

Grand Rounds Case Study

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Patient

Georgia McCraw

- Gender: Female
- Age: 54
- Height: 5' 6" (167.64 cm)
- Weight: 160 lbs.
- BMI: 25.82 (overweight)
- Heart Rate: 86 bpm
- Blood Pressure: 135/83 mmHg
- Occupation: Grocery Store Clerk



Original Symptoms

Georgia came into the clinic because she has been experiencing these symptoms for a while:

- Swelling the lower jaw
- Persistent pain when chewing
- Transient mild fever for the last few weeks
- Weight loss (~7 lbs over past month)
- Recent oral surgery for tooth extraction
- No reported significant injuries, including head/neck injuries

Signalment

Question: How long have you felt your symptoms?

- **Answer:** My jaw has been hurting for about a month.

Question: Do you have any preexisting conditions?

- **Answer:** No, I don't have any other health conditions and I've never had any allergies. The only health thing I've had recently is a tooth extracted a couple weeks ago.

Question: Did the pain start before your dental procedure?

- **Answer:** I don't think so. I don't remember any pain before.

Question: Are you on any medications?

- **Answer:** No, I'm not on any medications or anything.

Question: How long ago was the tooth extraction?

- **Answer:** About 6 weeks ago.

Question: Did your doctor prescribe any antibiotics or pain relievers?

- **Answer:** Yes, but I don't really like taking any medicine if I think I can handle the pain, so I haven't taken any of it.

Question: Have you traveled anywhere recently?

- **Answer:** No, I haven't gone on any trips recently.

Question: What do you do for a living?

- **Answer:** I'm a grocery store clerk.

Question: Do you drink or smoke?

- **Answer:** Yes, I have a beer a couple times a week and I do smoke cigarettes.

Initial Examination

Extraoral Findings:

- Firm and hardened (indurated) swelling on right mandibular region
- Mild redness of the skin
- Jaw tenderness

Intraoral Findings:

- Poor oral hygiene
- Bad breath (halitosis)
- Exposed socket at the location of the tooth extraction site
- Pus discharge



Primary Differential Diagnosis

- Odontogenic Abscess
- Cervicofacial Actinomycosis
- Squamous Cell Carcinoma of Oral Cavity or Jaw
- Tuberculous Osteomyelitis
- Fungal Infection (such as Mucormycosis or Histoplasmosis)

Suggested Labs and Tests



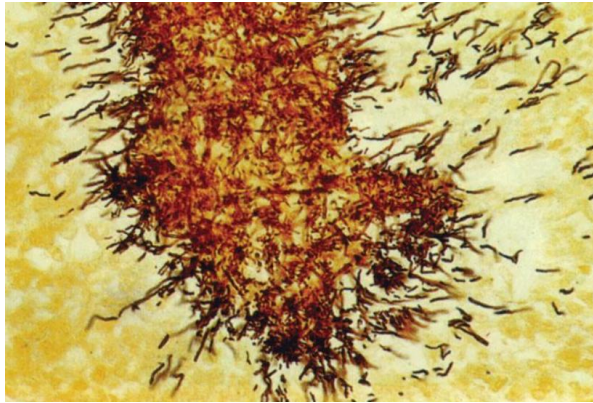
Pus Culture
& Microscopy

Microscopy & Pus Culture

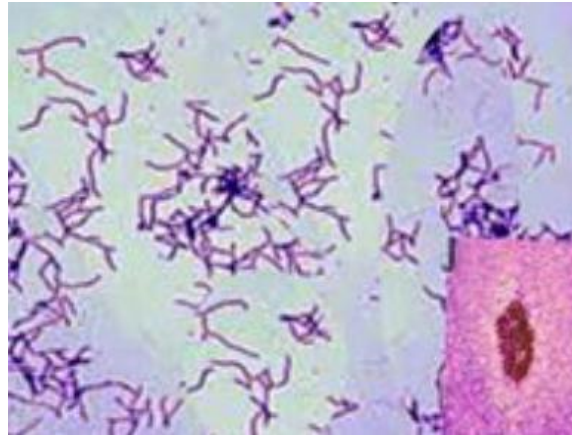
- Microscopy finds gram-positive bacilli that grow slowly under anaerobic conditions. In pus, sulfur granule had formed.
- Gram-stained smear: Beaded, branched, gram-positive filamentous rods



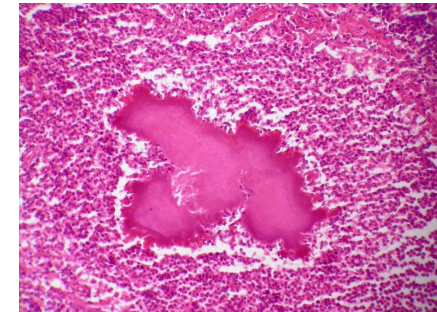
"Molar tooth" appearance of colonies on Blood Agar (Anaerobic culture)



Sulfur granule.



Filamentous rods.



Gram stain. Colony of Actinomyces surrounded by macrophages.

Imaging



Panoramic Dental X-Ray

It's the third planet from the Sun

CT Scan (Maxillofacial)

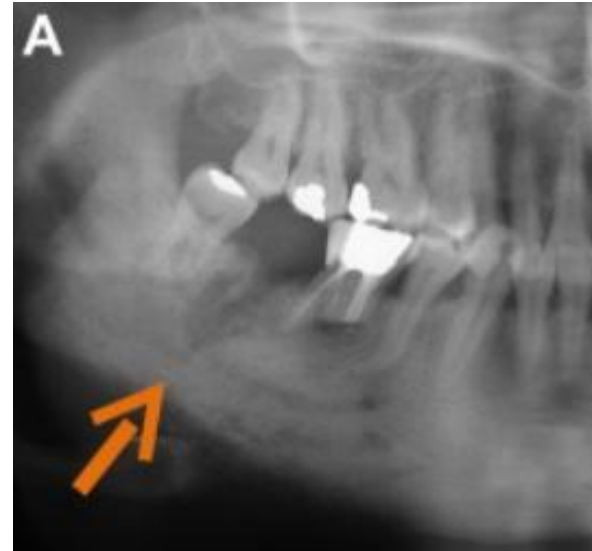
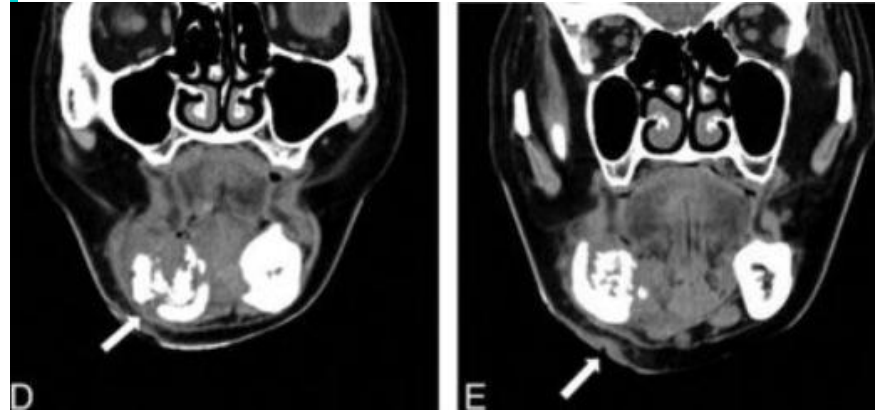
Mars is actually a cold place

Biopsy

Neptune is the farthest planet

CT Scan

- **CT scan (maxillofacial)** showing extensive soft tissue damage and bone destruction.
- **Panoramic dental X-ray** showing right mandibular osteomyelitis (“lumpy jaw syndrome”). Showing irregular bone destruction in mandible.



What information do we have?

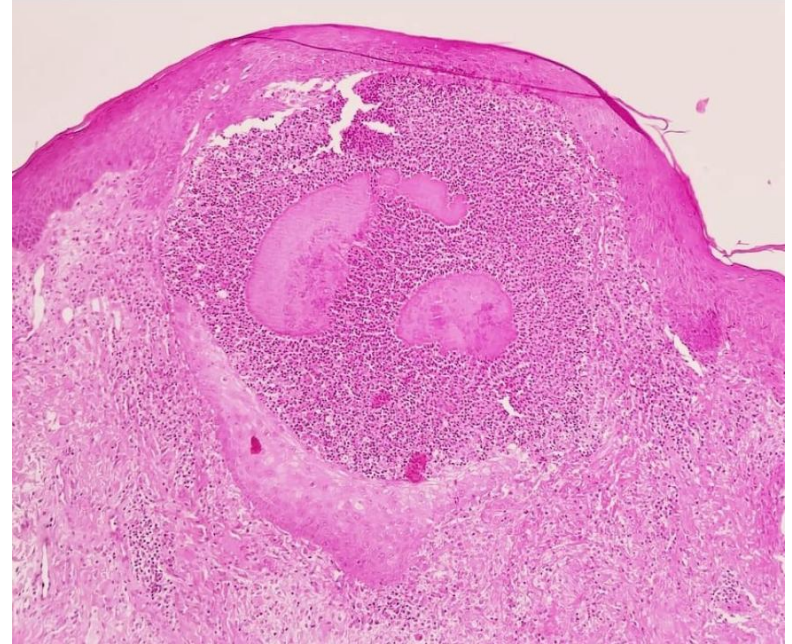
- Georgia has jaw swelling, pain, draining sinus tracts.
- Recent tooth extraction and poor dental hygiene
- Lab Findings: Gram-positive filamentous organisms in sulfur granules
- Imaging: deep soft tissue damage

Results strongly suggest **chronic anaerobic infection**.

Next Steps: Biopsy, Diagnosis & Treatment

Biopsy

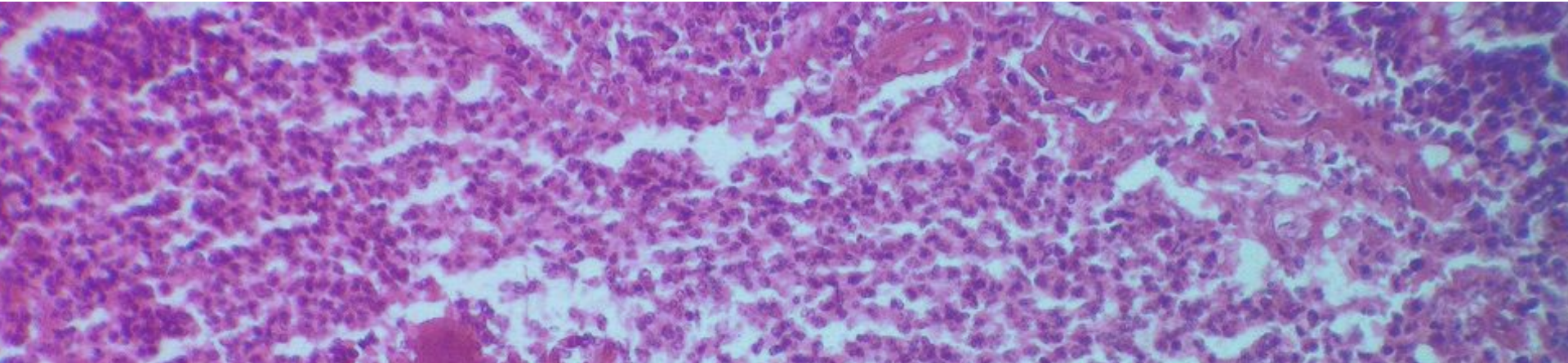
- **Oral mucosa biopsy**: Low power view of dense sheets of neutrophils surrounding sulfur granules.
- Biopsy provides histopathological confirmation of diagnosis.



Diagnosis

Cervicofacial Actinomycosis

Caused by: *Actinomyces israelii*



Treatment Plan

Medical Management

- High-dose Penicillin G via IV for 2-6 weeks
- Oral Penicillin for 6-12 months
 - Note: alternative for penicillin-allergic: Doxycycline or Erythromycin

Surgical Management

- Abscess Drainage
- Removal (debridement) of necrotic tissue

Supportive Care

- Dental hygiene counseling
- Stop Smoking Support



Surgical debridement and decortication were required due to extension of osteomyelitis.

Prognosis & Future Care

Short-Term Prognosis:

- Good! With antibiotic therapy Georgia should make a full recovery.

Long-Term Prognosis:

- Monitor for recurrency (If antibiotic course is completed as prescribed, this recurrence is unlikely.)
- Georgia should have a regular dental follow-up appointment to ensure oral health and prevention future oral infections.

Epidemiology and Prevention

Prevalence

- Rare (1 in 300,000)
 - Actinomyces is a normal part of flora in the human oral cavity, GI tract, and female urogenital tract, however tissue injury or breaks in the mucosal barrier can lead to infection.
- Most common between ages 20 and 60 and more common in men
- Cervicofacial form = ~60% of all actinomycosis cases

At-Risk Populations

- Immunocompromised
- Poor dental hygiene
- Post-dental trauma

Prevention Strategies

- Health dental practices (brushing 2x daily, flossing, antibacterial mouthwash)
- Regular dental check-ups
- Avoiding smoking or other tobacco products
- Prophylactic antibiotics post-oral surgery in high-risk individuals
- Monitor for recurrency (If antibiotic course is completed as pre

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Thank you!

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