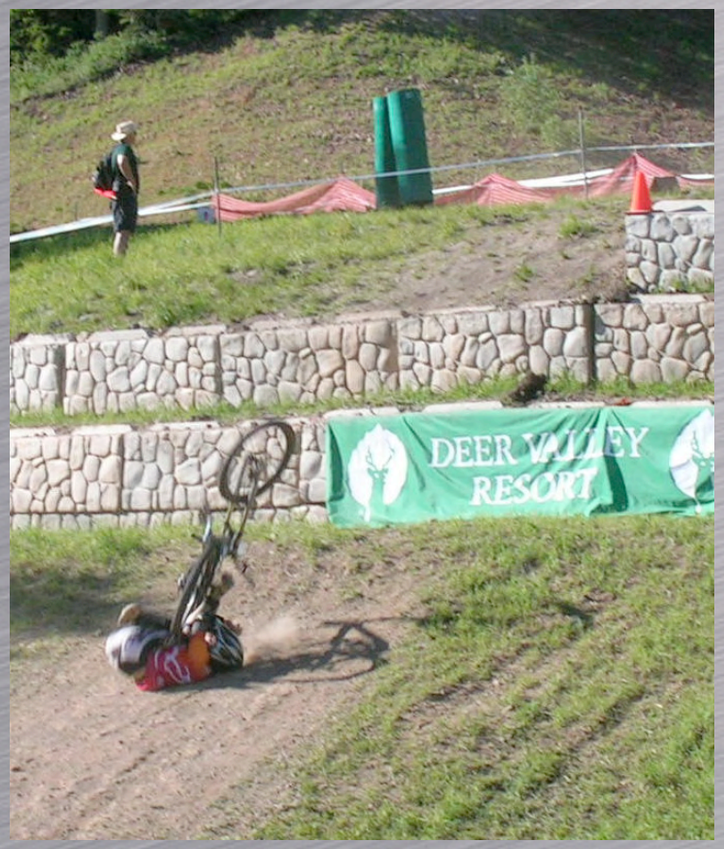
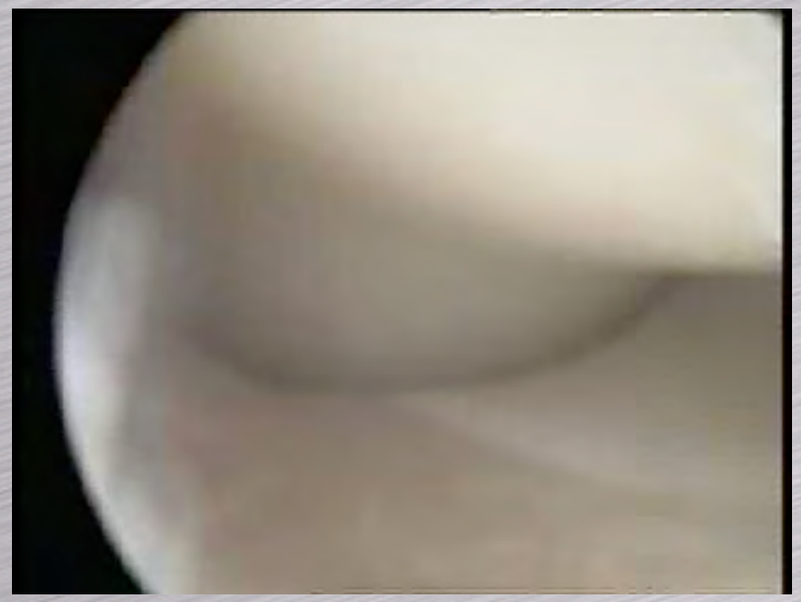
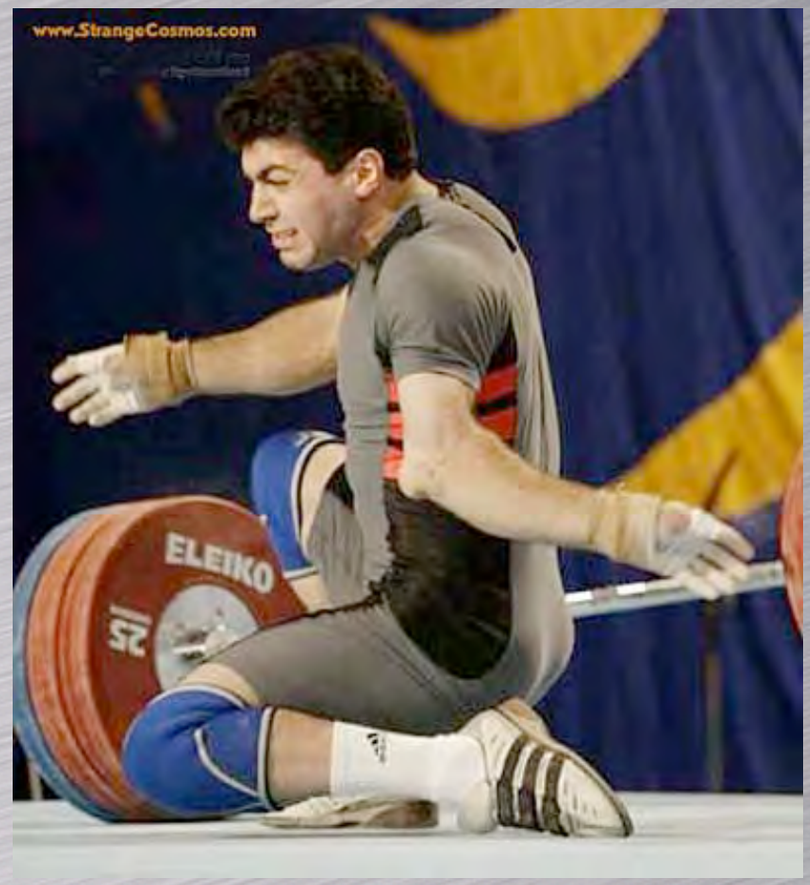
Elbow arthroscopy in sports injuries







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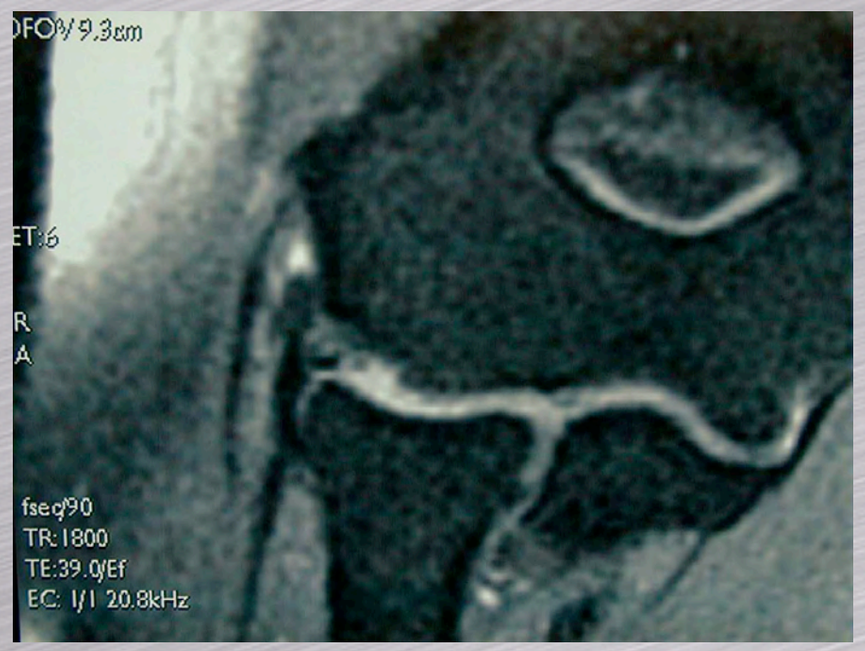
Elbow arthroscopy is not an easy technique

- ✓ Very tight and congruent joint
- ✓ Very risky: up to 14 % of complications have been described
  - ➡ Very few diagnostic indications as clinical examination and imaging techniques are more adapted



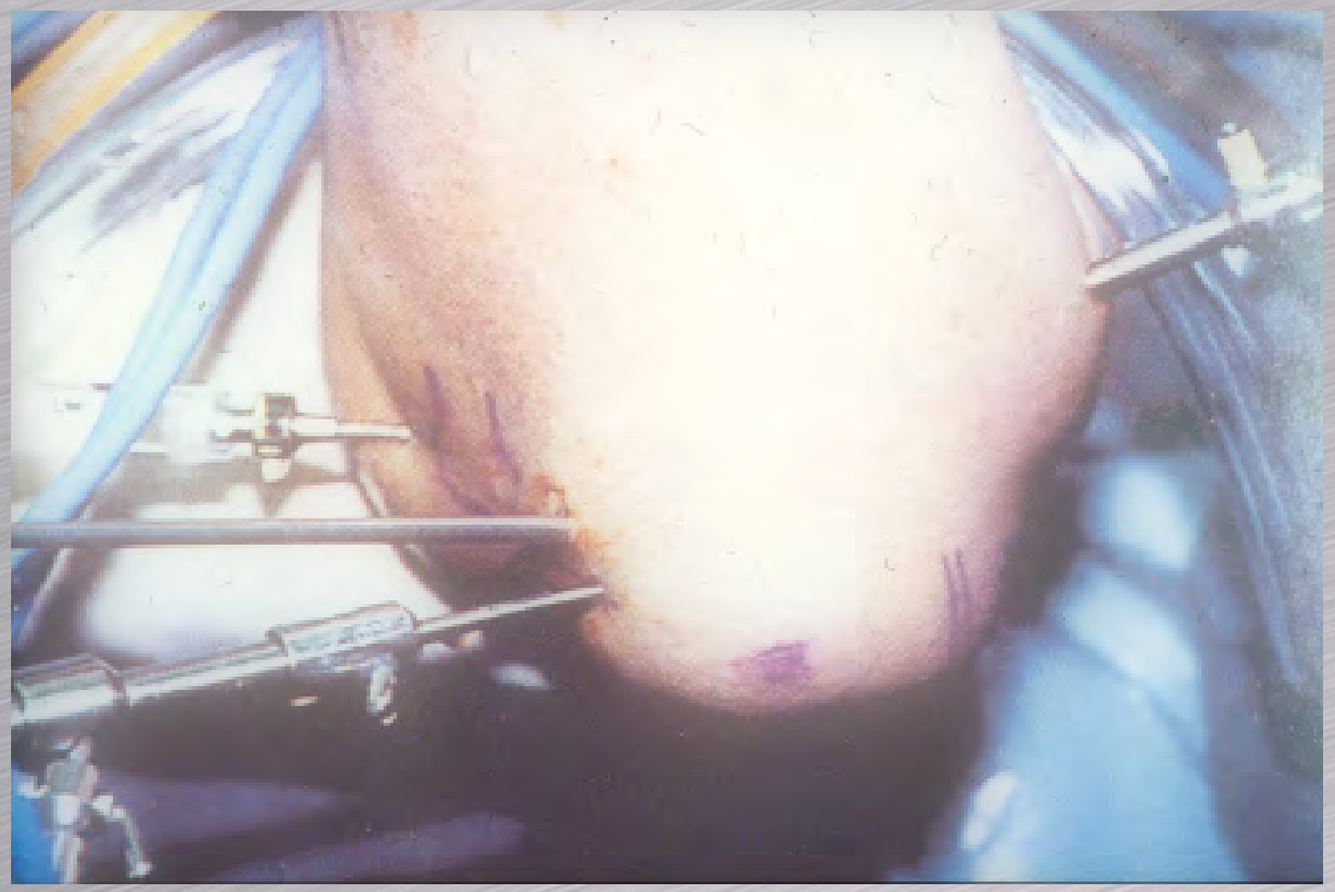
Contra-indications +++

- ✓ Elbow ankylosis
- ✓ Previous surgery
- ✓ Sympathetic dystrophy
- ✓ Ulnar nerve instability (Childress)
- ✓ (Lack of experience)

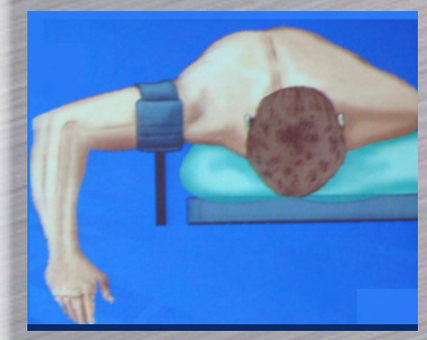
Potential therapeutic indications in sportsmen

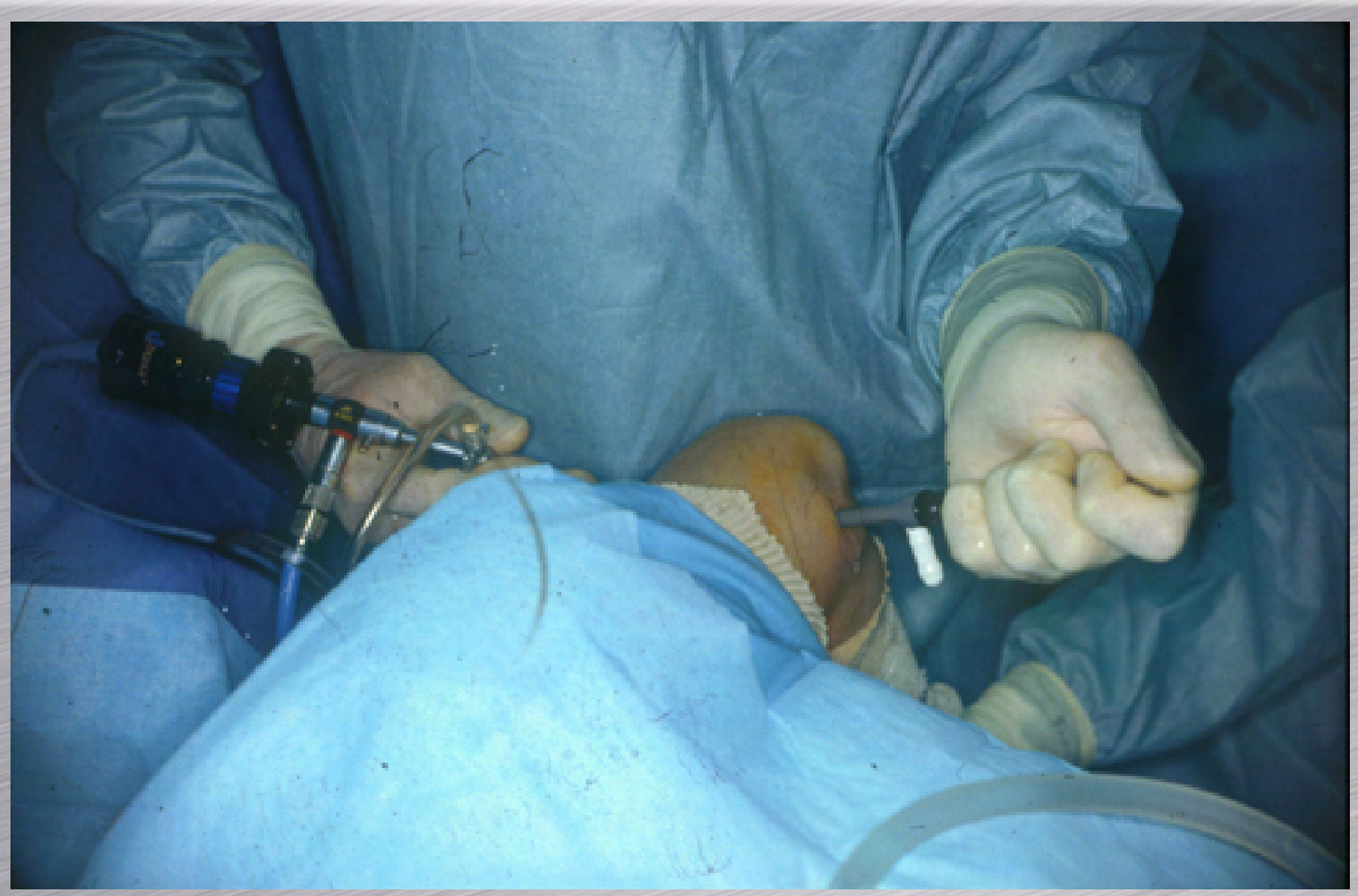
- ✓ Loose bodies
- ✓ Osteochondritis dissecans
- ✓ Synovitis, plicae
- ✓ Débridement of olecranon osteophytes (valgus overload injuries)
- ✓ (some) Post-traumatic elbow stiffness
- ✓ some incomplete fractures
- ✓ Bursitis
- ✓ Tennis elbow

Working position



- Dorsal decubitus:
  - Easy to install
  - Unstable elbow difficult to explore in the posterior compartment

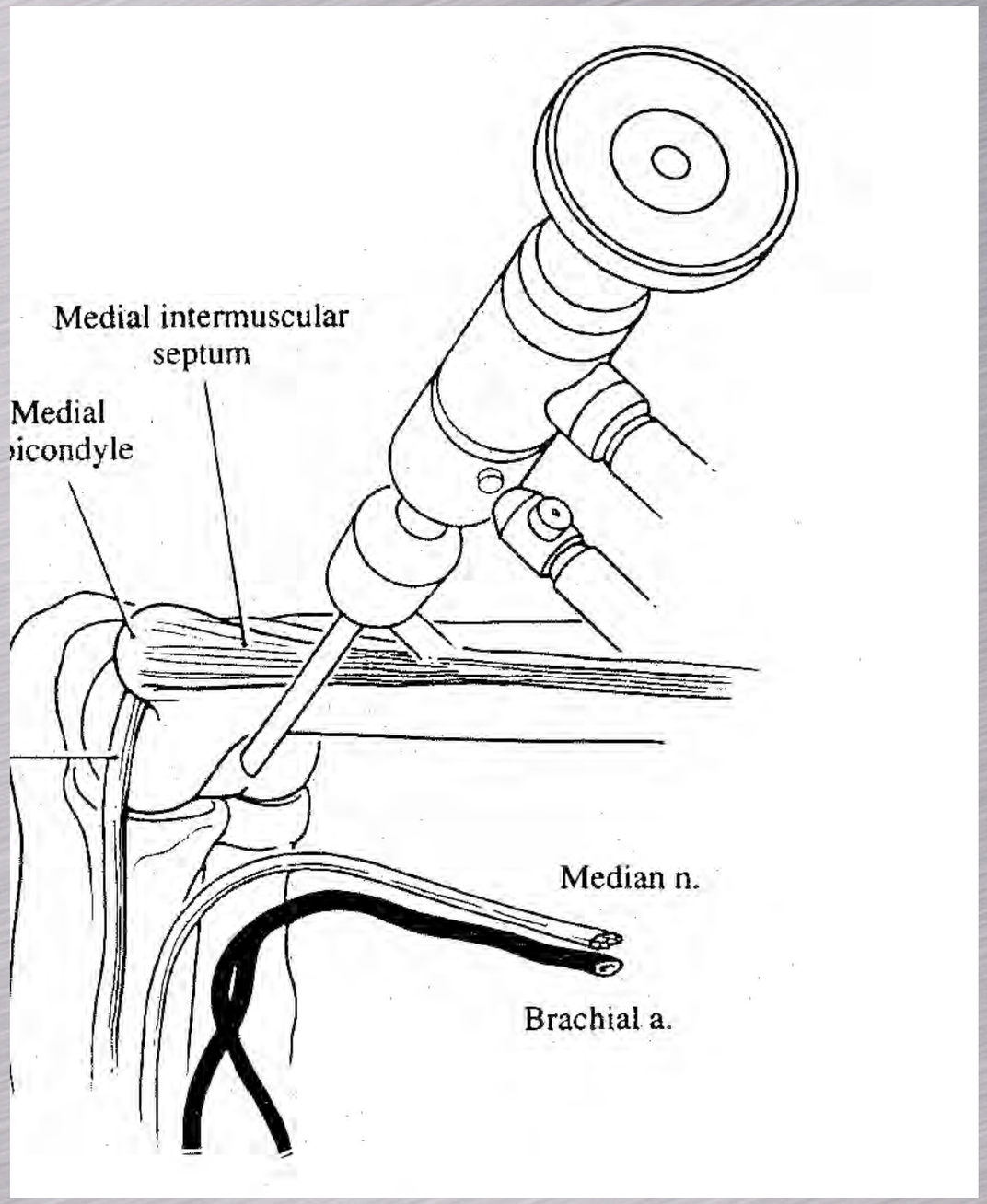


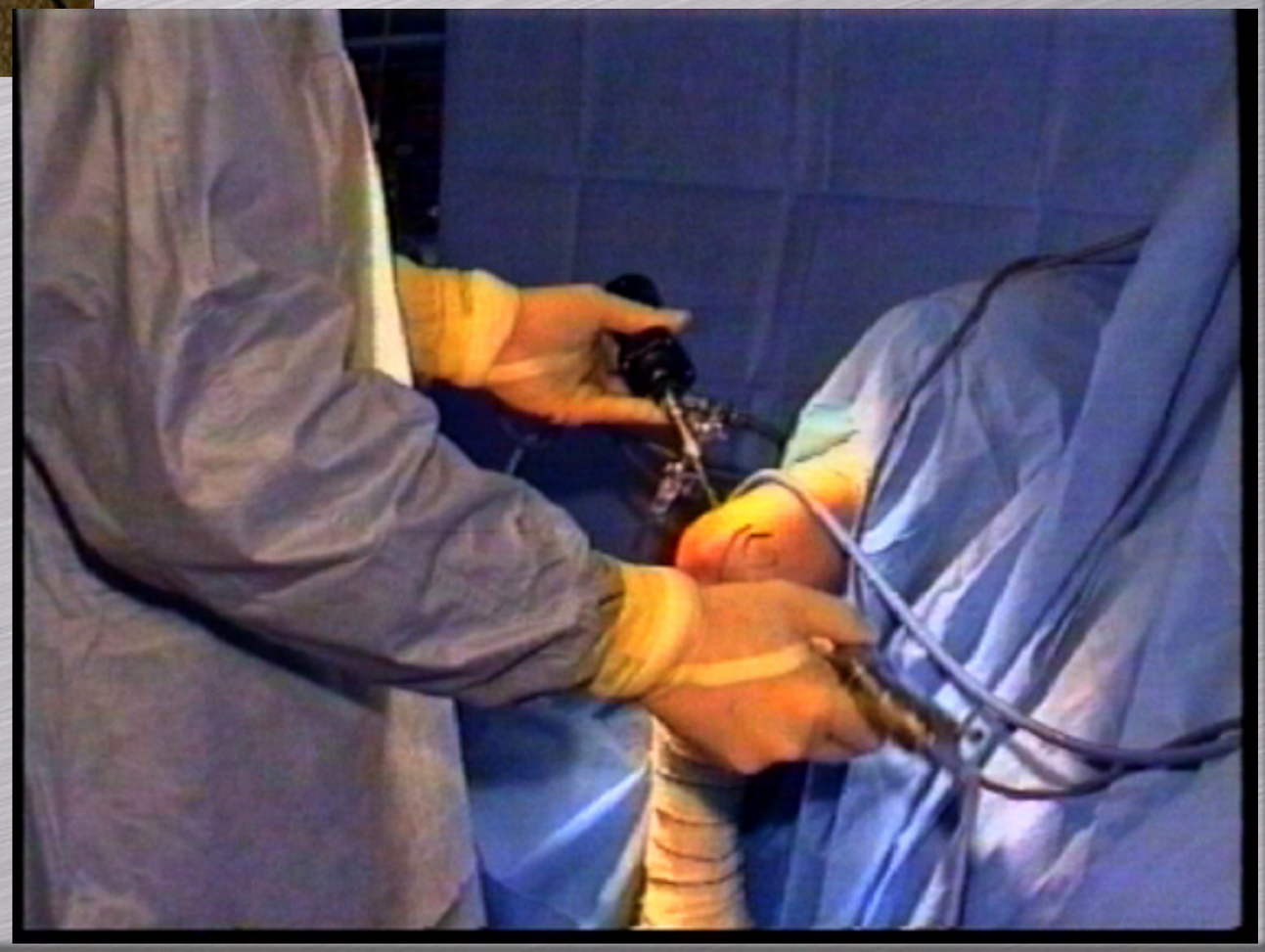


- ✓ Prone position
- ✓ Easier for the surgeon:
  - Better posterior access
  - More physiological position for working

The prone position

- ✓ Is also safer for the patient
- ✓ Gravity takes away the neuro-vascular structures from the instruments

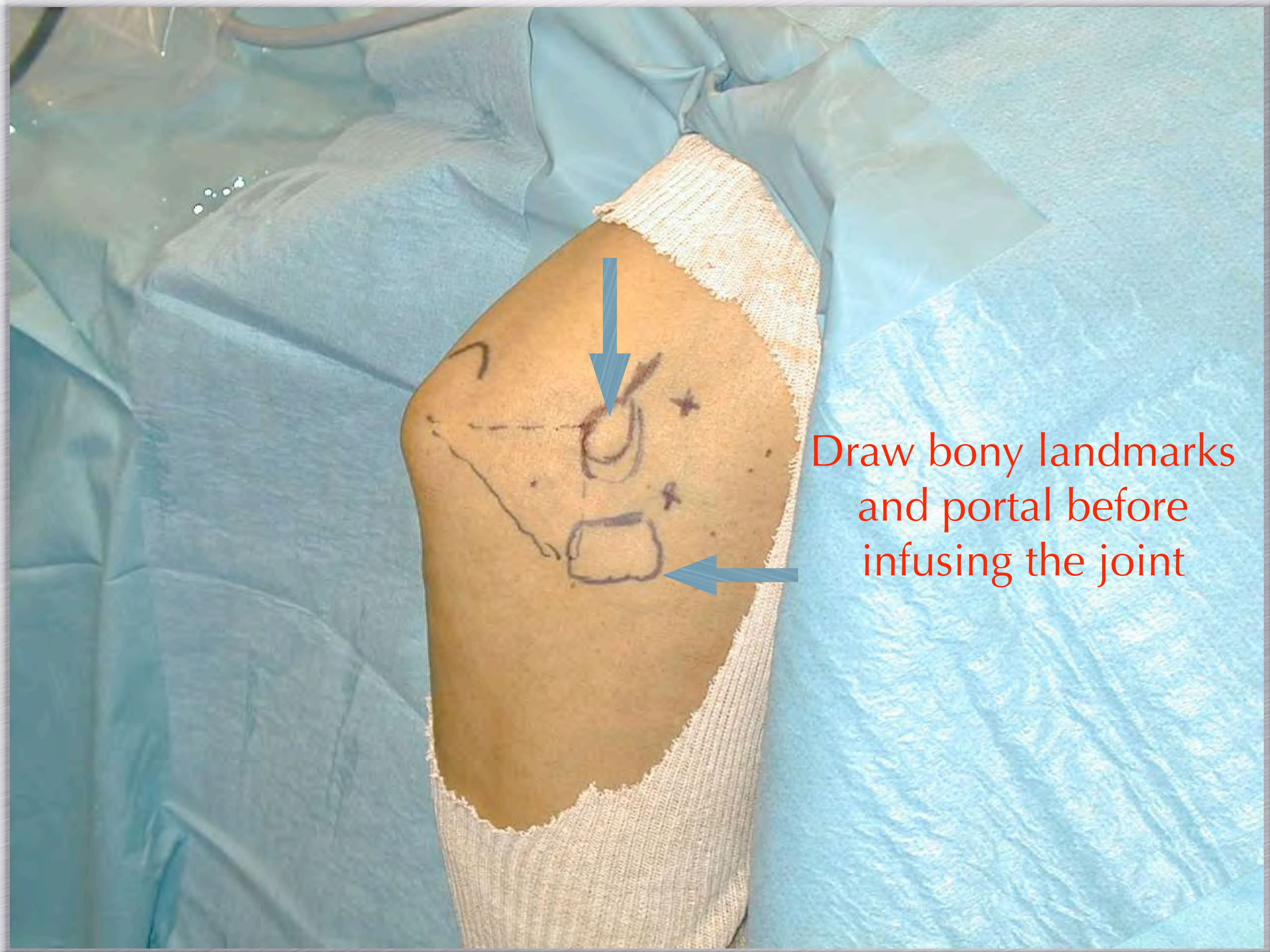




Entry portals

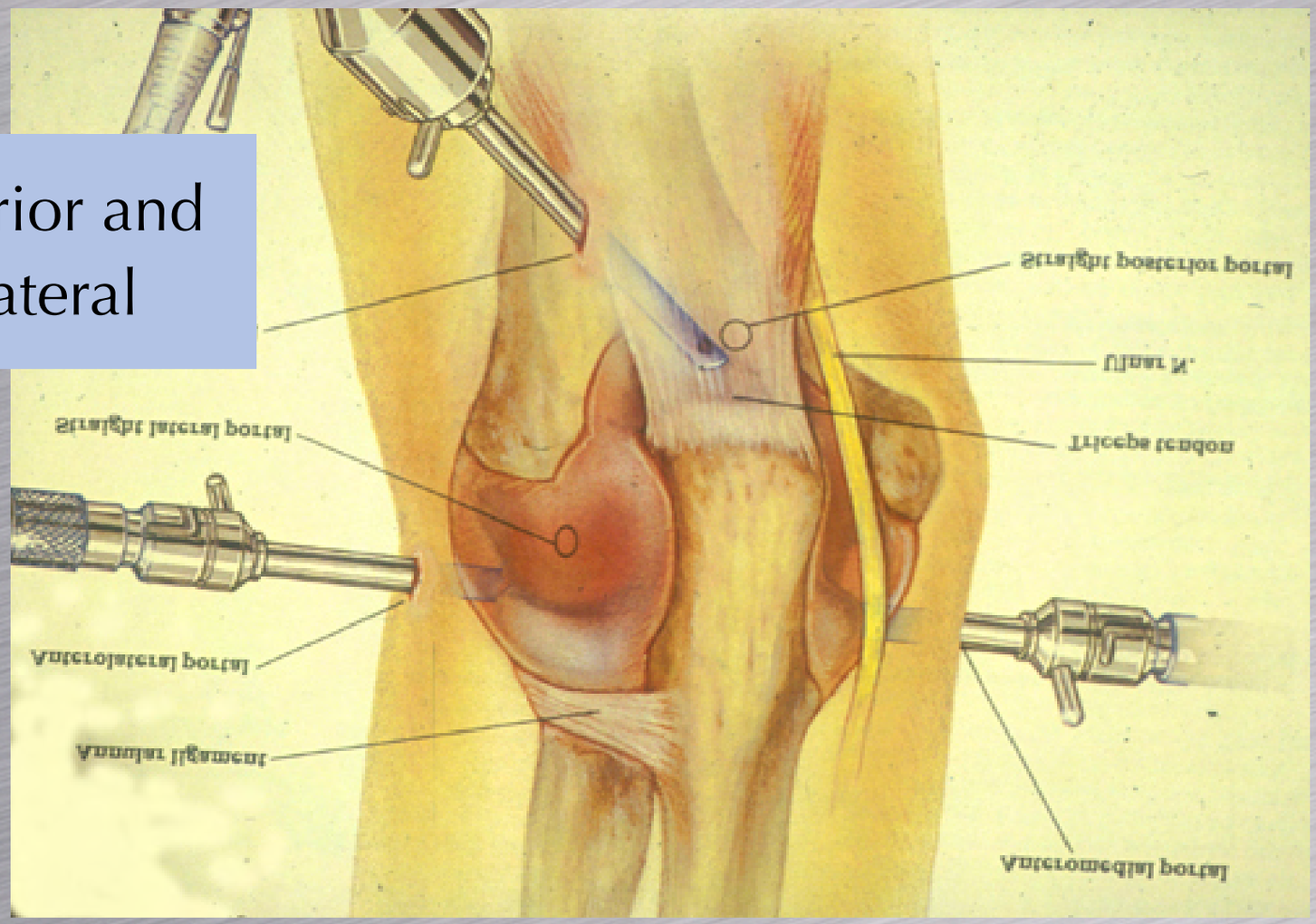
- ✓ Many have been described
- ✓ Some are more dangerous than others
- ✓ Their indication depends of the arthroscopic procedures planned

They must be drawn before inflating the joint


Draw bony landmarks
and portal before
infusing the joint

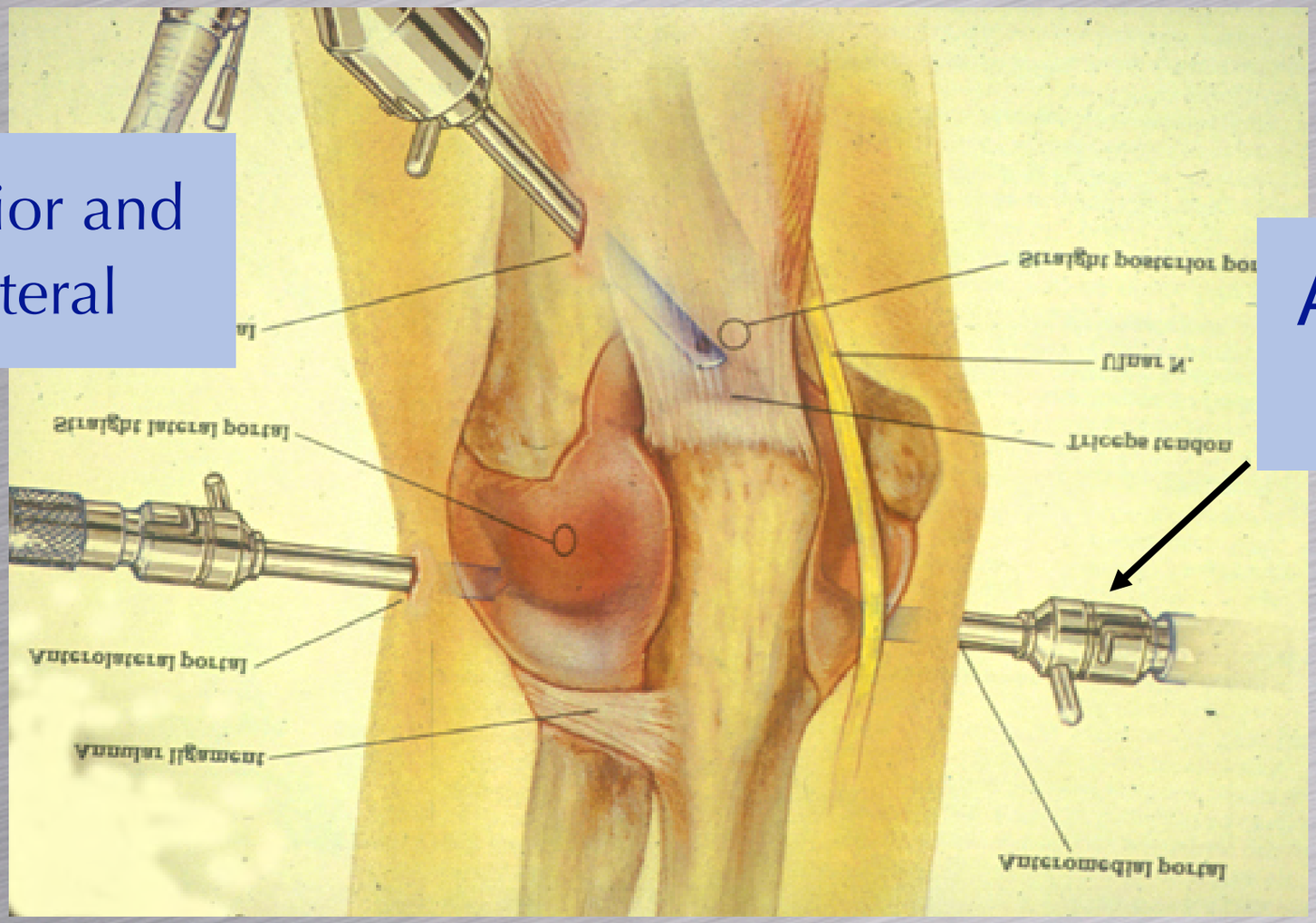
Entry portal

Anterior and lateral



Entry portal

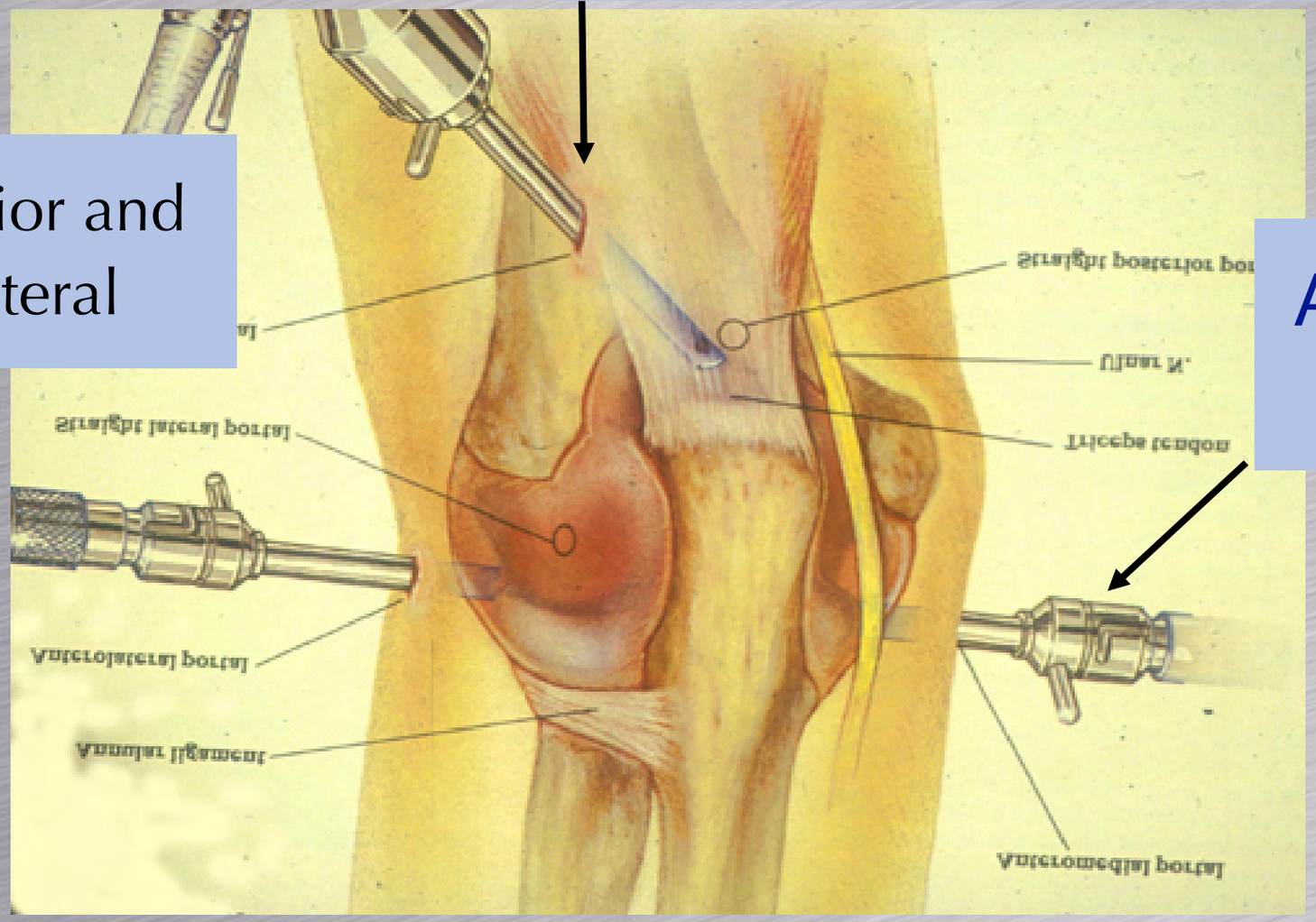
Anterior and lateral



Entry portals

Posterior and postero-lateral

Anterior and lateral

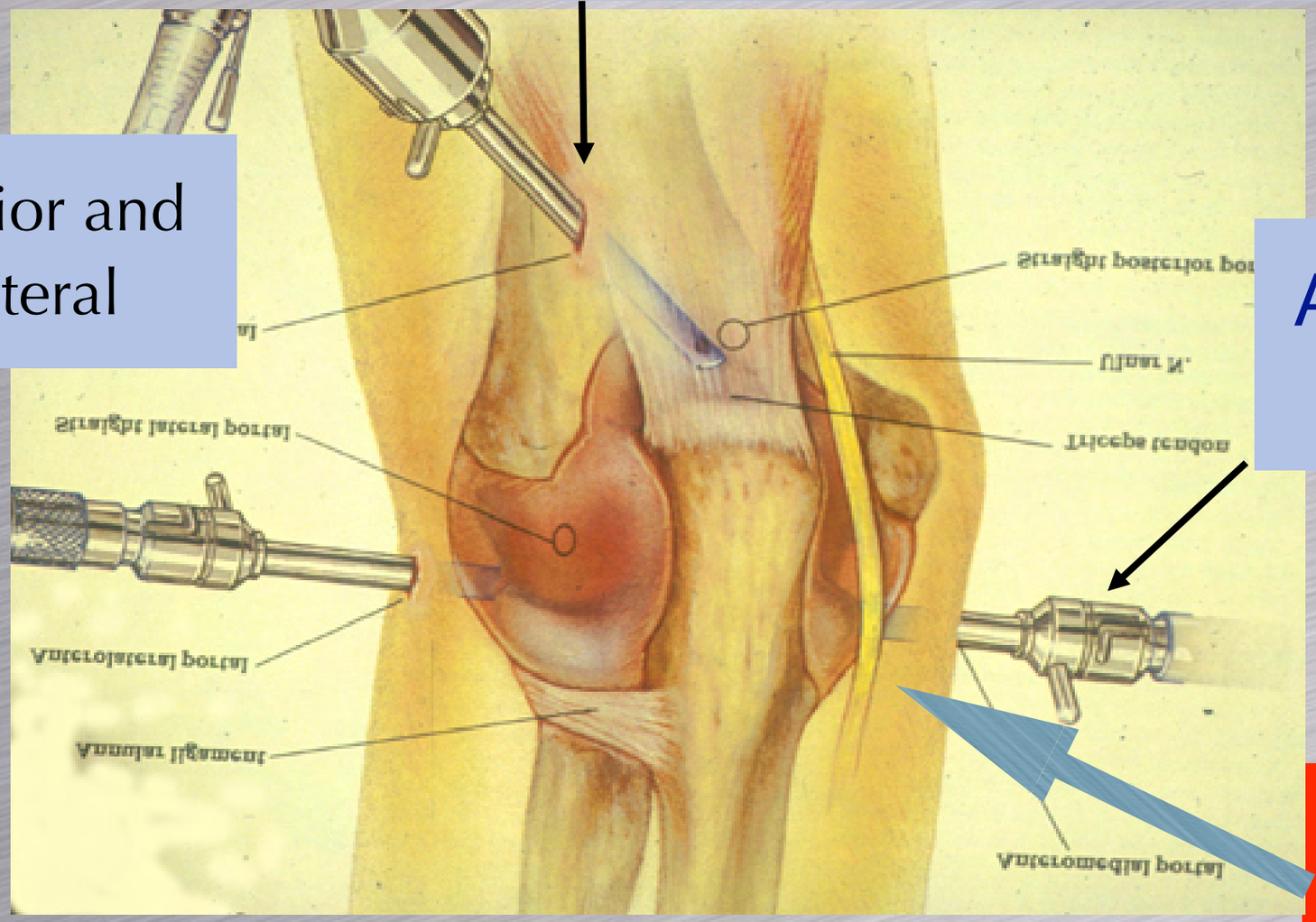


Anterior and medial

Entry portals

Posterior and postero-lateral

Anterior and lateral

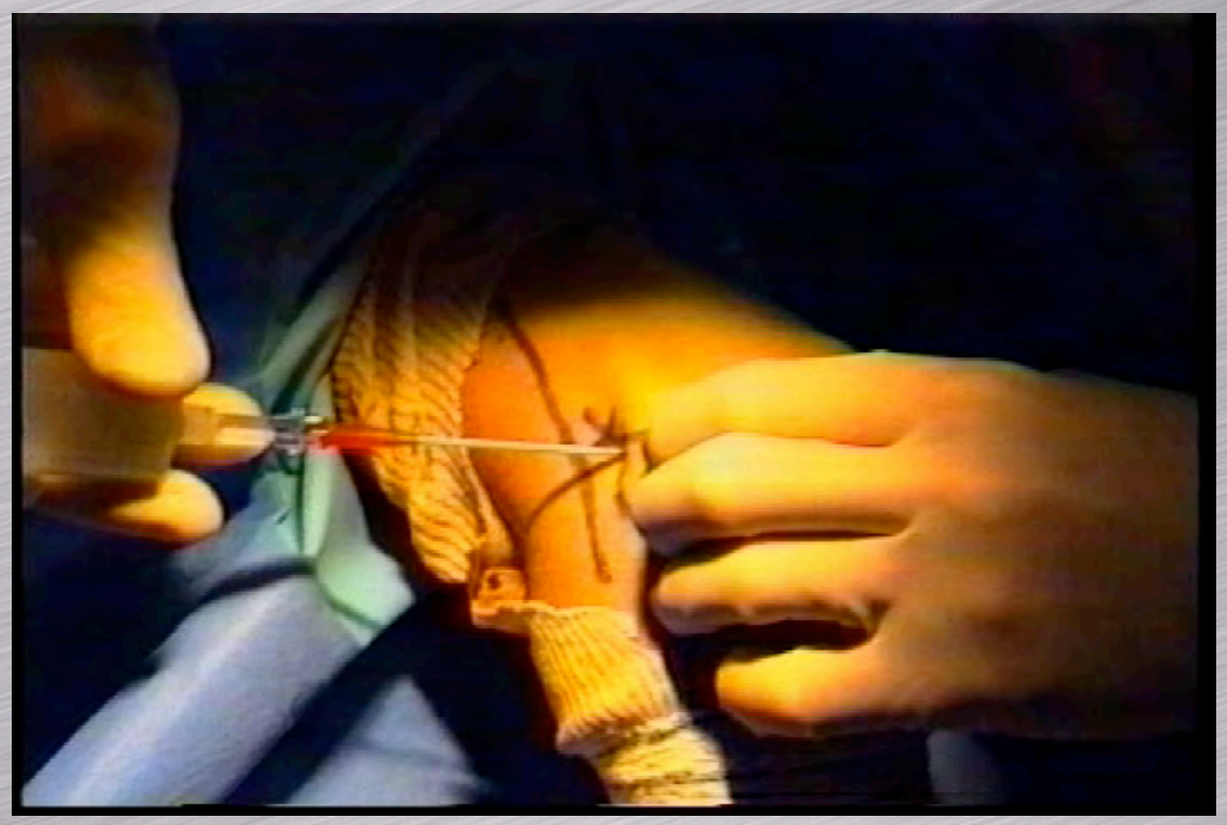


Anterior and medial

But not postero-medial !

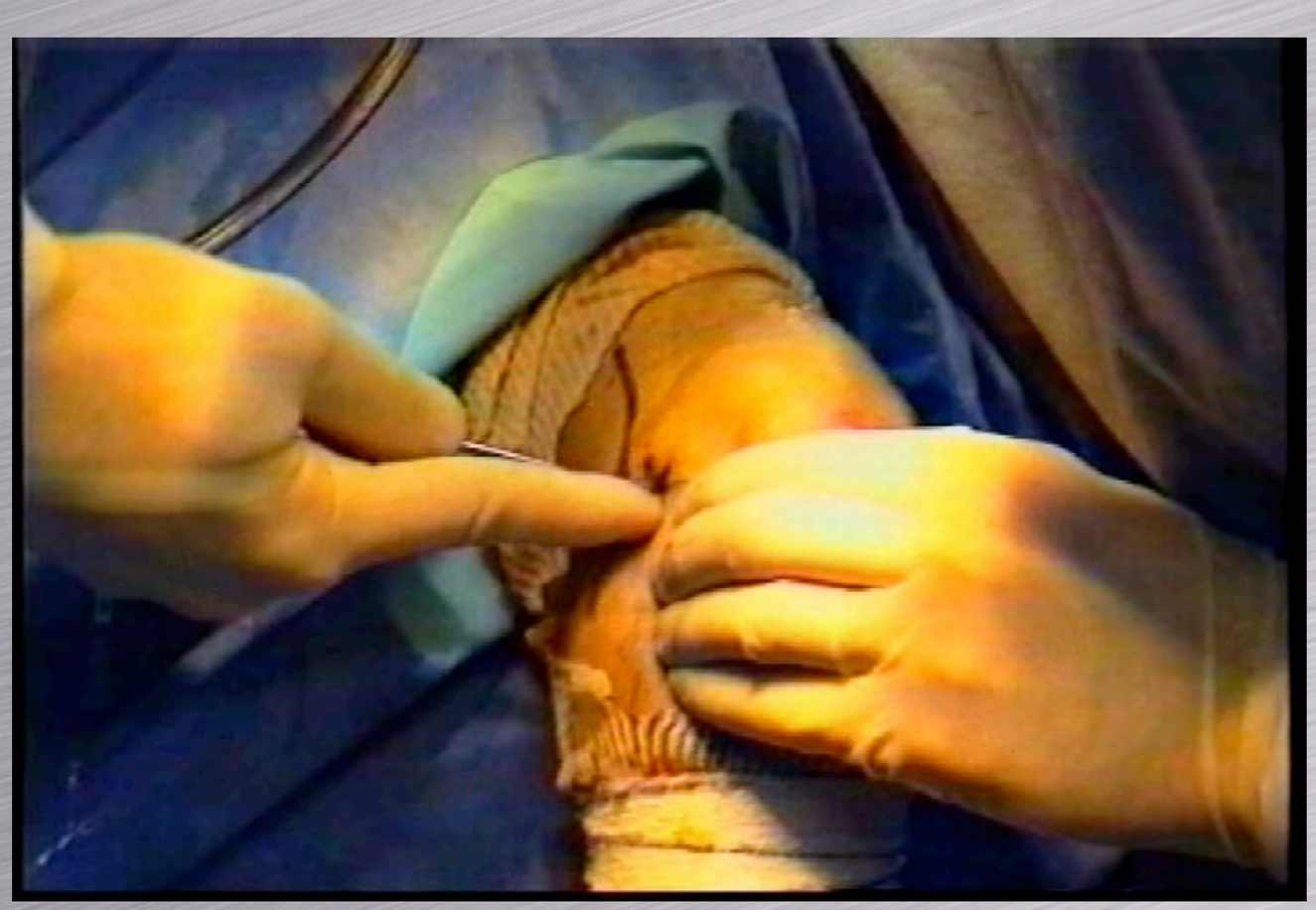
Anterior portals

- ✓ One starts by infusing the joint to take away the neuro-vascular structures
- ✓ Elbow must be flexed to 90°



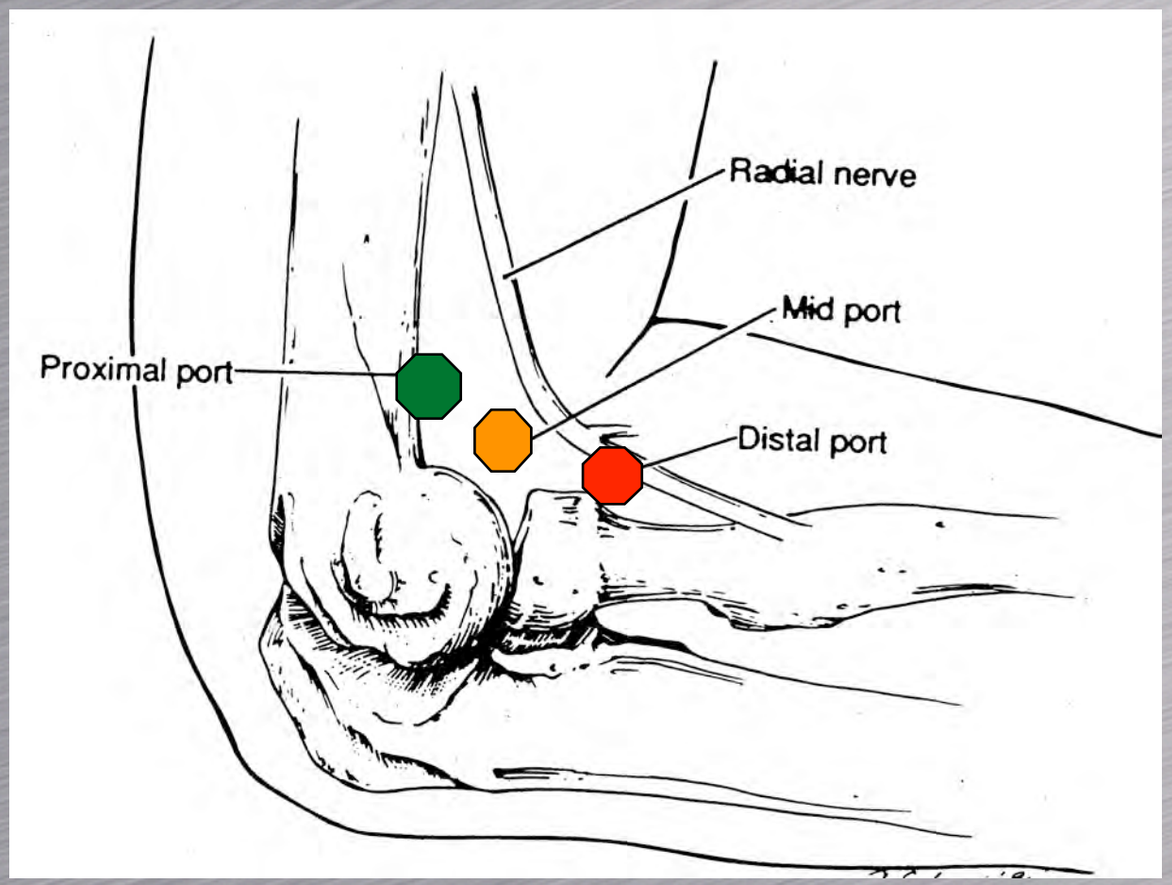
Anterior portals

- ✓ Only incise the skin, then subcutaneous dissection is made with a soft trocar or a forceps
  - One must stay in close contact with the humerus

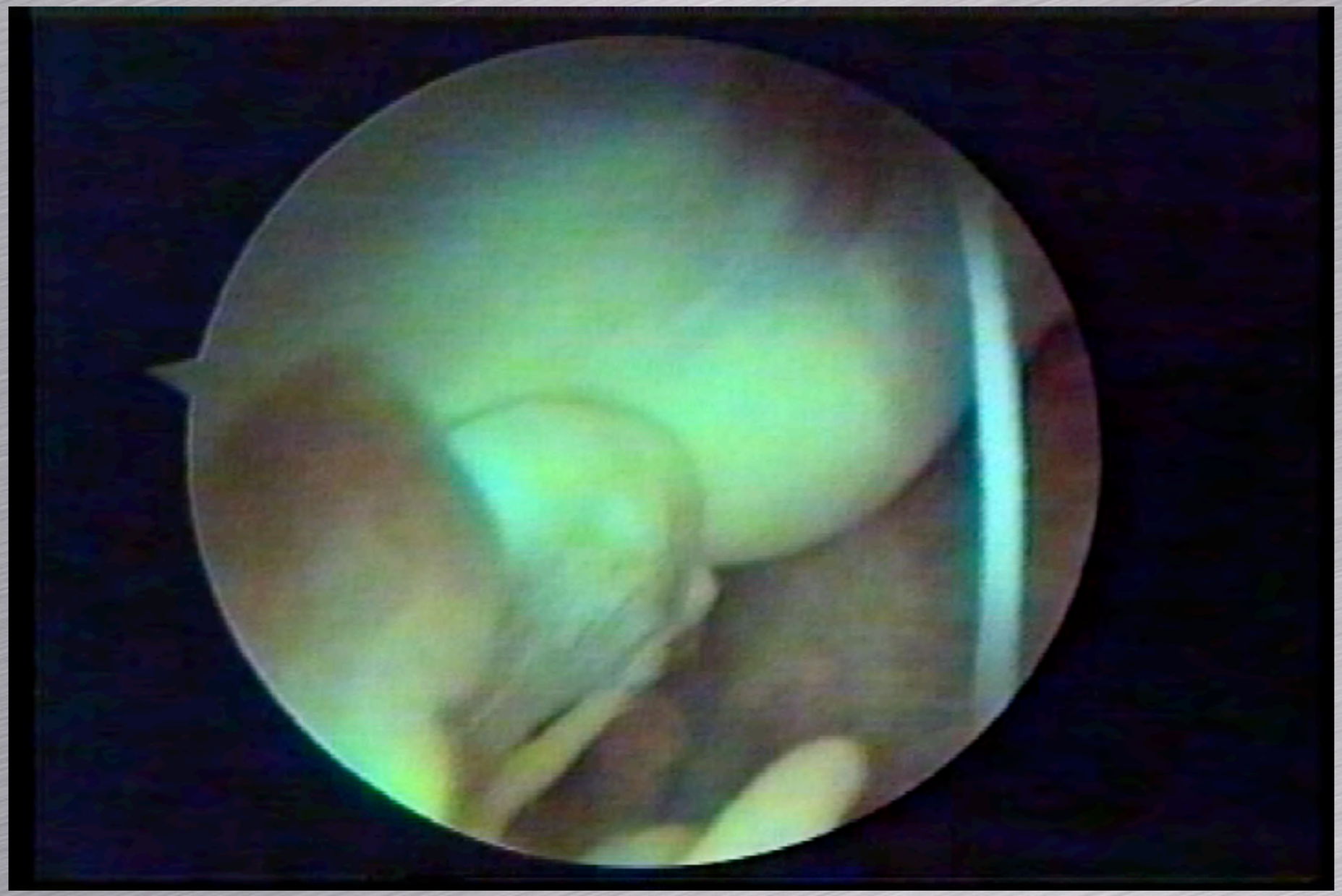


3 antero-lateral portals have been described

- The more proximal the portal, the safer it is for preventing radial nerve injury

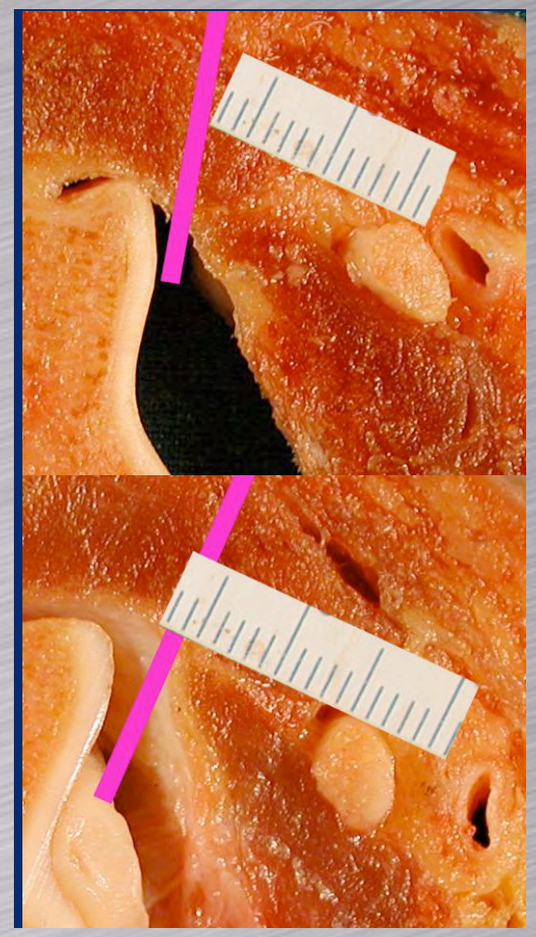


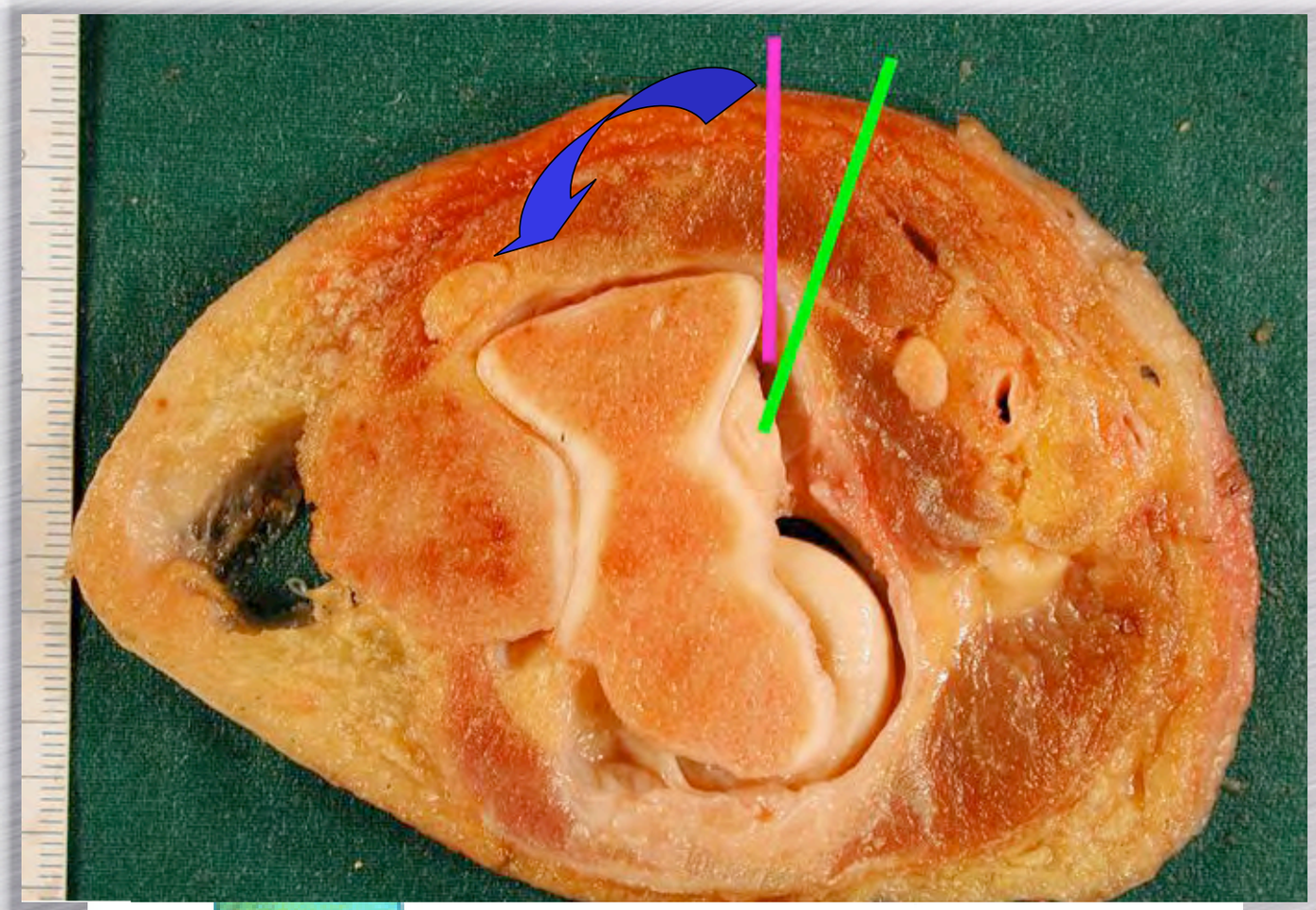
Vision of the anterior compartment from an antero-lateral portal

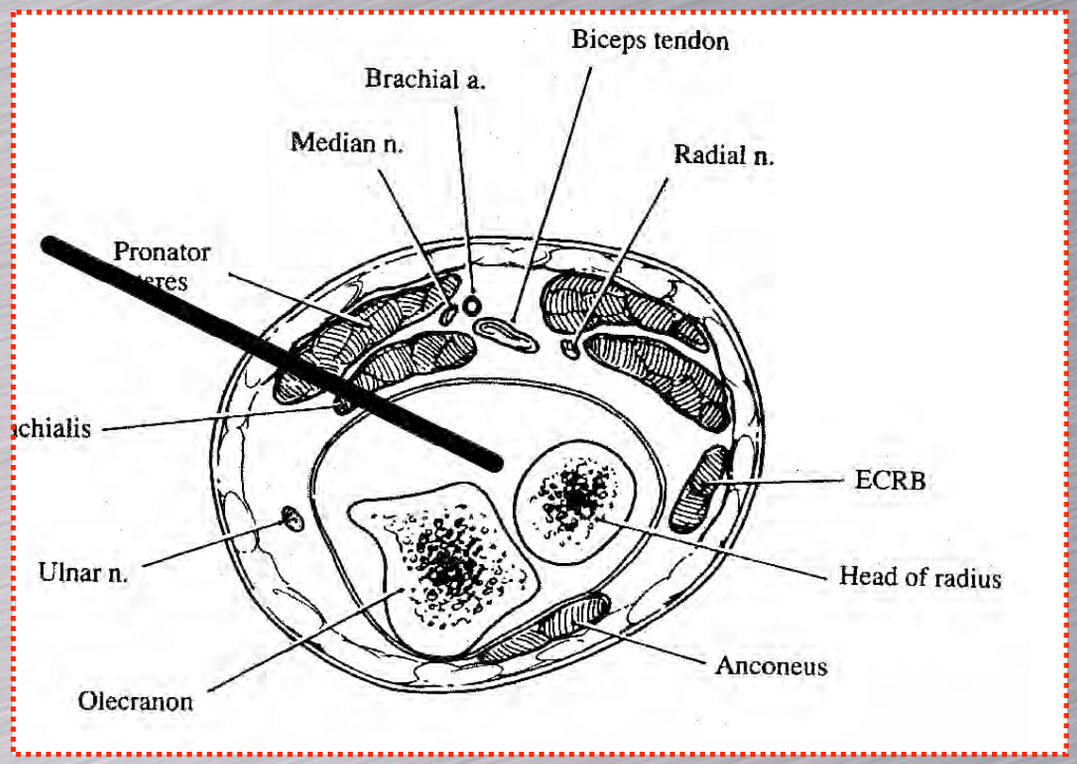


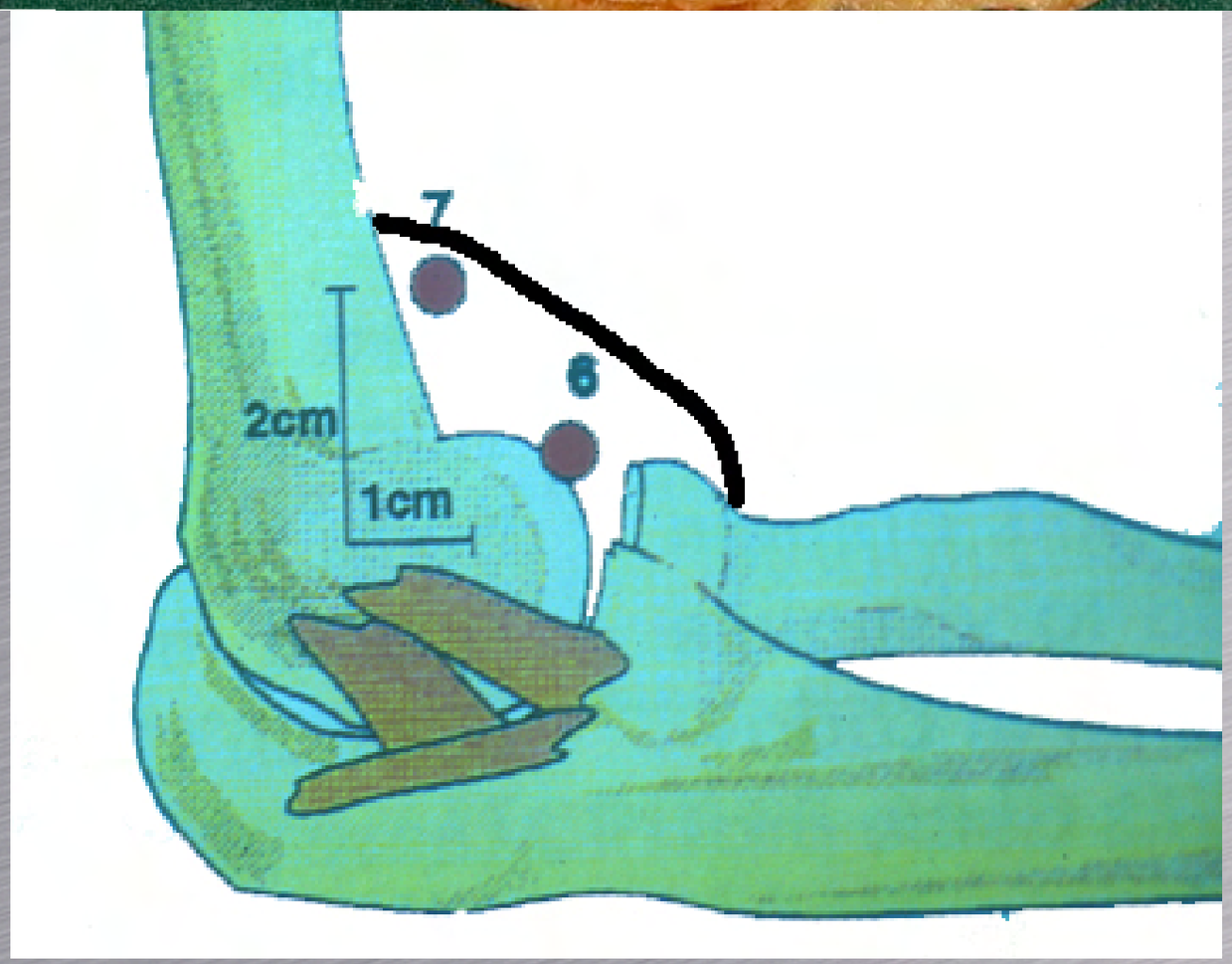
Antero-medial portals

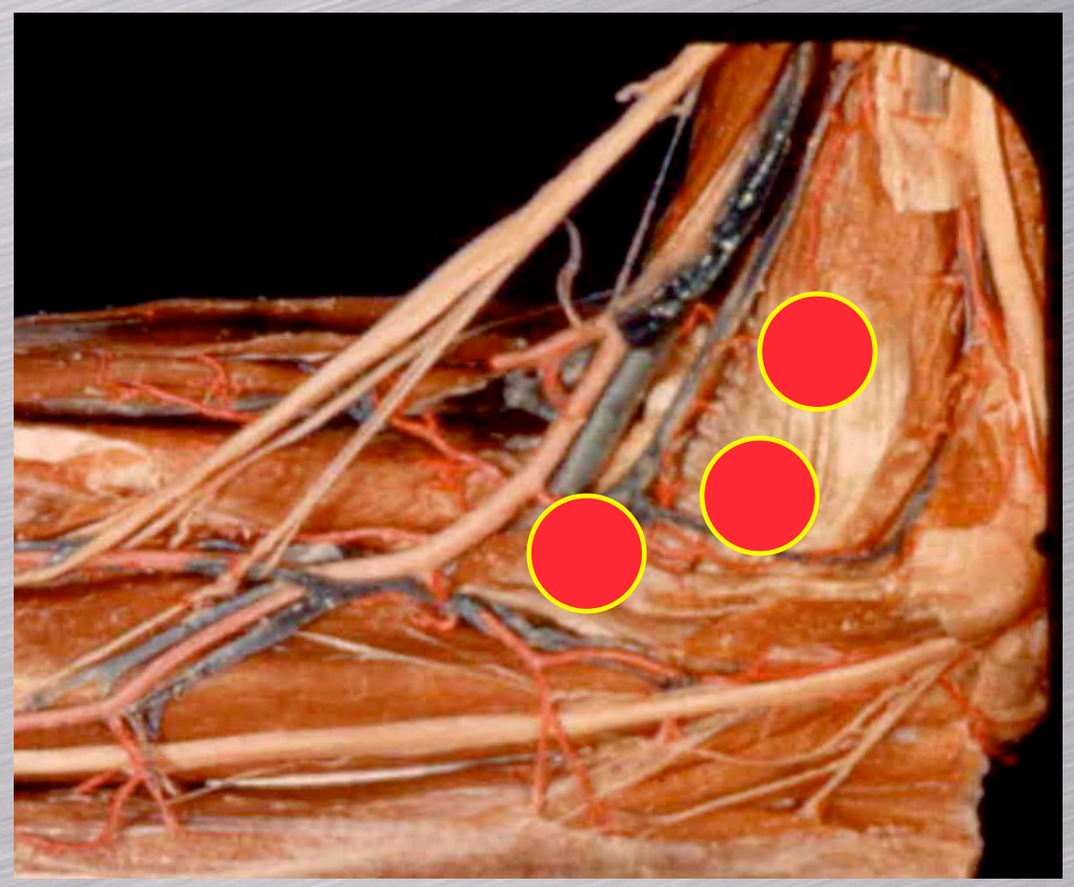
- ✓ Elbow flexed at 90° +++
- ✓ 2 portals
  - Proximo-medial (2 cm prox)
  - Antero-medial (2 cm distal, 2 cm ant)
- ✓ Both are useful as most of the lesions are in the lateral compartment





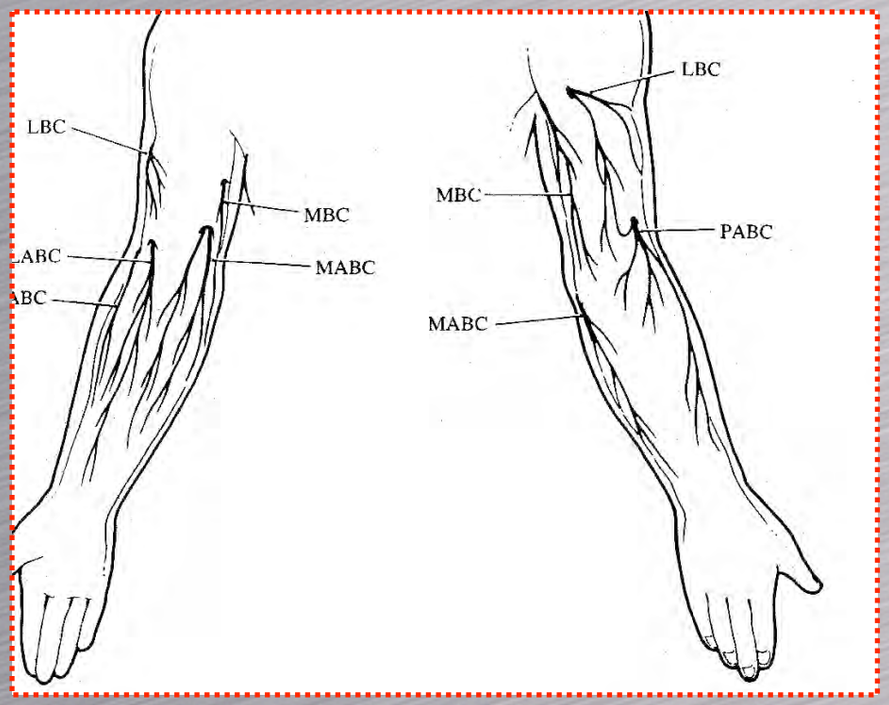

Biceps tendon
Brachial a.
Median n.
Radial n.
Pronator
eres
chialis
ECRB
Ulnar n.
Head of radius
Anconeus
Olecranon

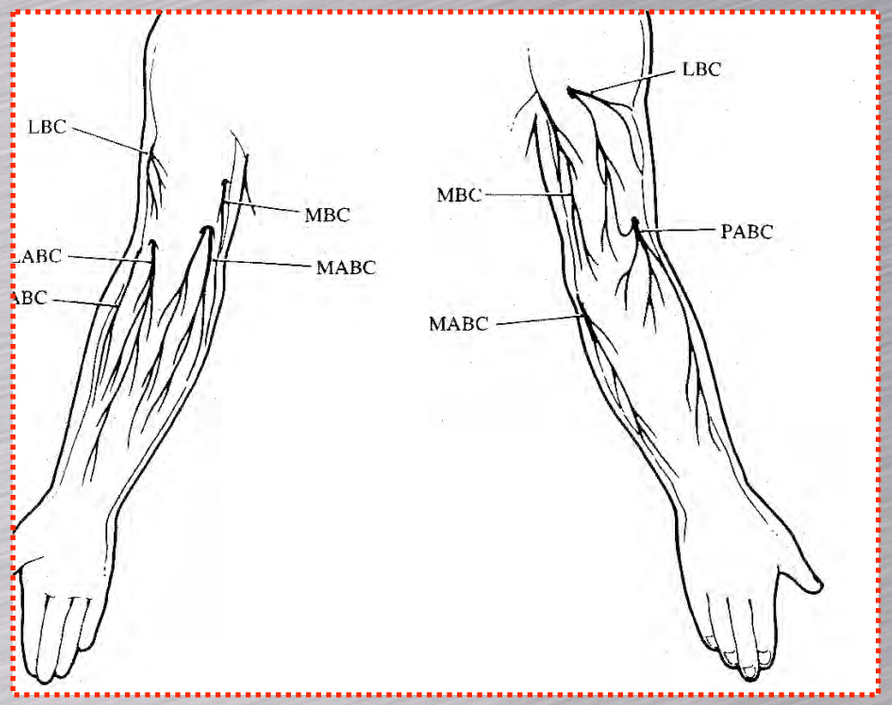

7
6
2cm
1cm



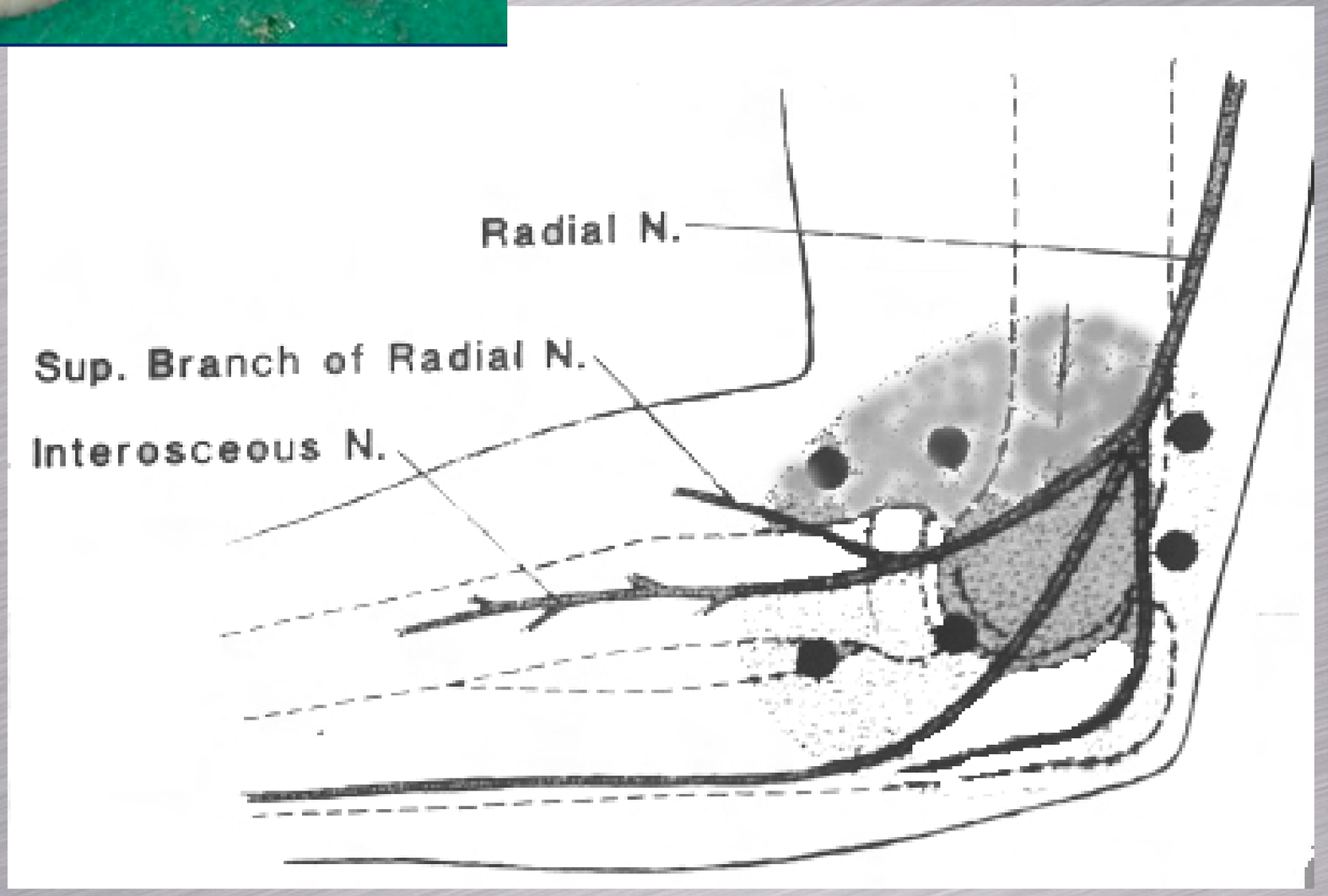
- Vision from an antero-medial portal

In the lateral portals, nerves are in danger of jeopardy

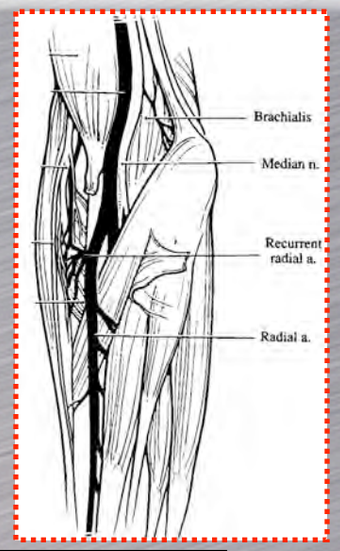




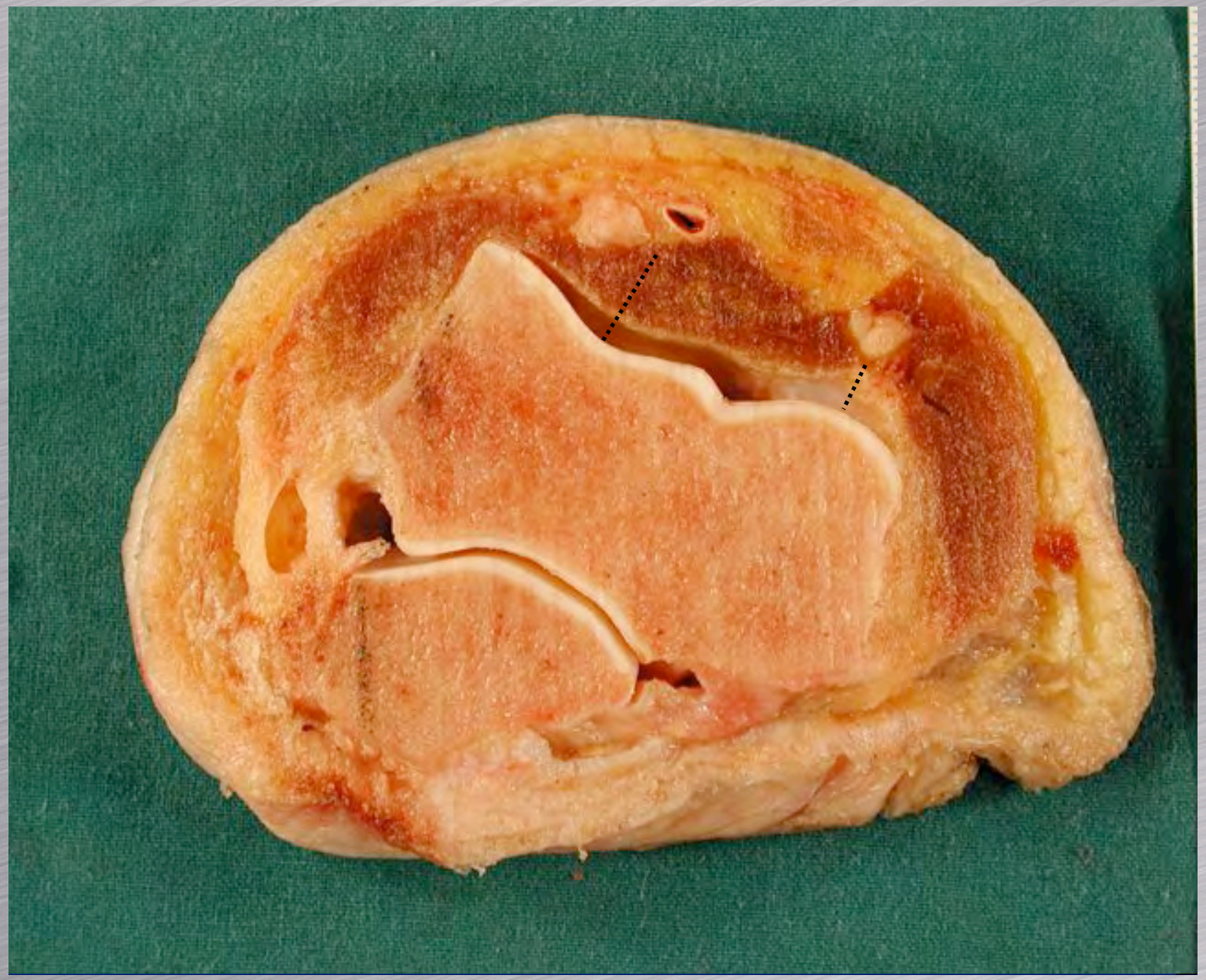
- ✓ Sensory branches of the radial nerve
- ✓ Posterior branch of the lateral cutaneous antebrachial nerve
- ✓ The motor branch of the radial nerve


Radial N.
Sup. Branch of Radial N.
Interosseous N.

Structures in jeopardy for medial portals

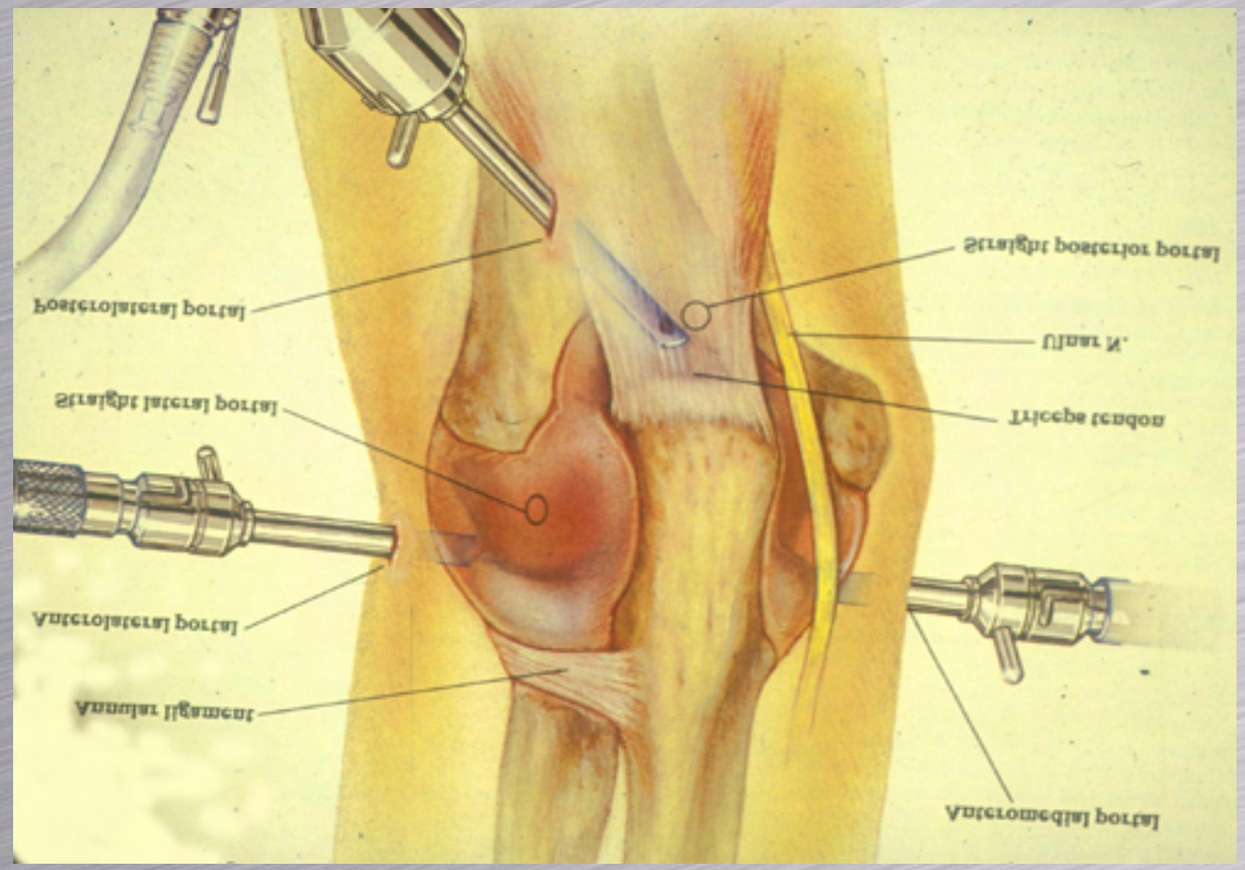


	Proximal portal	Distal portal
Medial antebrachial nerve	2,3 mm (0-9)	1 mm (0-5, contact 71%)
Median nerve	12 mm	7 mm (5-13)
Brachial artery	18 mm (8-20)	15 mm (8-20)
Ulnar nerve	12 mm (7-18)	

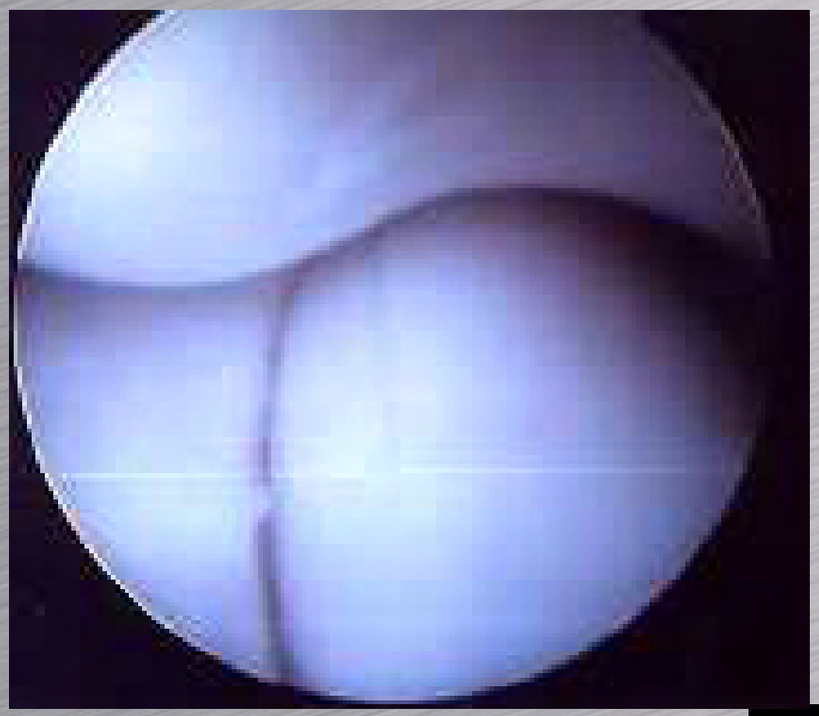


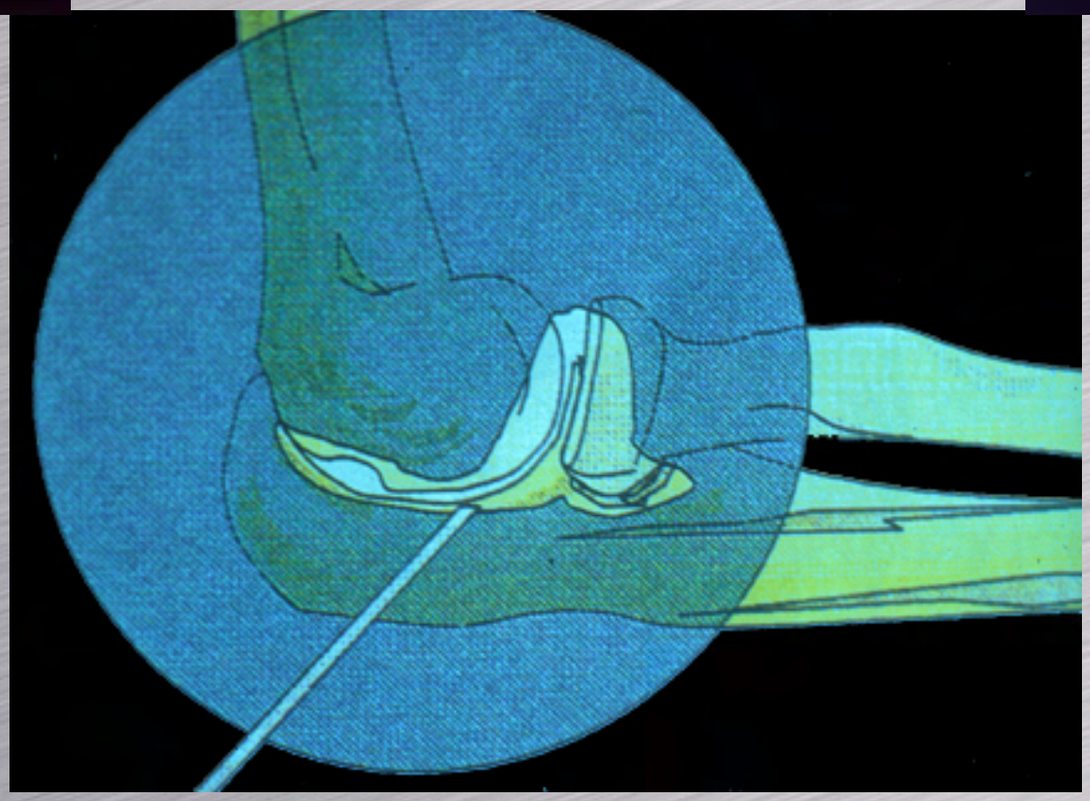
Posterior portals

- ✓ Postero-lateral = straight lateral = midlateral
- ✓ Superior pstero-lateral portal
- ✓ Direct, trans-tricipital portal
  - All safe, nerves are at more than 15 mm



The postero-lateral portal is often used as it allows a complete exploration of the posterior compartment





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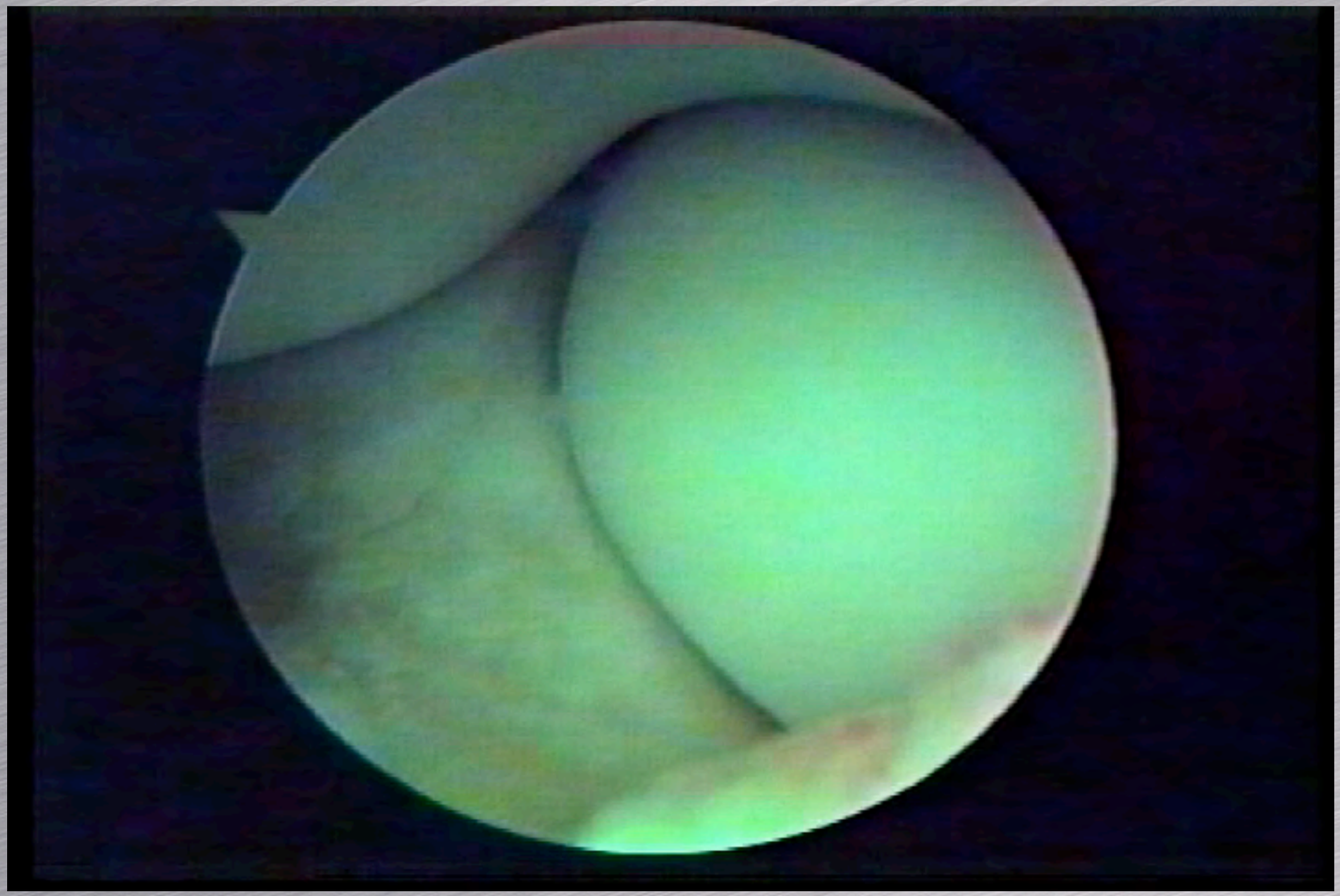
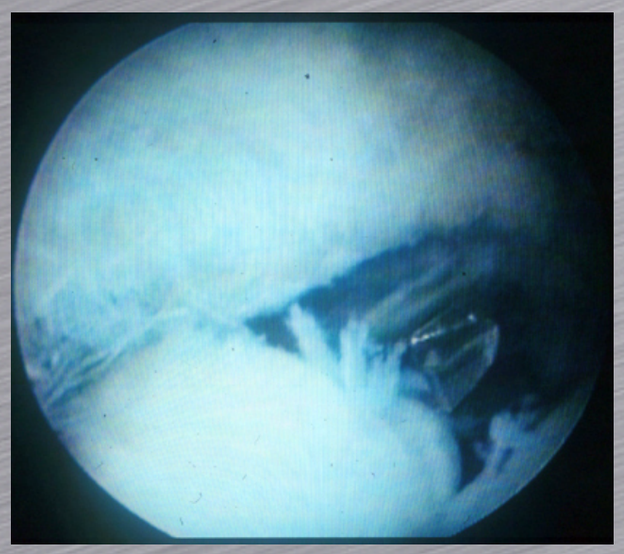


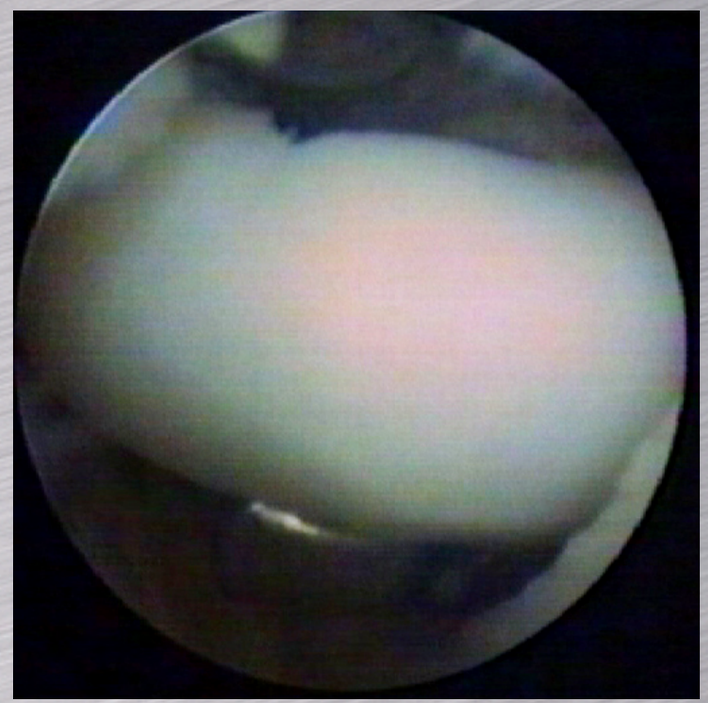
Loose bodies

- ✓ Best indications (in terms of frequency and results), at least at the beginning of the experience
- ✓ Arthroscopy allows for a better exploration of the joint, a better efficacy and an earlier recovery



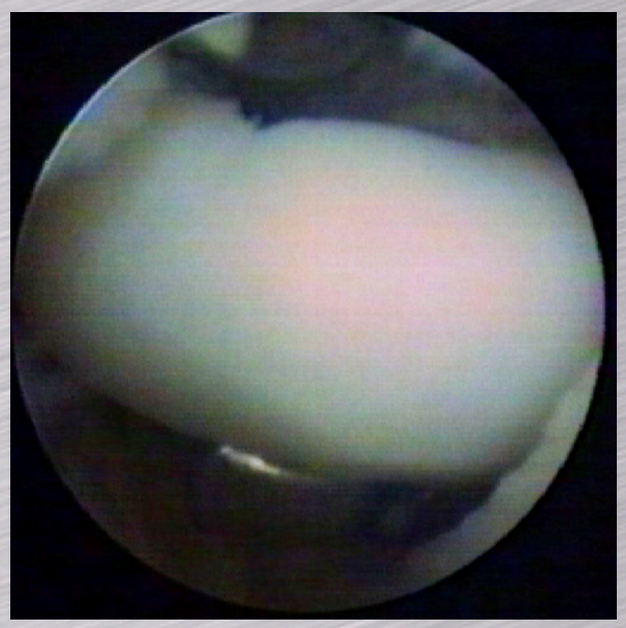
90% good results in isolated lesions

- ✓ O 'Driscoll (1992) 23 cases
- ✓ Ogilvie-Harris (1993) 34 cases
- ✓ SFA (1995) 78 cases
- ✓ Leissing (1997) 16 cases



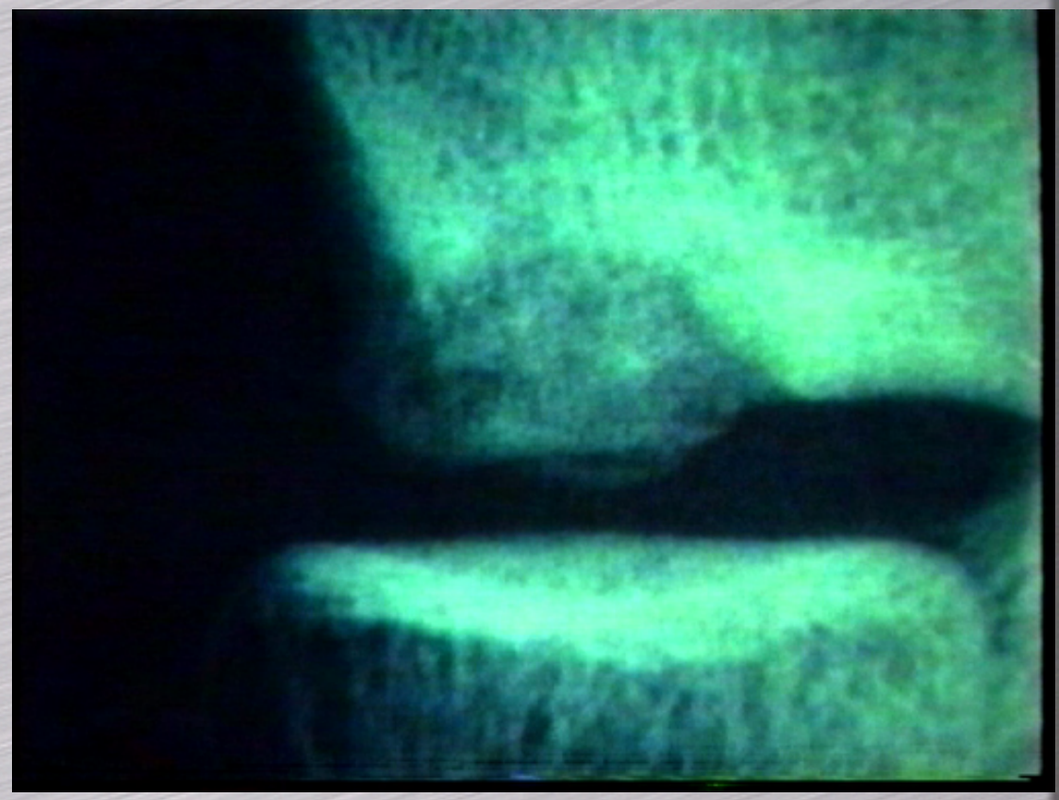
Results depend in fact of the associated arthritic joint involvement

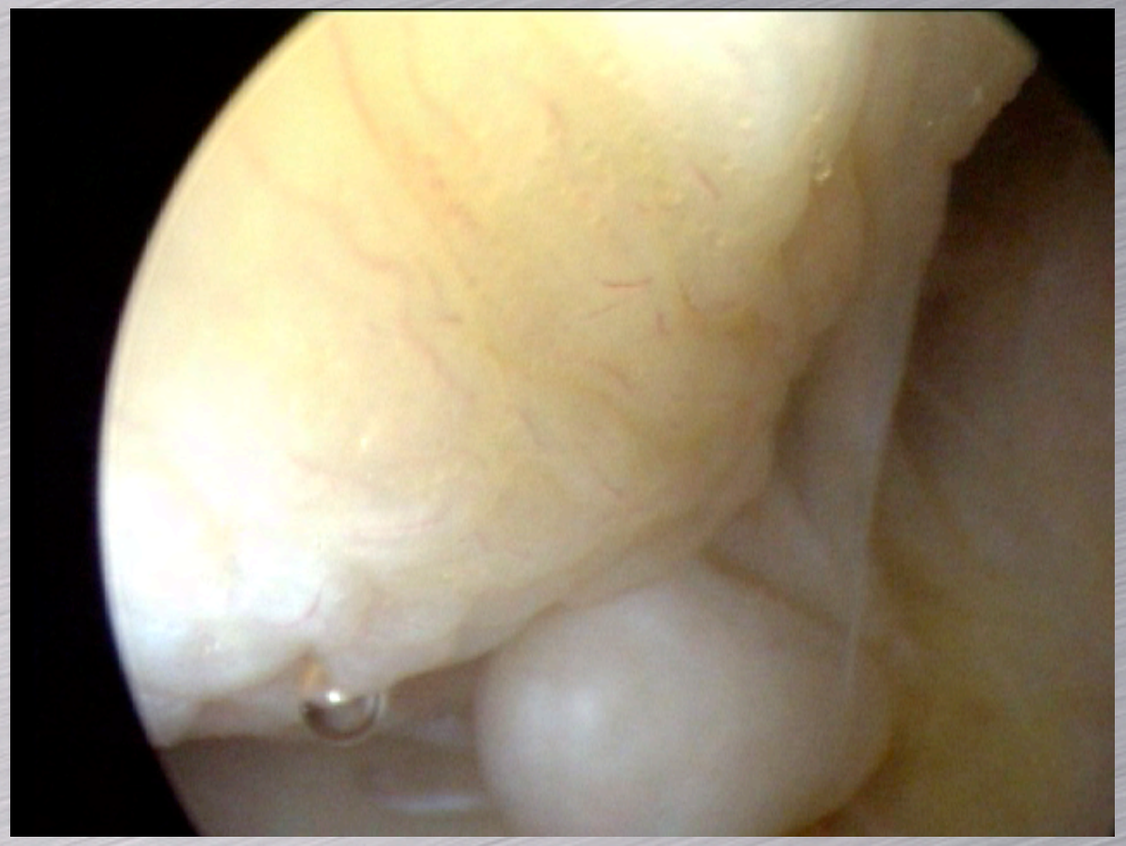
- ✓ Painless 85%;
- ✓ Disappearance of the locking 92%,
- ✓ Disappearance of joint effusion 75%
- ✓ But 30% still complain of crepitus

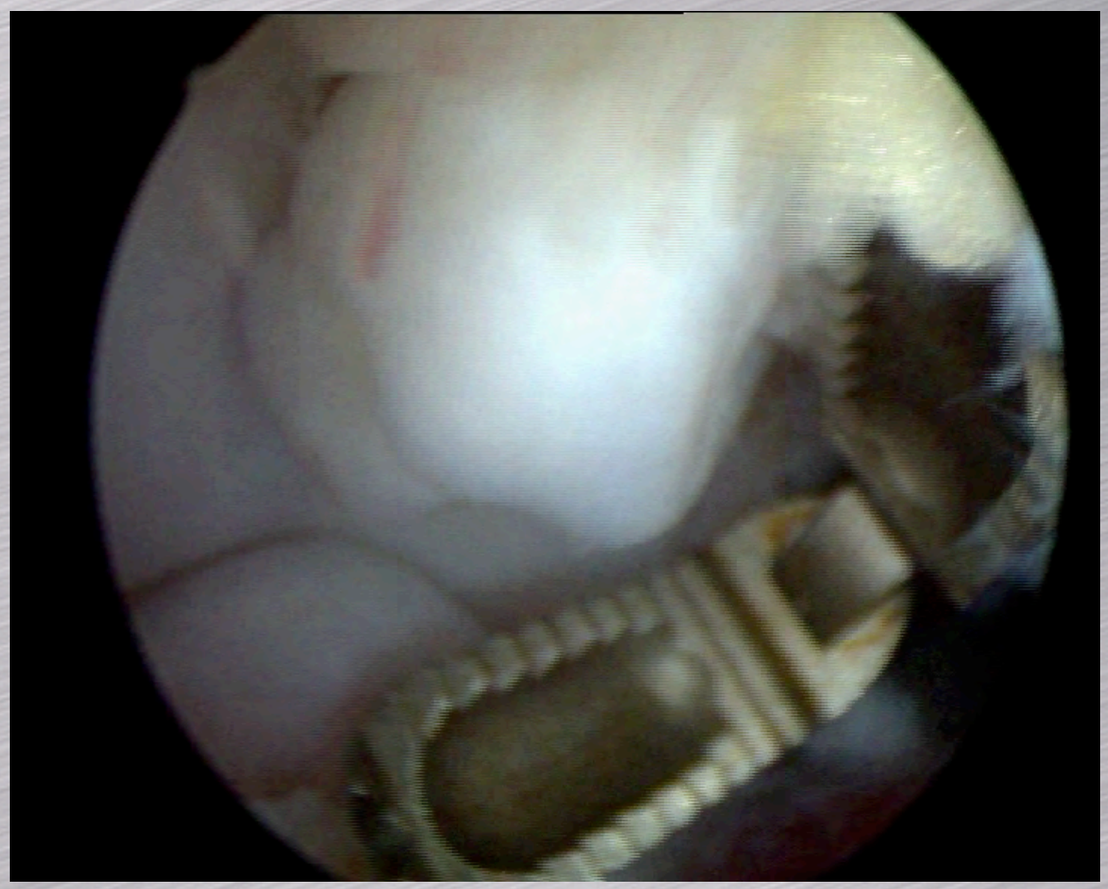


Osteochonditis dissecans

- ✓ Arthroscopic classification
  - stade 1: Chondromalacia
  - Stade 2: Superficial cartilage cracking
  - Stade 3: Bony exposition, fragment still in place
  - Stade 4: Mobile bony fragment
  - Stade 5: Loose body

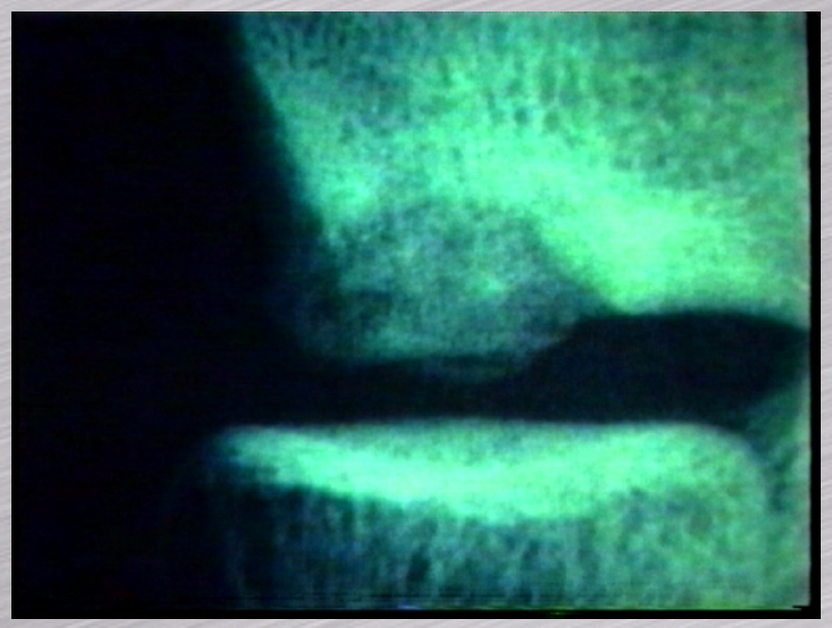






Results of arthroscopic treatment

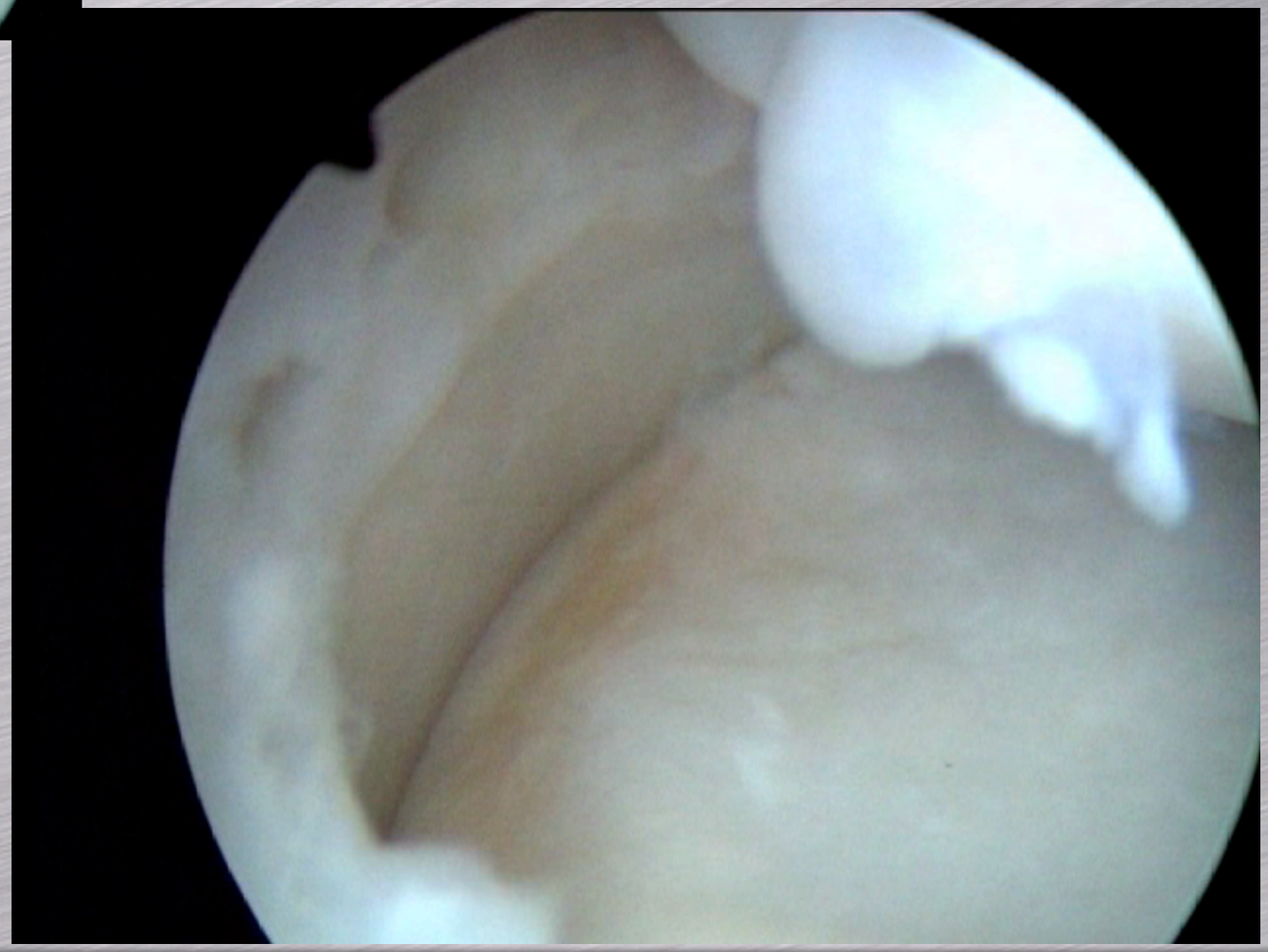
- ✓ good to excellent results with short-term follow-up in young athletes with small lesion
- ✓ 80 % of athletes return to the same sport level
- ✓ 10-20° gain in motion
- ✓ Long-term follow-up of these elbows is still unknown



Plicae

- ✓ Between radial head and capitulum

- ✓ Snapping during pronation between 90 and 110° of flexion
- ✓ 36 yrs old, sex-ratio = 1
- ✓ 2 postero-lateral portals
- ✓ 12/14 had pain reliefs

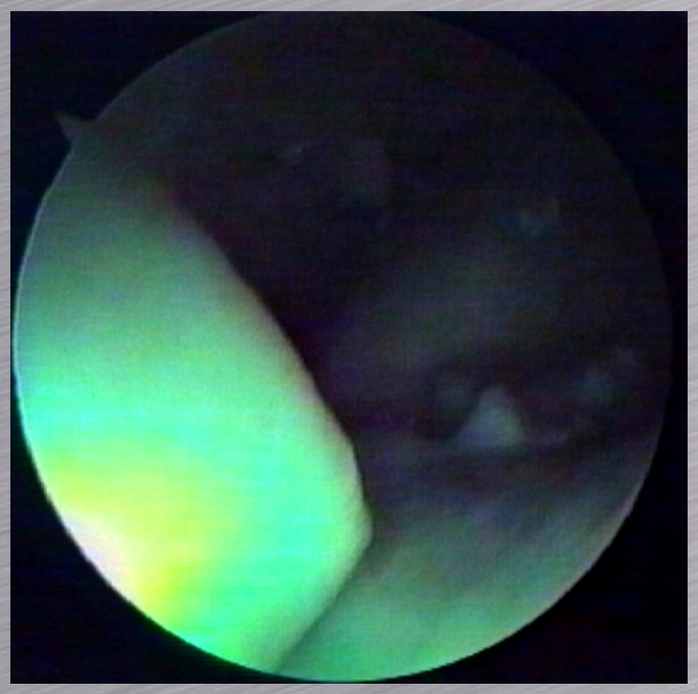


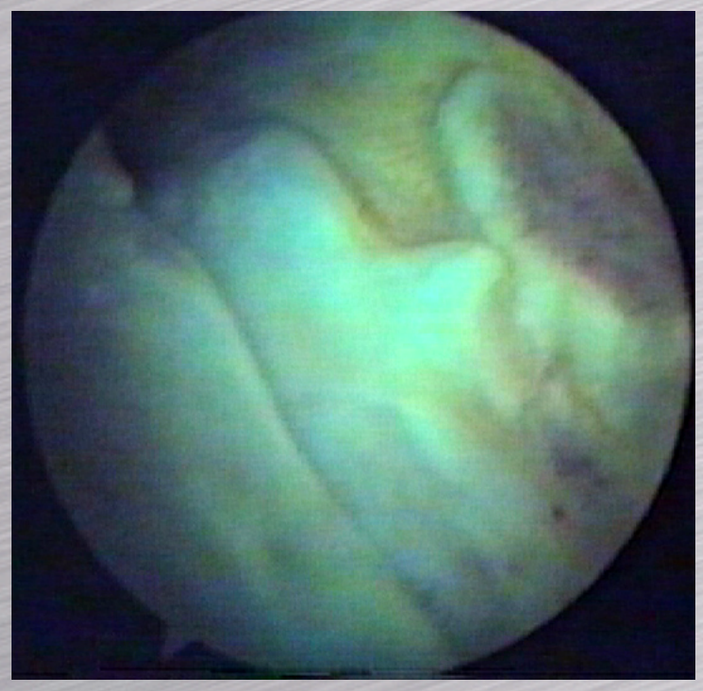
Early "arthritis"

- Limited arthritis (localized osteophytes)
  - Primitive early arthritis
  - Valgus overload syndrome

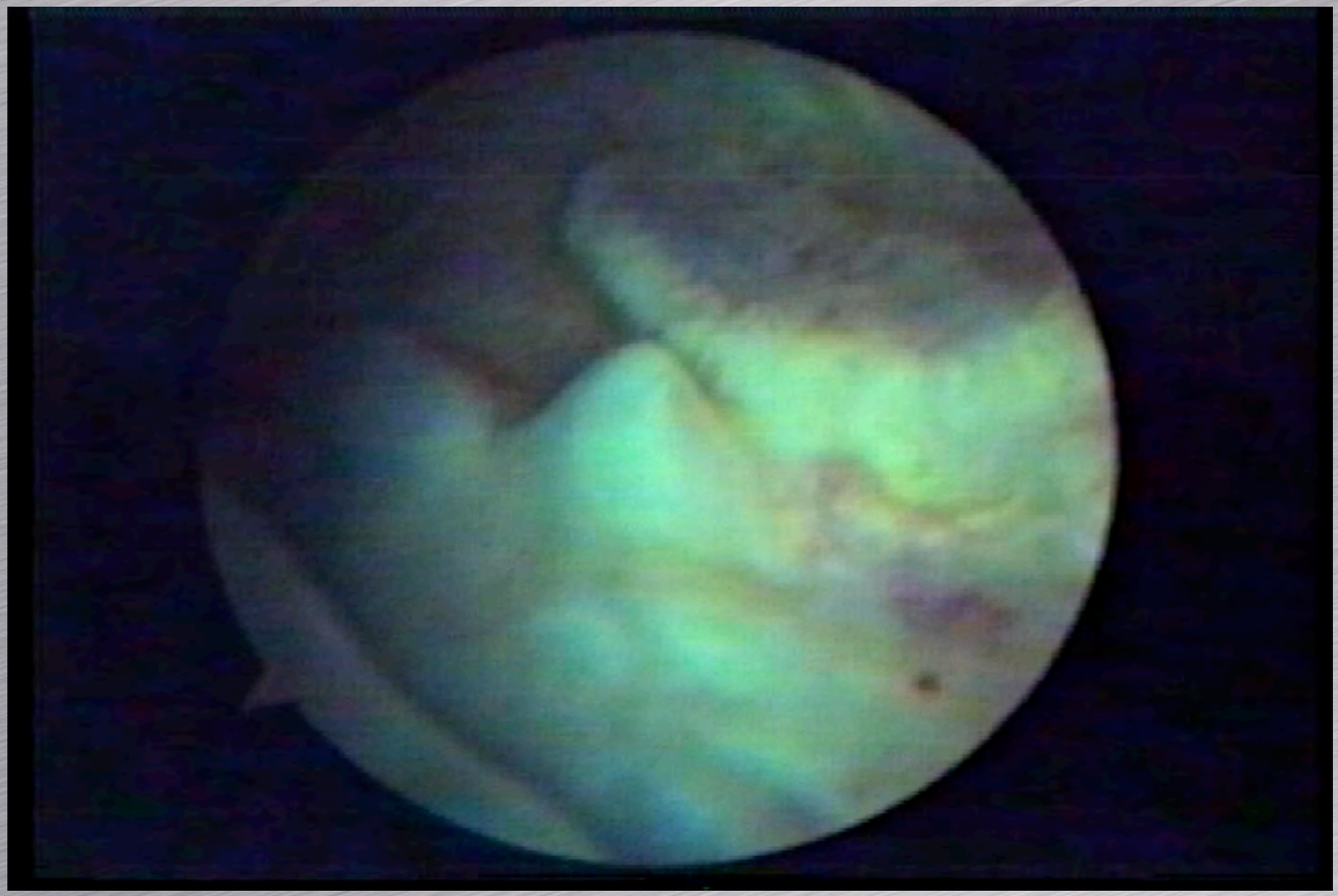
Osteophytectomy

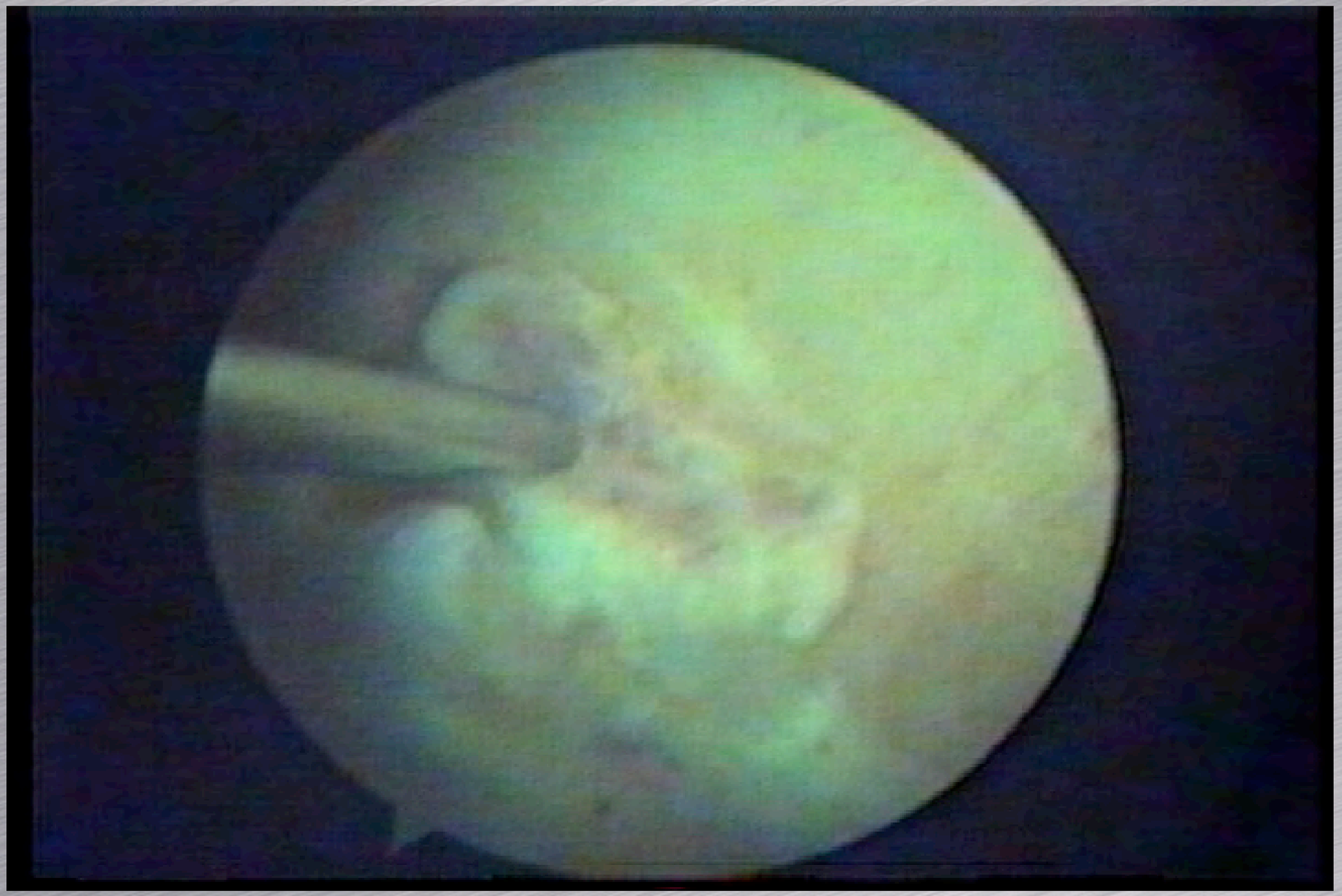
- ✓ Removal with a rongeur, a curette or the shaver
- ✓ Of mostly posterior (and postero-medial) osteophytes





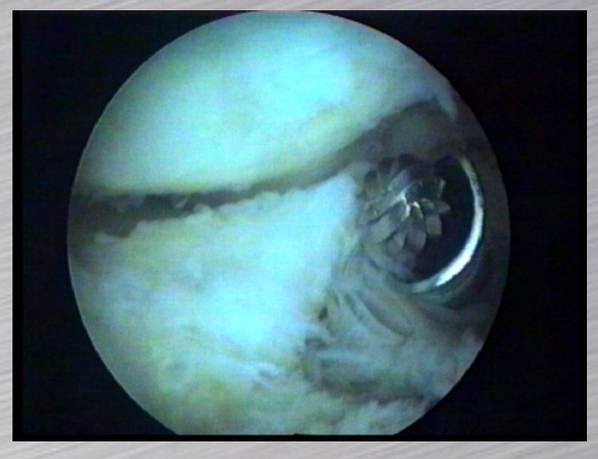
Posterior osteophytes of the olecranon fossa

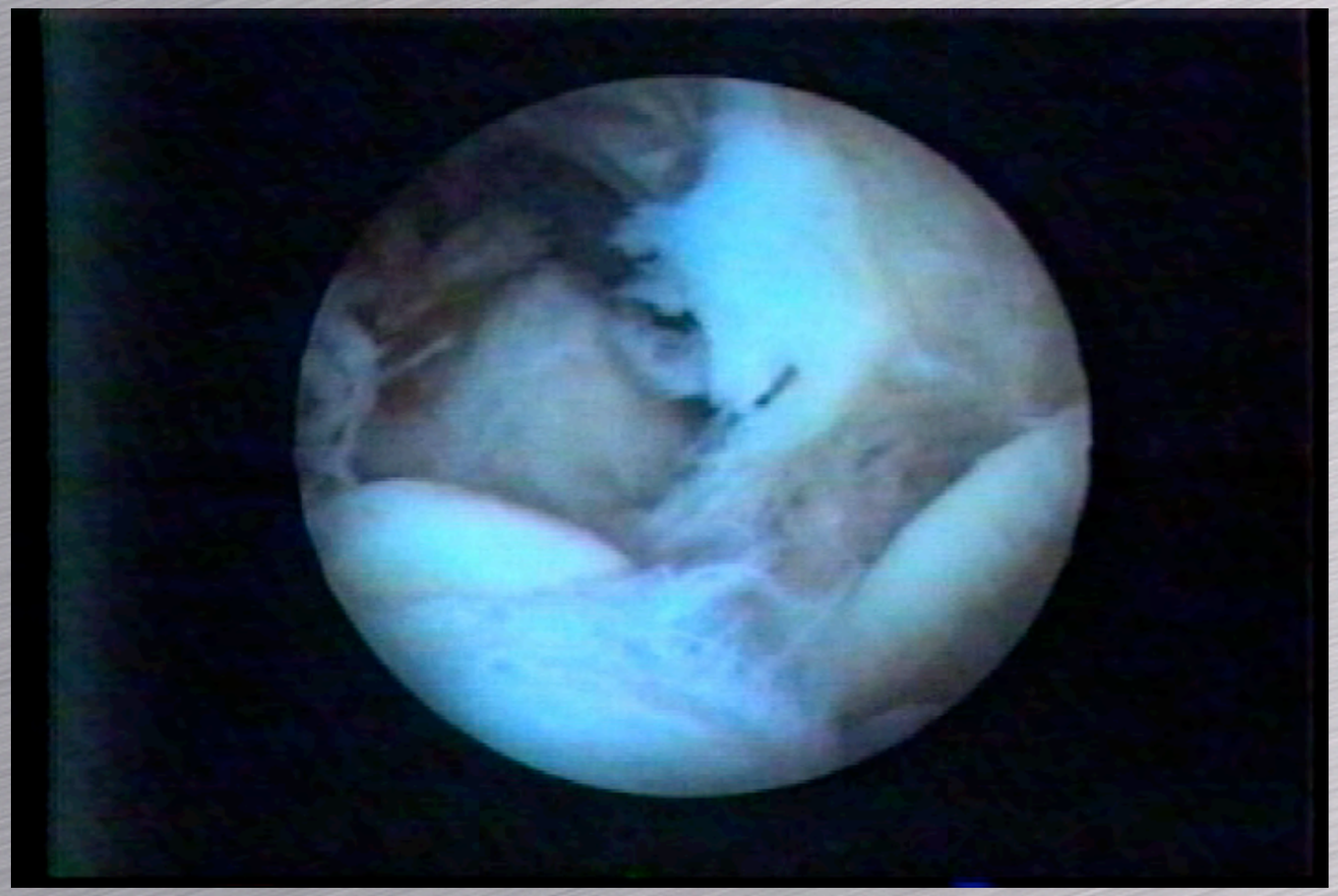


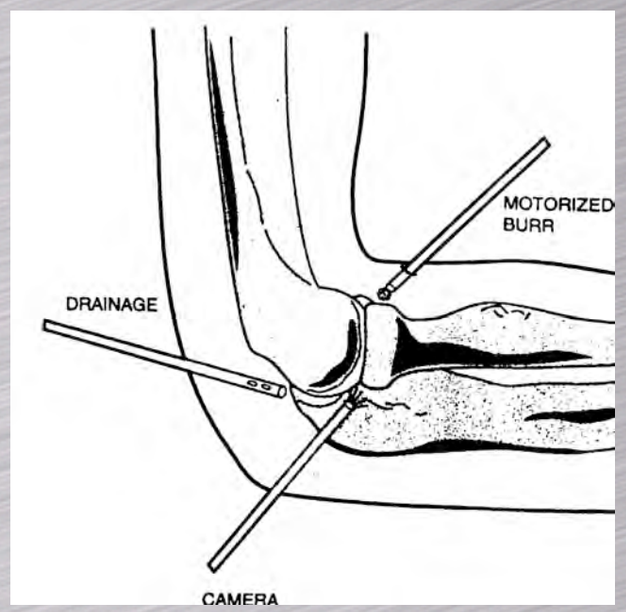


Bony resection

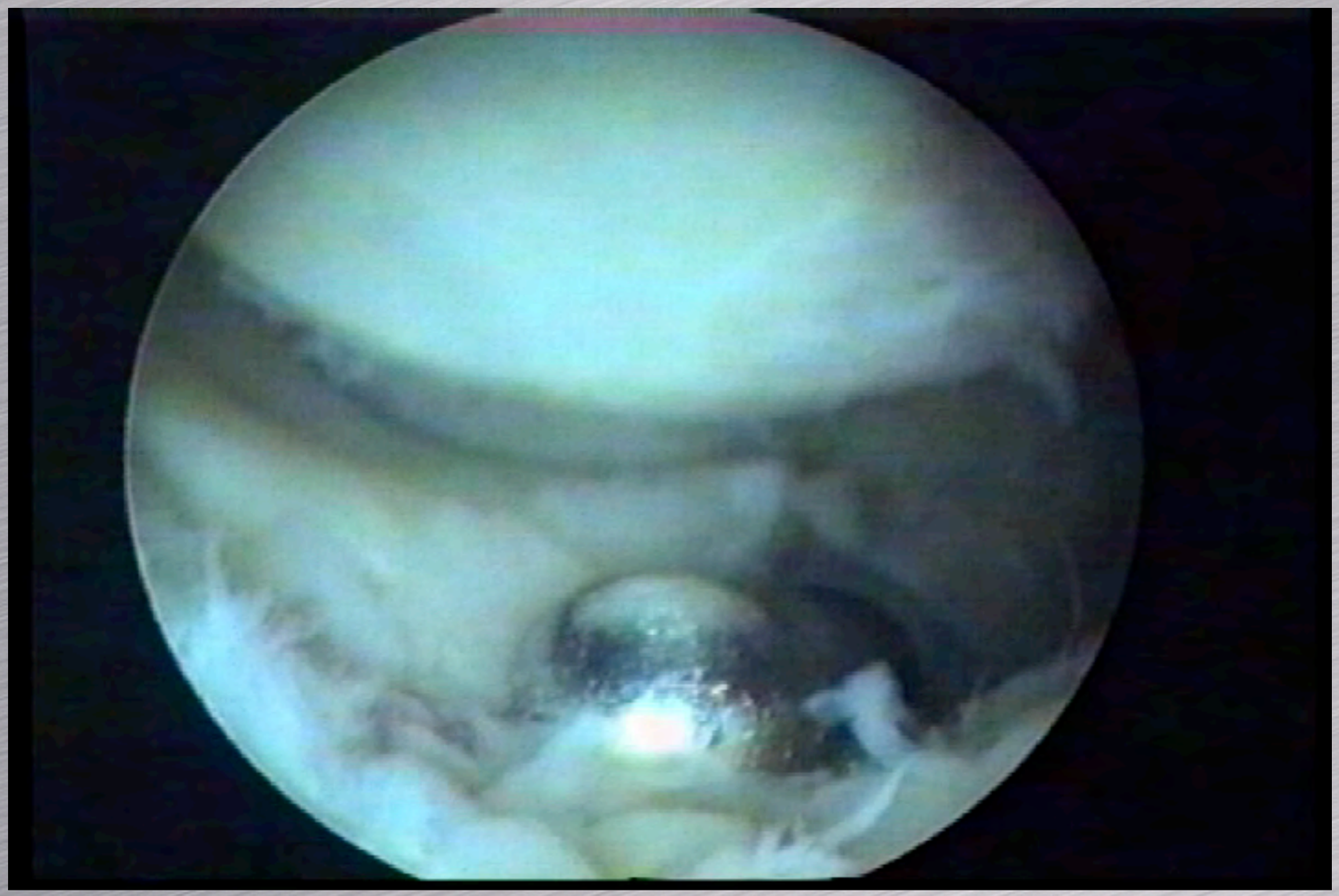
- ✓ Radial head and coronoid
- ✓ Debridement with a shaver







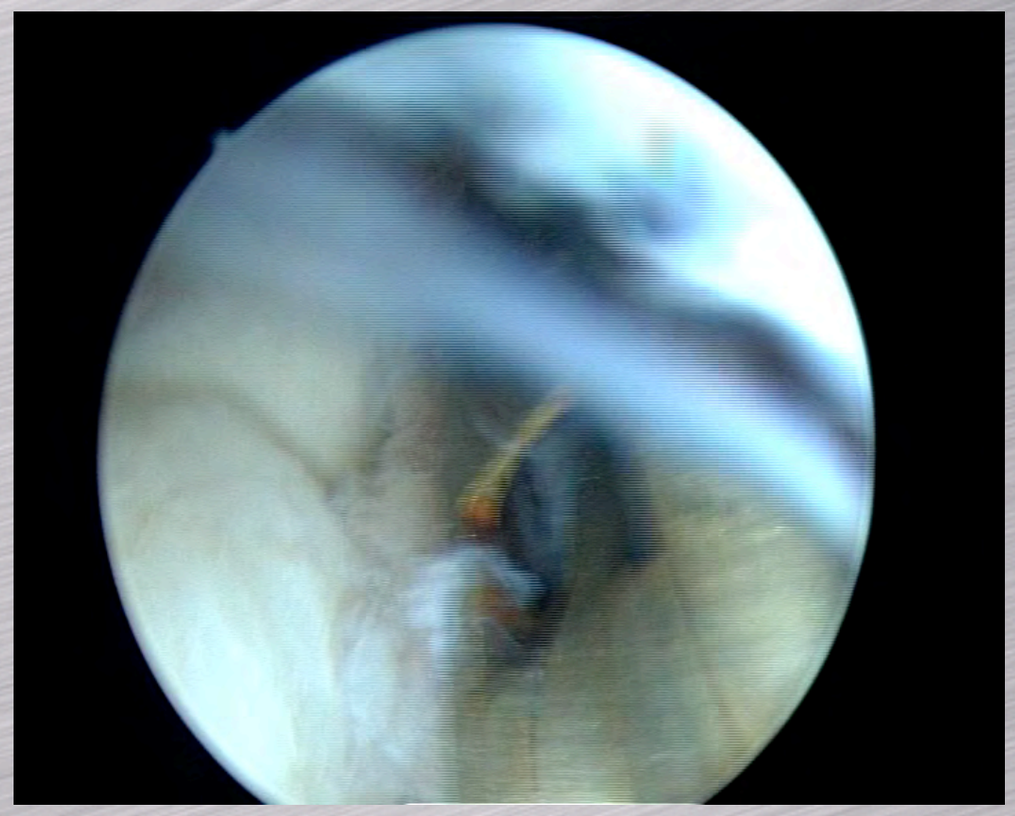
Partial resection of the coronoid in an early arthritis



Posterior debridement (olecranon to the left, olecranon fossa to the right

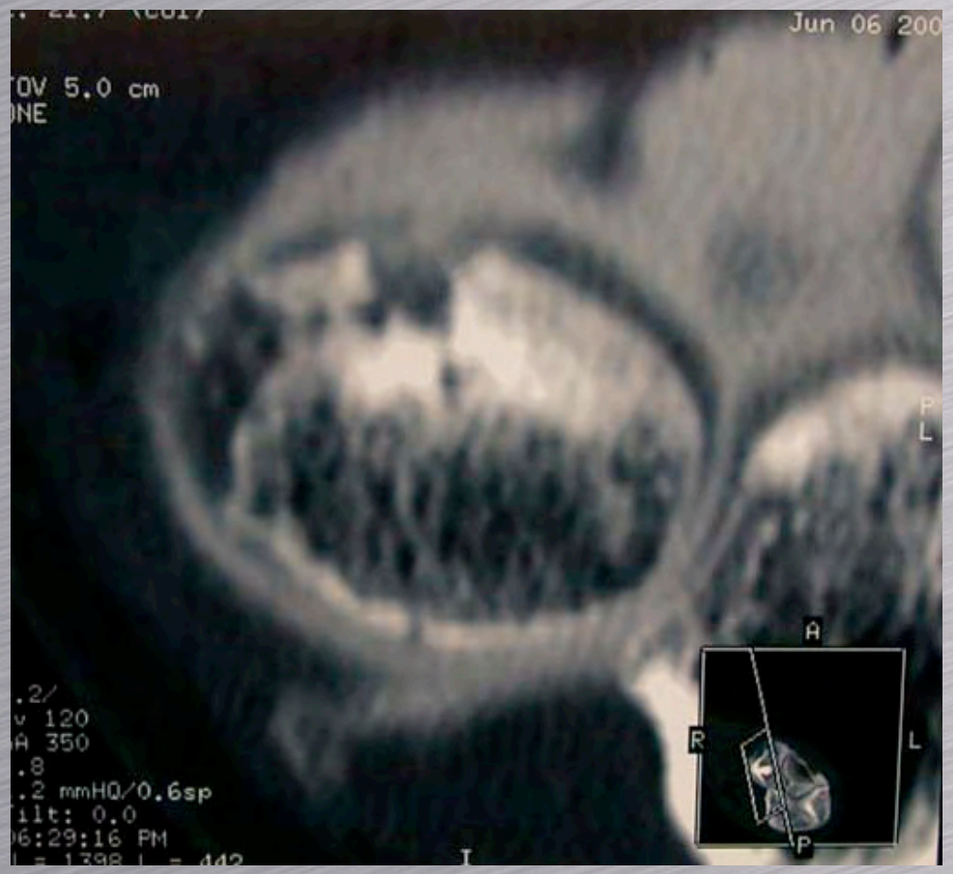
Capsular release

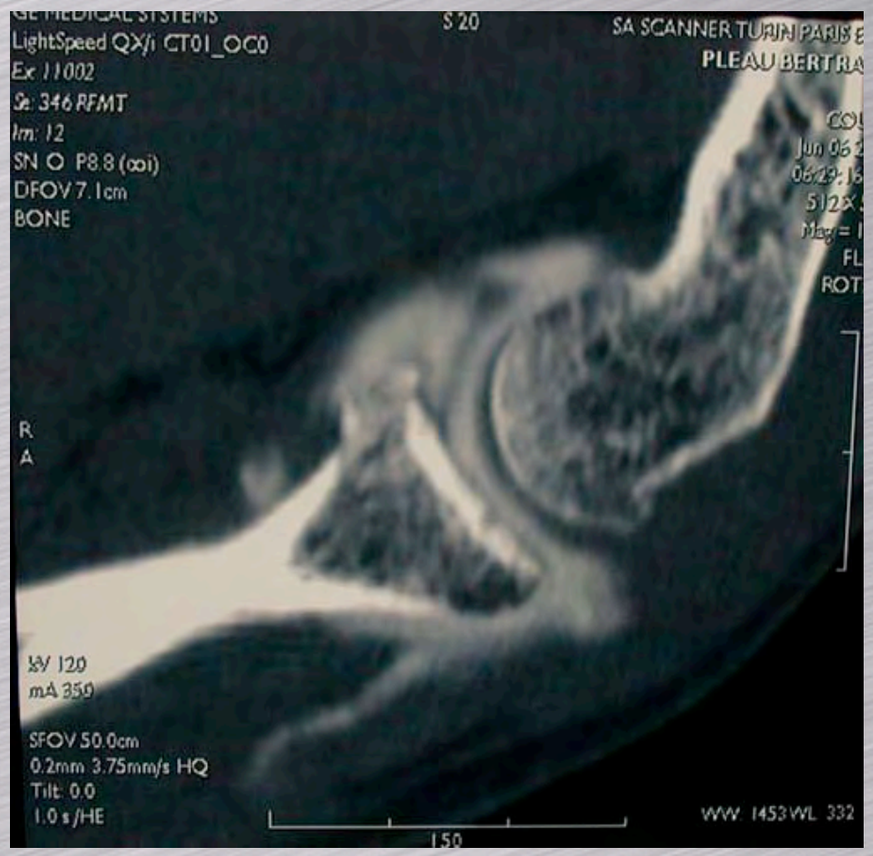
- ✓ The most dangerous as nerves are “sticked” to the capsule
- ✓ Must be done at the end of the procedure
- ✓ Capsular division to see the brachialis muscle



incomplete fractures

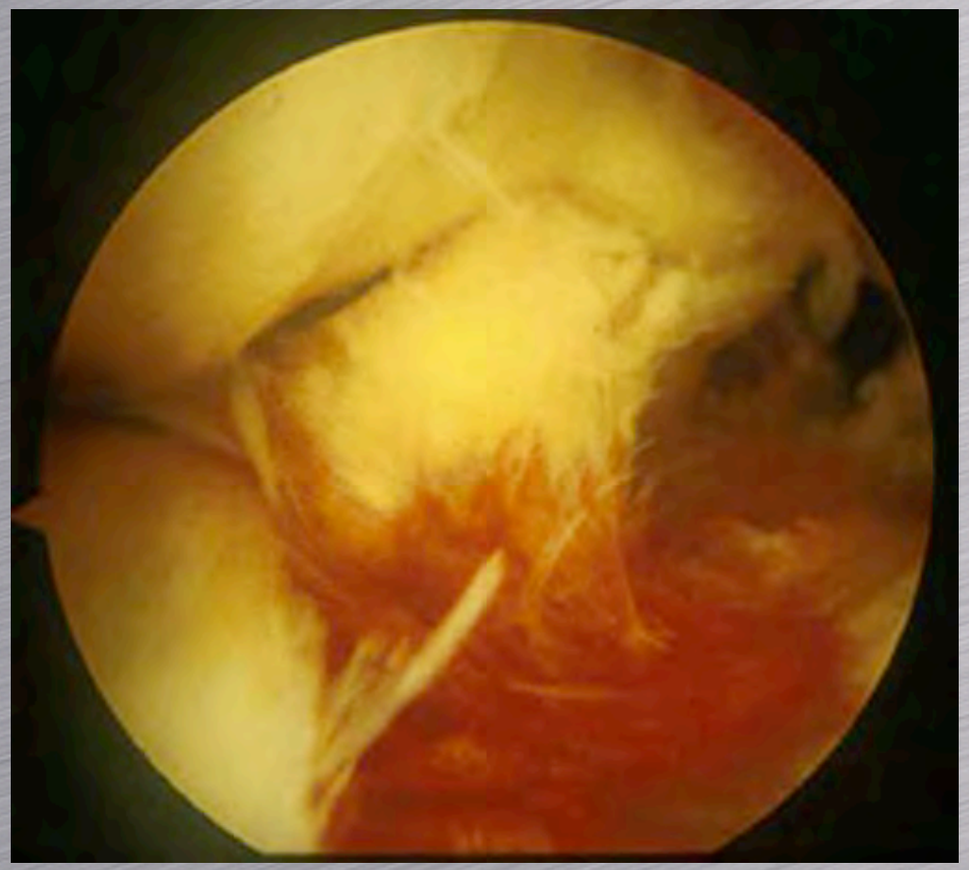
- ✓ Radial head (Mason type II with a small fragment)





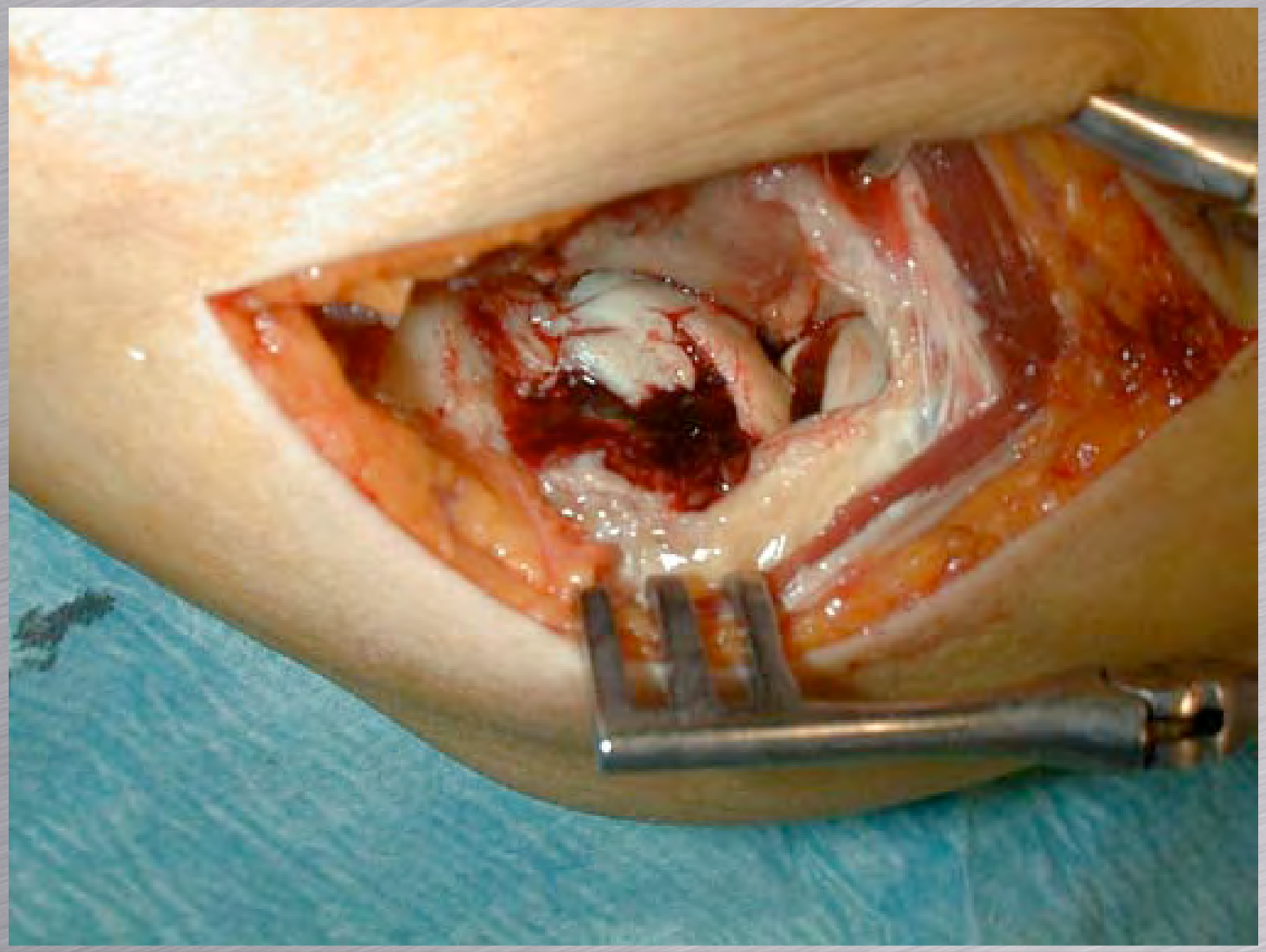
Incomplete fractures

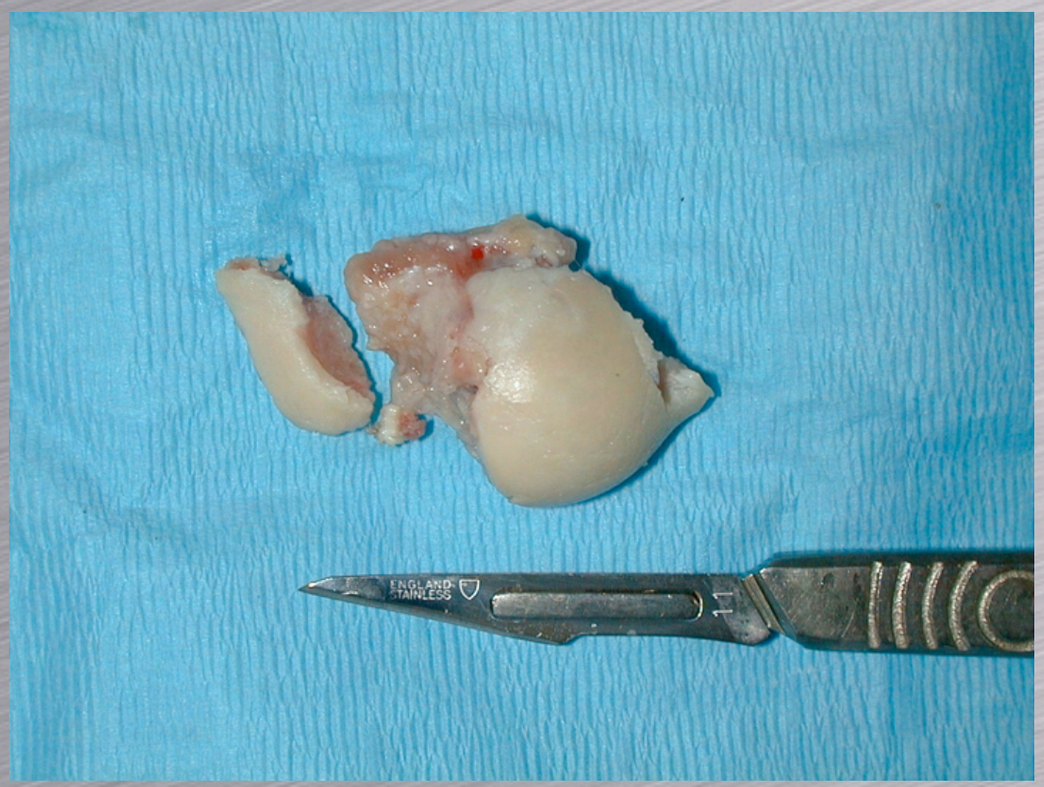
✓ Fracture of the tip of the coronoid (type 1)

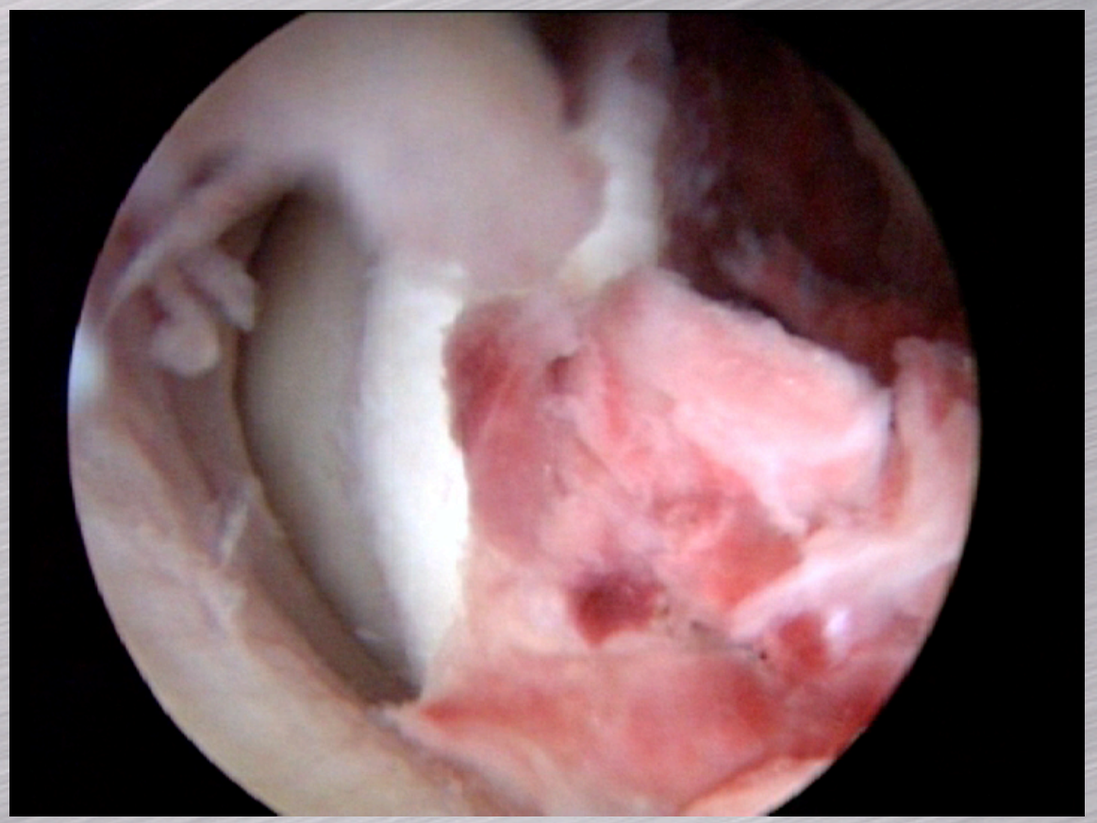


Incomplete fractures

- ✓ Fracture of the capitulum when the fragment is small and difficult to fix




ENGLAND
STAINLESS
11

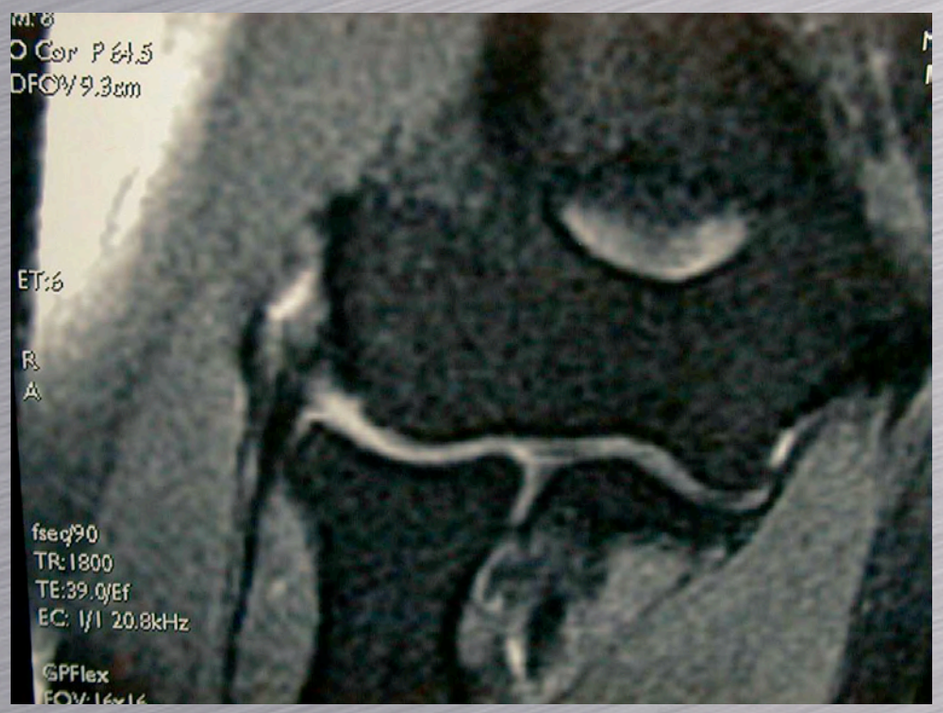


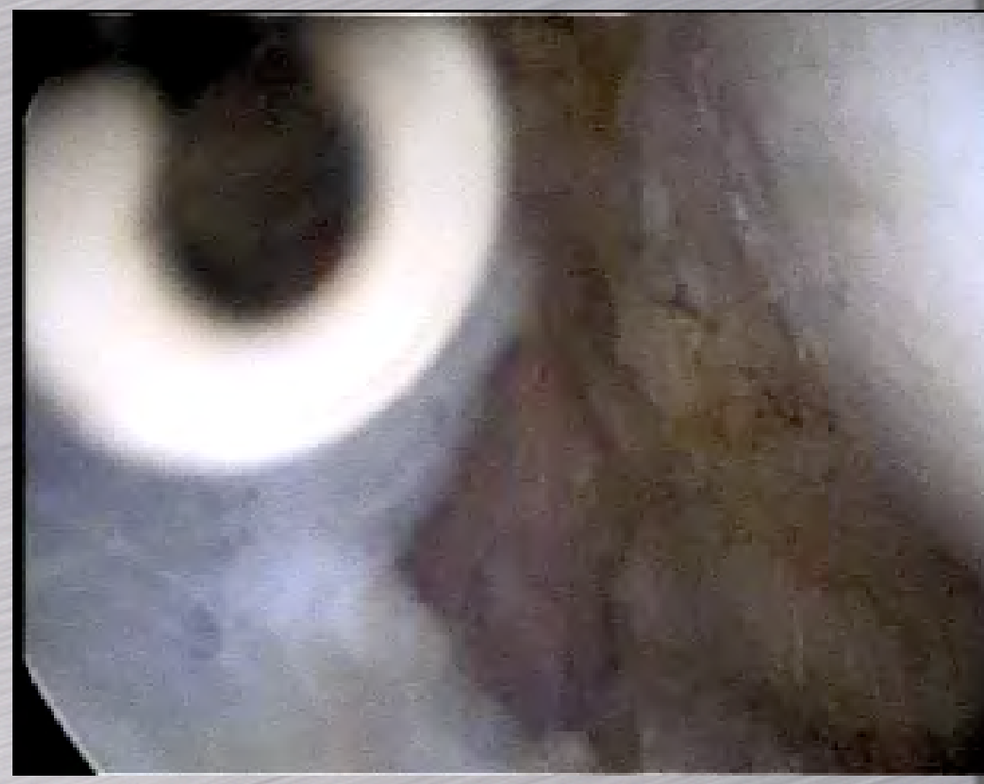
Bursitis

- ✓ Mostly indicated for post-traumatic bursitis
- ✓ Resection of the bursa with a shaver
- ✓ 86 % of 31 patients were painfree
- ✓ Return to work (10 days)

Lateral epicondylitis

It is possible to divide, under arthroscopy, the conjoint tendon





- Baker : Satisfactory results, 2 yrs follow-up:

– 95 % consider themselves improved

(42 cases, 13 examined)

– Pain 0,87 (rest)- 1,5 (activity)- 1,9 (sport)

– Return to work at 2, 2 weeks

- Owens: All patients improved

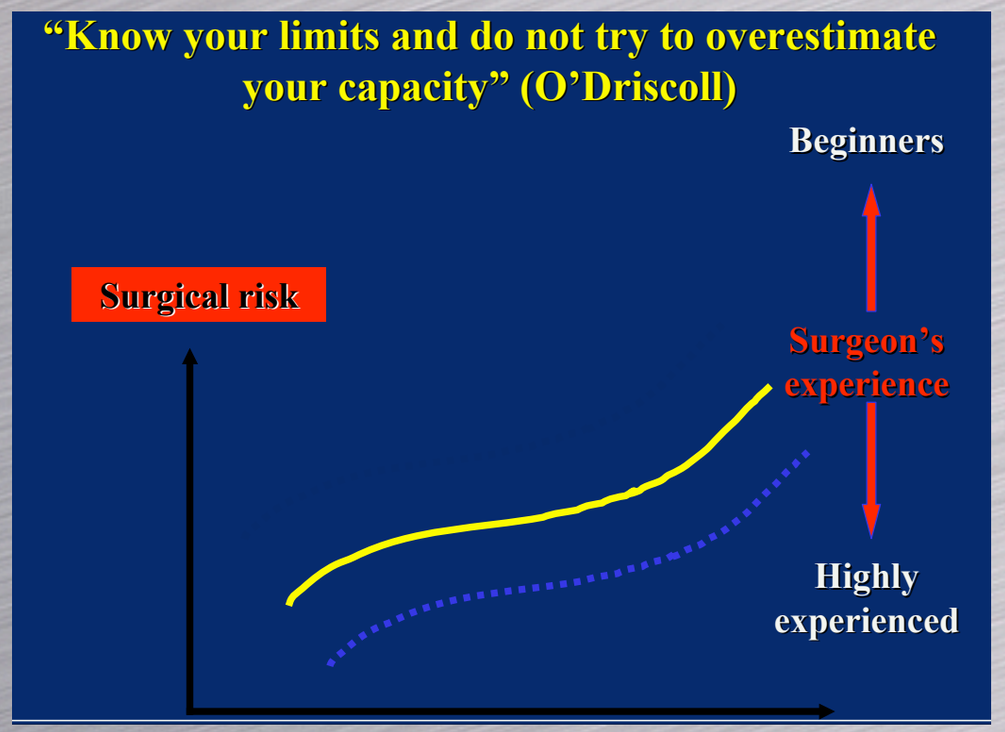
(16 cases, 12 examined at 1 year),

– Return to work without restriction in 6 days

– Pain 0,58 (rest)- 1,58 (activity)- 3,25 (sport)

Conclusion

- ✓ Therapeutic indications of elbow arthroscopy are still limited in sportsmen
  - Lack of patients or lack of experience
- ✓ But results improve as surgeons gain experience with elbow arthroscopy



Conclusion

- ✓ Some disease deserve to be treated with an arthroscopic technique
  - Loose bodies
  - Osteochondritis dissecans
  - Plicae synovialis

Conclusion

- ✓ Some pathologies may be treated through a scope
  - Limited osteophytes
  - Limited stiffness
- ✓ Other pathologies are still in evaluation
  - Tennis elbow
  - Bursitis
  - Incomplete fractures