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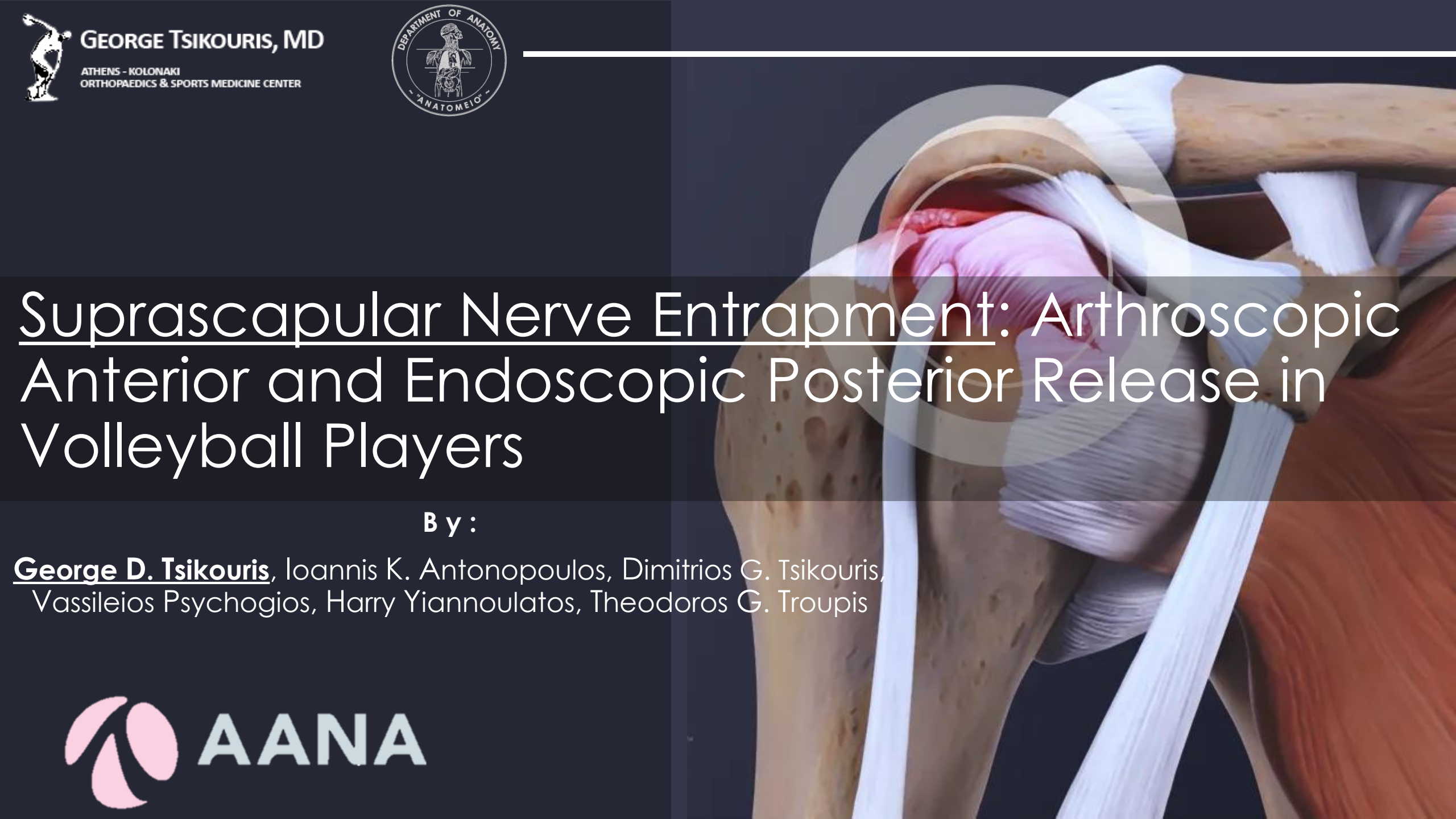

Suprascapular Nerve Entrapment: Arthroscopic Anterior and Endoscopic Posterior Release in Volleyball Players

B y :

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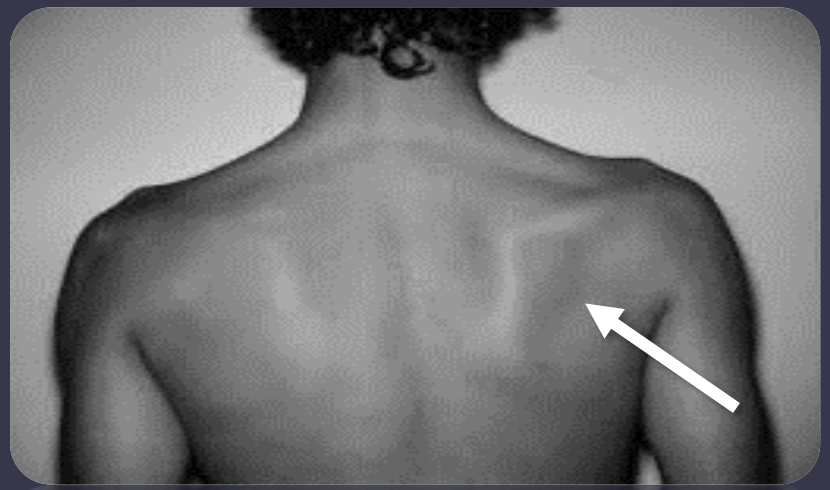
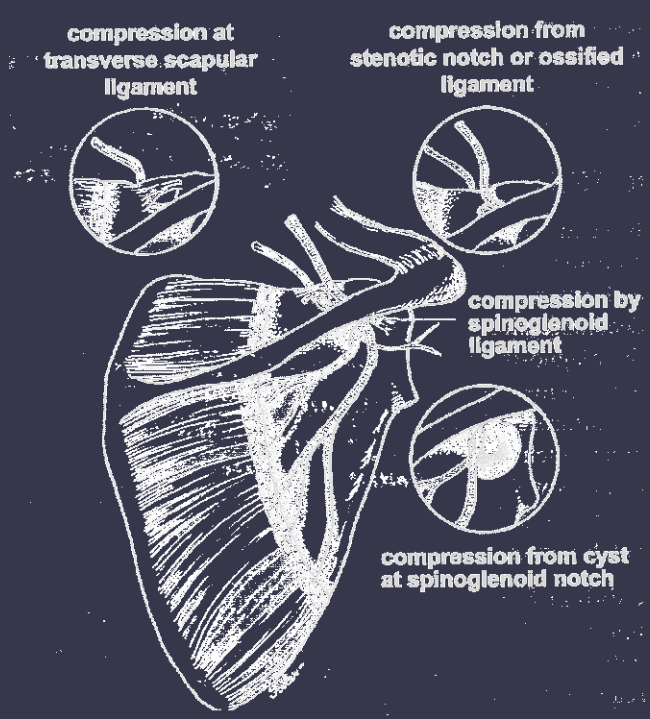
AANA

NO CONFLICT OF INTEREST TO DECLARE

- Volleyball predisposes in SSN entrapment and shoulder injuries and vice versa

- Entrapment of the suprascapular nerve (SSN) usually occurs at the suprascapular notch





- ➢ *Atrophy of infraspinatus muscle and weakness in external rotation*

- Traction and/or compression of nerve
- Forceful eccentric contraction of infraspinatus muscle to stop the arm, creating traction of the nerve

Incidence: Dominant upper extremity

- 12-30% of high-level volleyball players

"VOLLEYBALLER'S SHOULDER"

- Traction and/or compression of nerve
- Forceful eccentric contraction of infraspinatus muscle to stop the arm, creating traction of the nerve

- Often misdiagnosed
  - ➢ *Delayed diagnosis*
  - ➢ *Poor therapeutic outcomes*

Irreversible muscle atrophy, if left untreated !

- Usually *asymptomatic* – Athletes remain able to play at a high level
  - Nerve lesion usually not complete
  - Compensation of terres minor muscle (axillary nerve)

- **X-rays**

  AP, scapular Y, Stryker, axillary views.

- **Nerve conduction studies**

  Prolonged motor latencies.

  The normal distal motor latencies to the supraspinatus muscles during stimulation at the Erb point are 2.7 msec +- 0.5 and to the infraspinatus muscles, 3.3 msec. +- 0.5.

  Side to side differences greater than 0.4 msec. suggest focal entrapment of the SSN or other neural injury.

- **EMG studies**

  Evidence of denervation.

  Fibrillations, positive sharp waves, decreased amplitudes, polyphasia.

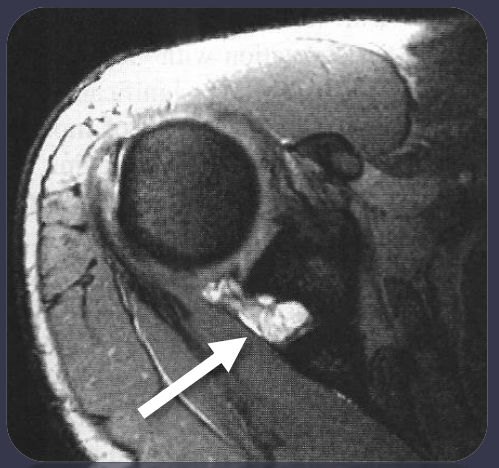
  Motor unit recruitment abnormalities.

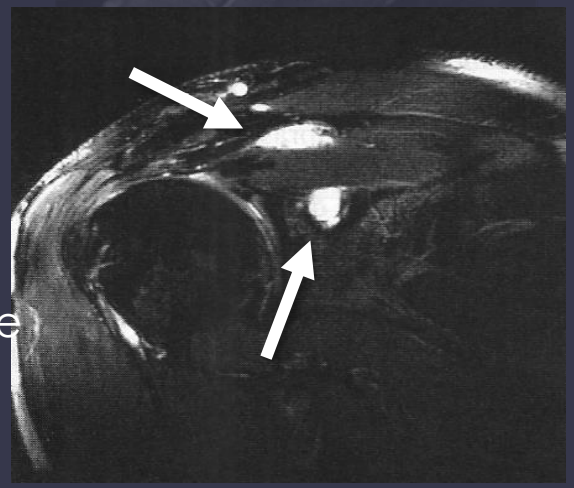
- **MRI**

  Ganglion cyst, decreased muscle bulk, fatty degeneration, altered signal intensity for muscle & nerve.

- **ULTRASONOGRAPHY**

  (Parascapular ganglia or masses).





Conservative management

- Restriction of overhead hitting
- Non-steroidal anti-inflammatory medications
- Physiotherapy, strengthening of rotator cuff muscles

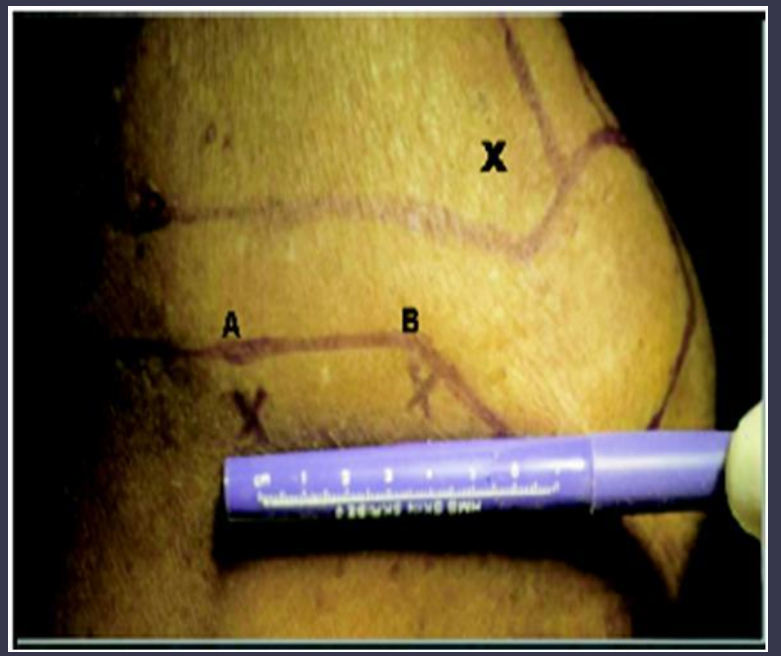
Surgical treatment

- Indications
  - Significant pain and decreased performance despite 6 months of conservative management
  - Space-occupying lesion compressing nerve
- Nerve exploration and release of compression areas

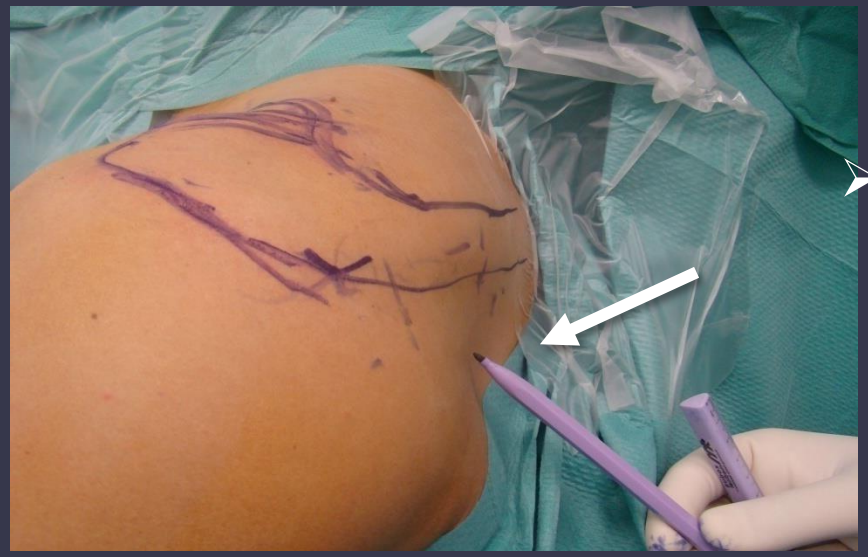
- January 2005 to November 2022
- 40 professional and elite volleyball players
  - 32 males, 8 females
  - Mean age: 26 years (16-34 ys)

    - All patients treated arthroscopically for their main injury
    - Definite diagnosis was made intra-operatively
    - SSN release was performed during arthroscopy
    - Clinical outcomes
      - VAS score
      - Evaluation ROM

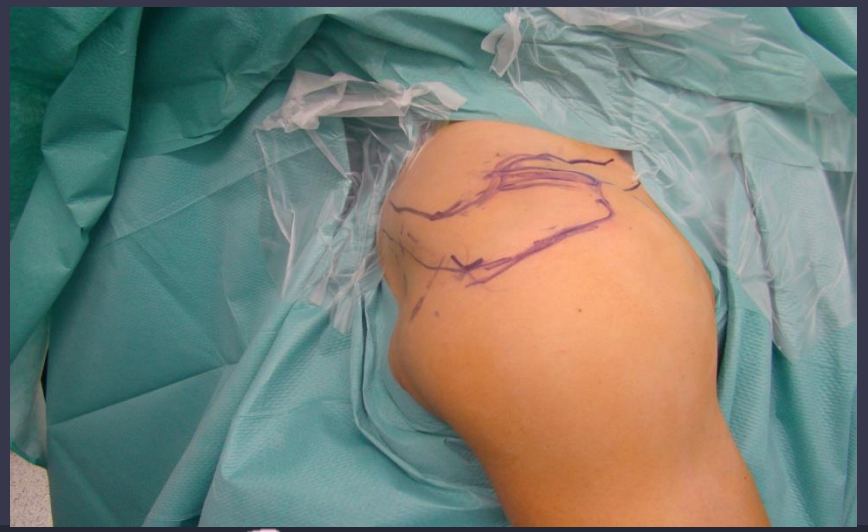
- Intra-articular pathology (labral and rotator cuff) present in all athletes as main injury
- Conspicuous atrophy of supraspinatus and/or infraspinatus muscles
- All athletes experienced shoulder weakness, especially in external rotation and abduction
- Deep dull pain and numbness at the posterolateral shoulder area



- Internal impingement in 35/40 patients (8 female, 27 male)
- Partial thickness tear and posterior superior labral detachment in 35/40 patients
- Anterior dislocation and massive rotator cuff tear in 5/40 patients



Atrophy of infraspinatus muscle and weakness in external rotation



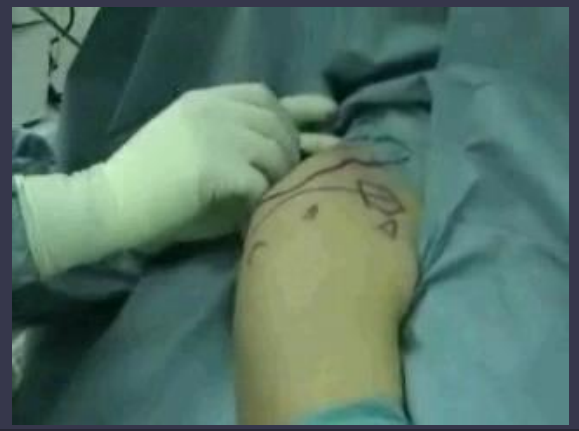
- **Complete pain relief** at posterior shoulder in **40/40** post-operatively
- **Muscle atrophy** significantly **improved** at 14 months post-operatively
- All athletes gradually **regained full ROM** to operated shoulder

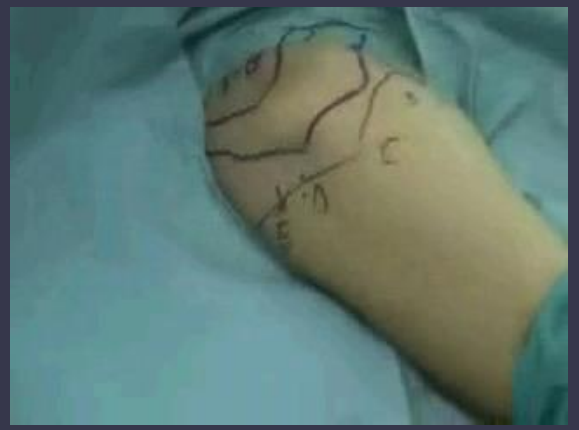
- **Patients' satisfaction**

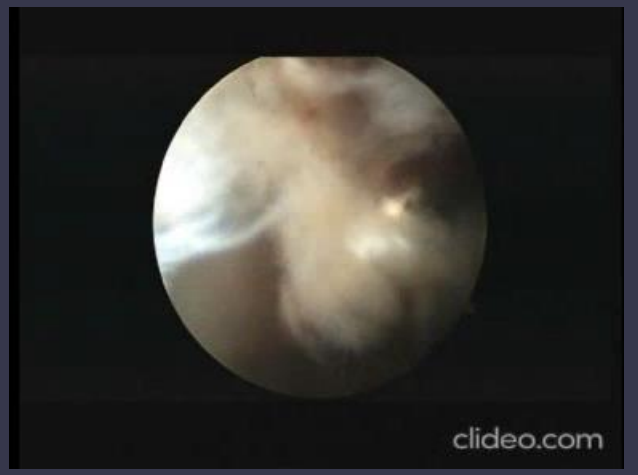
35/40 fully returned to pre-injury levels, **very satisfied**

3/40 satisfied

2/40 partially satisfied







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DEPARTMENT OF ANATOMY "ANATOMEIO"

AANA

- **Volleyball patients** are susceptible in SSN entrapment and shoulder injuries and vice versa, due to **extreme shoulder ROM** during hitting and IGHL + capsule loosening.
- **OVERUSE INJURIES predispose to internal impingement (obvious supraspinatus atrophy) due to SSN entrapment at the spinoglenoid notch**
- **ACUTE INJURIES predispose to SSN entrapment at the suprascapular notch**
- In patients with advanced SSN entrapment, significant **muscle wasting is often irreversible**
- **Quick and accurate diagnosis and awareness** is important to facilitate appropriate intervention
- **Arthroscopic shoulder procedure** with **simultaneous SSN release** associated with **excellent clinical outcomes** and **high patients' satisfaction**