

# **Strains, Sprains, & Pains:** **Ergonomic Injury Prevention for** **Commercial Fishermen**



Section B- Upper Extremity- Shoulder, Elbow,  
Wrist, Hand Issues

[www.amsea.org](http://www.amsea.org)

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# Susan Harwood project

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**Whistleblower regs: “Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.”**

## **Employees have the right to:**

1. Working conditions that do not pose a risk of serious harm.
2. Receive information and training (in a language workers can understand) about hazards, prevention, and OSHA standards that apply to their workplace.
3. Review records of work-related injuries and illnesses.
4. Get copies of test results done to find and measure hazards in the workplace.
5. File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA rules. When requested, OSHA will keep all identities confidential.
6. Use their rights under the law without retaliation or discrimination. If an employee is fired, demoted, transferred or discriminated against in any way for using their rights under the law, they can file a complaint with OSHA. This complaint must be filed within 30 days of the alleged discrimination.

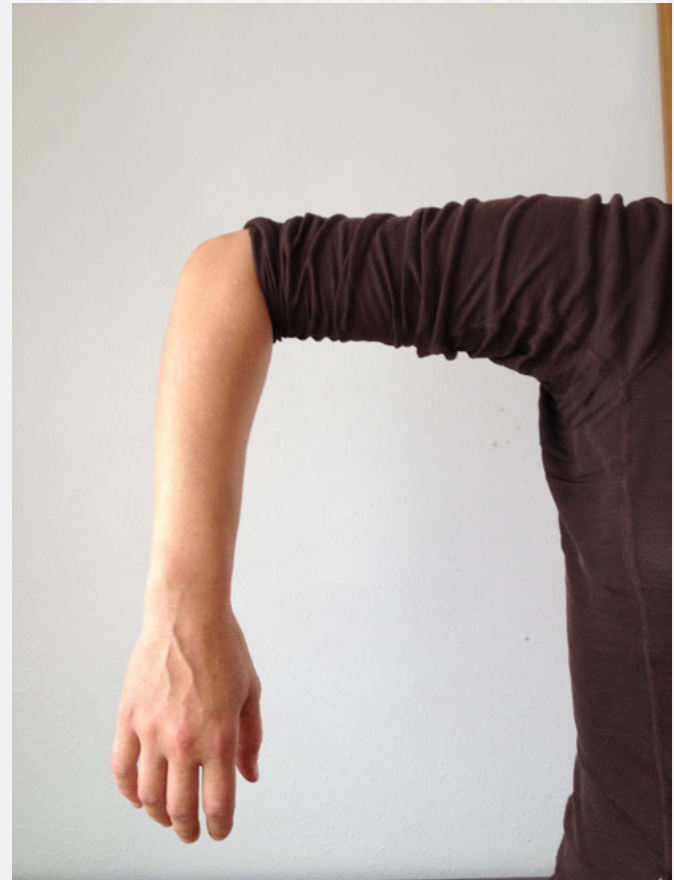
Go to [www.whistleblowers.gov](http://www.whistleblowers.gov) for more information

# Musculoskeletal Injuries

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## Section B:

- **Upper Extremity (shoulder, elbow, wrist, hand)**



# Upper Extremity Stress Causes (same issues as back)

1. Force.
2. Posture.
3. Effort repetition/  
effort duration.
4. Shift duration.



# **Specific Risk Factors for Upper Extremity Musculoskeletal Disorders (UEMSD)**

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- 1. Grip Force**
- 2. Posture**
- 3. Frequency/  
repetition**
- 4. Contact**
- 5. Cold Temperature**





# UEMSD - Risk Factors

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## Grip Force - Reduction

- Tool design-decrease hand force
- Use power grip
- Improve mechanical advantage
- Improve friction grip/  
glove characteristics
- Automate if possible



# UEMSD - Risk Factors

**Force – Reduction: handle easier to grip and turn**



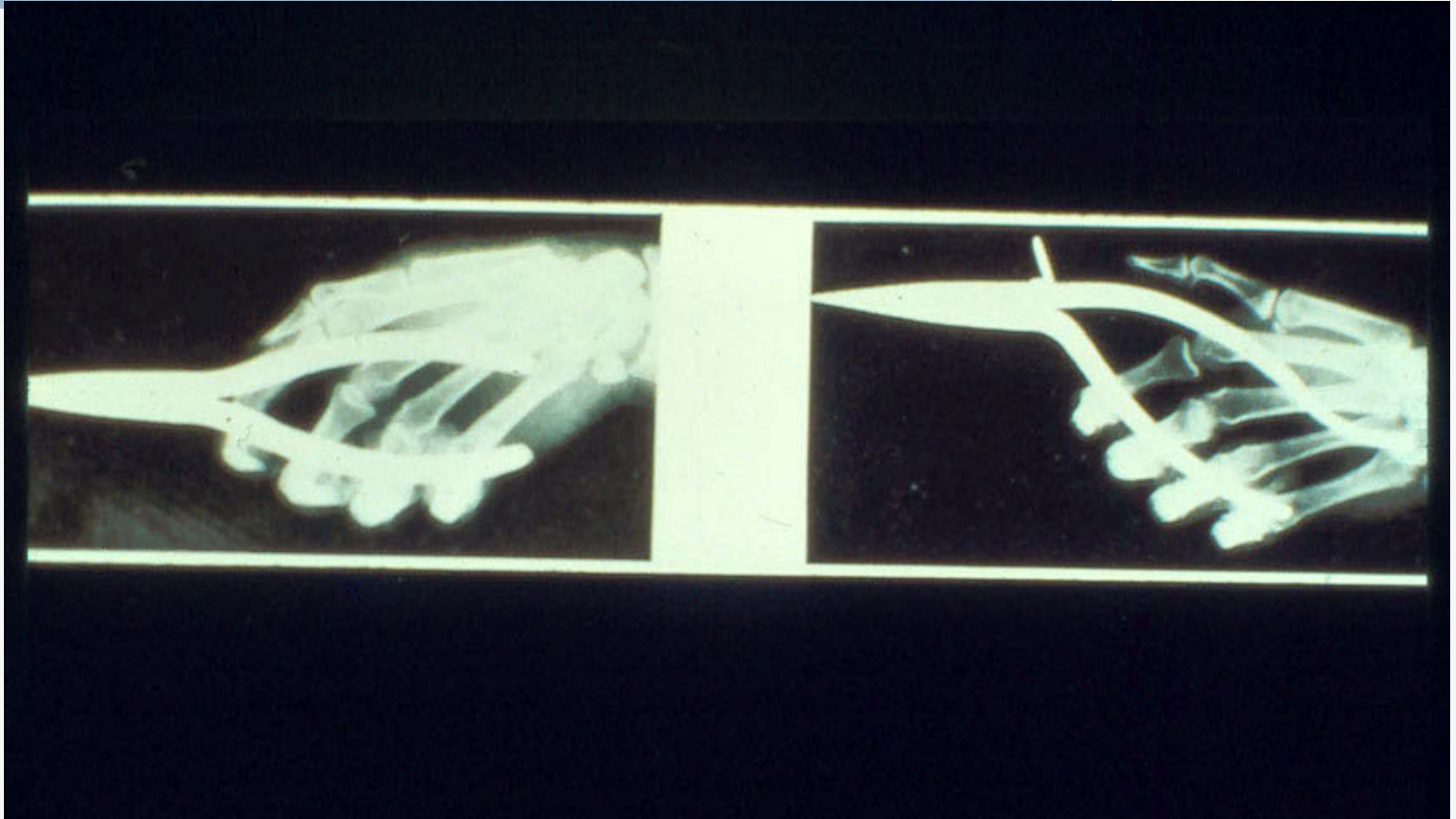


# **UEMSD- Risk Factors – (Posture) awkward postures increase stress**

**High forces and/or awkward posture  
can cause tendonitis (inflammation of  
the tendons.)**



# UEMSD - Risk Factors (Posture)



Put the bend in the tool - not the hand.

# UEMSD - Risk Factors (Posture)



# UEMSD - Risk Factors (Posture)





# **UEMSD - Risk Factor Reduction Posture –**

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- 1. Workplace design/work orientation**
- 2. Minimize wrist/shoulder deviation**
- 3. Try to keep the hand in front below mid-torso**
- 4. Work methods**
- 5. Automate if possible**



# UEMSD - Risk Factors (Freq/Rep)

**The stress on the body appears to accumulate with repeated exertions.**





# UEMSD – Reduce Risk Factors

## High Repetition - Minimize

1. < decrease repetition
2. Worker rotation
3. Alternate hands
4. More rest breaks
5. Greater job variety
6. Automate

**CATCH + FISH WITH – EFFORT = + \$\$\$\$**

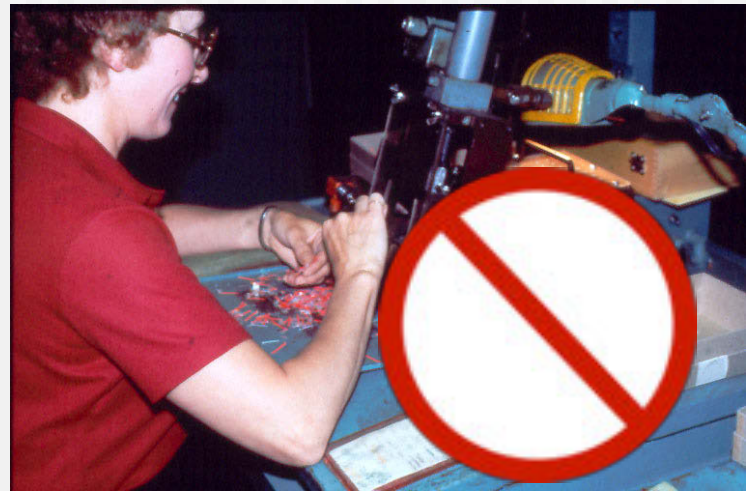


# UEMSD - Contact Trauma

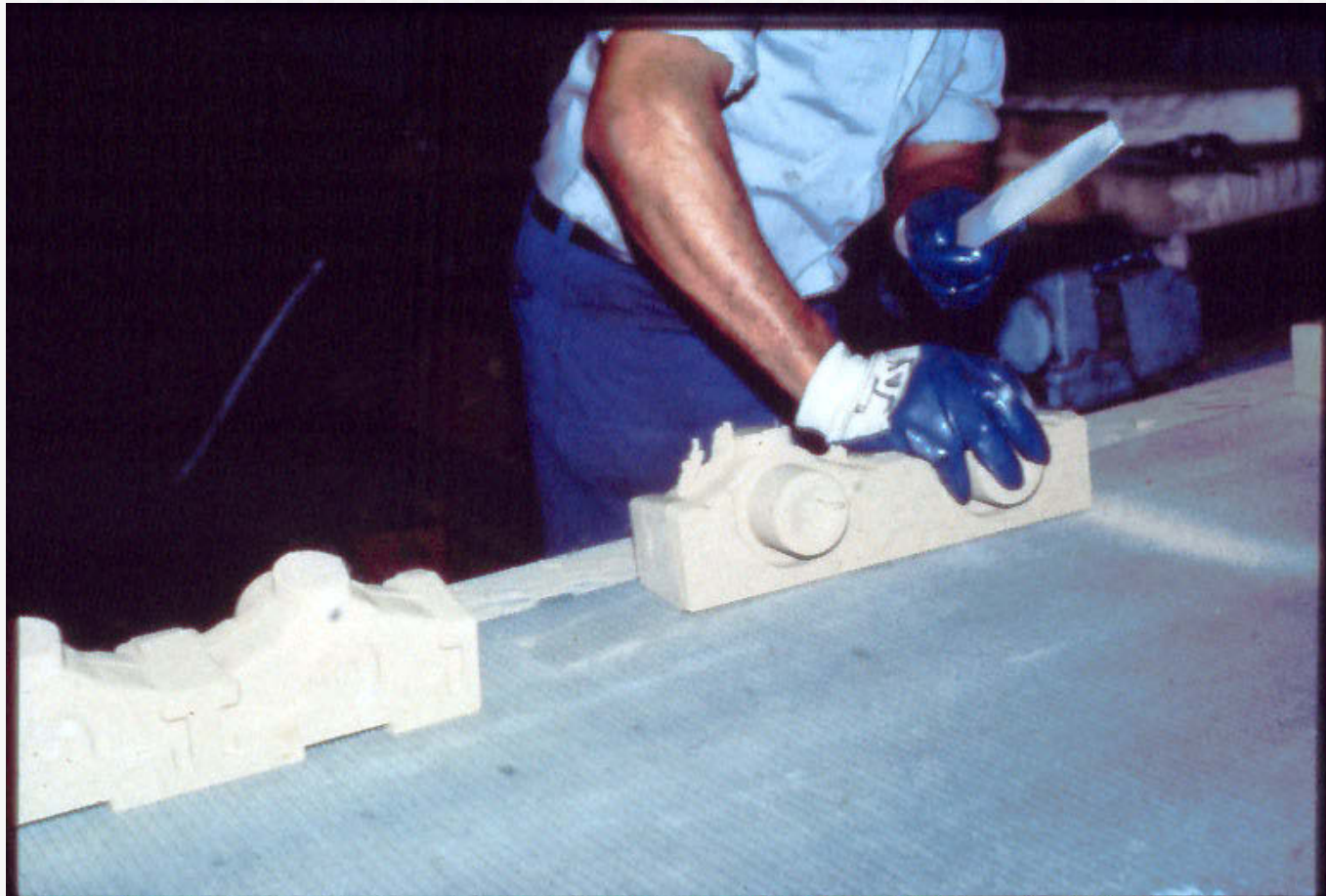
**Caused by direct contact with the work piece, tool, or work surface.**

**Hazardous when hand used repeatedly to pound/push on parts.**

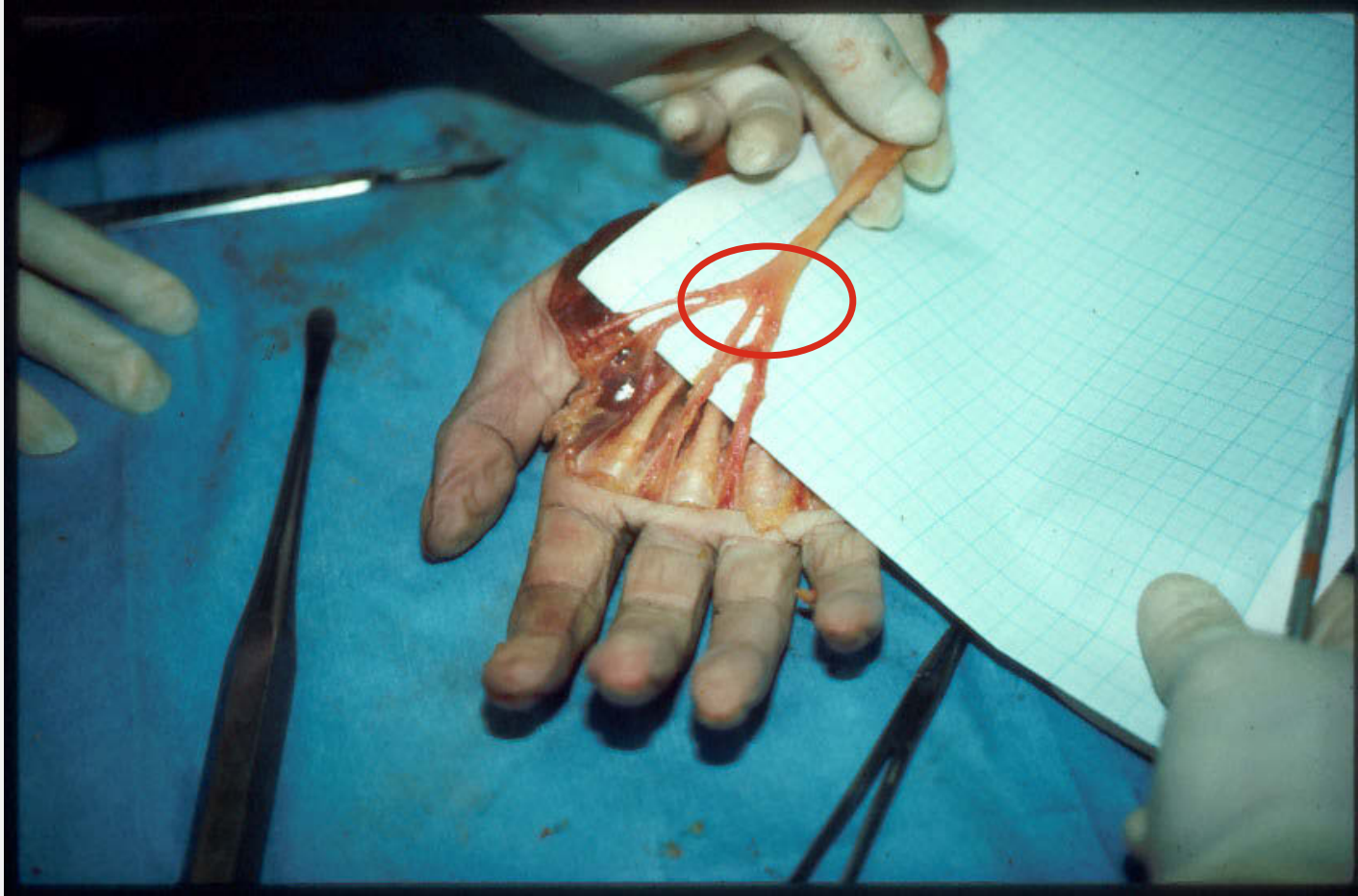
**Injury possible when elbows/forearms rest on hard surface.**



# UEMSD - Contact Trauma



# UEMSD - Contact Trauma





# UEMSD - Risk Factors (Contact)



# UEMSD - Risk Factors

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## Contact Trauma – Reduction

1. Padding
2. Distribute force among fingers
3. Alternate hands
4. Workplace redesign
5. Automate





# Shoulder Problems

**Tendonitis- inflamed tendon**

**Bursitis- inflamed bursa- fluid filled sac**

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**Caused by:**

- 1. Using arms overhead tasks.**
- 2. Imbalance shoulder.**
- 3. Muscle weakness.**
- Major risk factors:  
force,  
posture,  
repetition.**



# Shoulder Problem Prevention

1. **Avoid work at or above shoulders.**
2. **Get help with overhead work.**
3. **Keep shoulders square, rolled back.**
4. **Exercise shoulders and mid back.**



# Elbow Problems

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**Tendonitis at the elbow is called “epicondylitis”.**

**Tennis elbow - outside of elbow.  
Golfers elbow – inside of elbow.**

**Pain increasing around outside of elbow  
due to lifting, gaffing, baiting, cleaning.**



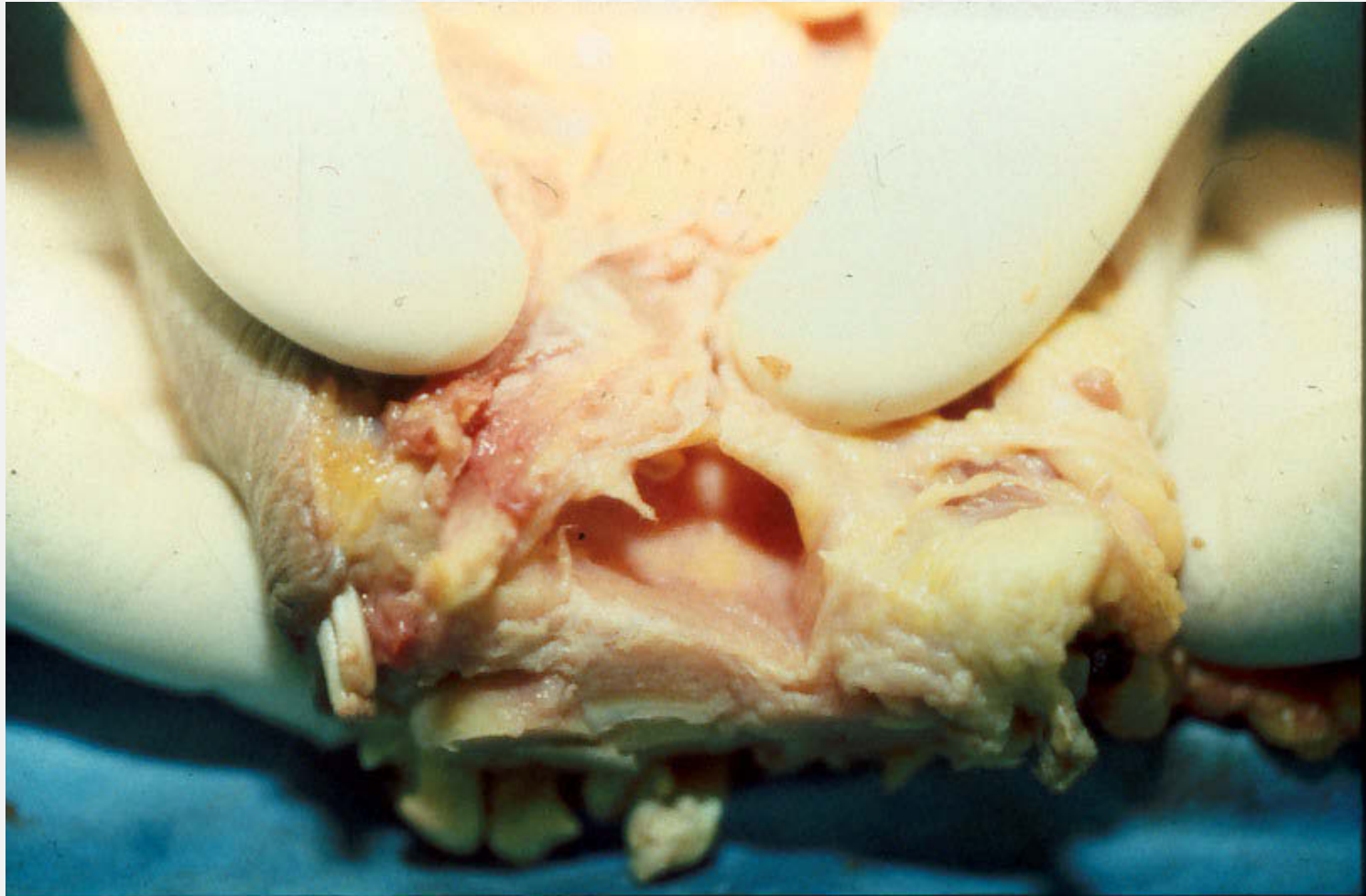
# Epicondylitis Treatment

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- 1. Avoid pain causing activity.**
- 2. Ice pack 30 minutes - 2x/day.**
- 3. Anti-inflammatory drugs.**
- 4. Use forearm brace.**
- 5. Use gloves that grip.**
- 6. Physical therapy.**



**The Carpal Tunnel-** Hand/finger forces from forearm muscle via tendons to the fingers. Causes tendonitis and results in Carpal Tunnel Syndrome (CTS).

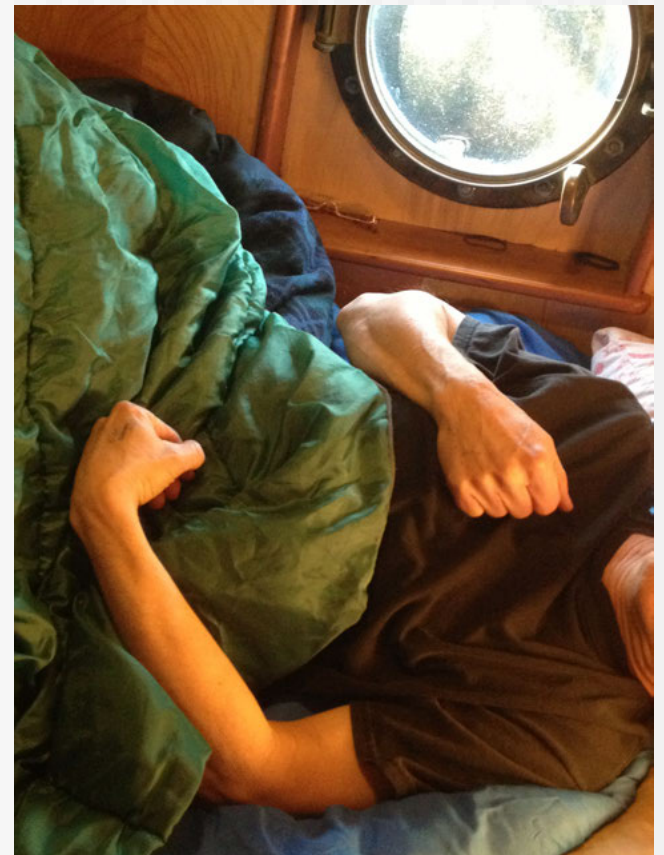




# CTS SYMPTOMS

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- 1. Pain, tingling, cramping.**
- 2. Numbness in thumb, pointer, middle, inside of ring finger.**
- 3. Weak grip, clumsiness.**
- 4. Burning pain (worse at night).**
- 5. Tendency to find affected hand with bent wrist when at rest.**





# **Carpal Tunnel Syndrome- CTS**

## **When to be concerned:**

**Swelling, Tingling, Numbness:  
more than > 24 hrs.**

**Pain, Stiffness:  
more than  
1- 2 weeks  
(after activity  
ceases)**

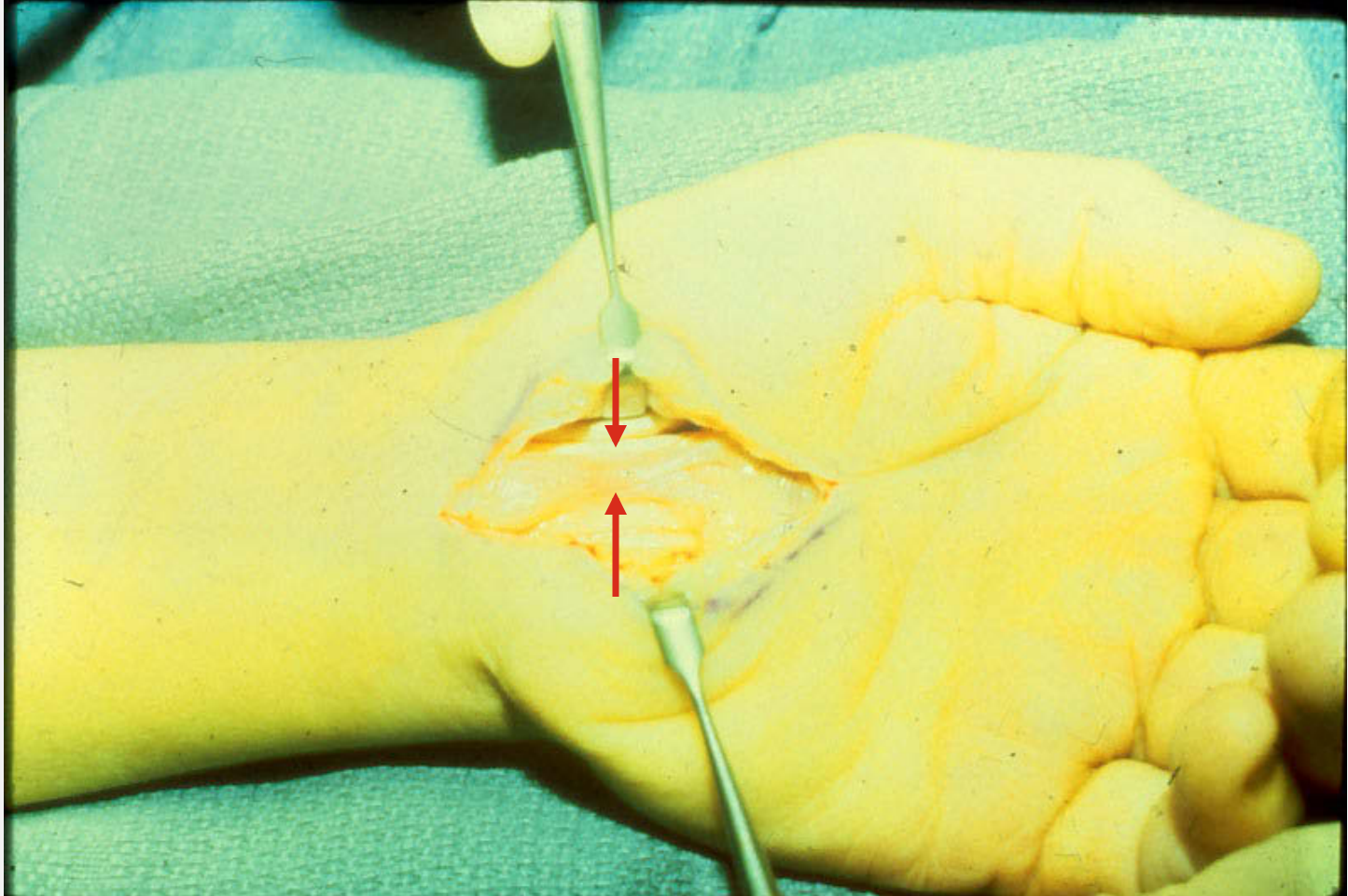


# CTS TREATMENT

1. **Stop activity- it only gets worse - rotate jobs.**
2. **Keep wrist neutral position.**
3. **Wear splints (not where it interferes with work).**
4. **Keep warm.**
5. **Cortisone shots.**
6. **Vitamin B-6 has mild effect.**
7. **Anti-inflammatories before, during, after activity. (ibuprofen, aspirin etc.)**
8. **Surgery – generally very effective.**



# Carpal Tunnel Surgery



# UEMSD Recommendations

- Tool and work design to decrease hand force.
- Improve friction/grip.
- Tool grip diameter (@ 2 inches).
- Power grip, no pinch grip.
- Minimize wrist/shoulder deviation.
- - exertion time (+ muscle recovery time.)
- Alternate hands.
- Less repetition through job variety.
- Use PPE.
- Pad to reduce contact stress.

