1 PATIENT INFORMATION

1 PATIENT DETAILS

NAME
Rosalind M. Achebe-Kerr

DOB
09/28/1966

AGE / SEX
59 yrs / Female

MRN / PATIENT ID
6118374

DATE OF SERVICE
08/05/2026

PROVIDER
Marcus Villanueva, MD

CREDENTIALS
MD, UHM-certified

REFERRAL SOURCE
Oral & maxillofacial surgery — pre-extraction ORN protocol

VISIT TYPE
Treatment Visit — interval physician review at dive 14

CARE SETTING
Outpatient Hyperbaric Center, co-located with the wound care center

PRIMARY CARE PROVIDER
Joel Hammersmith, MD

WOUND CARE PROVIDER / SURGEON
Priyanka Rau, DDS, MD — oral & maxillofacial surgery

CC CHIEF COMPLAINT

2 PRIMARY HYPERBARIC MEDICINE CONCERN

"The jaw pain is finally easing and that piece of bone that was poking through my gum is smaller. But my left ear has been blocked and painful for the last three dives, and I have to admit I've started smoking again since my husband's diagnosis."

S SUBJECTIVE

3 PATIENT-REPORTED SYMPTOMS, HBOT INDICATION & TREATMENT TOLERANCE

3a INDICATION & CONDITION COURSE

Reason for Hyperbaric Medicine Evaluation

Scheduled interval physician review at treatment 14 of a 20-dive pre-operative Marx protocol for refractory stage II mandibular osteoradionecrosis, ahead of planned extraction of teeth 18 and 19 with sequestrectomy. Visit purpose:

assessment of treatment response, evaluation of new left-sided otalgia and aural fullness raising a concern for middle ear barotrauma, management of a smoking relapse that carries both fire-safety and healing implications, glucose review, and confirmation that the surgical date remains achievable.

Primary Condition / HBOT Indication

Delayed radiation injury — chronic refractory osteoradionecrosis of the left posterior mandible, an approved indication under the Undersea and Hyperbaric Medical Society category for delayed radiation injury (soft tissue and bony necrosis). Medical necessity is established by 14 months of failed conservative therapy and by the requirement for surgery within a heavily irradiated field.

Symptom Onset and Course

Osteoradionecrosis first became apparent in 05/2025, approximately four months after the extraction of tooth 17 at an outside dental practice without pre-operative hyperbaric cover. She developed persistent left mandibular pain, non-healing extraction socket, and a 6 mm area of exposed alveolar bone. Fourteen months of conservative management — chlorhexidine rinses, three courses of oral antibiotics, and a six-month trial of pentoxifylline with tocopherol — produced no durable improvement, and the exposed bone enlarged to 11 mm by 04/2026. Since starting HBOT on 07/13/2026 the trajectory has reversed: pain has fallen from a constant 7 of 10 to an intermittent 3 of 10, the exposed bone has reduced to approximately 7 mm, and a loose sequestrum she could previously feel with her tongue has become smaller and less mobile.

Wound or Tissue Injury History

No cutaneous wound. The lesion is intraoral — exposed necrotic alveolar bone at the left posterior mandible in the region of the tooth 17 socket, extending toward the buccal aspect of teeth 18 and 19. No extraoral fistula, no pathological fracture. Scant serous exudate with intermittent halitosis. No debridement performed to date beyond dental hygiene; sequestrectomy is planned as part of the surgical procedure. Not applicable for offloading or compression.

Radiation Injury History

p16-positive squamous cell carcinoma of the left tonsil, stage T2N1M0, diagnosed 11/2020. Treated 01/2021 to 03/2021 with definitive intensity-modulated radiotherapy to 70 Gy in 35 fractions to the primary and involved nodes, with concurrent weekly cisplatin. The left posterior mandible received an estimated mean dose of 62 Gy and lay within the high-dose volume. Complete oncologic response, disease-free at 5 years and 4 months, with surveillance imaging clear as of 04/2026. Late radiation sequelae are extensive: grade 2 xerostomia, trismus with a maximal interincisal opening of 29 mm, submental soft tissue fibrosis, dysgeusia, radiation-induced hypothyroidism on levothyroxine, and the current osteoradionecrosis. No prior radionecrosis at any other site and no prior hemorrhage from the field.

3b TREATMENT COURSE & TOLERANCE

Treatment Course

Fourteen of 20 pre-operative dives completed as of 08/05/2026, delivered once daily Monday through Friday at 2.4 ATA for 90 minutes of oxygen with two 5-minute air breaks. Protocol prescription: 20 dives before surgery, followed by 10 further dives postoperatively, in keeping with the Marx 20/10 regimen. Two treatments were missed — 07/24 for a family emergency and 07/31 for transport failure — and both were made up rather than skipped. Attendance is otherwise complete. Transport is provided by a hospital shuttle, and this remains the fragile element of her attendance.

Treatment Tolerance

Tolerance was excellent through dive 10. From dive 11 onward she has reported progressive left-sided ear pain and fullness on descent, now requiring the chamber operator to slow compression and pause twice at approximately 1.4 ATA. She describes it as “a plug that won’t clear” and reports muffled hearing on the left for one to two hours after each treatment. No vertigo, no tinnitus, no otorrhea. Baseline claustrophobia was present at dives 1 and 2 and has been managed successfully with lorazepam 0.5 mg one hour before treatment, now needed only intermittently. No chest discomfort, no dyspnea, no visual change beyond the expected mild myopic shift, and no oxygen toxicity or seizure-like symptoms at any point.

Diabetes / Glucose History

Type 2 diabetes for 8 years on metformin 1000 mg twice daily and glipizide 5 mg each morning. HbA1c 7.2% on 07/09/2026. Pre-dive capillary glucose has run 118–164 mg/dL. She had one symptomatic pre-dive reading of 71 mg/dL on 07/27 after skipping breakfast, treated with 15 g of oral carbohydrate and rechecked at 108 before the dive proceeded —

this remains the only hypoglycemic event. She now takes a protein-containing breakfast before every treatment and has been reliable with it since.

3c SAFETY-RELEVANT MEDICAL HISTORY

Pulmonary / ENT History

No COPD, asthma, pneumothorax, bullous lung disease, or thoracic surgery. Never on home oxygen. Screening chest radiograph before treatment 1 was normal with no blebs or bullae. ENT history is the relevant one: chronic eustachian tube dysfunction, worse on the left and attributed to post-radiation nasopharyngeal fibrosis, with a documented inability to perform a Valsalva manoeuvre on the left. She has no tympanostomy tubes. Baseline audiogram 07/10/2026 showed a mild high-frequency sensorineural loss bilaterally consistent with prior cisplatin exposure, with normal tympanometry at that time.

Cardiovascular / Neurologic History

No CHF, CAD, arrhythmia, or valvular disease. No pacemaker, ICD, or other implanted device. No seizure disorder and no seizure-threshold-lowering medications. No stroke or TIA. No syncope. Baseline neurologic examination normal apart from post-radiation soft tissue changes.

Medication / Exposure History

Levothyroxine 88 mcg daily, metformin 1000 mg twice daily, glipizide 5 mg each morning, pentoxifylline 400 mg three times daily with tocopherol 1000 IU daily (continued alongside HBOT), amitriptyline 25 mg nightly for neuropathic facial pain, lorazepam 0.5 mg as needed before dives, and pilocarpine 5 mg three times daily for xerostomia. No steroids, anticoagulants, bleomycin, doxorubicin, or cisplatin currently — her cisplatin exposure ended in 2021 and is not a contraindication at this remove. **Smoking relapse**: abstinent from 11/2020 until 07/2026, she resumed at approximately 8 cigarettes daily three weeks ago following her husband's cancer diagnosis. Prior history 24 pack-years. Nicotine use is the single most important modifiable factor in this case, both for tissue oxygenation and for chamber fire safety.

Prior Evaluation and Treatment

Oral and maxillofacial surgery evaluations 04/2026 and 06/2026 with staging of the osteoradionecrosis and surgical planning. Panoramic radiograph and mandibular CT 04/2026. Three courses of oral antibiotics (amoxicillin-clavulanate, then clindamycin twice) during 2025 for intermittent infective flares. Six months of pentoxifylline and tocopherol from 09/2025. Dental oncology review with fabrication of fluoride trays and a full caries-control programme. Radiation oncology confirmed the dosimetry to the mandible. ENT consulted 07/2025 for eustachian tube dysfunction with conservative management recommended at that time.

Pertinent Negatives

Denies fever, chills, facial swelling, trismus worsening beyond baseline, extraoral drainage or fistula, new numbness of the lower lip suggesting inferior alveolar nerve involvement, and any symptom of pathological fracture. Denies chest pain, dyspnea, cough, and haemoptysis. Denies seizure activity, vertigo, tinnitus, otorrhea, and acute visual change. Denies hypoglycemic symptoms since 07/27. No untreated pneumothorax and no new pulmonary symptoms.

ROS HYPERBARIC MEDICINE REVIEW OF SYSTEMS

4 PERTINENT POSITIVES & NEGATIVES

Wound pain, drainage, odor, swelling, redness, or delayed healing	**Positive but improving — intraoral pain down from 7/10 to 3/10, scant serous exudate, intermittent halitosis. Exposed bone reduced from 11 mm to 7 mm.**
Fever, chills, fatigue, or systemic infection symptoms	**Negative — afebrile, no systemic symptoms.**
Ear pain, ear pressure, hearing change, sinus pain, or congestion	**Positive — left otalgia and fullness on descent since dive 11, muffled hearing for 1–2 hours post-dive. No vertigo, tinnitus, or otorrhea.**

Chest pain, dyspnea, cough, wheezing, or oxygen requirement	**Negative throughout 14 dives.**
Vision changes, headache, dizziness, seizure-like symptoms, or neurologic changes	**Mild expected myopic shift only. No headache, dizziness, seizure activity, or focal change.**
Claustrophobia, anxiety, or treatment intolerance	**Positive at baseline, now well controlled — lorazepam 0.5 mg used intermittently rather than routinely.**
Hypoglycemia symptoms, hyperglycemia symptoms, or diabetes control concerns	**One pre-dive reading of 71 mg/dL on 07/27 after a skipped breakfast, resolved. None since. HbA1c 7.2%.**
Smoking / nicotine use, medication issues, or adherence barriers	**Positive — smoking relapse to 8 cigarettes daily for 3 weeks. Medication adherence otherwise complete; transport is the sole attendance risk.**

O OBJECTIVE

5 OBSERVED FINDINGS

V VITALS

TEMPERATURE
36.7 °C

BLOOD PRESSURE
126/78 mmHg

HEART RATE
74 bpm

RESPIRATORY RATE
15 /min

OXYGEN SATURATION
98% on room air

WEIGHT
64.8 kg

BMI
24.6 kg/m²

PAIN SCORE
3/10 intraoral, intermittent (from 7/10 constant at baseline)

PRE-TREATMENT BLOOD GLUCOSE
142 mg/dL

POST-TREATMENT BLOOD GLUCOSE
116 mg/dL

5a GENERAL, ENT & PULMONARY

General Appearance

Well-appearing, alert, fully oriented, ambulates independently. Nutritionally adequate despite xerostomia and trismus. Cooperative and fully able to follow chamber safety instructions. No distress.

ENT

Left tympanic membrane retracted with a grade 2 modified Teed appearance — diffuse injection along the handle of the malleus and mild erythema of the pars tensa, without effusion, haemorrhage, or perforation. Right tympanic membrane normal and mobile. Unable to auto-inflate the left ear on Valsalva or Toynbee; the right clears readily. No ear canal debris or otorrhea. Sinuses non-tender. Nasal mucosa dry with post-radiation atrophic change. Maximal interincisal opening 29 mm, unchanged. No tympanostomy tubes.

Pulmonary

Clear to auscultation bilaterally with no wheeze, crackles, or diminished breath sounds. Normal work of breathing. Room air, saturation 98%. No chest wall abnormality. No clinical or radiographic evidence of air trapping, blebs, or pneumothorax risk.

5b CARDIOVASCULAR, NEUROLOGIC & SKIN

Cardiovascular

Regular rate and rhythm at 74. Normal S1 and S2, no murmur or gallop. No peripheral edema. Peripheral perfusion normal with capillary refill under 2 seconds. No signs of heart failure or volume overload that would complicate hyperbaric exposure.

Neurologic

Alert and fully oriented. Cranial nerves intact with the exception of altered taste. Sensation of the lower lip and chin is intact bilaterally — no inferior alveolar nerve deficit. No focal motor or sensory deficit, no tremor, no gait abnormality. No history or clinical suggestion of seizure risk.

Skin / Wound Examination

Extraoral: left submental and submandibular soft tissue fibrosis with tethered, indurated skin and telangiectasia within the radiation field. No cutaneous ulceration, cellulitis, fluctuance, or draining fistula. Intraoral: as detailed in the wound assessment below. No graft or flap in situ.

WA WOUND / TISSUE INJURY ASSESSMENT

6 LEFT POSTERIOR MANDIBULAR OSTEORADIONECROSIS

WOUND NUMBER

1 of 1

LOCATION AND LATERALITY

Left posterior mandible, alveolar ridge at the tooth 17 socket extending buccally toward 18–19

WOUND ETIOLOGY

Delayed radiation injury — osteoradionecrosis following 70 Gy IMRT, precipitated by extraction without hyperbaric cover

DIMENSIONS

Exposed bone 7 mm × 5 mm; depth not probeable beyond 3 mm (from 11 mm × 8 mm at 07/09)

EXUDATE AMOUNT, COLOR, CONSISTENCY, ODOR

Scant, serous, non-purulent; intermittent mild halitosis, reduced from baseline

OFFLOADING, COMPRESSION, OR DRESSING STATUS

Not applicable — intraoral. Chlorhexidine 0.12% rinses twice daily and a soft diet

WOUND PHOTOGRAPHS OBTAINED

Yes — intraoral photographs with a periodontal probe scale, filed to the chart

COMPARISON TO PRIOR MEASUREMENTS

Improving — exposed bone area reduced approximately 60% since dive 1 on 07/13/2026

Undermining or tunneling

No soft tissue undermining or sinus tract. No extraoral fistula. The mucosal margin is now advancing over the previously exposed bone at the mesial aspect.

Wound bed tissue type; exposed structure

Exposed necrotic alveolar bone, dull grey-yellow, with an approximately 4 mm loose sequestrum at the distal aspect that is smaller and less mobile than at dive 1. Surrounding mucosa shows early granulation and epithelial advance at the mesial and lingual margins. No exposed tendon, joint, capsule, hardware, or graft material. No pathological fracture.

Periwound condition

Peri-lesional mucosa is erythematous but no longer boggy, with reduced friability compared with 07/09. Generalised post-radiation mucosal atrophy and xerostomia. No cellulitis, no fluctuance, no purulence.

Signs of infection, ischemia, necrosis, or radiation injury

Established radiation injury with bony necrosis and a loose sequestrum. No active infection — afebrile, no purulence, no

cellulitis, no systemic signs. The hypoxic, hypocellular, hypovascular tissue characteristic of a radiated field is evident clinically as fibrosis, mucosal atrophy, and impaired healing.

Pain with wound care or palpation

Palpation of the exposed bone elicits 4 of 10 pain, improved from 8 of 10 at baseline. Rinses are tolerated without difficulty.

HB HBOT TREATMENT DETAILS

7 HYPERBARIC OXYGEN SESSION RECORD — 08/05/2026

TREATMENT NUMBER COMPLETED
14

TOTAL TREATMENTS PRESCRIBED
20 pre-operative, followed by 10 post-operative (Marx 20/10)

TREATMENT PRESSURE
2.4 ATA

TREATMENT DURATION
90 minutes of oxygen at pressure; total chamber time 115 minutes

AIR BREAKS
Two 5-minute air breaks at 30 and 60 minutes

COMPRESSION AND DECOMPRESSION TOLERANCE
Compression slowed and paused twice at approximately 1.4 ATA for left ear equalization difficulty; decompression uneventful

PRE-TREATMENT ASSESSMENT COMPLETED
Yes — glucose 142 mg/dL, vitals stable, otoscopy performed, no prohibited items, cotton garments confirmed

POST-TREATMENT ASSESSMENT COMPLETED
Yes — glucose 116 mg/dL, vitals stable, otoscopy repeated

Ear / sinus symptoms during treatment

Significant left-sided ear pain and fullness on descent requiring two compression holds and coaching in Toynbee and Frenzel manoeuvres, with only partial clearance achieved. Post-dive otoscopy confirms a grade 2 modified Teed change on the left. No sinus pain or barotrauma. Right ear cleared normally throughout. No vertigo and no alternobaric symptoms.

Glucose monitoring and intervention

Pre-dive glucose 142 mg/dL — no intervention required. Post-dive glucose 116 mg/dL, an expected fall of 26 mg/dL consistent with hyperbaric exposure in a patient on a sulfonylurea. No hypoglycemic symptoms. Oral carbohydrate offered and declined; she ate immediately after the session as instructed.

Adverse events or complications

Grade 2 middle ear barotrauma of the left ear, developing progressively from dive 11 and confirmed on post-dive otoscopy today. No pulmonary barotrauma, no oxygen toxicity, no seizure, no confinement anxiety event, and no hypoglycemia during this session.

Patient tolerance and disposition

Completed the full 90-minute oxygen period. Ambulated out of the chamber unassisted, alert and stable, with left aural fullness persisting at the end of the session. Discharged home with the hospital shuttle. Treatment 15 held pending the ENT intervention detailed in the plan.

SS CONTRAINDICATION / SAFETY SCREENING

8 HBOT SAFETY REVIEW — REASSESSED 08/05/2026

UNTREATED PNEUMOTHORAX STATUS

Absent — screening chest radiograph before dive 1 normal; no interval pulmonary symptoms

PULMONARY HISTORY AND CHEST IMAGING

No COPD, asthma, bullae, or thoracic surgery. Chest radiograph 07/10/2026 normal

EAR / SINUS BAROTRAUMA RISK

HIGH and now realised — post-radiation eustachian tube dysfunction with grade 2 left middle ear barotrauma. Requires intervention before further dives

SEIZURE HISTORY OR SEIZURE RISK

None. No seizure disorder and no seizure-threshold-lowering medication

CLAUSTROPHOBIA OR ANXIETY RISK

Mild, well controlled with intermittent lorazepam 0.5 mg pre-dive

PREGNANCY STATUS

Not applicable — postmenopausal

IMPLANTED DEVICE OR PACEMAKER / ICD STATUS

None

CHEMOTHERAPY OR MEDICATION CONTRAINDICATION REVIEW

Cisplatin completed 03/2021 — no current contraindication. No bleomycin or doxorubicin exposure. Current medication list reviewed and cleared

GLUCOSE RISK ASSESSMENT IN DIABETIC PATIENTS

Moderate — on metformin and glipizide with one prior pre-dive hypoglycemic event. Pre- and post-dive glucose monitoring mandatory

SMOKING / NICOTINE USE AND FIRE SAFETY COUNSELING

ACTIVE RISK — smoking relapse to 8 cigarettes daily. Fire-safety counselling repeated and documented; no smoking within 2 hours of a dive, no lighters or matches, cotton garments only

Ability to follow chamber safety instructions

Fully able. Alert, oriented, cooperative, and demonstrably compliant with prohibited-item and garment protocols across 14 sessions. She independently reported the ear symptoms and the smoking relapse without prompting, which is a favourable marker of engagement.

L LABORATORY AND DIAGNOSTIC RESULTS

9 RESULTS REVIEWED OR ORDERED

Wound / Infection Labs — 07/09/2026

White cells 6.8 K/µL, hemoglobin 12.9 g/dL, platelets 244. ESR 22 mm/hr, CRP 6 mg/L — both mildly elevated and unchanged, consistent with chronic radiation injury rather than acute infection. Glucose 148 mg/dL, HbA1c 7.2%. Creatinine 0.82 with an eGFR above 90. Albumin 3.9 g/dL, prealbumin 24 mg/dL — nutrition adequate. TSH 2.1 on levothyroxine. No wound culture obtained; there is no purulence to culture.

Imaging

Panoramic radiograph and mandibular CT 04/2026: an ill-defined lytic and sclerotic lesion of the left posterior mandibular body with cortical irregularity and a 4 mm sequestrum, no pathological fracture, and no inferior alveolar canal disruption. Findings are consistent with stage II osteoradionecrosis. Repeat panoramic radiograph scheduled before surgery. Chest radiograph 07/10/2026 normal. Surveillance neck CT 04/2026 shows no evidence of recurrent malignancy.

Vascular Studies

Not applicable — the lesion is an irradiated intraoral field, not a limb wound. No ABI, TBI, toe pressure, or duplex indicated. Transcutaneous oximetry is not applicable at this site.

Audiology / ENT Testing

Baseline audiogram 07/10/2026: mild bilateral high-frequency sensorineural hearing loss consistent with prior cisplatin, normal tympanometry, type A tracings bilaterally. **Repeat tympanometry today shows a type C tracing on the left** with markedly negative middle ear pressure, confirming eustachian tube dysfunction with early barotrauma; the right remains type A. Urgent ENT referral placed today for consideration of bilateral tympanostomy tubes.

Carbon Monoxide / Decompression Testing

Not applicable — no carbon monoxide exposure, decompression illness, or arterial gas embolism.

Prior Records Reviewed

Radiation oncology treatment summary and mandibular dosimetry from 2021, oral and maxillofacial surgery consultations of 04/2026 and 06/2026 with the surgical plan, mandibular CT and panoramic radiograph reports, the 2025 antibiotic and pentoxifylline treatment record, ENT consultation of 07/2025, baseline audiogram, dental oncology caries-control notes, and all 14 hyperbaric treatment records with pre- and post-dive observations. Approximately 19 minutes of independent record review.

A ASSESSMENT

10 HYPERBARIC MEDICINE CLINICAL INTERPRETATION

- **Chronic refractory stage II osteoradionecrosis of the left posterior mandible — responding well to hyperbaric oxygen therapy at dive 14 of 20.** Exposed bone has reduced from 11 mm to 7 mm, pain from a constant 7 of 10 to an intermittent 3 of 10, the sequestrum is smaller and less mobile, and mucosa is advancing at the mesial and lingual margins. This is a genuine and objectively documented response.
- **HBOT candidacy and medical necessity remain firmly established.** Delayed radiation injury is an approved indication; 14 months of conservative therapy including pentoxifylline and tocopherol failed; and surgery is planned within a 62 Gy field where the Marx 20/10 protocol is the accepted standard for reducing the risk of post-operative wound breakdown and progressive necrosis.
- **Grade 2 left middle ear barotrauma is the limiting complication and requires intervention before dive 15.** Progressive symptoms from dive 11, an inability to auto-inflate on the left, a retracted injected tympanic membrane, and a type C tympanogram together confirm post-radiation eustachian tube dysfunction that will not resolve with technique coaching alone. Continuing to dive without addressing it risks tympanic membrane perforation and the loss of the remaining treatment course.
- **The smoking relapse is the most consequential modifiable factor in this case, and it operates on two independent axes.** Clinically, nicotine-induced vasoconstriction and carbon monoxide directly oppose the angiogenic mechanism by which HBOT works in irradiated tissue, and continued smoking materially raises the risk of post-operative flap breakdown and progression of the osteoradionecrosis. Operationally, active smoking is a chamber fire-safety concern requiring explicit counselling and documentation. The relapse is situational, following her husband's cancer diagnosis, and is therefore treatable rather than simply a matter of adherence.
- **No active infection.** Afebrile, no purulence, no cellulitis, normal white cell count, and only mildly elevated ESR and CRP consistent with chronic radiation injury. No antibiotic is indicated at present.
- **Glucose management is adequate but requires continued vigilance.** Hyperbaric exposure reliably lowers glucose, and she is on a sulfonylurea — today's 26 mg/dL fall is typical. The single event on 07/27 followed a skipped breakfast and has not recurred since that behaviour was corrected.
- **No evidence of recurrent malignancy** on surveillance imaging as of 04/2026, which is an important exclusion in any patient with a non-healing lesion in a previously irradiated field.
- **No absolute or emergent contraindication to continuing HBOT** once the ear is addressed. Pulmonary screening is clear, there is no seizure risk, no implanted device, and no chemotherapeutic contraindication at this remove from cisplatin.

- **The surgical date remains achievable** provided tympanostomy tubes are placed promptly and the remaining six pre-operative dives are completed. A delay of approximately one week is anticipated and is acceptable.

P PLAN

11 HYPERBARIC MEDICINE MANAGEMENT

- **HBOT — hold and resume:** hold treatments 15 through 20 pending tympanostomy tube placement. Resume at the same prescription of 2.4 ATA for 90 minutes with two air breaks, once daily Monday through Friday, immediately after ENT clearance. The full pre-operative course of 20 dives is to be completed before surgery, followed by the 10 post-operative dives beginning within 24 to 48 hours of the procedure. The anticipated delay is approximately 7 days and the surgical date is preserved.
- **ENT and barotrauma management — the immediate priority:** urgent ENT referral placed today with a request for bilateral tympanostomy tubes, which are the definitive solution for post-radiation eustachian tube dysfunction in a patient who must complete a fixed dive course. Interim measures: oxymetazoline nasal spray twice daily for no more than 3 days, fluticasone nasal spray daily, and oral pseudoephedrine 60 mg before any dive if cleared by ENT. Repeat otoscopy and tympanometry before resuming, and post-dive otoscopy at every subsequent session. Frenzel and Toynbee technique re-coached with the chamber operator.
- **Smoking cessation — treated as a clinical intervention, not advice:** 16 minutes spent on the specific mechanism by which smoking opposes the effect of hyperbaric oxygen in irradiated bone and raises the risk of post-operative breakdown. Varenicline declined; nicotine replacement started today with a 14 mg patch daily plus 2 mg lozenges as needed, with the important caveat that patches must be removed before entering the chamber and that no nicotine product may be used within 2 hours of a dive. Referral to the tobacco treatment service placed with an expedited appointment requested. Behavioural health referral placed given the situational trigger of her husband's diagnosis, and caregiver support resources provided.
- **Wound and oral care:** continue chlorhexidine 0.12% rinses twice daily, a soft diet, and meticulous dental hygiene with the fluoride tray programme. Continue pentoxifylline 400 mg three times daily with tocopherol 1000 IU daily throughout the hyperbaric course and beyond — the combination is synergistic with HBOT in radiation fibrosis. No debridement at this visit; the loose sequestrum is to be removed at the time of surgery rather than piecemeal.
- **Surgical coordination:** extraction of teeth 18 and 19 with sequestrectomy and primary closure remains planned with Dr. Rau, to be scheduled after dive 20. Confirmed with the surgical office today that the date can absorb a one-week hyperbaric delay. Repeat panoramic radiograph before surgery. Post-operative dives to begin within 24 to 48 hours of the procedure and the chamber schedule has been provisionally blocked.
- **Infection management:** no antibiotic indicated — no purulence, no cellulitis, no systemic signs. Peri-operative antibiotic prophylaxis to be determined by the surgical team. Culture only if purulence, cellulitis, or systemic signs develop.
- **Glucose management:** continue mandatory pre- and post-dive capillary glucose. Hold the dive for any pre-dive reading below 100 mg/dL until corrected with 15 g of oral carbohydrate and rechecked. A protein-containing breakfast before every treatment is reinforced. Endocrinology or primary care review requested to consider replacing glipizide with a DPP-4 inhibitor or a GLP-1 receptor agonist for the remainder of the hyperbaric course, which would remove the sulfonylurea hypoglycemia risk entirely.
- **Chamber safety:** fire-safety counselling repeated and documented in light of the smoking relapse — no smoking within 2 hours of treatment, no lighters, matches, or nicotine patches into the chamber, cotton garments only, no petroleum-based products, hair oils, or cosmetics. She verbalised understanding of each item.
- **Nutrition and supportive care:** nutrition is adequate with an albumin of 3.9 and prealbumin of 24; no intervention required. Continue pilocarpine for xerostomia. Continue amitriptyline for neuropathic facial pain. Speech and language therapy referral for trismus at 29 mm, with jaw-stretching exercises to protect surgical access.

- **Coordination:** note routed to Dr. Rau (oral and maxillofacial surgery), Dr. Hammersmith (primary care), ENT, dental oncology, radiation oncology, the tobacco treatment service, and behavioural health. Chamber schedule adjusted and the surgical office notified the same day.
- **Patient education:** reviewed why the ear must be fixed before diving resumes, why the six remaining pre-operative dives cannot be skipped, the specific effect of smoking on her healing, the hypoglycemia protocol, chamber fire safety, and the symptoms that should prompt urgent contact.

F FOLLOW-UP

12 REASSESSMENT PLAN

Follow-up timeframe and purpose

ENT within 5 days for tympanostomy tube placement; hyperbaric treatments to resume immediately on ENT clearance with repeat otoscopy and tympanometry before dive 15. Physician review at dive 20 for pre-operative clearance, wound remeasurement, and confirmation of the surgical date. Tobacco treatment service within 2 weeks with cessation progress to be documented at every hyperbaric physician review. Repeat panoramic radiograph before surgery. Post-operative hyperbaric review within 48 hours of the procedure to begin the 10-dive post-operative course. Immediate contact instructed for ear pain with sudden hearing loss or discharge, facial swelling, fever, new lower lip numbness, chest pain, dyspnea, or any hypoglycemic episode.

TB TIME DOCUMENTATION & BILLING

TOTAL TIME SPENT
52 minutes

HBOT TREATMENT SUPERVISION TIME
115 minutes of chamber time under physician supervision

PROCEDURE TIME
Not applicable — no procedure performed

COUNSELING / COORDINATION OF CARE TIME
16 minutes — smoking cessation and treatment-hold counselling

RECORDS REVIEW TIME
19 minutes

BASIS FOR BILLING
HBOT supervision plus separately identifiable Medical Decision Making (moderate-to-high complexity)

E/M LEVEL
99214 with modifier 25 — established patient, separately identifiable E/M for barotrauma and smoking relapse

HYPERBARIC OXYGEN THERAPY CODE(S)
99183 — physician attendance and supervision of hyperbaric oxygen therapy, per session; G0277 — HBOT, full body chamber, per 30-minute interval × 3

WOUND PROCEDURE CODE(S)
Not applicable this visit

PRIMARY ICD-10 DIAGNOSIS CODE
M27.2 — Inflammatory conditions of jaws (osteoradionecrosis of the mandible)

SECONDARY ICD-10 DIAGNOSIS CODE(S)
T66.XXXD — Radiation sickness, subsequent encounter; Z85.819 — Personal history of malignant neoplasm of pharynx; T70.0XXA — Otitic barotrauma, initial encounter; H69.83 — Other specified disorders of Eustachian tube, bilateral; E11.9 — Type 2 diabetes mellitus; F17.210 — Nicotine dependence, cigarettes, uncomplicated; E89.0 — Postprocedural hypothyroidism; M26.602 — Trismus; K11.7 — Disturbances of salivary secretion

SO PROVIDER SIGN-OFF

PROVIDER NAME	CREDENTIALS	SPECIALTY	DATE	TIME
Marcus Villanueva, MD	MD, UHM-certified	Hyperbaric Medicine / Wound Care	08/05/2026	10:38 AM