I CONGRESSO DO OMBRO E COTOVELO

COMPLICAÇÕES/REVISÕES

GUIMARÃES
10 E 11 MAIO 2019
Centro Cultural Vila Flor

INSTABILIDADE ANTERIOR DO OMBRO ASSOCIADA A ROTURA DA COIFA DOS ROTADORES

Anterior Instability of the shoulder associated with rotator cuff tears

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PATRONAGE 2019

DOES IT MATTER?

The **incidence** of shoulder dislocation before and after the age of 45 years is roughly equivalent

[Kim DS, 2011, Int Orthop]

The **consequences** of anterior glenohumeral dislocations in patients older than 40 years are markedly different than in the younger population

- In the **young people** the recurrence of the instability is the most common complication

[Bassett RW, 1983, Clin Orthop Relat Res] [Itoi E, 1992, Int Orthop] [McBride T, 2012, Trauma]

- In **older patients**, the primary issue is the associated cuff tear

[Robinson CN, 2012, J Bone Joint Surg Am]

DOES IT MATTER?

- The **prevalence** of rotator cuff tears after traumatic dislocation **increases with advancing age**, although the incidence of pre-existing rotator cuff tears is not well established

[Porcellini, G., 2012, Instability and Rotator Cuff Tear, Med Sport Sci. Basel, Karger]

- The different injury patterns are thought to be secondary to the changes in tissue properties that occur with **aging**, and lead to **degenerative weakening of the tendons**

[Neviasser RJ, Neviaser TJ, Neviaser JS: Concurrent rupture of the rotator cuff and anterior dislocation of the shoulder in the older patient. J Bone Joint Surg Am 1988;70:1308–1311]

DOES IT MATTER?

- Stevens in 1926 and Codman in 1934 **first called attention to the possibility of tears** of the rotator cuff accompanying anterior dislocation of the shoulder in elderly patients

[Stevens JH: Dislocation of the shoulder. Ann Surg 1926;83:84–103]
[Codman EA: The Shoulder: Rupture of the Supraspinatus Tendon and Other Lesions In or About the Subacromial Bursa. Boston, Thomas Todd Co, 1934]

PREVALENCE AND INCIDENCE: REPORTS FROM THE LITERATURE

[K. RO ET AL., 2018, Arthroscopy Association of North America]

50 patients > 40 years who underwent arthroscopic stabilization for recurrent anterior shoulder dislocation

- Recurrence, which includes dislocation and subluxation, occurred in 14% postoperatively.
- Anteroinferior labral lesion was seen in 92% of patients.
- Associated lesions included superior labrum anterior to posterior lesion (22%), midsubstance capsular tear (10%), and Hill-Sachs lesion (92%).

- **Rotator cuff tears** were found in 18% partial-thickness tear in 10% and full-thickness tear, which was repaired with suture anchor, in 8%.

28% !

PREVALENCE AND INCIDENCE: REPORTS FROM THE LITERATURE

International Orthopaedics (SICOT)
DOI 10.1007/s00264-015-2862-z

ORIGINAL PAPER

Prevalence of associated injuries after anterior shoulder dislocation: a prospective study

Ashraf Atef[1] · Ahmad El-Tantawy[1] · Hossam Gad[1] · Mohammad Hefeda[2]

Received: 18 March 2015 / Accepted: 21 April 2015

- **240 patients**, traumatic anterior glenohumeral dislocations
  - History taking, neurovascular assessment and pre-reduction plain X-ray
  - X-ray immediately after reduction
  - Ultrasonography (US) and magnetic resonance imaging (MRI) within one week after reduction in all patients
  - Nerve conduction studies for any patient with suspected nerve injury

- Associated lesions were reported in 144 (60%) patients
  - **RCT - most common injury (67 cases, 27,91%)**

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- Associated lesions were reported in 144 (60%) patients
  - **RCT - most common injury (67 cases, 27,91%)**
    - Isolated in 34 patients (14.15%)
    - Combined with other lesions in 33 cases (13.75%)
      - Axillary nerve injury in 15 patients (6.25%)
      - Bankart lesion in 18 patients (7.5%)
  - **Axillary nerve** injury in 38 patients, 8 (3.33%) were isolated and 30 (12.5%) were combined
  - **Greater tuberosity fracture** in 37 patients, 15 (6.25%) were combined with axillary nerve injury, 22 patients (9.17 %) the fracture was isolated
  - **Hill-Sachs** [32 cases (13.33 %)] and **Bankart** lesion [50 cases (20.8 %)] were combined lesions with no isolated cases
  - **Bony Bankart lesions**, **Humeral avulsion of the glenohumeral ligament** (HAGL) (Glenoid labral articular defect (GLAD) Anterior labral periosteal sleeve avulsion (ALPSA)) and **superior labrum anterior and posterior** (SLAP) lesions were no reported in this study

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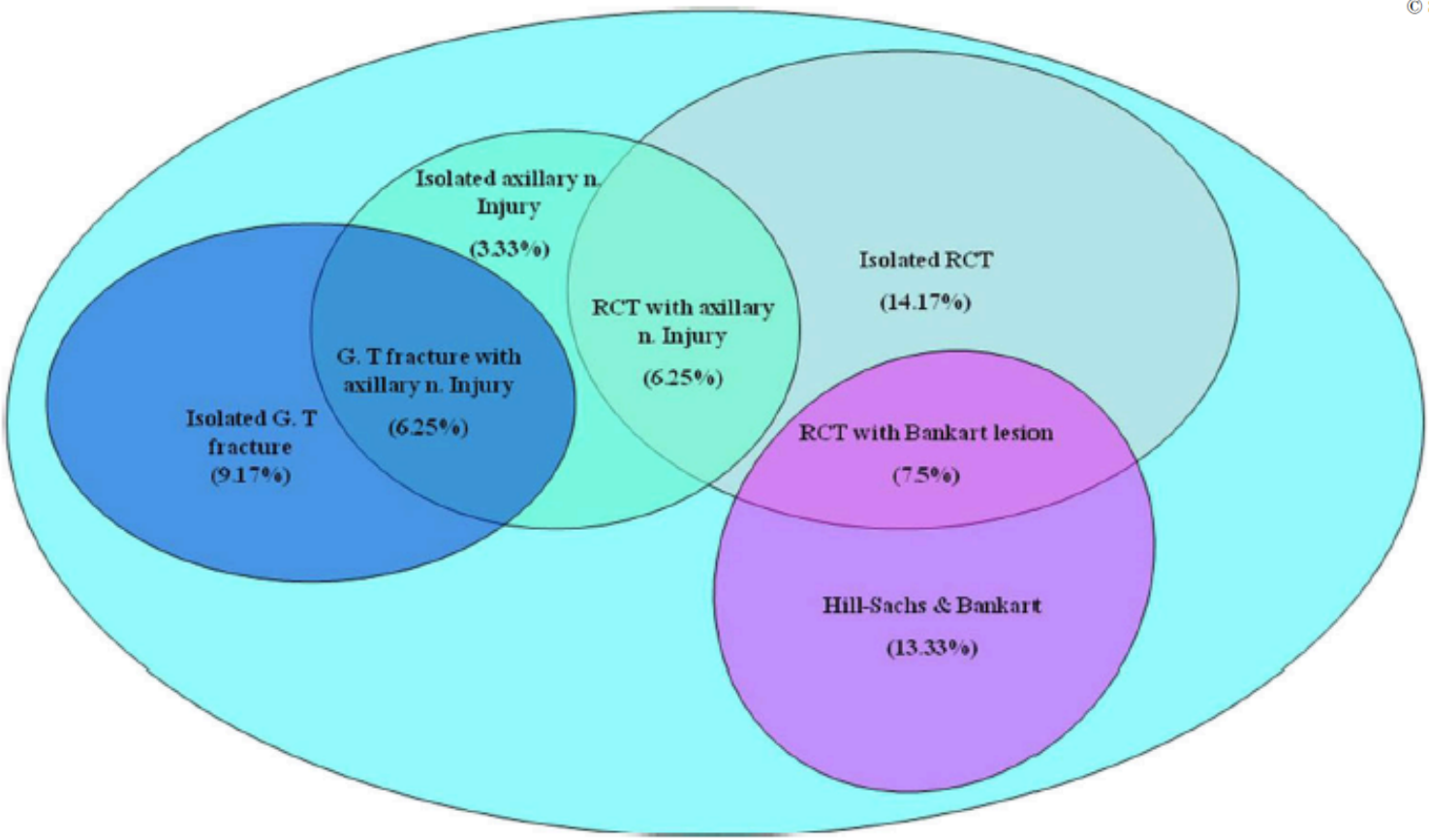

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Pathology	*n*	Mean age, years (range)	Percentage
Dislocations with associated shoulder injuries			
Isolated axillary nerve injury	8	46.3 (30–52)	3.33
GT fracture with axillary nerve injury	15	32.8 (25–38)	6.25
RCT with axillary nerve injury	15	53.9 (49–58)	6.25
RCT with Bankart lesion	18	49.3 (46–55)	7.5
Isolated GT fracture	22	42.6 (28–55)	9.17
Hill–Sachs & Bankart lesion	32	24.4 (20–29)	13.33
Isolated RCT	34	52.8 (45–60)	14.17
Total number of associated injuries	144	43.1 (20–60)	60
Dislocations with no associated injuries	96	27.3 (21–40)	40
Total study	240	35.2 (20–60)	100

GT greater tuberosity

PREVALENCE AND INCIDENCE: REPORTS FROM THE LITERATURE

RCT in 27.91 %

- Most commonly among ladies after fall on outstretched hand
- Only in the age group above 45 years

The significant **relation between age and RCT** was also reported in many other studies:

- Yuen et al. [2012, Am J Emerg Med]
  - 49 patients
  - 37 % incidence of RCT after anterior shoulder dislocation, and all of them were older ladies

- [Robinson CN, 2012, J Bone Joint Surg Am]
  - 3633 patients
  - 1215 patients (33.4%) had either a RCT or a GT fracture
  - Female patients with an age of 60 years

PREVALENCE AND INCIDENCE: REPORTS FROM THE LITERATURE

RCT in 27.91 %

- Most commonly among ladies after fall on outstretched hand
- Only in the age group above 45 years

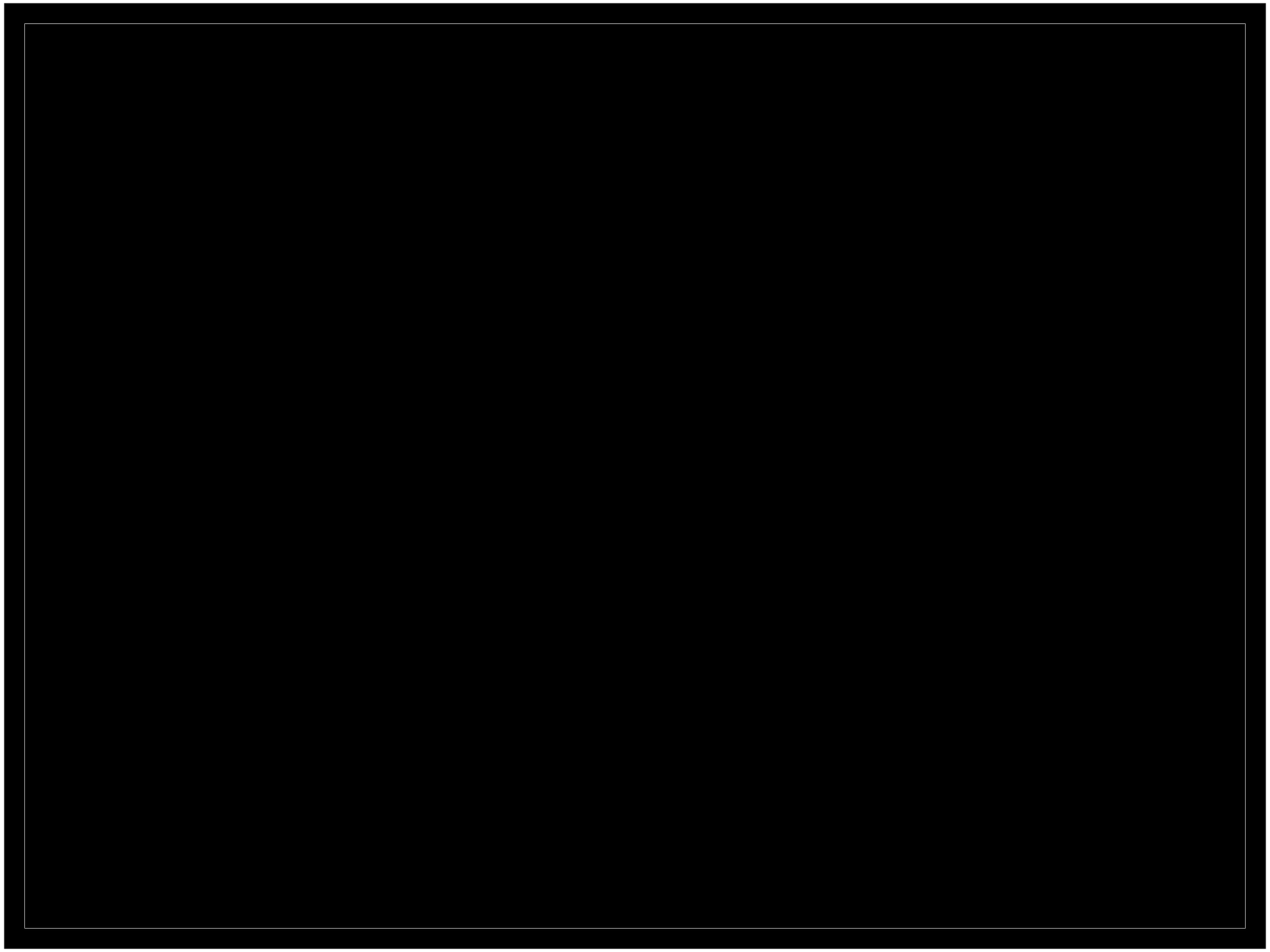
The significant **relation between age and RCT** was also reported in many other studies:

- [Berbig et al.,1999, J Shoulder Elbow Surg]
  - 167 patients
  - RCT associated with anterior shoulder dislocation in 32 % of their patients, and all were women above 50 years

- [Penvy T, et. Al., 1998, Arthroscopy]
  - Reported a series of initial 52 dislocations in patients older than 40 years and found that 35 % of patients had associated RCT

CASE REPORT

- 38 y, men, GU dislocation, Bankart lesion



@ Bankart &
@ Cuff Repair

DIAGNOSIS AND EVALUATION

[Berbig et al. 1999, J Shoulder Elbow Surg]

- RCT associated with anterior shoulder dislocation in 32% of their patients, all were women above the age of 50 years
- They recommended US evaluation of the rotator cuff if 90° elevation in the scapular plane was not achieved within **2 weeks** following injury

[Ribbans W, 1990, J Bone Joint Surg Br]

- Incidence of RCT in 61 % of cases in an older population
- US has the advantages of speed and ability to compare both shoulders in one sitting

[Sonnabend DH, 1994, Clin Orthop]

- Persistence of pain or weakness **3 weeks** following dislocation should be investigated to exclude cuff injury in patients over 40 years old

DIAGNOSIS AND EVALUATION

[Stiles RG, 1993 Radiology]

- The accuracy of sonographic evaluation of the rotator cuff depends on the experience of the ultrasonographer

[Kneeland JB, 1987, Am J Roentgenol]

- **MRI** offers a non-invasive, sensitive technique for detecting RCT
- It provides information regarding the tendinous attachments of the rotator cuff as well as the condition of the specific rotator cuff muscle
- It was noticed in this study that over 50 % of cases with grades 1 and 2 RCT were misdiagnosed by US and only detected by MRI study accidentally

DIAGNOSIS AND EVALUATION

Maffulli N (ed): Rotator Cuff Tear. Med Sport Sci. Basel, Karger, 2012, vol 57, pp 41–52

Instability and Rotator Cuff Tear

Giuseppe Porcellini[a] · Francesco Caranzano[b] · Fabrizio Campi[a] · Paolo Paladini[a]

Reference	Time of immobilization, start of physical therapy	Imaging examination
Hawkins and Mohtadi [61]	physical therapy at 1 week	arthrogram if poor improvement at 4 weeks
Sonnabend [62]	immobilization for 3 weeks	arthrogram or ultrasonography if pain and weakness were still present
Pevny et al. [20]	shorter immobilization to avoid stiffness in older patients	MRI: negative → rehabilitation program → repeat MRI at 3–4 weeks if poor improvement MRI: positive: arthroscopic or open cuff repair

DIAGNOSIS AND EVALUATION

Acute Versus Delayed Magnetic Resonance Imaging and Associated Abnormalities in Traumatic Anterior Shoulder Dislocations

Nathan D. Orvets,* MD, Robert L. Parisien,* MD, Emily J. Curry,* BA, Justin S. Chung,* BS, Josef K. Eichinger,† MD, Akira M. Murakami,‡ MD, and Xinning Li,*§ MD

Investigation performed at the Boston University School of Medicine/Boston Medical Center, Boston, Massachusetts, USA

2017

- 89 patients with clinically and radiographically confirmed primary traumatic anterior shoulder dislocations
- Patients were divided into 2 groups:
  - those undergoing MRI less than 6 months (n 44; LT6)
  - those undergoing MRI greater than 6 months (n 45; GT6)
- The delayed MRI group (GT6) demonstrated a greater degree of intra-articular abnormalities compared to the early MRI group (LT6).
  - A greater percentage of superior labral anterior-posterior (SLAP) tears (58% vs 34%, respectively) and cartilage damage (73% vs 27%, respectively) was present in the GT6 group compared to the LT6 group. Cartilage damage was 18% mild, 7% moderate, and 2% severe for the LT6 group as compared to 38% mild, 31% moderate, and 4% severe for the GT6 group.
  - In the LT6 group, there were more rotator cuff tears (50% vs 24%, respectively) and capsular tears (25% vs 9%, respectively) than the GT6 group

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2017

- Significant difference with respect to patient age and timing of MRI:
  - The mean age of the LT6 group was 40 y as compared to 30 y for those in the GT6 group ($P < .05$)

- The LT6 group had more rotator cuff tears (50%) than the GT6 group (24%)
  - This difference in the incidence of rotator cuff tears may be explained by the differences in the ages between the 2 groups, as **older patients tend to tear their rotator cuff more than younger patients**


N680CA


9M-DRC


MAC
A4

TREATMENT

- **In older patients, treatment focuses on preventing:**
  - Recurrent instability
  - The morbidity associated with a dysfunctional rotator cuff
    - Pain
    - Loss of function
    - Disabling degenerative changes

[Hawkins RJ, Bell RH, Hawkins RH, Koppert GJ. Anterior dis- location of the shoulder in the older patient. Clin Orthop Relat Res. 1986;206:192–195]

TREATMENT

- The lag time between the onset of traumatic RCT and rotator cuff repair plays a major role in the reduction of **mesenchymal stem cells (MSCs)** in the bone marrow of the tuberosity at the tendon–bone interface
  - This deficiency in the number of MSCs at the healing tendon–bone interface is one of the leading causes of the poor response of the rotator cuff healing process, hence the importance of early diagnosis and treatment of these lesions

[Hernigou P, 2015, Reduced levels of mesenchymal stem cells at the tendon–bone interface tuberosity in patients with symptomatic rotator cuff tear. Int Orthop]

- The value of early diagnosis and treatment of associated RCT in older people

[Itoi E, Tabata S (1992) Rotator cuff tears in anterior dislocation of the shoulder. Int Orthop 16(3):240–244]

TREATMENT

- Bankart lesion combined with a supraspinatus tendon tear:
  - Increased rotational range of motion
  - Decreased the force required for dislocation

[McShin SJ, Yoo JC, McGarry MH, Jun BJ, Lee TQ.;Anterior capsulolabral lesions combined with supraspinatus tendon tears: biomechanical effects of the pathologic condition and repair in human cadaveric shoulders; Arthroscopy. 2013 Sep;29(9):1492-7]

- In a cadaveric study, a 50% of decrease in rotator cuff activity turned in an increase of 50% of dislocations
  - A smaller capsule-labral tear was needed to provocate instability in the presence of a cuff defficience

[Pouliart N, Gagey O. Concomitant rotator cuff and capsuloligamentous lesions of the shoulder: A cadaver study. Arthroscopy 2006; 22(7): 728-35]

TREATMENT

- Capsuloligamentous anterior static stabilizers have a fundamental role in young individuals' shoulders, but not in patients over the age of 40 years.

[McLaughlin H.L. Injuries of the shoulder and arm. In: McLaughlin H.L., Harrison L., editors. Trauma. Saunders; Philadelphia: 1959. pp. 233–296]

- After the age of 40, the function of the rotator cuff as a dynamic stabilizer has fundamental importance and, when injured, this generates a posterior instability, with consequently increased anterior translation due to loss of the posterosuperior blockage that the rotator cuff provides.

[Craig E.V. The posterior mechanism of acute anterior shoulder dislocations. Clin Orthop Relat Res. 1984;(190):212–216]

TREATMENT

- Bankart repair combined with supraspinatus repair restored range of motion and the force required for dislocation

- However repair of both pathologic conditions shifted the humeral head posteriorly at midrange of rotation in 30º and 60º abduction ($p<.05$)

- When repairing both care should be taken not to overtighten the joint, which may lead to stiffness or osteoarthritis

[Shin SJ, et. Al., Arthroscopy. 2013 Sep;29(9):1492-7. doi: 10.1016/j.arthro.2013.05.031. Epub 2013 Jul 30]

- Repair of the RCT alone, even without repair of a Bankart lesion, may be sufficient to achieve stability and prevention of recurrence after acute traumatic shoulder dislocation

[Itoi E, Tabata S (1992) Rotator cuff tears in anterior dislocation of the shoulder. Int Orthop 16(3):240–244]

TREATMENT

- 33 patients
  - Retrospective
  - Traumatic shoulder dislocation and complete rotator cuff injury
  - At least two years of follow up

- The functional outcomes of the patients who only presented complete rotator cuff tearing after traumatic shoulder dislocation, which underwent arthroscopic repair, were similar to the outcomes of those who presented an associated with a Bankart lesion that was corrected simultaneously with the rotator cuff injury.

- The extent of the original rotator cuff injury did not alter the functional results in the postoperative evaluation.

OUTCOME

Rotator cuff repair = Rotator cuff repair + Bankart

TREATMENT

- Surgical repairs of both the capsulo-ligament complex and the rotator cuff in patients younger than 40 years.

[Hawkins RJ, Morin WD, Bonutti PM: Surgical treatment of full- thickness rotator cuff tears in patients 40 years of age or younger. J Shoulder Elbow Surg 1999;8:259–265]

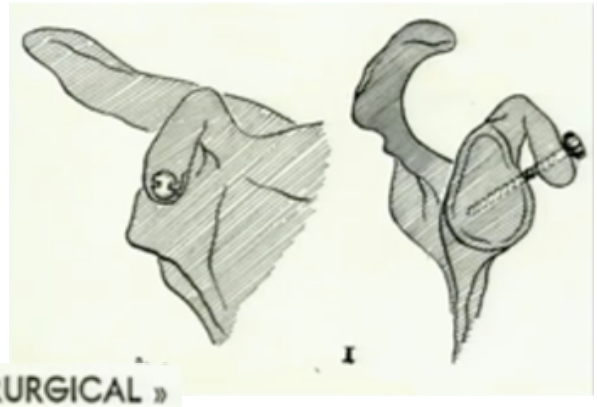
- Algorithm for the surgical treatment of associated instability and tendon lesion:
  - In patients younger than 60 years both capsulo-ligament reconstruction and cuff repair must be performed
  - In patients older than 60 or with low functional demands, cuff repair only is a good option to restore function and stability
  - **In patients older than 70 years, in whom a cuff lesion preceding the dislocation is likely, if the repair is not possible:**
    - Tendon transfer
    - Inverse prosthesis
    - Conservative management

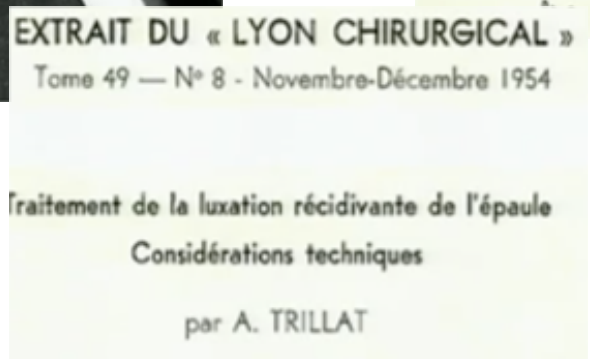
[Voigt C, Lill H: Shoulder instability and rotator cuff tear (in German). Orthopade 2009;38:70–74]

TREATMENT

- Walch and Boileau proposed an stabilization by coracoid transfer (Trillat procedure)

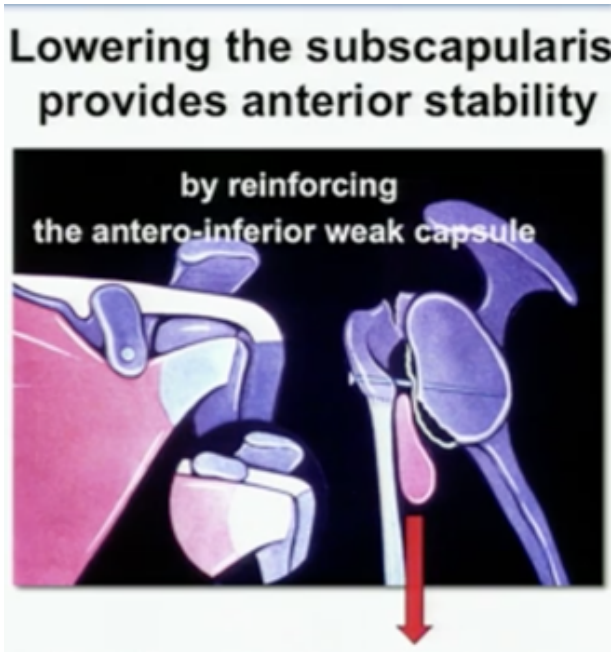
[Walch G, Boileau P: Rotator cuff tears associated with anterior instability; in Warner JJ, Iannotti JP, Gerber C (eds): Complex and Revision Problems in Shoulder Surgery. Philadelphia, Lippincott- Raven, 1997]




EXTRAIT DU « LYON CHIRURGICAL »
Tome 49 — N° 8 - Novembre-Décembre 1954

Traitement de la luxation récidivante de l'épaule
Considérations techniques

par A. TRILLAT



TREATMENT

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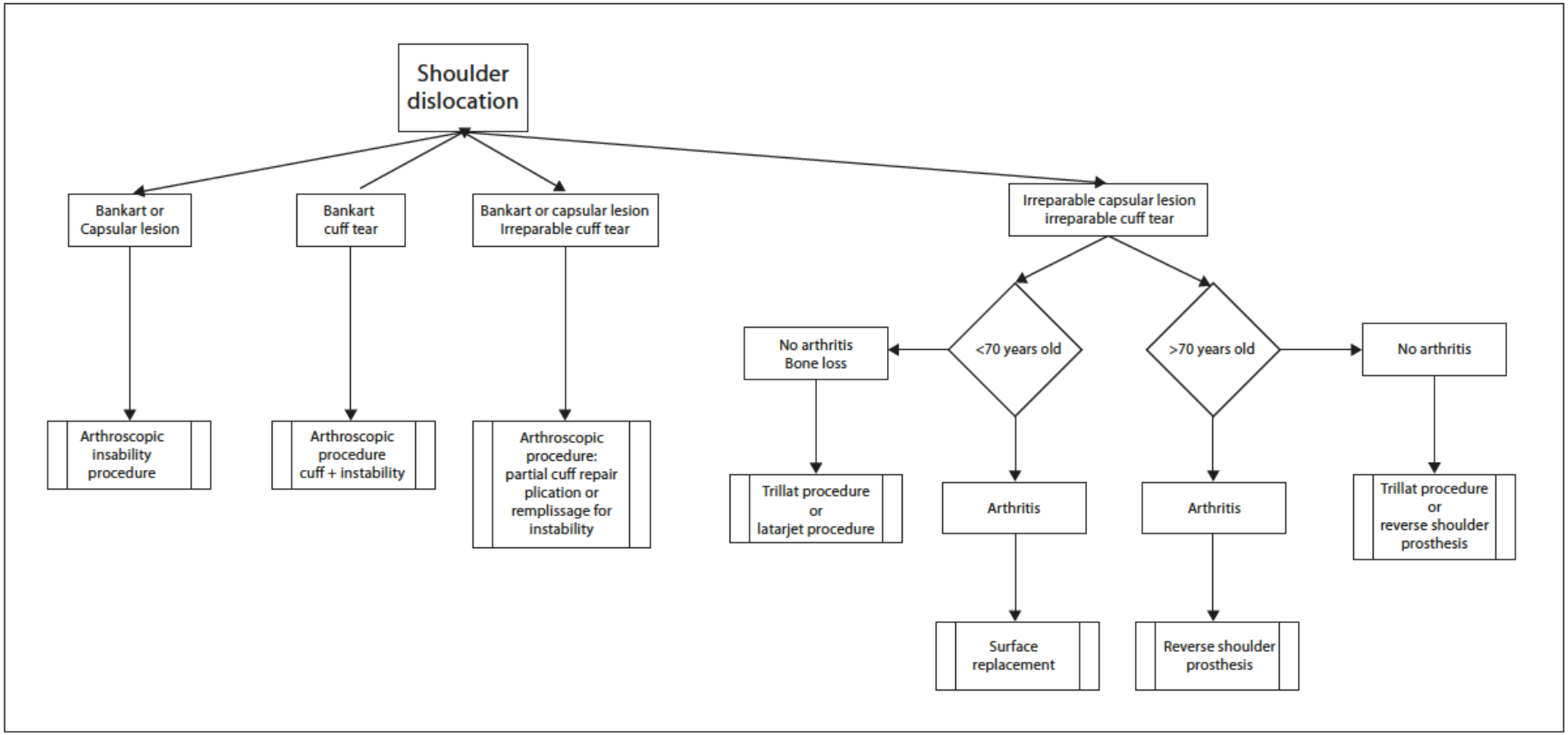
Instability and Rotator Cuff Tear

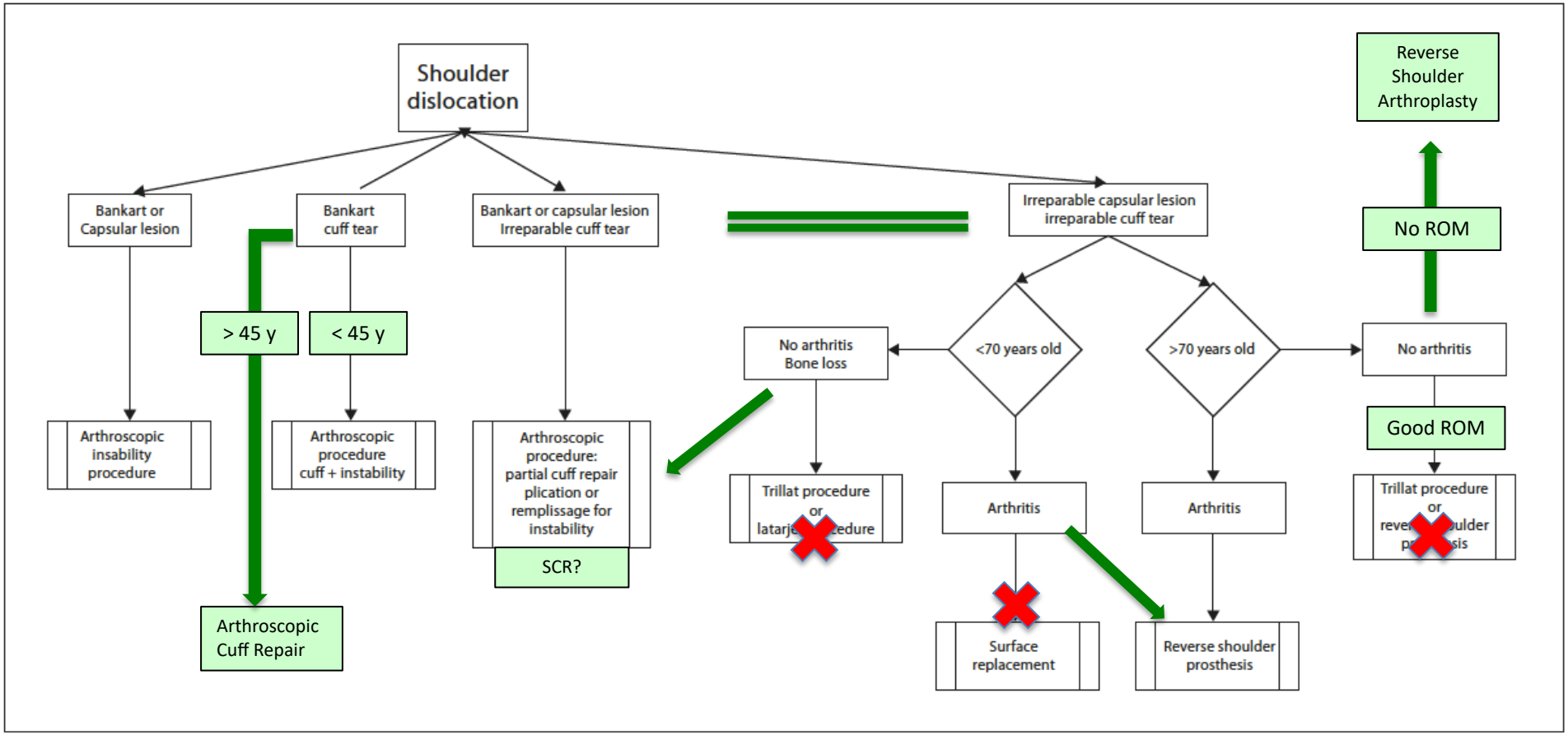
Giuseppe Porcellini[a] · Francesco Caranzano[b] · Fabrizio Campi[a] · Paolo Paladini[a]

- Algorithm Used in Shoulder Instability Associated to a Rotator Cuff Tear



TREATMENT

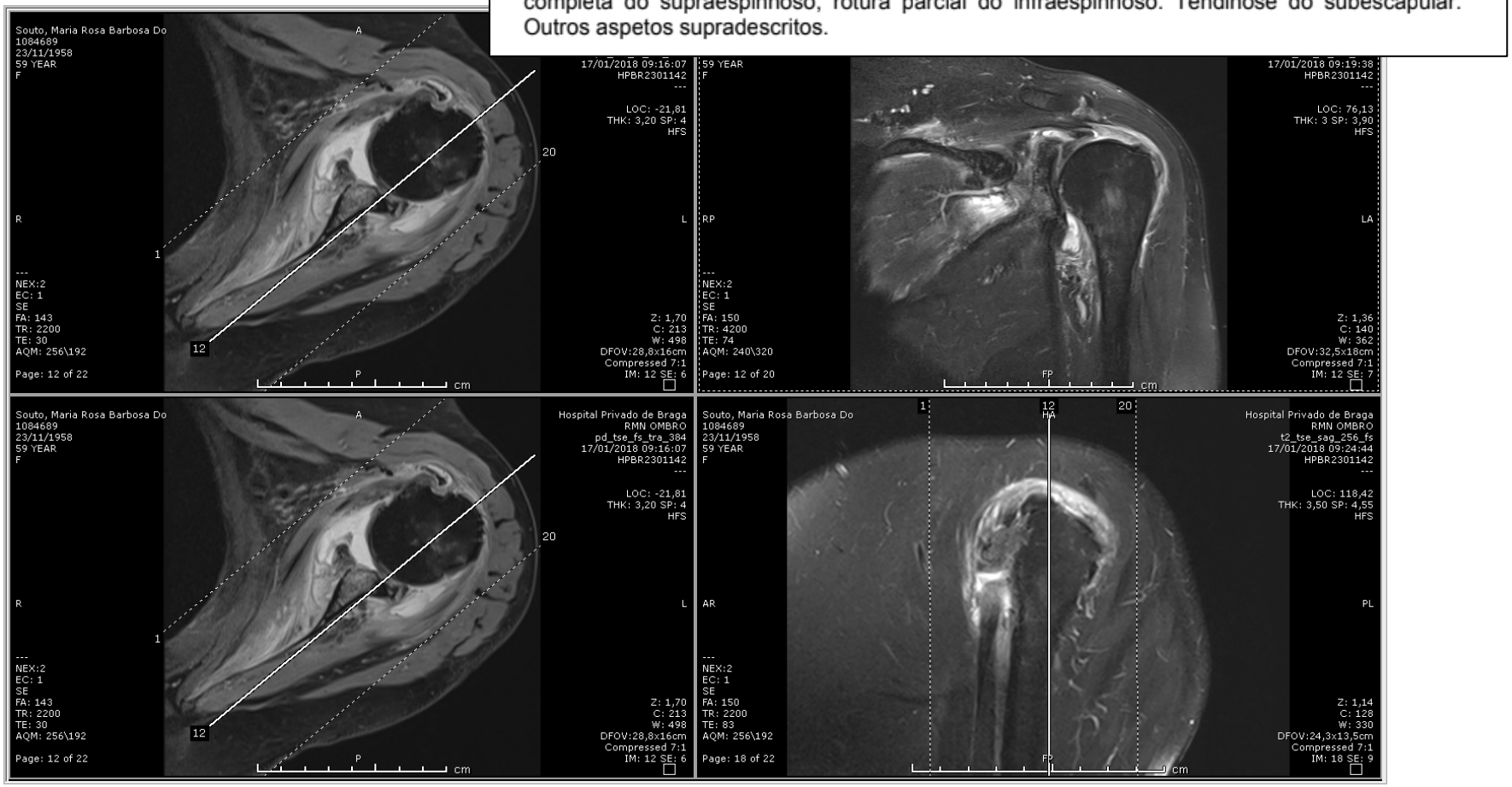
- Algorithm



TREATMENT

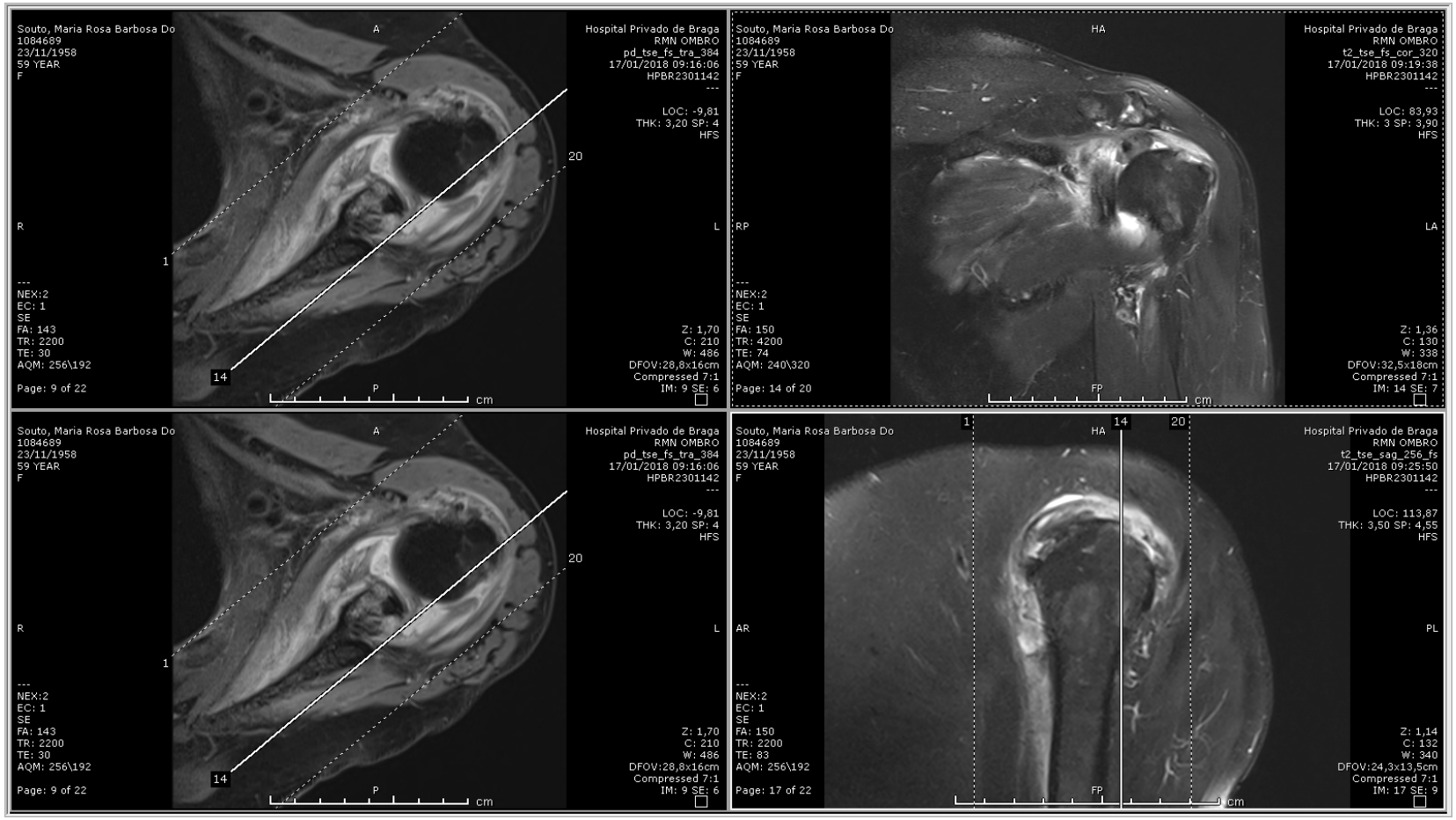
- 66y, fem, GU dislocation, glenoid and coracoid fracture

Conclusão: Fratura da porção anterior da glenoide com ligeiro afundamento. Rotura quase completa do supraespinhoso, rotura parcial do infraespinhoso. Tendinose do subescapular. Outros aspetos supradescritos.



TREATMENT

- 66y, fem, GU dislocation, glenoid and coracoid fracture, cuff tear



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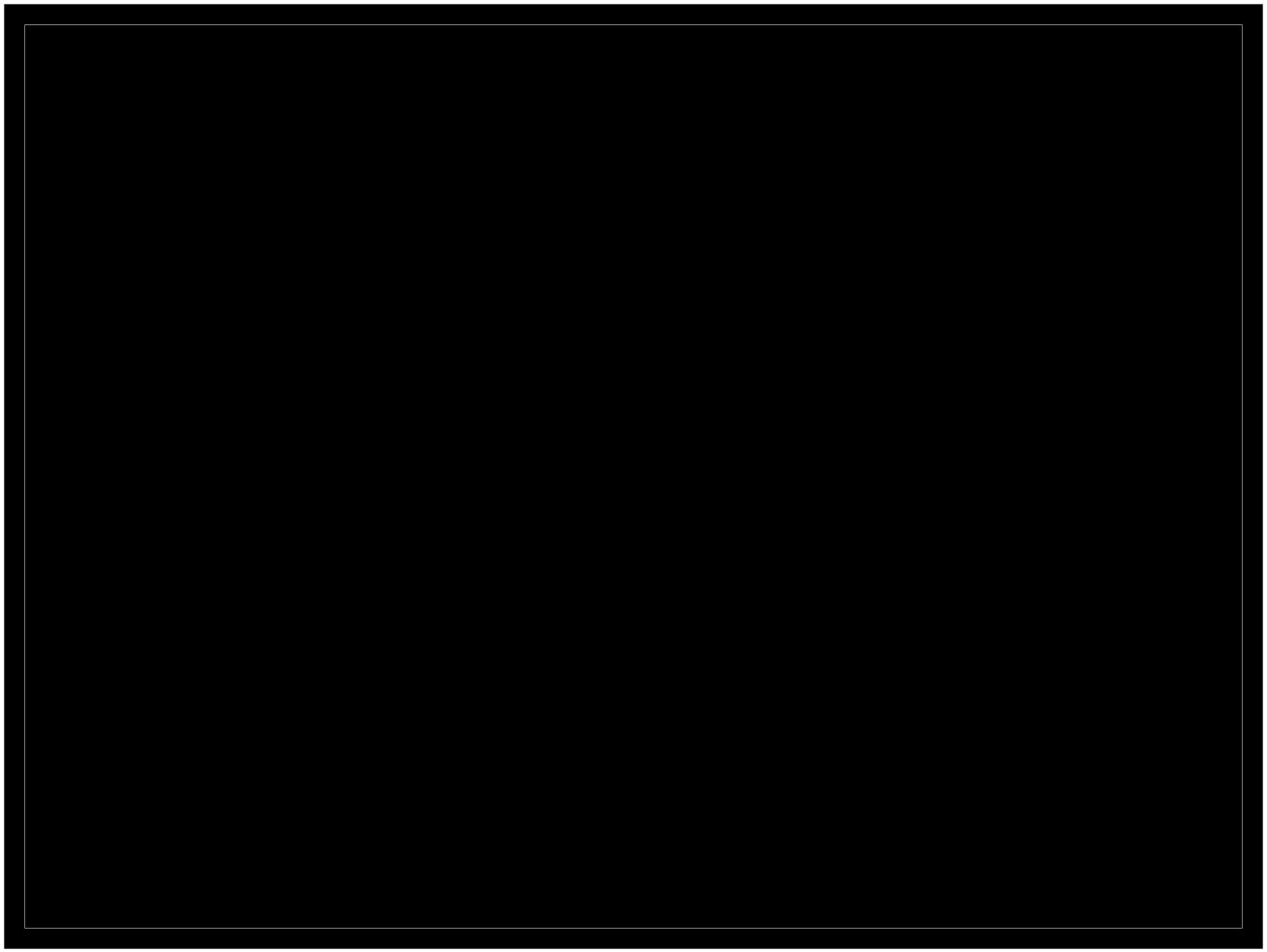
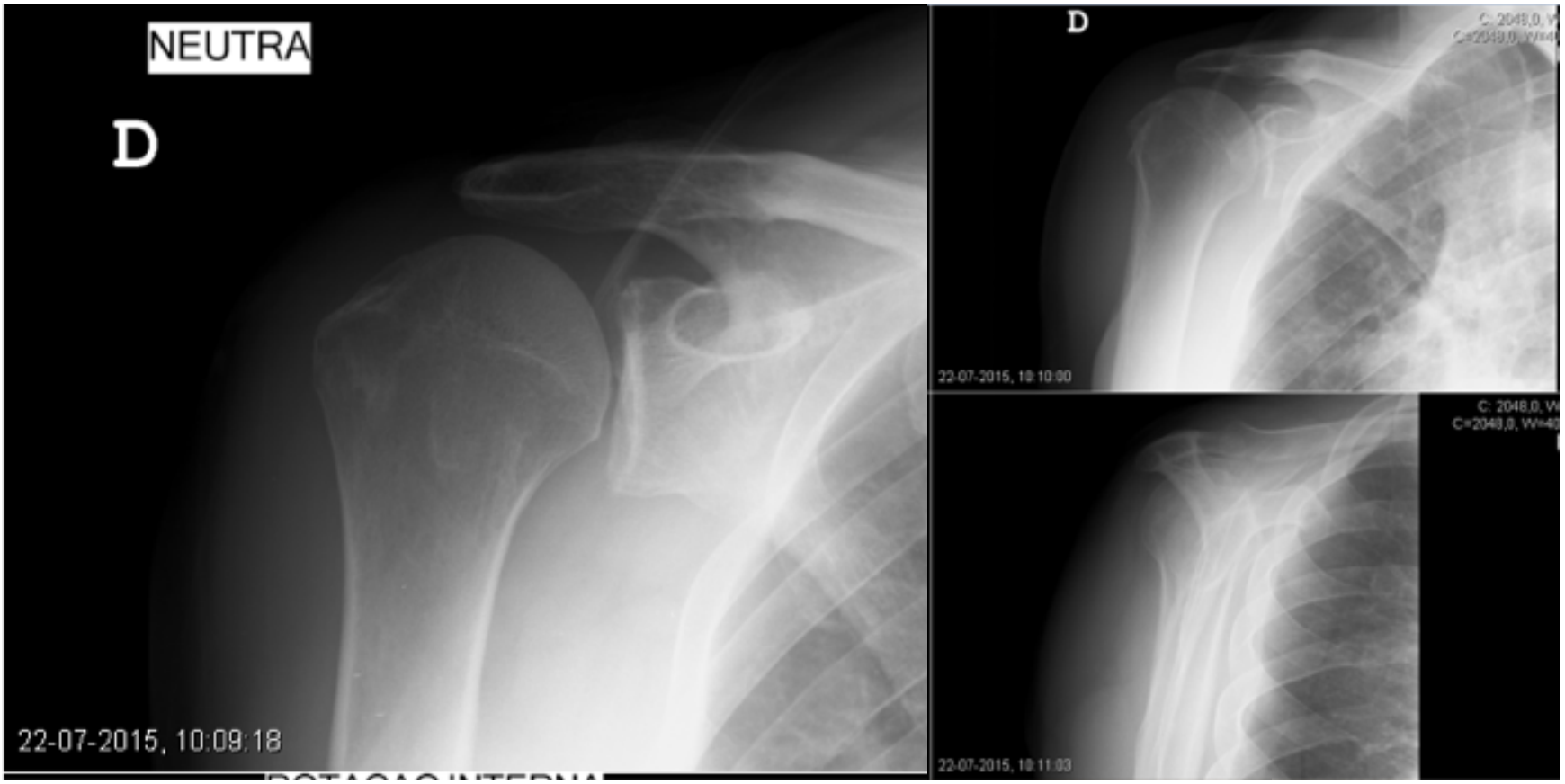


@ Cuff Repair

TREATMENT

- 70y, male, GU dislocation (>10), AE 170º; Abd 160º; ER 10º (appreh++); IR D12



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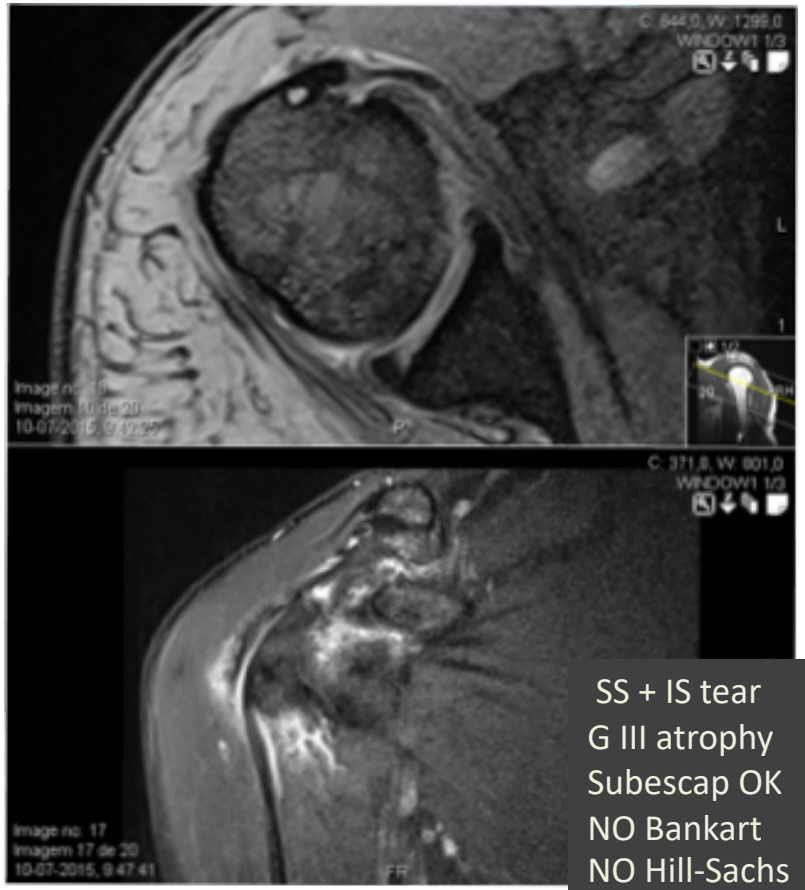

SS + IS tear
G III atrophy
Subescap OK
NO Bankart
NO Hill-Sachs

TREATMENT

- 70y, male, GU dislocation (>10), AE 170º; Abd 160º; ER 10º (appreh++); IR D12

THM / CONCLUSION

- Either isolated or combined **shoulder injuries** associated with the main traumatic anterior glenohumeral dislocations **are more frequent than expected.**

- **The increasingly age** of the general population and the **high activity levels** of older individuals produce an **increase in the frequency of trauma** and in the **necessity for a good functional result**.

THM / CONCLUSION

- **Persistent pain and dysfunction** after a shoulder dislocation should prompt **evaluation of the rotator cuff**, especially in contact or overhead athletes, patients older than 40 years, or those with nerve injury.

- Clinical examination and **detailed imaging including US and MRI** are mandatory to avoid missing the diagnosis of any occult associated lesions, which if neglected may affect the prospects of the shoulder functions.

- Nerve conduction studies may be needed in some cases.

THM / CONCLUSION

- **Cuff lesions must be suspected and diagnosed promptly in older patients** with a shoulder dislocation

- **A long wait between the cuff rupture and the surgery can jeopardize the outcome**.

- **Surgery should be considered** in patient with a **rotator cuff tear** after dislocation.


BRAGA


Nuno Vieira Ferreira