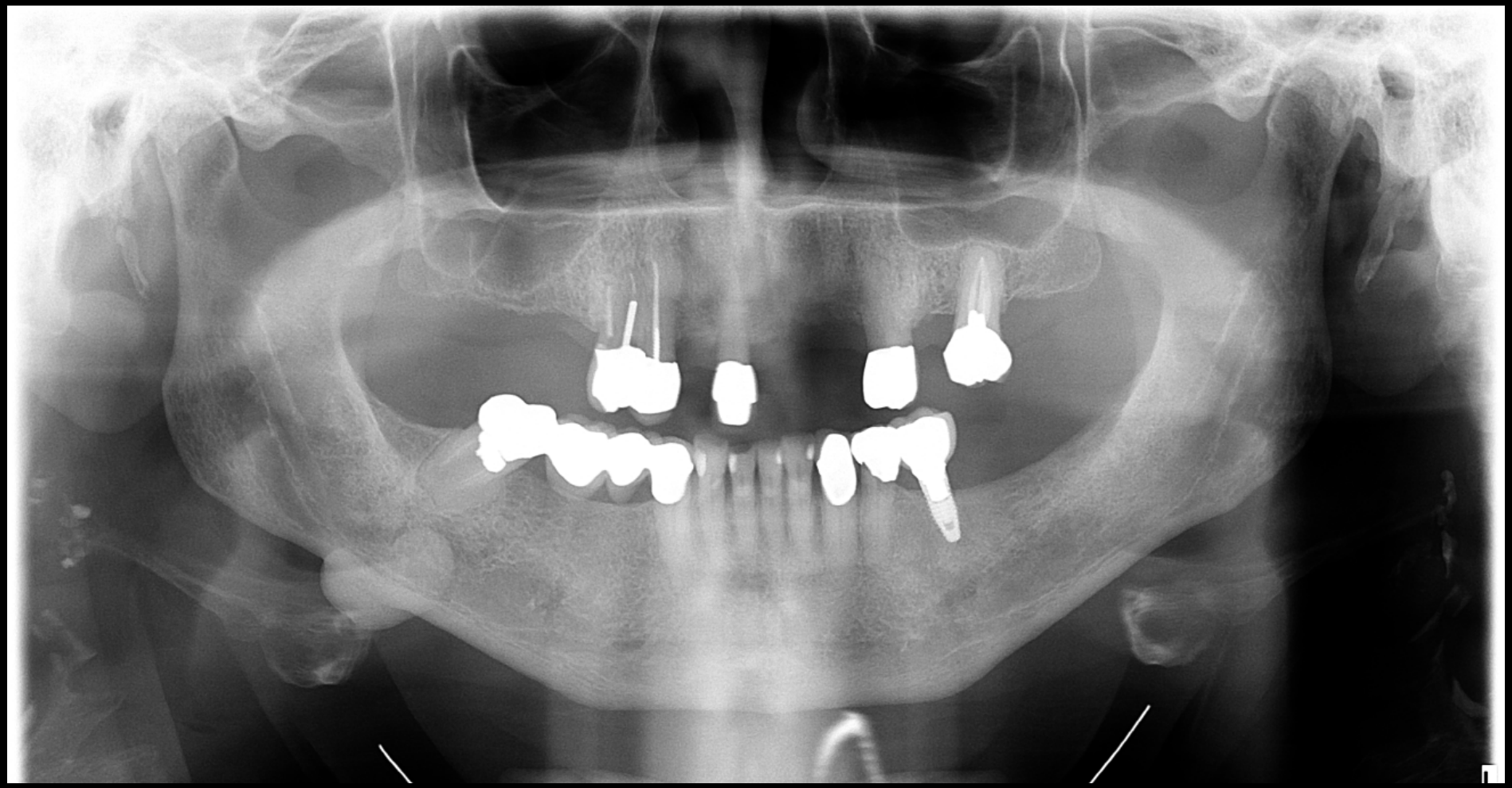
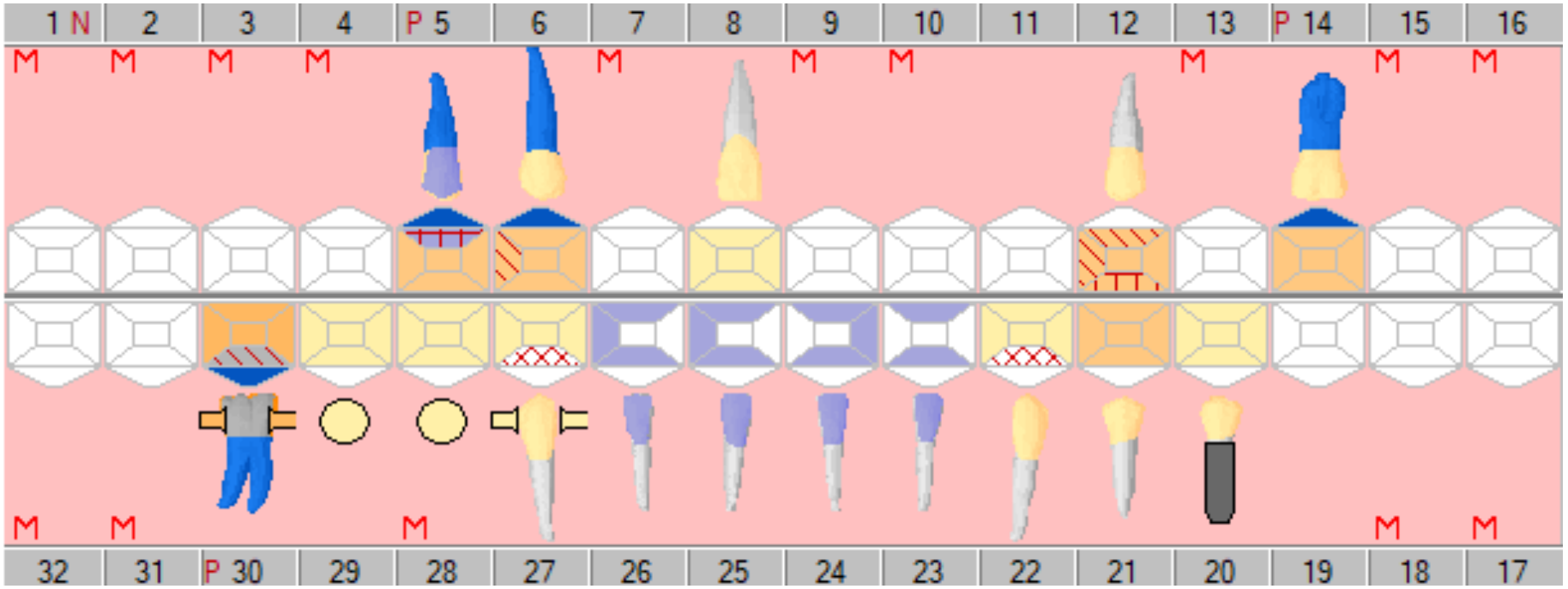


Radiographic Findings

- Generalized bone loss
- Implant on #19
- RCT treatments 5, 6, 14, 30
- Opaque, smooth, lobulated mass of homogeneous density overlapping the right posterior mandible

Clinical Findings

- Caries: #21 B, #23 DB, #26 M
- Abfractions: #21, #27
- Attrition on lower anteriors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Odontogram

																BOP
				5 5 5	6 6 6		9 9 9				4 4 4		3 3 3			MGJ
				3 3 4	3 1 2		3 2 4				2 3 2		4 2 5			CAL
				2 1 4	3 1 2		2 1 3				2 2 2		2 1 3			P.D.
				1 2 0	0 0 0		1 1 1				0 1 0		2 1 2			FGM
1 N	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
				0 0 0	0 0 0		0 0 0				0 0 0		0 0 0			FGM
				5 1 3	3 1 2		3 2 3				3 2 2		3 2 3			P.D.
				5 1 3	3 1 2		3 2 3				3 2 2		3 2 3			CAL
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																PROGNOSI
																FURCA
		P P P			P P P	P P P	P P P	P P P	P P P	P P P	P P P	P P P				PLAQUE
																BOP
																MGJ
		2 1 3			2 1 3	3 3 3	3 2 3	2 2 2	2 2 2	3 3 3	2 3 3	3 4 2				CAL
		2 1 3			2 1 3	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 3	3 1 2				P.D.
		0 0 0			0 0 0	1 2 1	1 1 1	0 1 0	0 1 0	1 2 1	0 2 0	0 3 0				FGM
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	
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		4 4 5			4 2 3	4 3 4	2 1 2	2 1 2	2 1 2	3 2 3	4 3 4	2 2 3				CAL
		2 2 2			5 5 5	5 5 5	4 4 4	4 4 4	5 5 5	4 4 4	3 3 3	4 4 4				MGJ
																BOP
		P P P			P P P	P P P	P P P	P P P	P P P	P P P	P P P					PLAQUE
																FURCA

Differential Diagnosis

- Sialolith
- Osteoma

Collaborative Care

- Patient requires CBCT for definitive diagnosis
- Patient does not have dental insurance, but she does have medical insurance
- Discussed possibility of using medical insurance through an ENT referral
- ENT consult obtained for rounds, and the leading differential is sialolith

D1: Basic Science

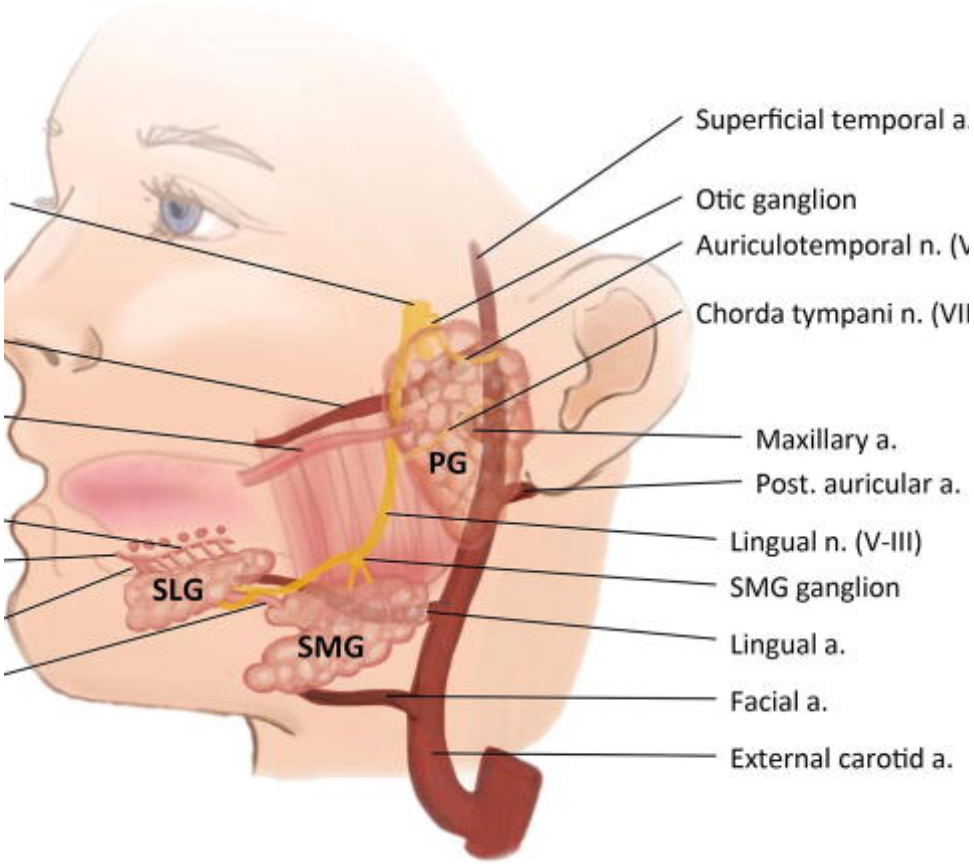
Major Salivary Glands of The Oral Cavity

- Three major salivary glands come in pairs.
- The Parotid gland excretes saliva through the Stensen's duct into the buccal mucosa near the second maxillary molar.
- The Submandibular gland excretes saliva through the Wharton's duct.
- The Sublingual gland excretes saliva through the Bartholin's duct.
- The Wharton's and Bartholin's ducts connect at the sublingual caruncula located under the tongue by the lingual frenulum.

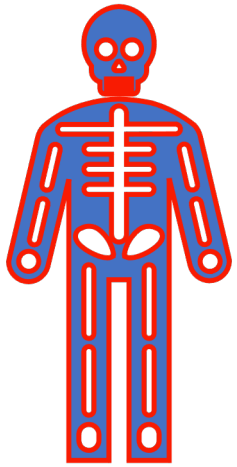
Holmberg, Kyle V, and Matthew P Hoffman. "Anatomy, biogenesis and regeneration of salivary glands." *Monographs in oral science* vol. 24 (2014): 1-13. doi:10.1159/000358776

Porcheri C, Mitsiadis TA. Physiology, Pathology and Regeneration of Salivary Glands. *Cells*. 2019; 8(9):976.

Major Salivary Glands of the Oral Cavity



Holmberg KV, Hoffman MP. Anatomy, biogenesis and regeneration of salivary glands. *Monogr Oral Sci.* 2014;24:1-13. doi:10.1159/000358776



D2: Pathology

Pathophysiology of Sialolithiasis

- Calcification of debris that forms within the ducts of the salivary glands.
- Unclear as to what triggers them.
- Most common in the submandibular gland duct (Wharton's Duct) because secretions there are thicker and move against gravity.
- Usually solitary
- Swelling/ pain before/while eating a meal is characteristic.

Neville, B.W., Damm, D.D. Allen, C.M. Chi, A.C. (2016) Oral and Maxillofacial Pathology, Fourth Ed. St. Louis, MO: Elsevier

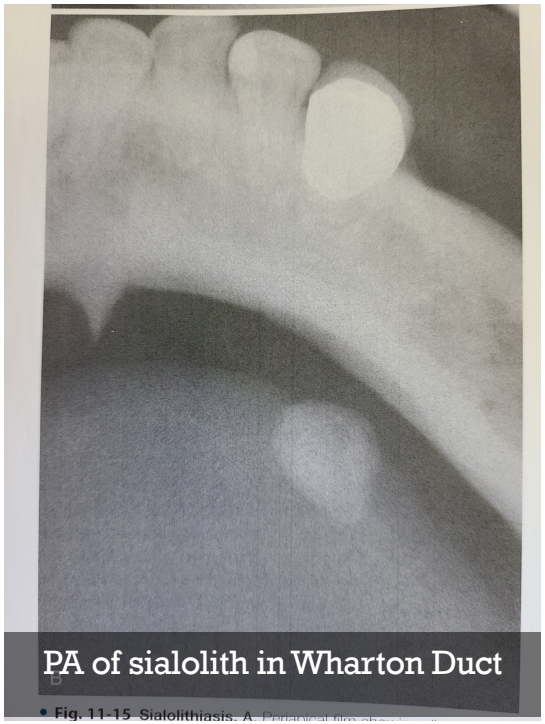
Pathophysiology of Sialolithiasis

- Radiopaque laminated masses sometimes difficult to see on radiographs.
- Sialography, ultrasound and CT may be helpful.
- If superficial stone may be palpable, when removed will appear yellow-white or yellow-brown color.
- Small stones can be passed with techniques like massage, sialagogues, moist heat, higher fluid intake, patient may be prescribed antibiotics, anti-inflammatory medication.
- Larger stones need to be removed surgically.
- Lithotripsy, sialendoscopy also possible options.

Neville, B.W. Damm, D.D. Allen, C.M. Chi, A.C. (2016) Oral and Maxillofacial Pathology, Fourth Ed. St. Louis, MO: Elsevier

Major Salivary Glands of the Oral Cavity

Sialolith at the opening of Wharton Duct



PA of sialolith in Wharton Duct

• Fig. 11-15 Sialolithiasis. A

Holmberg KV, Hoffman MP. Anatomy, biogenesis and regeneration of salivary glands. *Monogr Oral Sci.* 2014;24:1-13. doi:10.1159/000358776

D3: PICO

D3 PICO

- Clinical Question:
- What is the progression and maintenance of salivary gland disease and its effects on dental management?

PICO Format

P: Patients with submandibular sialolithiasis

I: Less invasive techniques such as endoscopy, extracorporeal shockwave lithotripsy and transoral stone removal

C: Submandibular gland resection

O: Better outcome for the patient

PICO Formatted Question

- In patients with submandibular sialolithiasis, do less invasive techniques such as endoscopy, extracorporeal shockwave lithotripsy and transoral stone removal versus submandibular gland resection provide a better outcome for the patient?

Clinical Bottom Line

- In regards to removal of submandibular salivary stones, the more conservative options are favorable to gland resection as long as the stone is removed and problems don't persist

Search Background

- **Date(s) of Search:** 11/02/2020
- **Database(s) Used: PubMed**
- **Search Strategy/Keywords:** Sialolithiasis, submandibular gland resection, endoscopy

Search Background

- MESH terms used: Submandibular gland disease, treatment outcome, human

Article 1 Citation, Introduction

Zenk J, Koch M, Klintworth N, König B, Konz K, Gillespie MB, Iro H. **Sialendoscopy in the diagnosis and treatment of sialolithiasis: a study on more than 1000 patients**. Otolaryngol Head Neck Surg. 2012 Nov;147(5):858-63.

Study Design: Case Series

Study Purpose: To look at the algorithm for conservative treatment of salivary stones in conjunction with endoscopy

Article 1 Synopsis

Methods: 1154 pts with suspected sialolithiasis were analyzed for stone size, location, surgical location, surgical method, complications, and short and long term resolution

Results: Of the SMG stones treated, transoral stone removal was used in 92% of pts, endoscopy was used in 5% of pts, with success rates above 90% and only 4% of pts needed SMG resection.

Article 1 Synopsis cont.

Conclusion: Endoscopy is an important tool in the treatment of salivary stones, but most pts need a combination of therapy for the ideal outcome.

Limitations: Level 5 evidence, published in 2012, mean diameter for transoral stone removal was 9.1mm

Article 1 Selection

Reason for selection: Gave percentages of success rates for different techniques of SMG stone treatment.

Applicability: Reenforced that transoral stone removal had high success rates for SMG stone removal.

Implications: Would tentatively recommend transoral stone removal based on size of stone for patient.

Article 2 Citation, Introduction

Jadu, Fatima M, and Ahmed M Jan. "**A meta-analysis of the efficacy and safety of managing parotid and submandibular sialoliths using sialendoscopy assisted surgery**." Saudi medical journal vol. 35,10 (2014): 1188-94.

Study Design: Meta-analysis

Study Purpose: To review the techniques of salivary stone removal with an emphasis on the safety and efficacy of the procedure

Article 2 Synopsis

Methods: Systematic search of MEDLINE, EMBASE and Cochrane library for articles relating to sialolithiasis removal and the success rates

Results: Found that for SMG stones, the success rates for conservative approaches was 92.8% with very few complications reported.

Article 2 Synopsis cont.

Conclusion: Sialendoscopy, when combined with transoral stone removal is very safe and efficacious.

Limitations: Published in 2014

Article 2 Selection

Reason for selection: Meta analysis that looked at complications of total gland resection and the safety of conservative gland surgery

Applicability to your patient: Very applicable, even included a study that had a SMG stone 23mm in diameter

Implications: Transoral stone removal is a safe and effective means to treat SMG sialolithiasis

Article 3 Citation, Introduction

Xiao JQ, Sun HJ, Qiao QH, Bao X, Wu CB, Zhou Q. **Advantages of submandibular gland preservation surgery over submandibular gland resection for proximal submandibular stones**. Oral Surg Oral Med Oral Pathol Oral Radiol. 2018 May;125(5):e113-e117

Study Design: Randomized Control Trials

Study Purpose: Compare surgical outcomes of conservative extraoral surgery and resection of the SMG for treatment of sialolithiasis

Article 3 Synopsis

Methods: 40 pts with SMG sialolithiasis were randomly assigned to one of two groups, either sialendoscopy assisted extraoral surgery or traditional SMG resection.

Results: Operation time, hospital stay, VAS pain scoring and facial deformity all had more favorable outcomes in the sialendoscopy assisted extraoral surgery than the SMG resection.

Article 3 Synopsis cont

Conclusion: Even sialendoscopy assisted extraoral surgery has many advantages to complete gland resection.

Limitations: Number of pts was small and long term tracking is still needed

Article 3 Selection

Reason for Selection: Randomized control trial that directly compared sialendoscopy assisted conservative surgery to SMG resection.

Applicability: Very applicable, as it showed the negative effects of total gland resection versus conservative surgery, even if it was extraoral.

Implications: If transoral stone removal is not an option for the pt based on size or position of the stone, extraoral surgical removal still offers many benefits over total gland resection

Article 4 Citation, Introduction

Eun, Y.G., Chung, D.H. and Kwon, K.H. (2010), **Advantages of intraoral removal over submandibular gland resection for proximal submandibular stones**. The Laryngoscope, 120: 2189-2192.

Study Design: Randomized Control Trials

Study Purpose: To compare outcomes of transoral SMG stones versus traditional SMG resection

Article 4 Synopsis

Methods: 44 pts with proximal submandibular stones were divided into 2 groups, one of which underwent transoral stone removal and the other received SMG resection.

Results: Operation time, hospital stay and post op pain were all significantly favorable in patients in the transoral stone removal group. No long-term side effects were noted in either group for this study, including dry mouth.

Article 4 Synopsis cont

Conclusion: Due to the significantly shorter operation time, recovery time and post op pain, transoral stone removal is a better option for SMG stone removal than total gland resection.

Limitations: Small number of pts, Published in 2010, mean size of stone removed was significantly different between the two groups

Article 4 Selection

Reason for Selection: Directly compared transoral stone removal to SMG resection

Applicability: Very applicable, this article describes the benefits of the conservative treatment over the more aggressive gland resection.

Implications: Transoral stone removal is highly favorable to total gland resection as long as the stone's size and location do not pose an issue to this approach.

- [x] **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)
- [x] **1b** – Individual RCT
- [ ] **2a** – Systematic Review of Cohort Studies
- [ ] **2b** – Individual Cohort Study
- [ ] **3** – Cross-sectional Studies, Ecologic Studies, "Outcomes" Research
- [ ] **4a** – Systematic Review of Case Control Studies
- [ ] **4b** – Individual Case Control Study
- [x] **5** – Case Series, Case Reports
- [ ] **6** – Expert Opinion without explicit critical appraisal, Narrative Review
- [ ] **7** – Animal Research
- [ ] **8** – In Vitro Research

☒	**A** – Consistent, good quality patient oriented evidence
☐	**B** – Inconsistent or limited quality patient oriented evidence
☒	**C** – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Conclusions: D3

Based on the literature, the more conservative the option the better, as long as the stone is removed and no reoccurring problems persist. However, the size and position of this patient's SMG stone might dictate resection of the entire gland.

Inform the patient of all options and have them see an ENT for definitive treatment.

Conclusions: D4

Referral to ENT for radiographs through medical insurance

Removal of stone based on radiographic findings and as advised by specialist

Discussion Questions

THANK YOU