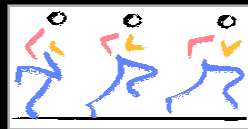


# Elbow Arthroscopy The Basics

J. Michael Bennett M.D.  
Fondren Orthopedic Group



# Elbow Arthroscopy

- History

- 1931- M.S. Burman MD

- Attempted elbow arthroscopy on cadavers

- 3mm endoscope

- Conclusion:

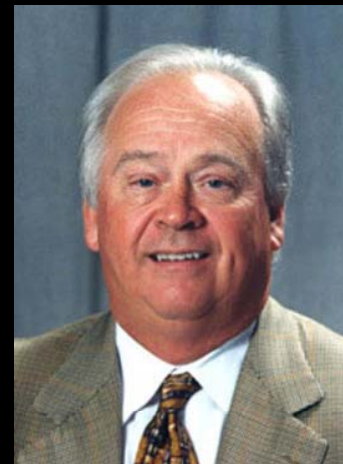
- “the elbow joint was unsuitable for examination due to the narrow joint space”

- Anterior approach was “out of the question”



# Elbow Arthroscopy

- History
  - 1970s – 1980s
    - Evolution of arthroscopy
    - Cadaveric dissections further outlined arthroscopic anatomy
  - 1985- first published clinical studies showing elbow arthroscopy was a feasible procedure
    - Watanabe
    - Andrews

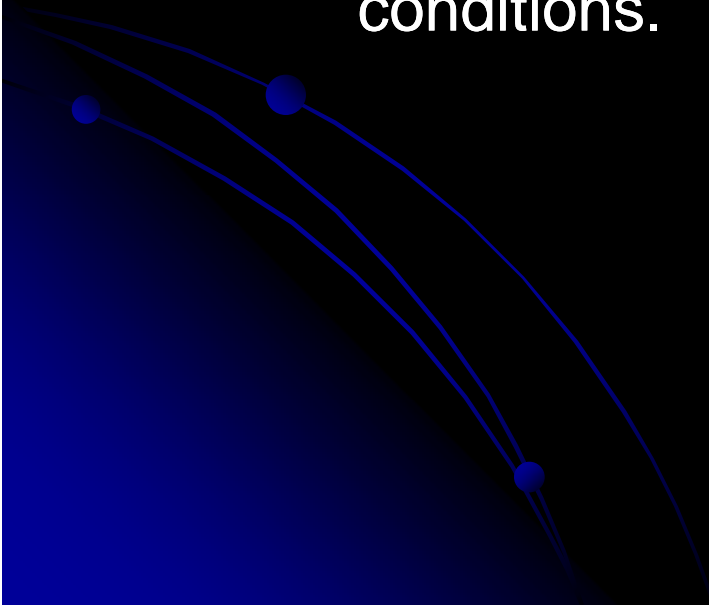


# Elbow Arthroscopy

- History

- Elbow arthroscopy evolution

- Advances in technique and equipment have made elbow arthroscopy an effective and safe method for the diagnosis and treatment of a variety of elbow conditions.



# Elbow Arthroscopy

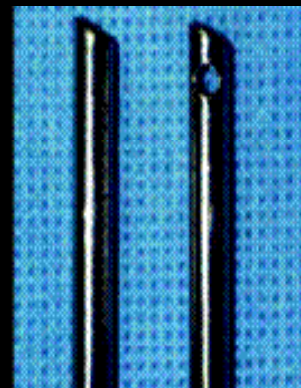
- Know your anatomy
  - Multiple portals
  - Neurovascular Proximity
- Valuable and effective tool
  - Diagnosis
  - Treatment
- Systematic approach is key
  - Proper OR setup
  - Arthroscopic skills
  - Portal placement

# Setup

- Patient positioning
  - Supine
    - Pulley system
    - Hydraulic positioning device
  - Lateral decubitus
  - Prone
    - Elbow holder



- Equipment
  - Arthroscopy set
  - 4.0 cannulas
  - Avoid side vented inflow cannulas (extravasation)
  - Gravity vs. pump
  - Arthroscopic retractors



# Setup

- Retractors
  - Useful in specific procedures
    - Provides capsular retraction
    - Protects neurovascular structures
  - Indications
    - Capsular release
    - Lateral epicondylitis
    - Protecting the ulnar nerve when working in the posteromedial joint



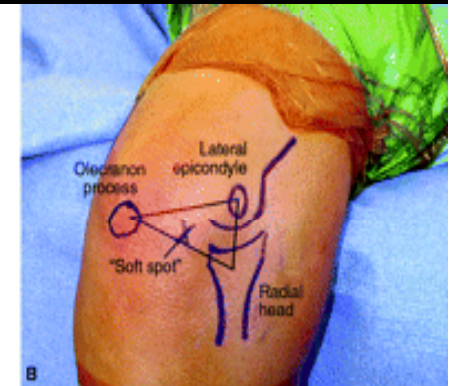
# Anatomy and Technique

- Anatomy is the key to safe effective arthroscopy
- Mark your landmarks
  - Medial epicondyle
  - Lateral epicondyle
  - Radiocapitellar joint
  - Olecranon
  - Ulnar nerve



# Technique

- Identify the soft spot
  - Leave elbow flexed 90 degrees
    - Proper placement of the elbow holder (TENET)
      - Proximal to the antecubital fossa
      - Allow full flexion and extension
    - Pre-insufflate the joint with 20-40cc
  - Incise skin only
    - Blunt dissection (hemostats)
    - Inside out portals vs outside in portals
  - Blunt trocars

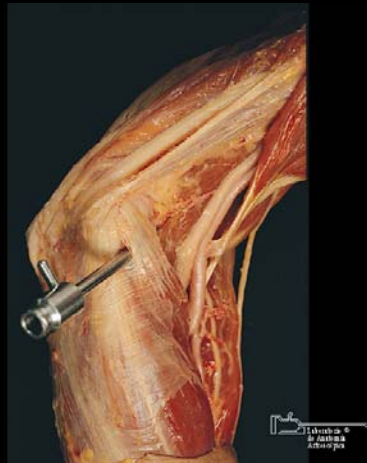


# Portals

- Ten portals described
  - Complicated and overwhelming
  - Four portals necessary for diagnostic arthroscopy
  - Portals can be procedure specific
  - Proximal anterior portals safer than distal anterior portals
  - Avoid ulnar nerve posteriorly



# Portals

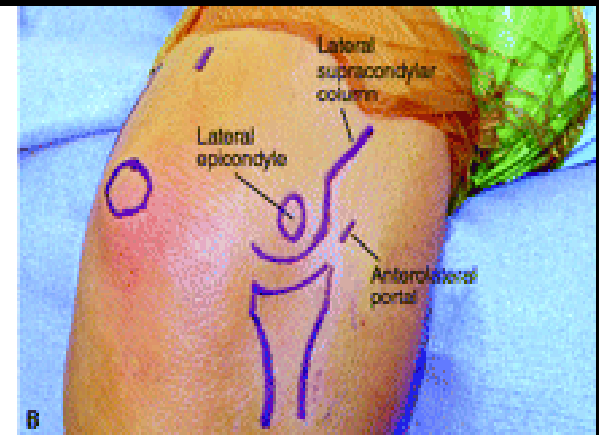
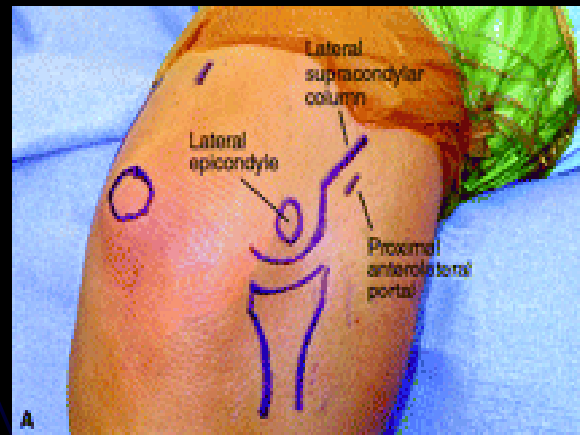
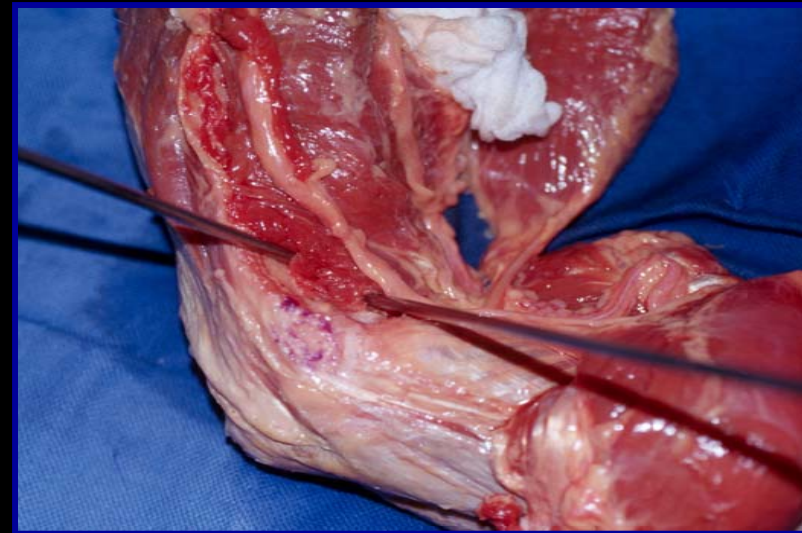


Laboratorio de Anatomía Artrososcopia

Laboratorio de Anatomía Artrososcopia

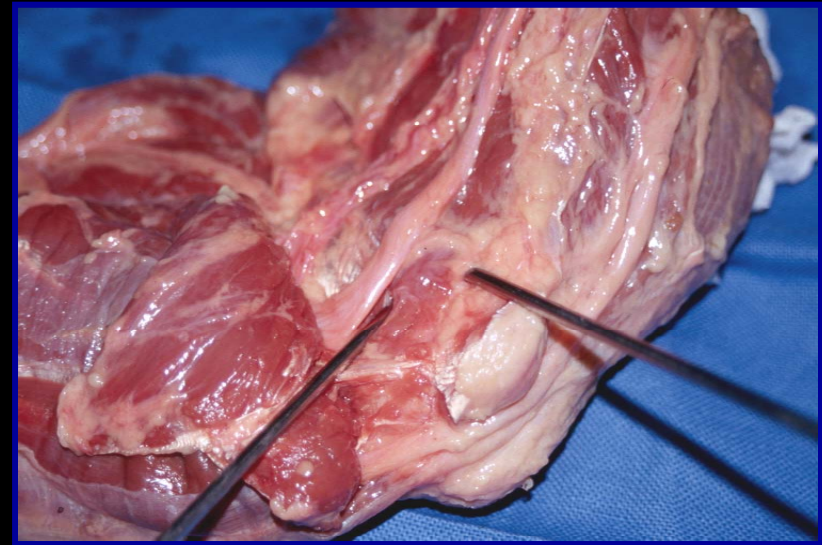
# Anterolateral Portals

- Proximal (2cm proximal, 1cm anterior)
- Distal (2-3 cm distal, 1cm anterior: close to the radial nerve)



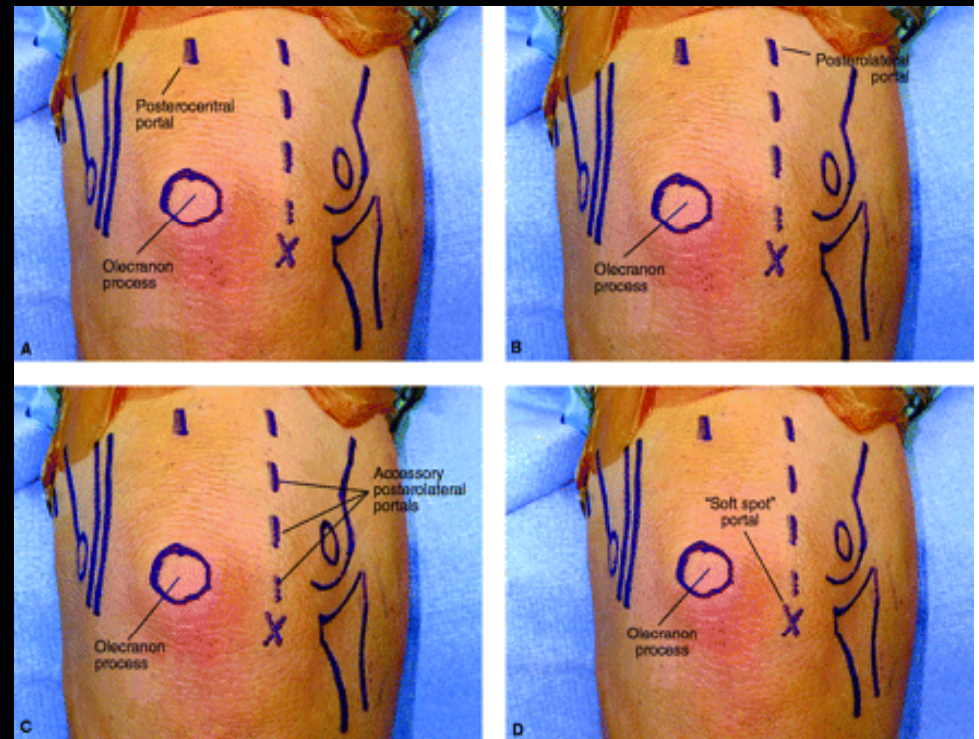
# Anteromedial Portals

- Proximal (2cm proximal, 1cm anterior)
- Distal (2cm anterior, 2cm distal to medial epicondyle- closer to median nerve, MABC)
  - Medial recess access
  - Rarely used



# Posterior Portals

- Direct posterior: 3cm proximal to olecranon tip
  - Safest portal
- Posterolateral: 1-2 cm lateral to the posterior portal at triceps border
- Accessory PL portals: anywhere along a line from the site of the proximal posterolateral portal to the site of the lateral soft spot distally
- Soft spot portal: triangle formed by the lateral epicondyle, olecranon process, and radial head
- Protect the ulnar nerve and PABC nerve



# Diagnostic Arthroscopy

- Indications can vary based on surgeon experience
  - Loose bodies- most common
  - Chondral lesions/ OCD
  - Plica/ synovitis
  - Contracture
  - Arthritis
  - Diagnosis of instability/ unknown elbow pathology
  - Fracture
  - Lateral epicondylitis
  - Infection

# Diagnostic Arthroscopy

- **Contraindications**

- **Distortion of normal anatomy**

- **Soft tissue vs bony**

- Flaps, skin grafts, burns- pedicle disruption or sinus tract formation

- **Extensive heterotopic bone formation**

- **Ulnar nerve transposition**

- **Submuscular or subcutaneous**

- **Need to identify the nerve**

# Portal Placement Pearls

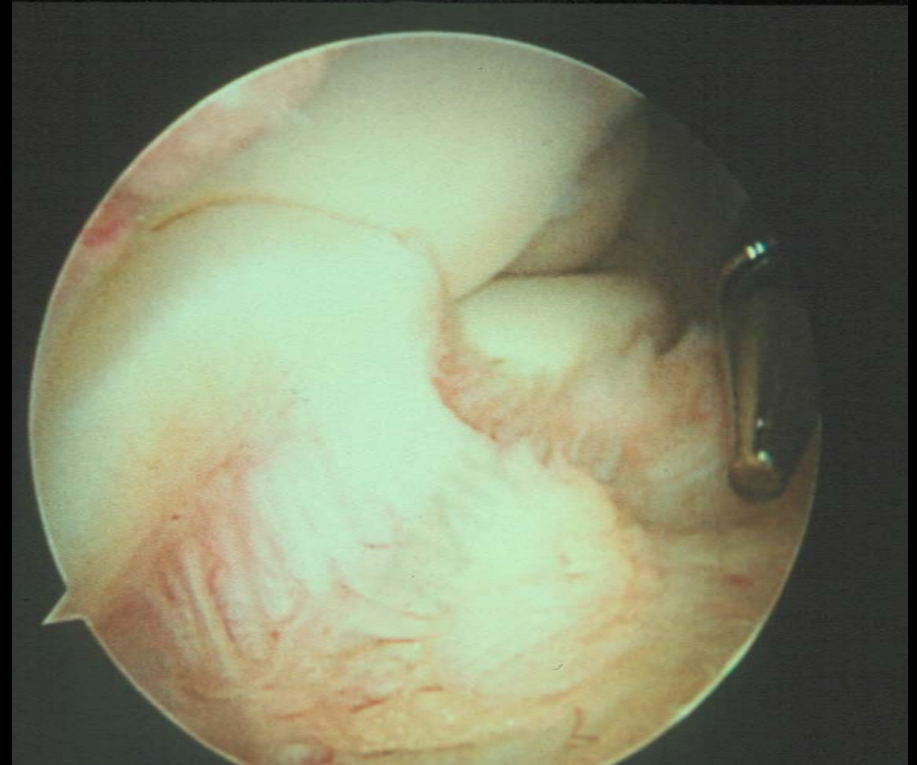
- Measurements are important in placement but landmarks are key....anatomy may vary
  - Previous surgery (ulnar nerve transposition)
  - Previous fracture (malunion)
  - Contracture
- Use the inside out technique
- Always insufflate joint
- Always bluntly dissect after incision
- Low threshold for open procedure

# Complications

- Nerve injury- 1-5% complication rate
  - Direct injury
    - Trocars and instrumentation
    - Failure to use blunt dissection- neuromas
  - Indirect injury
    - Compartment syndrome
      - Aggressive joint distension/ fluid extravasation
    - Local anesthesia extravasation- transient palsy
- Joint ankylosis
  - Heterotopic bone formation
    - Less than open procedures
    - Minimize bleeding
- Infection
  - Sinus tract formation- PL portal

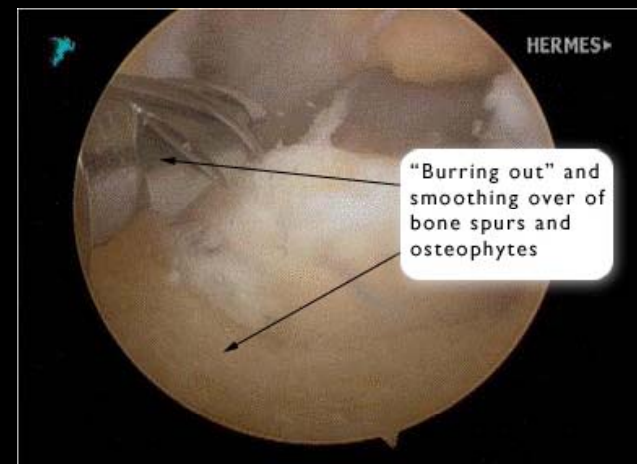
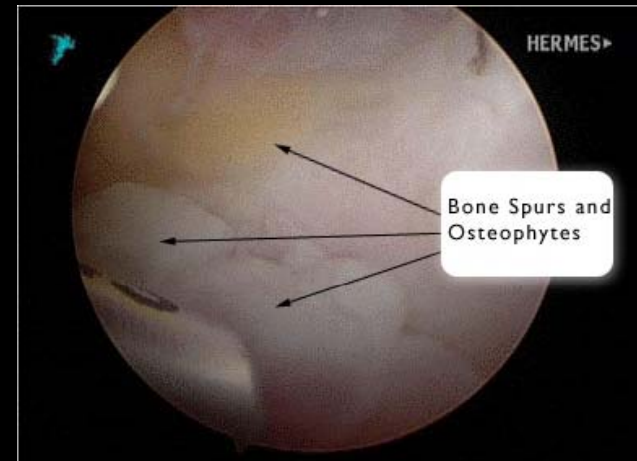
# Diagnostic Arthroscopy

- Systematic approach-  
Anterior Compartment
  - Position
  - Create proximal anterior portals
  - Diagnostic evaluation
    - Radiocapitellar joint (sup/pron, varus stress)
    - Ulnohumeral joint (tracking, coronoid impingement, valgus laxity)
    - Proximal radioulnar joint



# Diagnostic Arthroscopy

- Systematic Approach– Posterior Compartment
  - Olecranon
  - Olecranon fossa
  - Posterolateral and posteromedial gutters
- Protect the ulnar nerve



# Diagnostic Arthroscopy Video

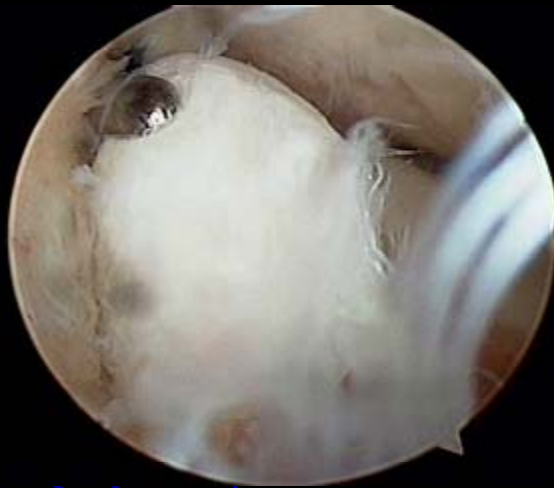
# Lateral Epicondylitis



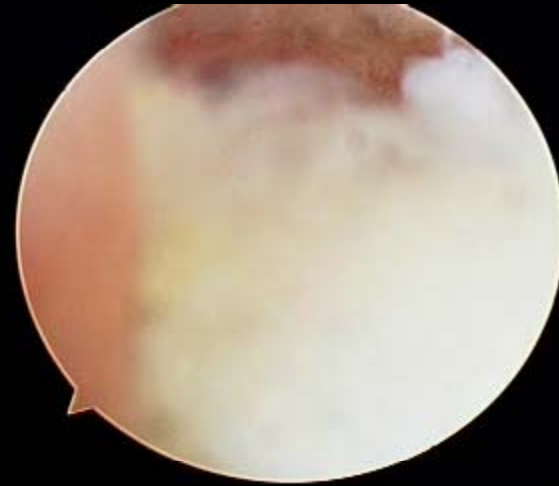
# Contracture



# Loose Body Excision



# Arthritis



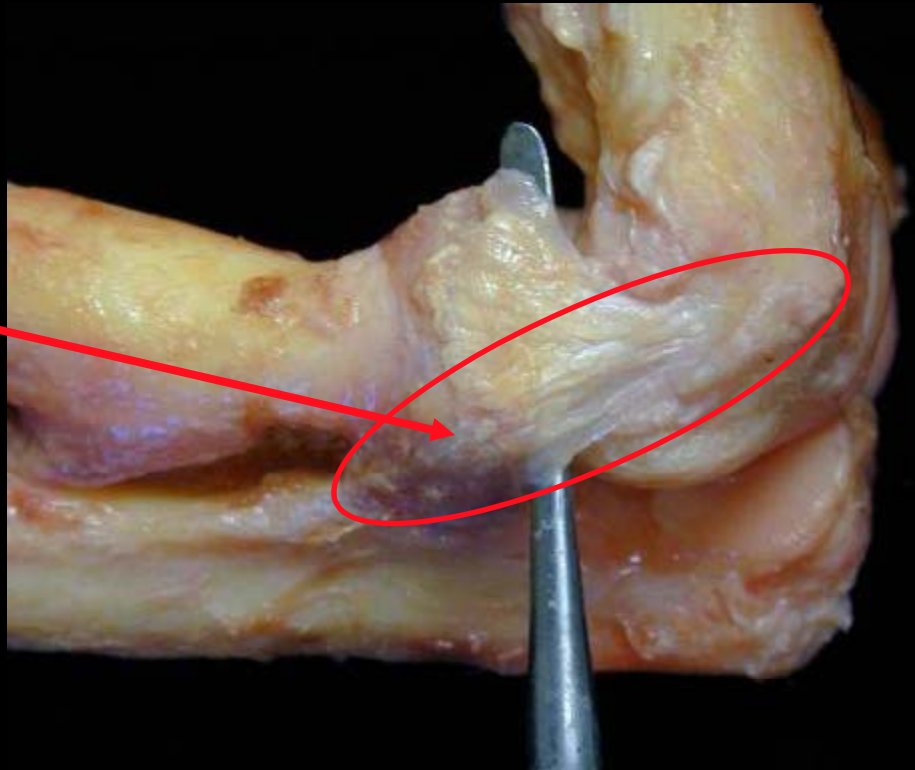
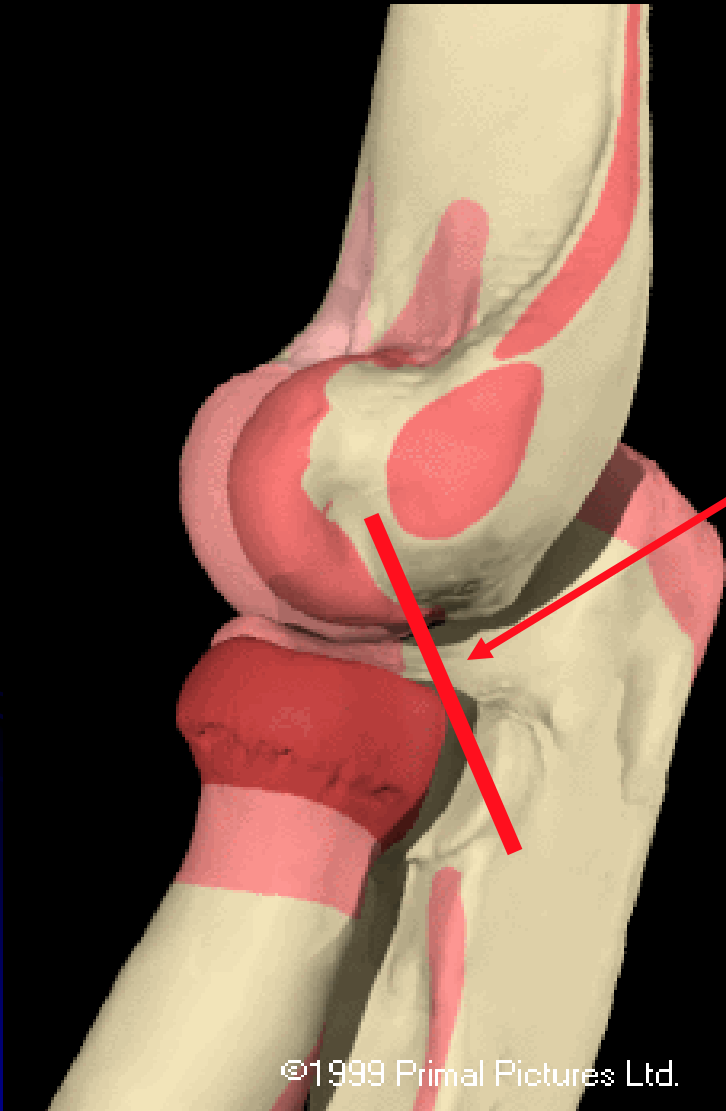
# PLRI



2

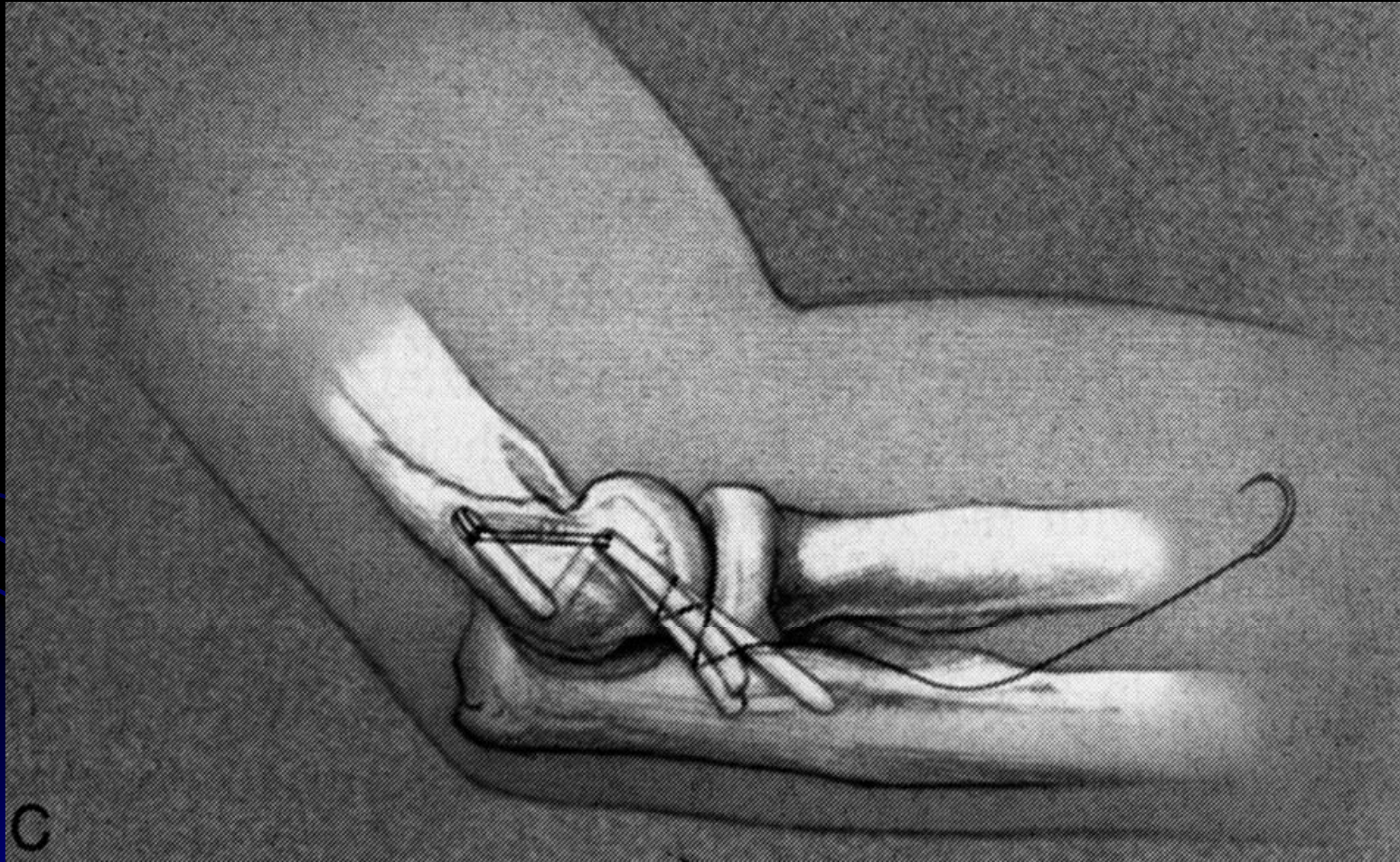


LCL

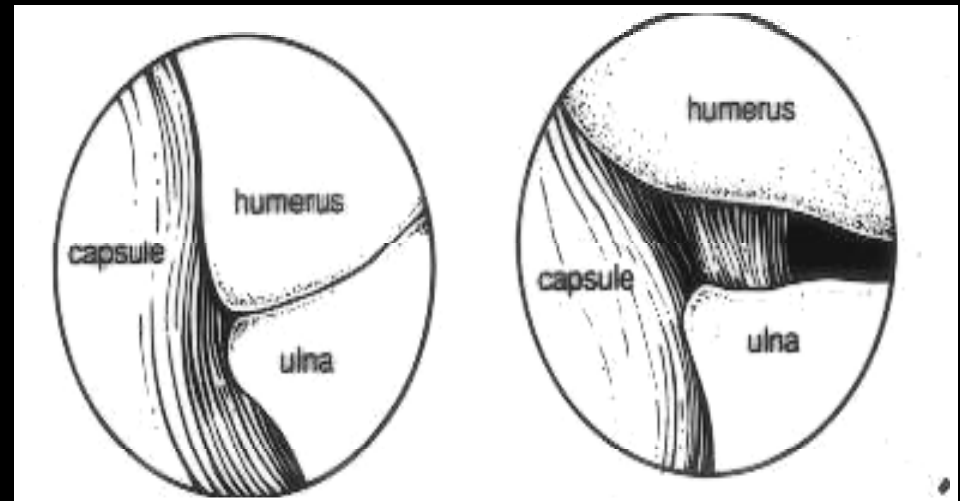


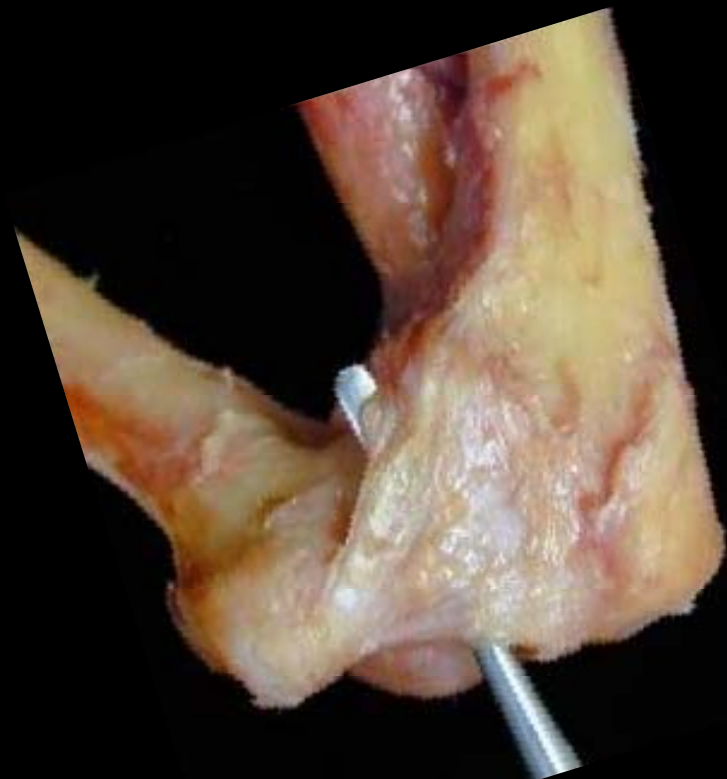
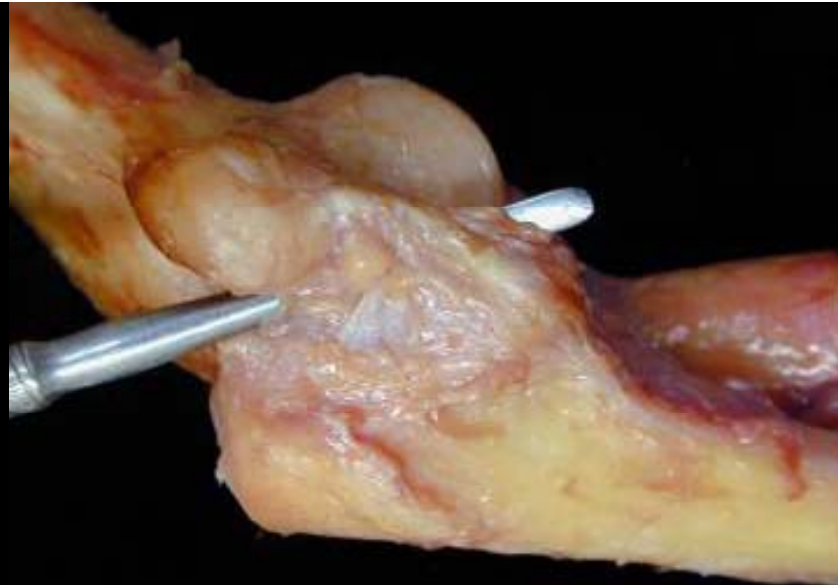
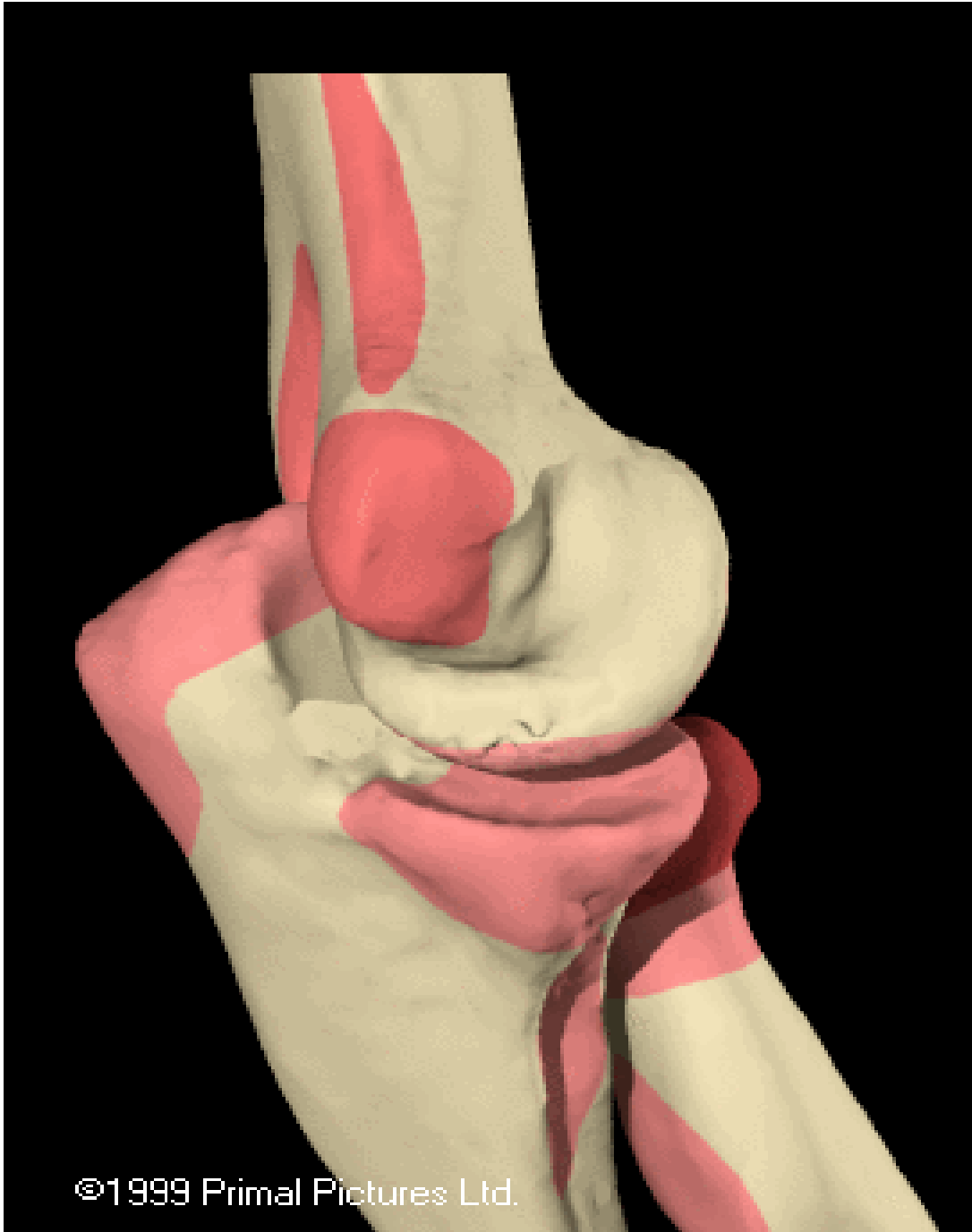
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# Lateral Collateral Reconstruction



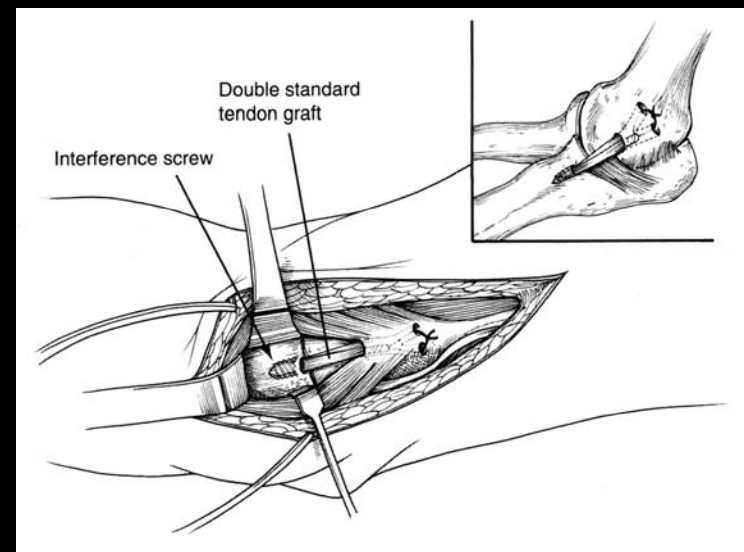
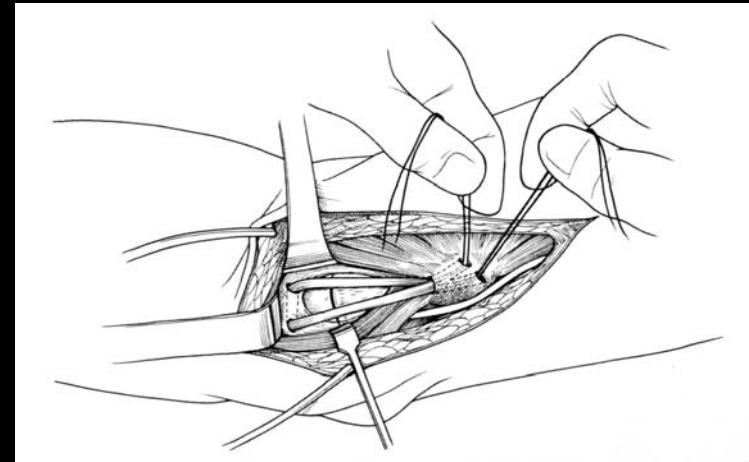
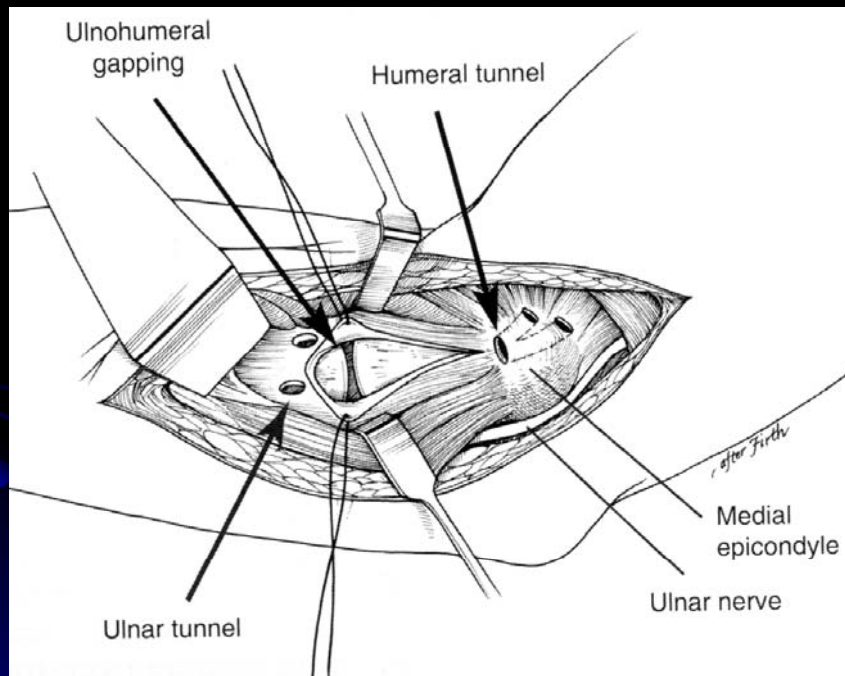
# Valgus Instability





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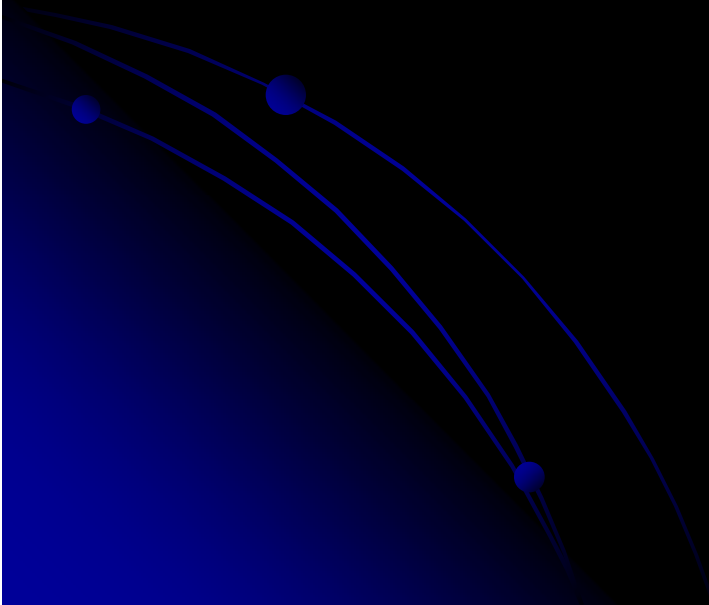
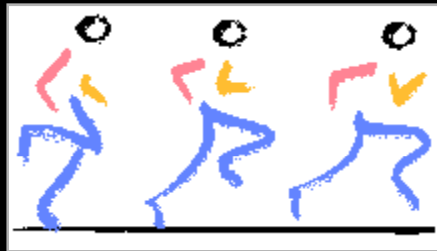
# Medial Collateral Reconstruction



# Conclusion

- Elbow Arthroscopy has become an accepted treatment modality for numerous conditions of the elbow.
- Careful preoperative planning, a thorough history and physical, and careful portal placement are necessary to ensure a successful outcome.
- Experience, skill level, and knowledge of arthroscopic anatomy should determine the complexity of cases attempted.
- New indications are likely to emerge as surgical equipment and techniques are refined and the clinical experience of elbow surgeons increases.

THANK YOU



# Lateral Epicondylitis

