

A person with curly hair is underwater, wearing a diving mask and holding a camera. Bubbles are visible around their head. A blue arrow points from the left edge towards the text.

Diving and Oral Health

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What is Diving Dentistry?



- Branch of dentistry that looks at oral problems caused by diving
- Relevant to recreational and professional divers.
- Dental surgeons' role - prevent dive-related emergencies and Mx deleterious effects
- Involves collaboration with dive and medical professionals.

Dry Mouth (Xerostomia)



48% to 52% during dives - both recreational and military divers.



Key Findings on Dry Mouth in Divers



Main Cause: The primary cause is breathing cold, dry, compressed air from a regulator,



Contributing Factors: Dehydration, (immersion diuresis) and the stress leading to reduced saliva production

Dry Mouth (Xerostomia)...

➡ Effects:

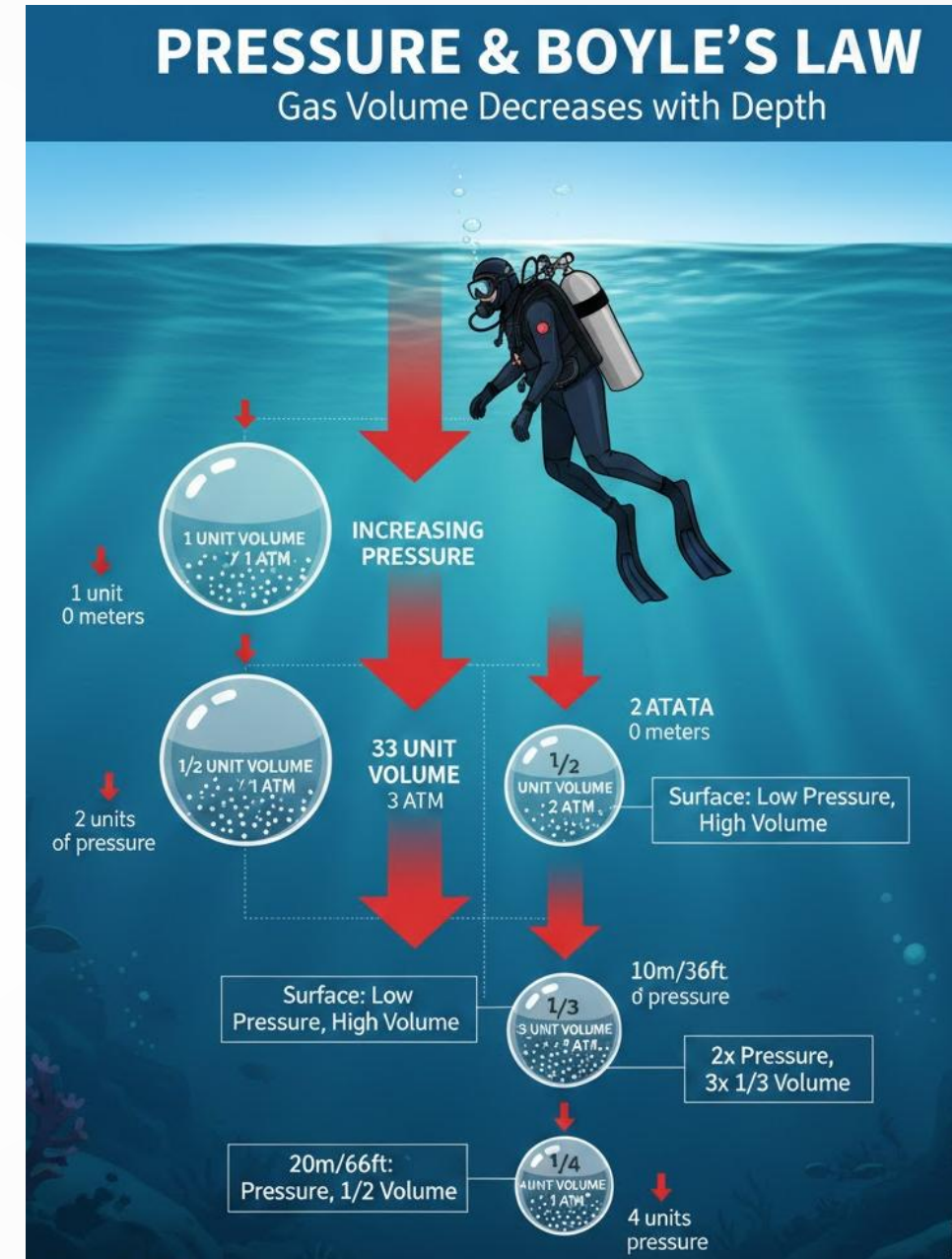
- ➡ Discomfort,
- ➡ Dental Caries

➡ Prevention:

- Staying hydrated before and after dives,
- Avoid excess alcohol and caffeine,
- Use saliva stimulants (sugar-free gum or lozenges)

Pressure Matters

- **Boyle's Law:** When pressure increases, gas volume decreases—and vice versa.
- **Teeth and sinuses can trap tiny air spaces.**
 - **Descent:** - Air shrinks → tissues get “squeezed.”
 - **Ascent :** Air expands → can crack teeth or restorations.
- This mismatch leads to **barotrauma**.



Barodontalgia (Tooth Squeeze)

- “Dental pain **triggered by pressure changes** during diving”
- Caused by **trapped air** under restorations, deep caries, inflamed pulp, periapical pathology, and referred pain.
- Reported by **~9–22%** of divers.
- Types:
 - **Direct:** From pulp or periapical disease (often felt during ascent).
 - **Indirect:** Referred pain from sinuses or middle ear (often during descent).



Barodontalgia (Tooth Squeeze) Contd.

- Clinical severity:

Ranges from short sharp pain to severe, lingering pain linked to periapical pathology.

- Previous term for Barodontalgia was "**aerodontalgia**" (specifically for flight-related pain), where similar sharp, intense pain from expansion can occur at altitudes between 9,000–27,000 feet.



Dental Barotrauma

- Physical damage caused by pressure.
- Includes fractured teeth and restorations.
- Can occur suddenly during ascent.
- Contributing factors include untreated caries, failed restorations, pulpitis, and periapical pathology.
- Temperature changes during diving may increase stress on tooth structure.



Odontocrexsis

- Odontocrexsis - cracking or loss of teeth/ restorations due to pressure.
- More likely when:
 - Old or leaky restorations are present
 - Secondary caries exists
 - Root canal treatment is incomplete
- Common with old or defective amalgam restorations.
- Amalgam does not bond to tooth structure: marginal gaps and crack propagation may develop over time.



Dental materials and Pressure



Materials matter:

- Composites pressure better than amalgam. Composite restorations bond to tooth structure, reducing air entrapment
- Amalgam fractures and dislodges easily.
- Resin cements are more stable.
- Zinc phosphate or GIC cements are prone to microleakage.





TMD & “Diver’s Mouth Syndrome”



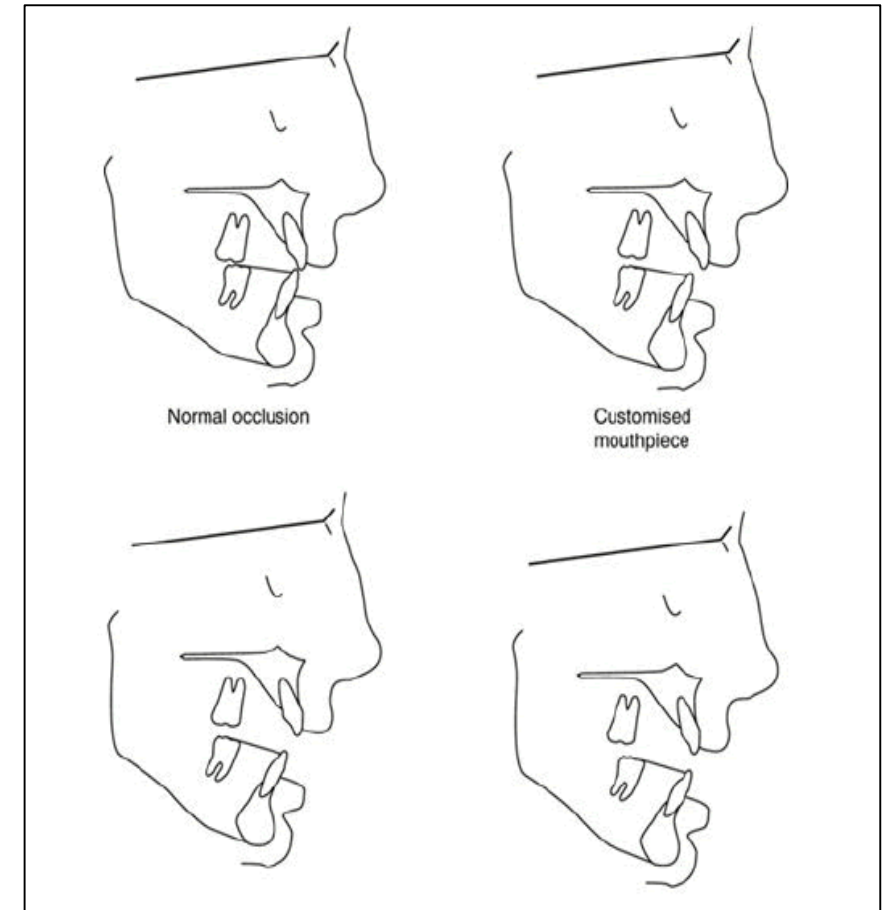
- **Associated with**
 - **constant clenching** on the regulator mouthpiece.
 - **Jaw protrusion** and lack of back-tooth support.
- **Symptoms:**
 - * Jaw pain
 - * TMJ clicking or pain
 - * Headaches
 - * Preauricular pain.

TMD & “Diver’s Mouth Syndrome” contd..

➤ Risk factors for TMD:

- Poorly designed mouthpieces.
- Inexperienced divers.
- Long dive durations

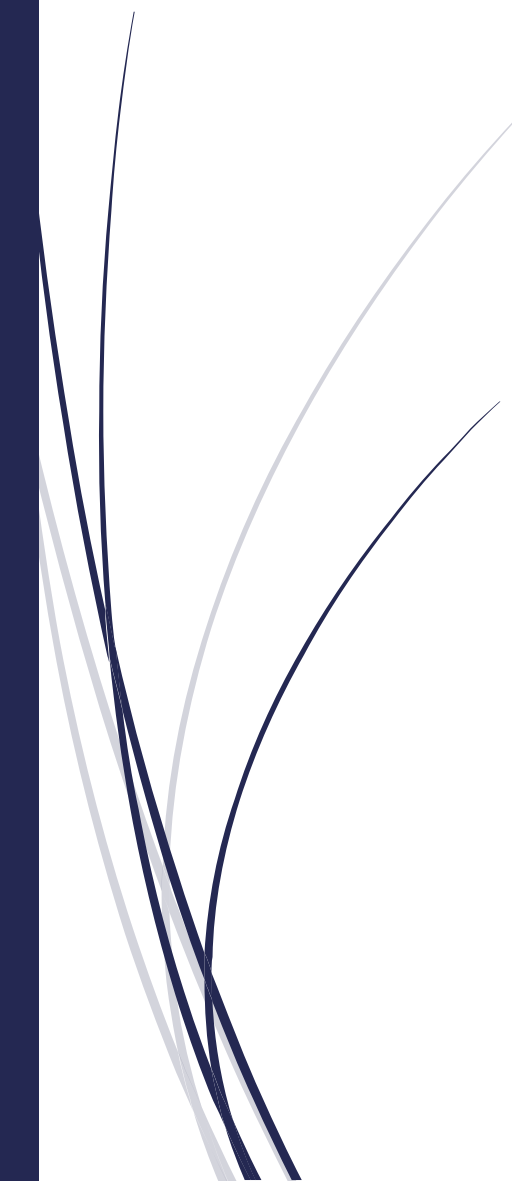
➤ Custom mouthpieces greatly reduce jaw strain



Showing the average differences in mandibular position during mouthpiece use. Normal occlusion is shown for comparison.



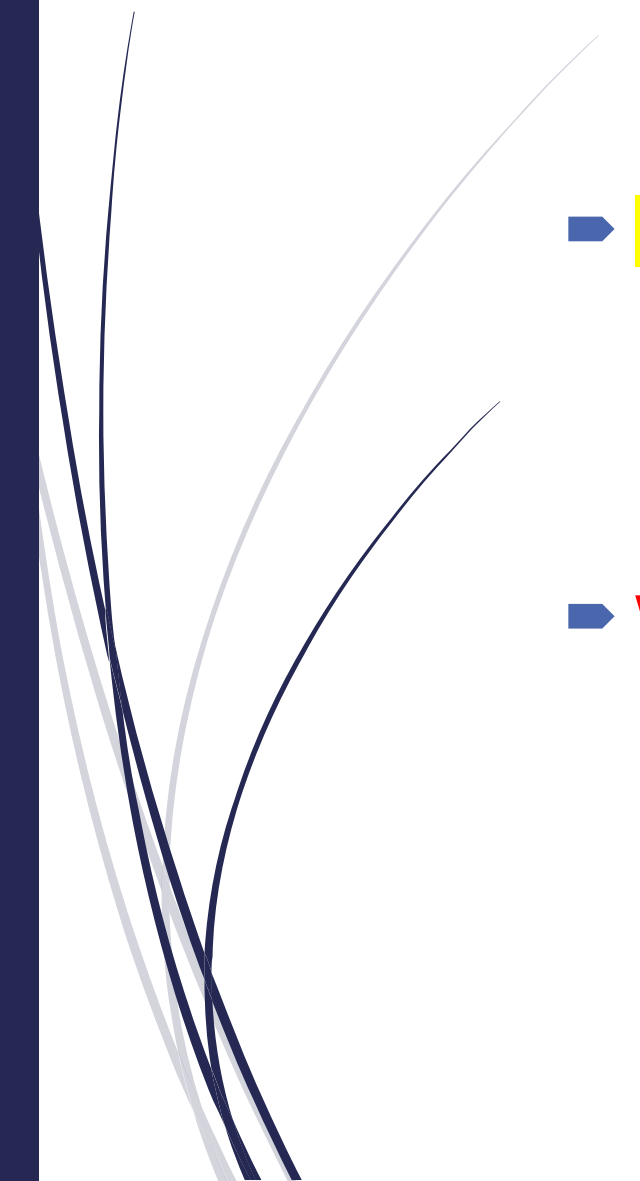
Special Considerations



- **Dentures:** Big risk—can dislodge and block the airway. Strongly discouraged.
- **Dental implants:** Usually safe (solid, no trapped air), but prostheses must be secured.
- Do NOT dive with:
 - Active osteomyelitis
 - Osteoradionecrosis
- Sinus issues: **Sinus squeeze** often feels like upper tooth pain. Is commonly found in divers.



What Dental Surgeons Can Do

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- **Pre-dive dental checkups** are essential - look for loose fillings, caries
 - **When to wait before diving:**
 - 24 hours after routine restorative treatment with anesthesia
 - At least 7 days after oral surgery



What Dental Surgeons Can Do (Contd.)

- Recommend composite restorations for active divers.
- Dental checkups at least every 6 months.
- Prosthesis:
 - Dentures are strongly discouraged as they can dislodge and block the airway.
 - Dental implants – safest as they contain no trapped air, the prostheses attached to them must be fully secured

Effects of Diving on Your Teeth

Barodontalgia "Tooth Squeeze"

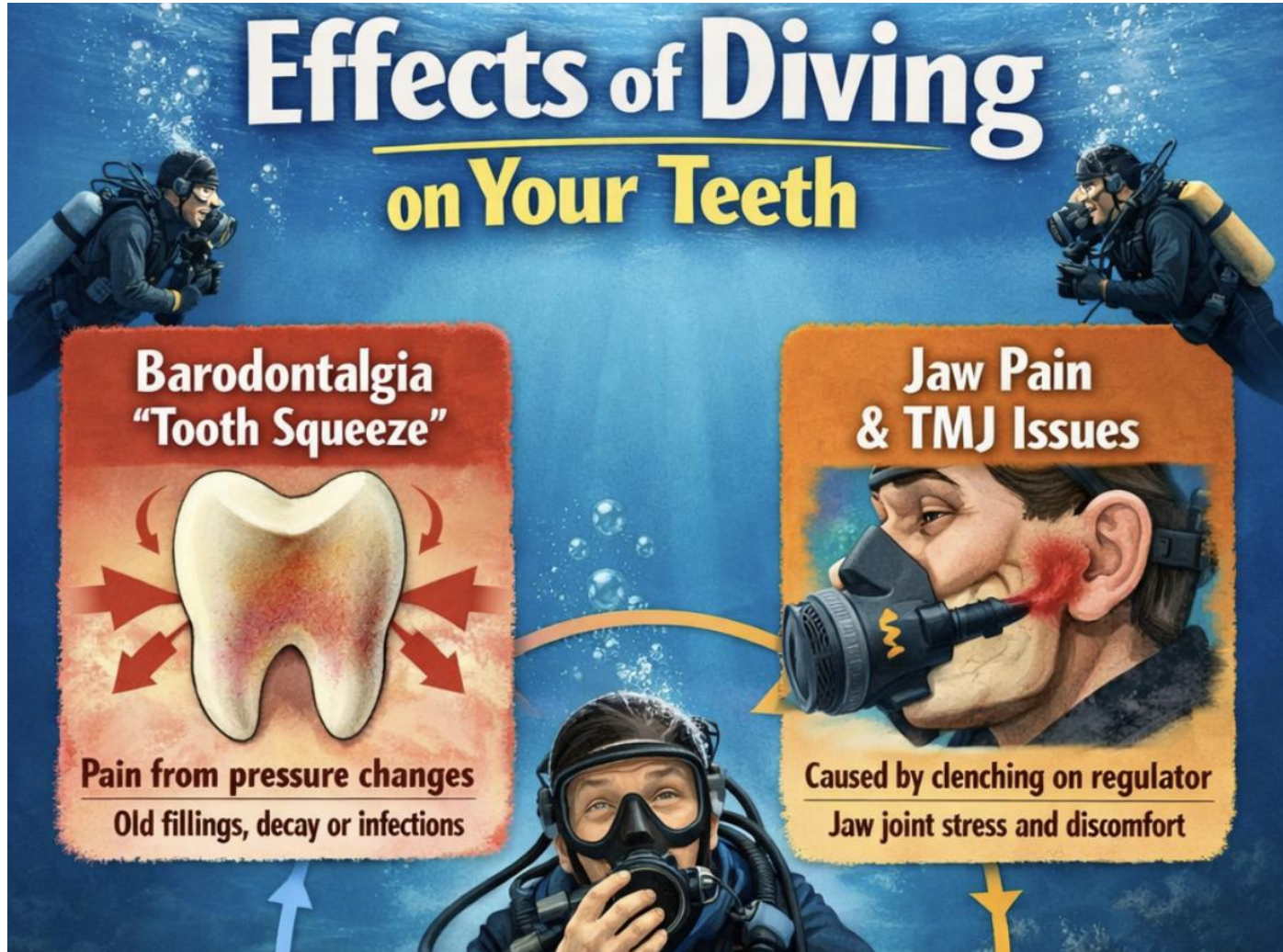


Pain from pressure changes
Old fillings, decay or infections

Jaw Pain & TMJ Issues



Caused by clenching on regulator
Jaw joint stress and discomfort



Tooth Fractures



Cracks from biting too h
Risk of dental damage

Dry Mouth



Mouth breathing & dry air
Reduced saliva, higher decay risk

Mouthpiece Problems "Diver's Mouth Syndrome"



Key Take-Home Message



- **Good preventive dentistry** - prevent serious underwater emergencies.
Restorative tips - Avoid air pockets under restorations, use liners in deep cavities, ensure proper marginal seal, prefer pressure-resistant materials
- **Encourage divers** to fix dental problems early—even if painless.
- **Proper mouthpiece design**
- **Regular reviews** make diving safer and more comfortable.



Thank You