

Orthokine en roturas masivas del manguito rotador

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Rotura masiva manguito rotador

- Insuficiente evidencia para establecer algoritmo de tratamiento
 - Traslación de la cabeza humeral
 - Dolor, función...edad...

[Int Orthop](#). 2015 Dec;39(12):2403-14. doi: 10.1007/s00264-015-2796-5. Epub 2015 May 1.

Massive rotator cuff tears: definition and treatment.

[Lädermann A](#)^{1,2,3}, [Denard PJ](#)^{4,5}, [Collin P](#)⁶.

⊕ Author information

Abstract

PURPOSE: The aim of this review is to summarise tear pattern classification and management options for massive rotator cuff tear (MRCT), as well as to propose a treatment paradigm for patients with a MRCT.

METHOD: Data from 70 significant papers were reviewed in order to define the character of reparability and the possibility of alternative techniques in the management of MRCT.

RESULTS: Massive rotator cuff tears (MRCT) include a wide panoply of lesions in terms of tear pattern, functional impairment, and reparability. Pre-operative evaluation is critical to successful treatment. With the advancement of medical technology, arthroscopy become a frequently used method of treatment, even in cases of pseudoparalytic shoulders. Tendon transfer is limited to young patients with an irreparable MRCT and loss of active rotation. Arthroplasty can be considered for the treatment of a MRCT with associated arthritis.

CONCLUSION: There is insufficient evidence to establish an evidence-based treatment algorithm for MRCTs. Treatment is based on patient factors and associated pathology, and includes personal experience and data from case series.

KEYWORDS: Arthroscopy; Cuff tear arthroplasty; Massive rotator cuff repair; Outcome; Pseudoparalysis; Reverse shoulder arthroplasty; Scores; Shoulder function; Tendon transfer

[J Shoulder Elbow Surg](#). 2017 Oct 19. pii: S1058-2746(17)30532-3. doi: 10.1016/j.jse.2017.08.026. [Epub ahead of print]

A new scale measuring translation of the humeral head as a prognostic factor for the treatment of large and massive rotator cuff tears.

[Taniguchi N](#)¹, [D'Lima DD](#)², [Suenaga N](#)³, [Chosa E](#)⁴.

⊕ Author information

Abstract

BACKGROUND: Failure rates after rotator cuff repair remain high in patients with massive tears. Although superior translation of the humeral head has been used to assess the severity of rotator cuff tears, the relevance of anterior migration of the humeral head to clinical outcomes has not been established. The purpose of this study was to investigate the potential role of the T-scale, a measure of the anterolateral translation of the humeral head, as a prognostic factor for rotator cuff repair.

METHODS: One hundred twenty consecutive patients with full-thickness rotator cuff tears underwent primary rotator cuff repair. The T-scale and acromiohumeral interval (AHI) were measured preoperatively on axial computed tomography scans and radiographs, respectively. The correlations of the T-scale and AHI with previously published scores and active forward elevation (FE) were investigated. The outcome of rotator cuff repairs was compared between patients with positive and patients with negative preoperative T-scale values.

RESULTS: The preoperative T-scale but not AHI correlated significantly with postoperative FE and clinical scores in patients with large to massive tears but not in those with small to medium tears. Postoperative FE and clinical scores were significantly higher in patients with positive T-scale values than in those with negative T-scale values. The relative risk of retear was 2.0 to 7.9 times greater in patients with negative T-scale values.

CONCLUSION: Patients with large to massive tears and negative T-scale values had poorer clinical outcomes and higher retear rates. A negative T-scale value represents a useful prognostic factor for considering reverse shoulder arthroplasty in patients at greater risk of retear after rotator cuff repair.

Rotura masiva manguito rotador

- No clara pauta de tratamiento no qx
- No quirúrgico
 - Rehabilitación
 - Infiltraciones
 - PRP
 - Corticoide
 - Células madre
 - Ortokine
- No clara pauta de tratamiento quirúrgico
- Artroscopia
- Balón subacromial
- Plastias
- Prótesis invertidas

J Shoulder Elbow Surg. 2017 Oct 19; pii: S1058-2746(17)30532-3. doi: 10.1016/j.jse.2017.08.026. [Epub ahead of print]

A new scale measuring translation of the humeral head as a prognostic factor for the treatment of large and massive rotator cuff tears.

Taniguchi N¹, D'Lima DD², Suenaga N³, Chosa E⁴.

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BACKGROUND: Failure rates after rotator cuff repair remain high in patients with massive tears. Although superior translation of the humeral head has been used to assess the severity of rotator cuff tears, the relevance of anterior migration of the humeral head to clinical outcomes has not been established. The purpose of this study was to investigate the potential role of the T-scale, a measure of the anterolateral translation of the humeral head, as a prognostic factor for rotator cuff repair.

Rotura masiva manguito rotador

- No clara pauta de Tto Qx
- Artroscopia
 - No claros factores pronósticos
 - Si menor de 25° rotación externa previa peor pronóstico
 - Degeneración grasa peor pronóstico
- Balon subacromial
- Plastias
- Prótesis invertidas

[Arthroscopy](#), 2017 Nov;33(11):1956-1957. doi: 10.1016/j.arthro.2017.08.237.

Editorial Commentary: Partial (Shoulder Rotator) Cuff Repair: May the Force (Couple) Be With You.

[Nottage WM](#)¹.

[J Orthop Surg Res](#), 2017 Sep 25;12(1):140. doi: 10.1186/s13018-017-0643-7.

Risk factors for retear of large/massive rotator cuff tears after arthroscopic surgery: an analysis of tearing patterns.

[Shimokobe H](#)¹, [Gotoh M](#)², [Honda H](#)³, [Nakamura H](#)¹, [Mitsui Y](#)³, [Kakuma T](#)⁴, [Okawa T](#)³, [Shiba N](#)¹.

CONCLUSIONS: Although multivariate analysis failed to detect significant risk factor for retear in patients with anterosuperior large/massive cuff tears who undergo ARCR, it demonstrated that active external rotation less than 25° before surgery is a significant risk factor in those with posterosuperior large/massive tears. This study may help surgeons understand the results of arthroscopic surgery in patients with large/massive tears.

[Am J Sports Med](#), 2017 Nov;45(13):2975-2981. doi: 10.1177/0363546517724432. Epub 2017 Sep 14.

Effect of Preoperative Fatty Degeneration of the Rotator Cuff Muscles on the Clinical Outcome of Patients With Intact Tendons After Arthroscopic Rotator Cuff Repair of Large/Massive Cuff Tears.

[Ohzono H](#)¹, [Gotoh M](#)², [Nakamura H](#)¹, [Honda H](#)², [Mitsui Y](#)², [Kakuma T](#)³, [Okawa T](#)², [Shiba N](#)¹.

Rotura masiva manguito rotador

- No clara pauta de Tto Qx
- Artroscopia
- Balon subacromial
 - Control del dolor
 - Recentraje. Prevención de ascenso
- Plastias
- Prótesis invertidas

[Obere Extrem.](#) 2017;12(1):38-45. doi: 10.1007/s11678-016-0386-9. Epub 2016 Dec 1.

Subacromial spacer implantation for massive rotator cuff tears: Clinical outcome of arthroscopically treated patients.

[Holschen M](#)¹, [Brand F](#)², [Agneskirchner JD](#)³.



[Acta Biomed.](#) 2017 Oct 18;88(4 -S):75-80. doi: 10.23750/abm.v88i4 -S.6797.

A clinical and radiological study of biodegradable subacromial spacer in the treatment of massive irreparable rotator cuff tears.

[Ricci M](#)¹, [Vecchini E](#), [Micheloni GM](#), [Berti M](#), [Schenal G](#), [Zanetti G](#), [Sambuogaro E](#), [Maluta T](#), [Maganan B](#).

Rotura masiva manguito rotador

- No clara pauta de tratamiento quirúrgico
- Artroscopia
- Balon subacromial
- **Plastias +++++**
 - PRP, Mesenchymal Stem Cells, PRFibrin Matrix...
- Prótesis invertidas

[J Am Acad Orthop Surg. 2017 Nov;25\(11\):e261-e271. doi: 10.5435/JAAOS-D-17-00086.](#)

Management of Failed Rotator Cuff Repair in Young Patients.

[Elhassan BT¹](#), [Cox RM](#), [Shukla DR](#), [Lee J](#), [Murthi AM](#), [Tashjian RZ](#), [Abboud JA](#).

Author information

Abstract

Management of failed rotator cuff repair may be difficult, especially in young patients. Various nonmodifiable and modifiable patient factors, including age, tendon quality, rotator cuff tear characteristics, acute or chronic rotator cuff tear, bone quality, tobacco use, and medications, affect rotator cuff repair healing. Surgical variables, such as the technique, timing, tension on the repair, the biomechanical construct, and fixation, as well as the postoperative rehabilitation strategy also affect rotator cuff repair healing. Variable outcomes have been reported in patients who undergo revision rotator cuff repair; however, a systematic surgical approach may increase the likelihood of a successful outcome. Numerous cellular and mechanical biologic augments, including platelet-rich plasma, platelet-rich fibrin matrix, mesenchymal stem cells, and acellular dermal matrix grafts, have been used in rotator cuff repair; however, conflicting or inconclusive outcomes have been reported in patients who undergo revision rotator cuff repair with the use of these augments. A variety of tendon transfer options, including latissimus dorsi, teres major, lower trapezius, pectoralis minor, pectoralis major, combined pectoralis major and latissimus dorsi, and combined latissimus dorsi and teres major, are available for the management of massive irreparable rotator cuff tears. Ultimately, the optimization of surgical techniques and the use of appropriate biologic/tendon transfer techniques, if indicated, is the best method for the management of failed rotator cuff repair.

Rotura masiva manguito rotador

- No clara pauta de tratamiento quirúrgico
- Artroscopia
- Balon subacromial
- Plastias
- Prótesis invertidas
 - Elevado % complicaciones

J Bone Joint Surg Am. 2017 Oct 18;99(20):1721-1729. doi: 10.2106/JBJS.17.00095.

Reverse Total Shoulder Arthroplasty for Massive, Irreparable Rotator Cuff Tears Before the Age of 60 Years: Long-Term Results.

Ernstbrunner L¹, Suter A, Catanzaro S, Rahm S, Gerber C.

⊕ Author information

Abstract

BACKGROUND: There has been serious concern regarding the longevity and durability of outcomes of reverse total shoulder arthroplasty (RTSA) in younger patients. It was the purpose of this study to analyze long-term outcomes and complications of RTSA for irreparable rotator cuff tears in patients younger than 60 years.

METHODS: Twenty patients (23 shoulders) with a mean age of 57 years (range, 47 to 59 years) were evaluated at a mean of 11.7 years (range, 8 to 19 years) after RTSA. Fifteen shoulders (65%) had undergone previous non-arthroplasty surgery. Longitudinal clinical and radiographic outcomes were assessed.

RESULTS: At the time of final follow-up, the mean absolute and relative preoperative Constant score (CS) (and standard deviation) had improved from 24 ± 9 to 59 ± 19 points ($p < 0.001$) and from $29\% \pm 11\%$ to $69\% \pm 21\%$ ($p < 0.001$), respectively. The mean Subjective Shoulder Value (SSV) had increased from $20\% \pm 13\%$ to $71\% \pm 27\%$ ($p < 0.001$). There were also significant improvements in the mean active anterior elevation (from 64° to 117°), active abduction (from 58° to 111°), pain scores, and strength (all $p \leq 0.001$). Clinical outcomes did not significantly deteriorate beyond 10 years and the functional results of patients with previous surgical procedures were not significantly inferior to the results of those with primary RTSA. The grade of, and number of patients with, radiographically apparent notching increased over time; the mean relative CS was lower in patients in whom the notching was grade 2 or higher (57%) than it was in those with no or grade-1 notching (81%; $p = 0.006$). Nine (39%) had ≥ 1 complication, with 2 failed RTSAs (9%).

CONCLUSIONS: RTSA in patients younger than 60 years leads to substantial subjective and functional improvement without clinical deterioration beyond 10 years. It is associated with a substantial complication rate, and complications compromise ultimate subjective and objective outcomes.

LEVEL OF EVIDENCE: Therapeutic Level IV. See Instructions for Authors for a complete description of levels of evidence.

PRP for rotator cuff tears

- No clara pauta de Tto
 - Rehabilitación
 - Infiltraciones
 - PRP tratamiento o coadyuvante qx...metaanálisis
 - No clara prevención rerroturas
 - No clara mejoría función
- Corticoide
- Células madre
- Ortokine

[Arthroscopy](#). 2016 May;32(5):906-18. doi: 10.1016/j.arthro.2015.10.007. Epub 2015 Dec 23.

Does the Use of Platelet-Rich Plasma at the Time of Surgery Improve Clinical Outcomes in Arthroscopic Rotator Cuff Repair When Compared With Control Cohorts? A Systematic Review of Meta-analyses.

[Saltzman BM](#)¹, [Jain A](#)², [Campbell KA](#)², [Mascarenhas R](#)³, [Romeo AA](#)², [Verma NN](#)², [Cole BJ](#)².

[Am J Sports Med](#). 2011 Oct;39(10):2082-90. doi: 10.1177/0363546511413454. Epub 2011 Jul 7.

Does platelet-rich plasma accelerate recovery after rotator cuff repair? A prospective cohort study.

[Jo CH](#)¹, [Kim JE](#), [Yoon KS](#), [Lee JH](#), [Kang SB](#), [Lee JH](#), [Han HS](#), [Rhee SH](#), [Shin S](#).

[Arthroscopy](#). 2014 Apr;30(4):428-35. doi: 10.1016/j.arthro.2013.12.018.

Does autologous leukocyte-platelet-rich plasma improve tendon healing in arthroscopic repair of large or massive rotator cuff tears?

[Charousset C](#)¹, [Zaoui A](#)², [Bellaiche L](#)³, [Piternan M](#)⁴.

[Am J Sports Med](#). 2015 Dec;43(12):3071-8. doi: 10.1177/0363546515572777. Epub 2015 Mar 12.

Platelet-Rich Plasma Reduces Retear Rates After Arthroscopic Repair of Small- and Medium-Sized Rotator Cuff Tears but Is Not Cost-Effective.

[Vavken P](#)¹, [Sadooghi P](#)², [Palmer M](#)³, [Rosso C](#)⁴, [Mueller AM](#)⁵, [Szoelloesv G](#)⁵, [Valderrabano V](#)⁵.

PRP FOR ROTATOR CUFF TEARS

Randomized: in the affirmative

Randomizado: in the opposite

[Am J Sports Med. 2013 Oct;41\(10\):2240-8. doi: 10.1177/0363546513497925. Epub 2013 Aug 6.](#)

Platelet-rich plasma for arthroscopic repair of large to massive rotator cuff tears: a randomized, single-blind, parallel-group trial.

[Jo CH¹, Shin JS, Lee YG, Shin WH, Kim H, Lee SY, Yoon KS, Shin S.](#)

⊕ **Author information**

Abstract

BACKGROUND: Platelet-rich plasma (PRP) is expected to have a biological augmentation potential in the healing of various diseases and injuries, including rotator cuff tears. However, few evaluations have been performed specifically for large to massive tears.

PURPOSE: To assess the efficacy of PRP augmentation in patients undergoing arthroscopic repair for large to massive rotator cuff tears.

STUDY DESIGN: Randomized controlled trial; Level of evidence, 1.

METHODS: A total of 48 patients scheduled for arthroscopic repair of large to massive rotator cuff tears were randomly assigned to receive either PRP-augmented (PRP group) or conventional treatment (conventional group). In the PRP group, 3 PRP gels (3 × 3 mL) were applied to each patient between the torn end and the greater tuberosity. The primary outcome measure was the retear rate assessed by magnetic resonance imaging (MRI) or computed tomographic arthrography (CTA) at a minimum of 9 months after surgery. Secondary outcome measures included pain, range of motion, muscle strength, overall satisfaction, functional scores, and the change in cross-sectional area (CSA) of the supraspinatus.

RESULTS: The retear rate of the PRP group (20.0%) was significantly lower than that of the conventional group (55.6%) ($P = .023$). Clinical outcomes showed no statistical difference between the 2 groups (all $P > .05$) except for the overall function ($P = .043$). The change in 1-year postoperative and immediately postoperative CSA was significantly different between the 2 groups: -15.54 ± 94.34 mm² in the PRP group versus -85.62 ± 103.57 mm² in the conventional group ($P = .047$).

CONCLUSION: The application of PRP for large to massive rotator cuff repairs significantly improved structural outcomes, as evidenced by a decreased retear rate and increased CSA of the supraspinatus compared with repairs without PRP augmentation. While there was no significant difference in clinical outcomes except the overall shoulder function after 1-year follow-up, better structural outcomes in the PRP group might suggest improved clinical outcomes at longer term follow-up.

[Am J Sports Med. 2011 Feb;39\(2\):258-65. doi: 10.1177/0363546510390780. Epub 2010 Dec 15.](#)

Platelet-rich plasma augmentation for arthroscopic rotator cuff repair: a randomized controlled trial.

[Castricini R¹, Longo UG, De Benedetto M, Panfoli N, Pirani P, Zini R, Maffulli N, Denaro V.](#)

⊕ **Author information**

Abstract

BACKGROUND: After reinsertion on the humerus, the rotator cuff has limited ability to heal. Growth factor augmentation has been proposed to enhance healing in such procedure.

PURPOSE: This study was conducted to assess the efficacy and safety of growth factor augmentation during rotator cuff repair.

STUDY DESIGN: Randomized controlled trial; Level of evidence, 1.

METHODS: Eighty-eight patients with a rotator cuff tear were randomly assigned by a computer-generated sequence to receive arthroscopic rotator cuff repair without ($n = 45$) or with ($n = 43$) augmentation with autologous platelet-rich fibrin matrix (PRFM). The primary end point was the postoperative difference in the Constant score between the 2 groups. The secondary end point was the integrity of the repaired rotator cuff, as evaluated by magnetic resonance imaging. Analysis was on an intention-to-treat basis.

RESULTS: All the patients completed follow-up at 16 months. There was no statistically significant difference in total Constant score when comparing the results of arthroscopic repair of the 2 groups (95% confidence interval, -3.43 to 3.9) ($P = .44$). There was no statistically significant difference in magnetic resonance imaging tendon score when comparing arthroscopic repair with or without PRFM ($P = .07$).

CONCLUSION: Our study does not support the use of autologous PRFM for augmentation of a double-row repair of a small or medium rotator cuff tear to improve the healing of the rotator cuff. Our results are applicable to small and medium rotator cuff tears; it is possible that PRFM may be beneficial for large and massive rotator cuff tears. Also, given the heterogeneity of PRFM preparation products available on the market, it is possible that other preparations may be more effective.

PRP still in controversy

STEM CELLS

Disminución atrofía grasa
Mejora del tejido tendinoso
Mínima experiencia en vivo
Precio
Modelos animales

- ☐ [Engineered stem cell niche matrices for rotator cuff tendon regenerative engineering.](#)
- 4. Peach MS, Ramos DM, James R, Morozowich NL, Mazzocca AD, Doty SB, Allcock HR, Kumbhar SG, Laurencin CT.
PLoS One. 2017 Apr 3;12(4):e0174789. doi: 10.1371/journal.pone.0174789. eCollection 2017.
PMID: 28369135 [Free PMC Article](#)
[Similar articles](#)
- ☐ [Perivascular Stem Cells Diminish Muscle Atrophy Following Massive Rotator Cuff Tears in a Small Animal Model.](#)
- 5. Eliasberg CD, Dar A, Jensen AR, Murray IR, Hardy WR, Kowalski TJ, Garagodio CA, Natsuhara KM, Khan AZ, McBride OJ, Cha PI, Kelley BV, Evseenko D, Feeley BT, McAllister DR, Péault B, Petrigliano FA.
J Bone Joint Surg Am. 2017 Feb 15;99(4):331-341. doi: 10.2106/JBJS.16.00645.
PMID: 28196035
[Similar articles](#)
- ☐ [Biologic and Synthetic Grafts in the Reconstruction of Large to Massive Rotator Cuff Tears.](#)
- 6. Gillespie RJ, Khapik DM, Akkus O.
J Am Acad Orthop Surg. 2016 Dec;24(12):823-828. Review.
PMID: 27768610
[Similar articles](#)
- ☐ [Rotator cuff tear state modulates self-renewal and differentiation capacity of human skeletal muscle progenitor cells.](#)
- 7. Thomas KA, Gibbons MC, Lane JG, Singh A, Ward SR, Engler AJ.
J Orthop Res. 2017 Aug;35(8):1816-1823. doi: 10.1002/jor.23453. Epub 2016 Oct 16.
PMID: 27699827
[Similar articles](#)
- ☐ [Mesenchymal Stem Cell Secretome: A Potential Tool for the Prevention of Muscle Degenerative Changes Associated With Chronic Rotator Cuff Tears.](#)
- 8. Sevivas N, Teixeira FG, Portugal R, Araújo L, Carriço LF, Ferreira N, Vieira da Silva M, Espregueira-Mendes J, Anjo S, Manadas B, Sousa N, Salgado AJ.
Am J Sports Med. 2016 Aug 8. pii: 0363546516657827. [Epub ahead of print]
PMID: 27501832
[Similar articles](#)
- ☐ [TGF-β Small Molecule Inhibitor SB431542 Reduces Rotator Cuff Muscle Fibrosis and Fatty Infiltration By Promoting Fibro/Adipogenic Progenitor Apoptosis.](#)
- 9. Davies MR, Liu X, Lee L, Laron D, Ning AY, Kim HT, Feeley BT.
PLoS One. 2016 May 17;11(5):e0155488. doi: 10.1371/journal.pone.0155488. eCollection 2016.
PMID: 27186977 [Free PMC Article](#)
[Similar articles](#)

[Am J Sports Med.](#) 2017 Oct 1:363546517735850. doi: 10.1177/0363546517735850. [Epub ahead of print]

Mesenchymal Stem Cell Secretome Improves Tendon Cell Viability In Vitro and Tendon-Bone Healing In Vivo When a Tissue Engineering Strategy Is Used in a Rat Model of Chronic Massive Rotator Cuff Tear.

Sevivas N^{1,2,3,4}, Teixeira FG^{1,2}, Portugal R⁵, Direito-Santos B³, Espregueira-Mendes J^{1,2,4,6}, Oliveira FJ⁷, Silva RF⁷, Sousa N^{1,2}, Sow WT⁸, Nguyen LTH⁸, Ng KW⁸, Salgado AJ^{1,2}.

- ☐ [Mesenchymal Stem Cell Secretome Improves Tendon Cell Viability In Vitro and Tendon-Bone Healing In Vivo When a Tissue Engineering Strategy Is Used in a Rat Model of Chronic Massive Rotator Cuff Tear.](#)
- 2.

Sevivas N, Teixeira FG, Portugal R, Direito-Santos B, Espregueira-Mendes J, Oliveira FJ, Silva RF, Sousa N, Sow WT, Nguyen LTH, Ng KW, Salgado AJ.

Am J Sports Med. 2017 Oct 1:363546517735850. doi: 10.1177/0363546517735850. [Epub ahead of print]

PMID: 29053925

[Similar articles](#)

- ☐ [Rotator cuff bridging repair using acellular dermal matrix in large to massive rotator cuff tears: histologic and clinical analysis.](#)
- 3.

Kim JO, Lee JH, Kim KS, Ji JH, Koh SJ, Lee JH.

J Shoulder Elbow Surg. 2017 Nov;26(11):1897-1907. doi: 10.1016/j.jse.2017.04.010. Epub 2017 Jul 10.

PMID: 28705694

[Similar articles](#)

- ☐ [Engineered stem cell niche matrices for rotator cuff tendon regenerative engineering.](#)
- 4. Peach MS, Ramos DM, James R, Morozowich NL, Mazzocca AD, Doty SB, Allcock HR, Kumbhar SG, Laurencin CT.
PLoS One. 2017 Apr 3;12(4):e0174789. doi: 10.1371/journal.pone.0174789. eCollection 2017.
PMID: 28369135 [Free PMC Article](#)
[Similar articles](#)

- ☐ [Perivascular Stem Cells Diminish Muscle Atrophy Following Massive Rotator Cuff Tears in a Small Animal Model.](#)
- 5.

¿ORTHOKINE FOR ROTATOR CUFF TEARS?



ACS Project: Shoulder Orthokine vs Betametasona



Institute of
Rheumatology



Belgrade
University, Serbia

Nemanja Damjanov, Branko Barać, Jelena Čolić, Vladan Stevanović, Goran Tulić

To compare the efficacy and safety of Autologous Conditioned Serum (ACS)-Orthokine injections, Vs Betamethasone (Diprofos).

Prospective, randomized, double-blind, controlled study.

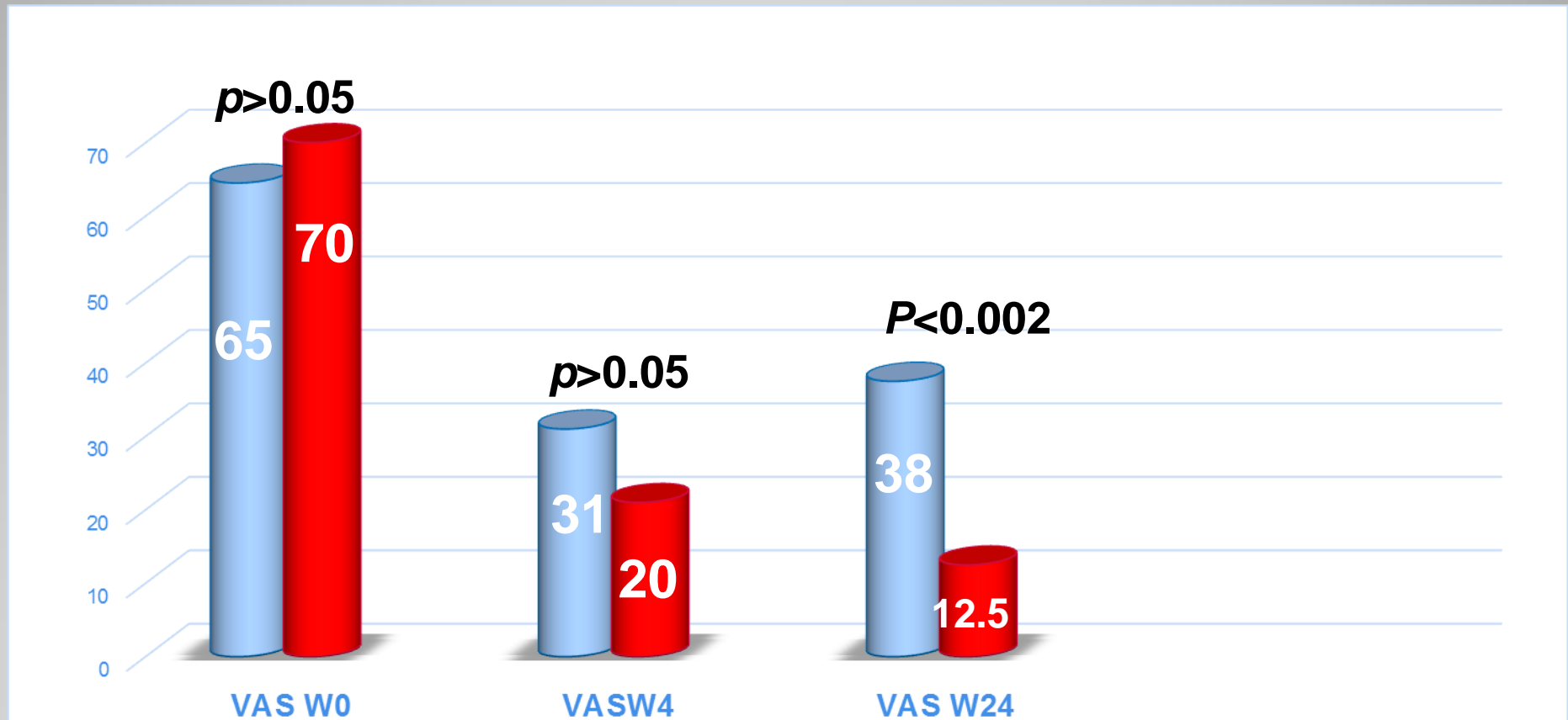
Group of 32 patients suffering from chronic supraspinatus tendinopathy and lesions of the supraspinatus tendon.

Randomisation. 32 patients

**16 patients treated with ACS – Orthokine,
- 4 injections (one injection/week)**

**16 patients will be treated with betamethasone –
Diprofos and placebo - saline,
- 3 injections of Diprofos (one injection/week),
and one injection of saline on a fourth week**

ACS vs betameth/pl. treatment - Assessment of pain (VAS scale)

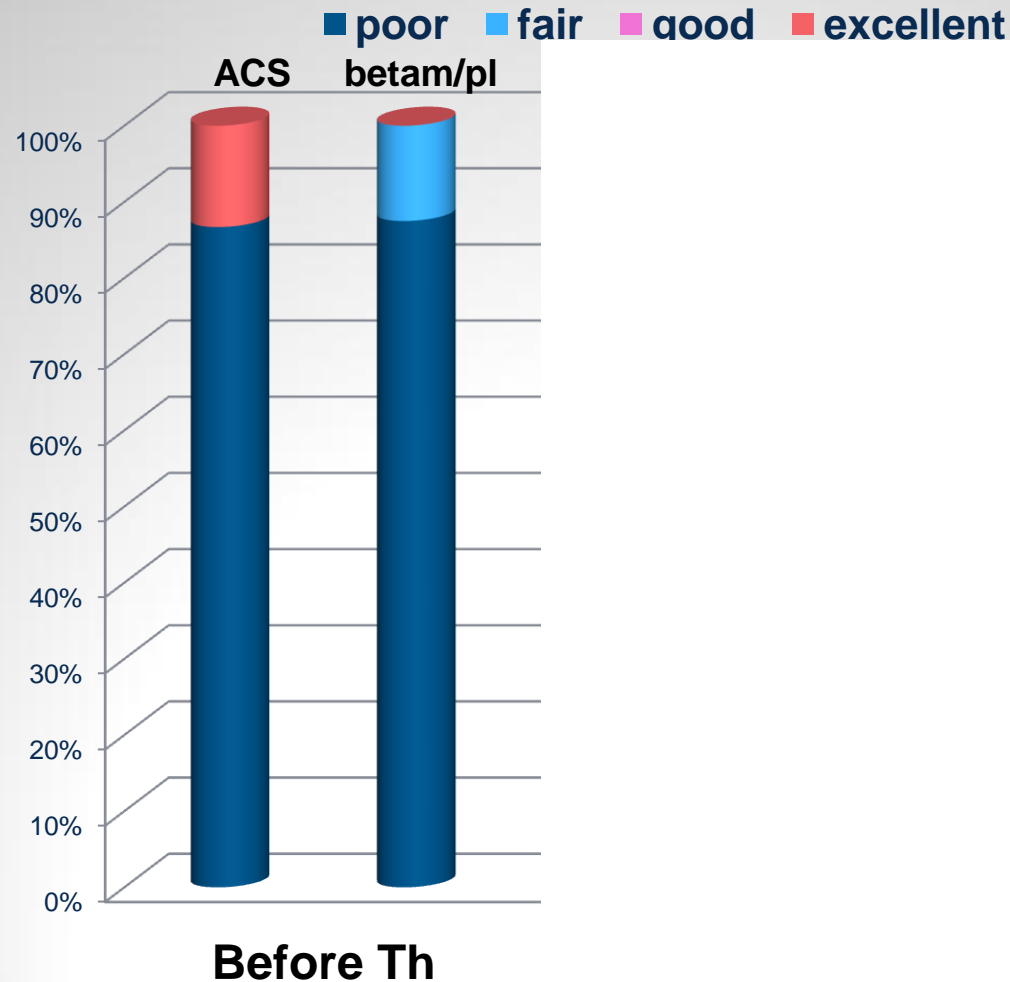


There was no significant difference in intensity of pain between ACS and betameth/pl. group before treatment; there was no significant difference between two groups after treatment week 4, but there was significant difference in intensity of pain between ACS and betameth/pl. group after week 24 of follow up ($p < 0.002$ (Wilcoxon test))

Results: CSS Score Orthokine & glucocorticoids

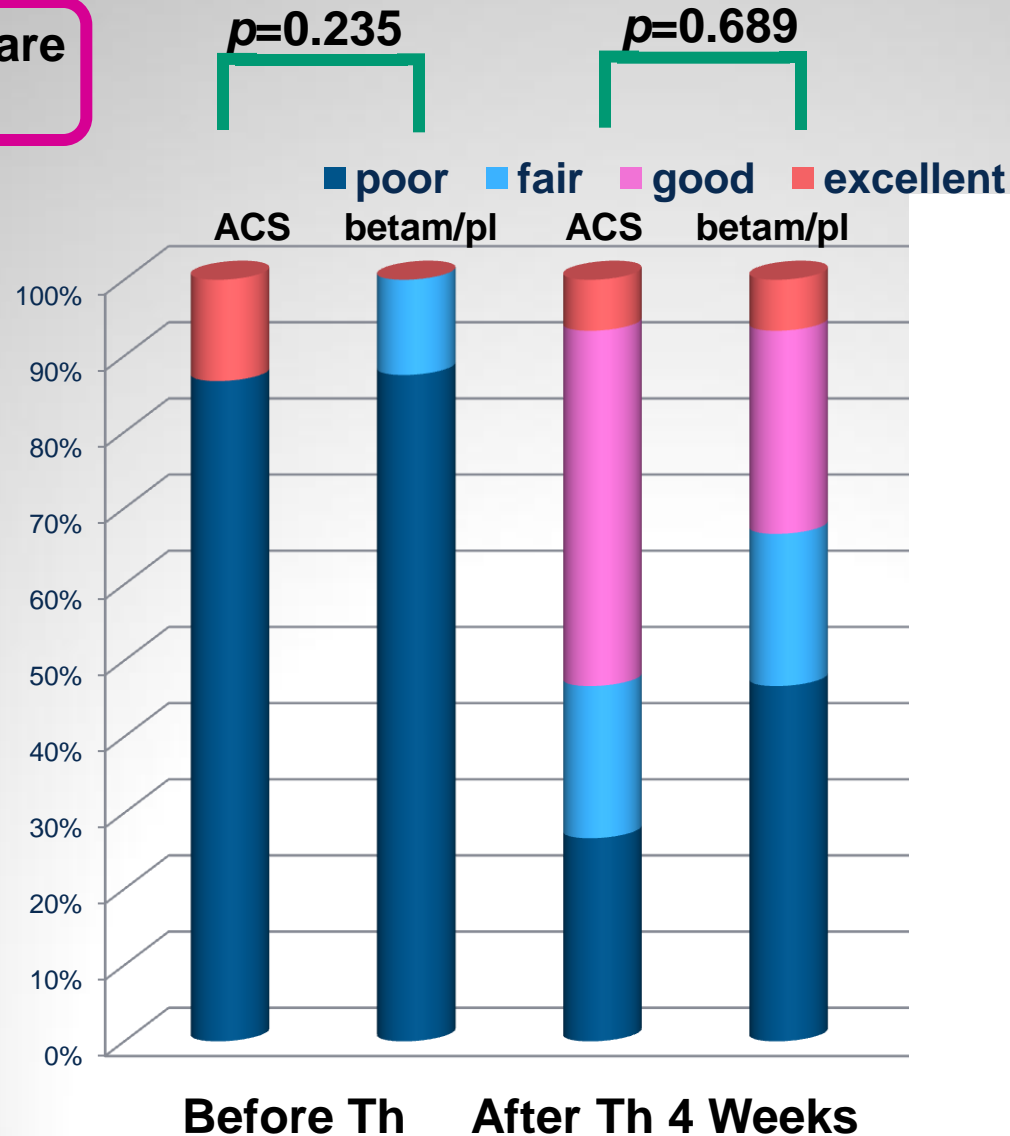
Chi-Square
test

$p=0.235$



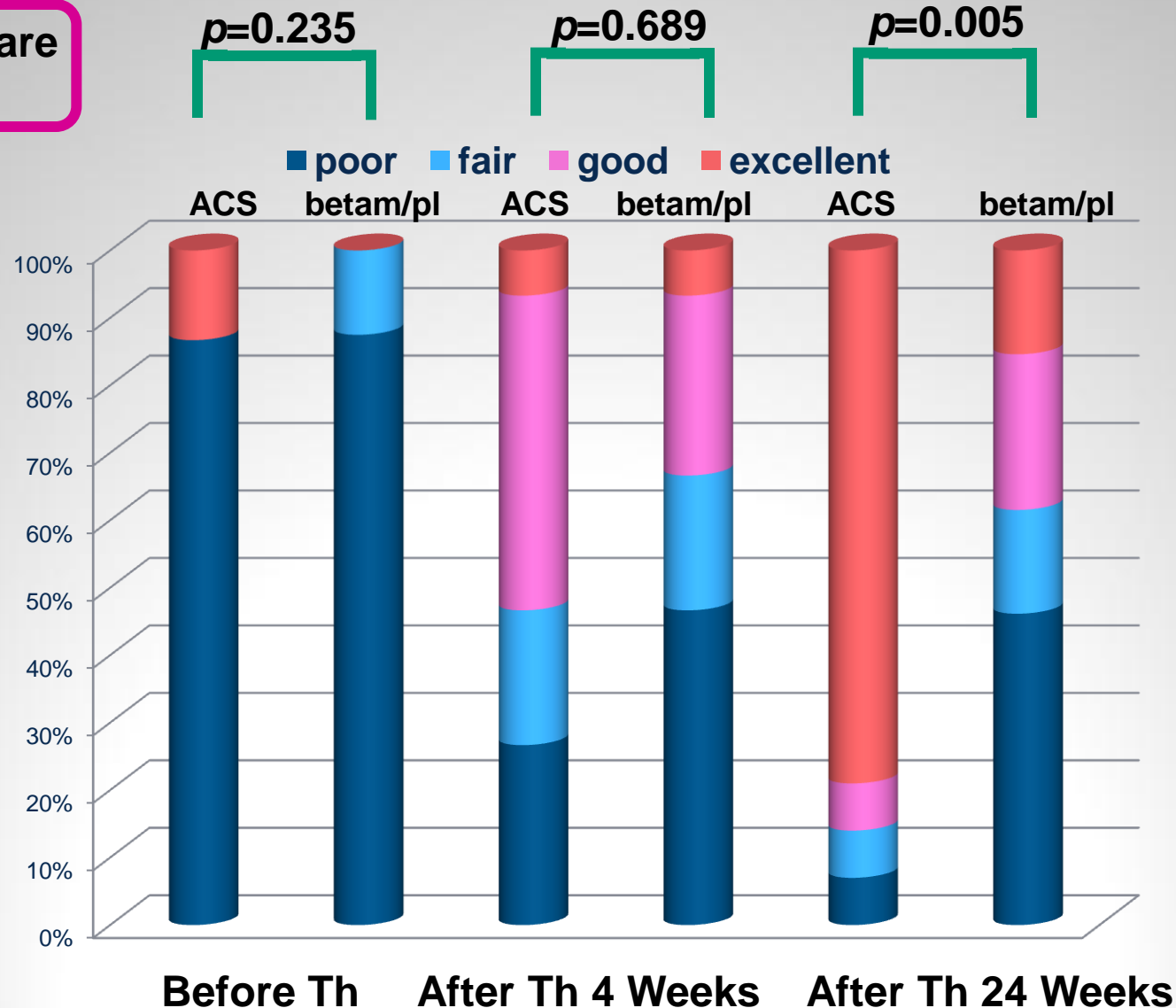
Results: CSS Score Orthokine & glucocorticoids

Chi-Square
test



Results: CSS Score Orthokine & glucocorticoids

Chi-Square
test



Conclusions I

**Intensity of pain (VAS scale) was lower after 4 weeks
Significantly lower after 24 weeks of treatment with 4 injections of
ACS, compared to 3 injections of betamethasone + 1 injection of
placebo.**

**Shoulder function (Constant Shoulder Score) was more improved
after 4 weeks, and significantly more improved after 24 weeks of
treatment with 4 injections of ACS, compared to treatment with 3
injections of betamethasone + 1 injection of placebo.**

***All adverse events were reported in patients treated with
bethamethasone.**

No claro tratamiento

- Valorar dolor
- Valorar función
- Valorar opciones, no quirúrgicas y quirúrgicas
- Test bloqueo del dolor
 - Función real
 - Potencial de mejoría con rehabilitación y reeducación funcional
 - Orthokine frente a otras terapias
- **INFILTRACIONES ECOGUIADAS**
 - Diagnóstico complementario preciso y seguimiento
 - **Punción-aspiración / Infiltración**
 - **Cirugía ultraminimamente invasiva**

Ventajas vs Desventajas

Ecografía

- Técnica de imagen fácil acceso, rápida, inocua
- Bajo coste comparada con otras
- Permite exploración dinámica
- Tiempo real
- Carece de efectos adversos (no radiaciones iónicas)
- Prácticamente no tiene contraindicaciones
- Permite tratamientos ecoguiados con máxima precisión



¿Es más efectivo guiado por ecografía?

[Arch Phys Med Rehabil](#). 2009 Dec;90(12):1997-2002.

Randomized controlled trial for efficacy of intra-articular injection for adhesive capsulitis: ultrasonography-guided versus blind technique.

[Lee HJ](#), [Lim KB](#), [Kim DY](#), [Lee KT](#).

Department of Rehabilitation Medicine, Ilsan-Paik Hospital, Inje University, and Institute of Sports Rehabilitation, Inje University, Goyang city, Gyeonggi-do, South Korea.
honglee@paik.ac.kr

The apparent improvement in the effectiveness of symptomatic treatment of frozen shoulder in the first weeks in the group injected under ultrasound vs "blind"

[Phys Sportsmed](#). 2011 Sep;39(3):121-31.

Ultrasound versus anatomic guidance for intra-articular and periarticular injection: a systematic review.

[Gilliland CA](#), [Salazar LD](#), [Borchers JR](#).

The Ohio State University Department of Family Medicine, Columbus, OH, USA.

Review of the literature - an obvious improvement in accuracy of needle placement regardless of the joint, a significant improvement in symptomatic efficacy during the acute period (up to 6 weeks), and in remote observation periods with no difference in the group injected under ultrasound vs "blind"

[Am J Sports Med](#). 2011 Mar;39(3):656-62. Epub 2011 Jan 21.

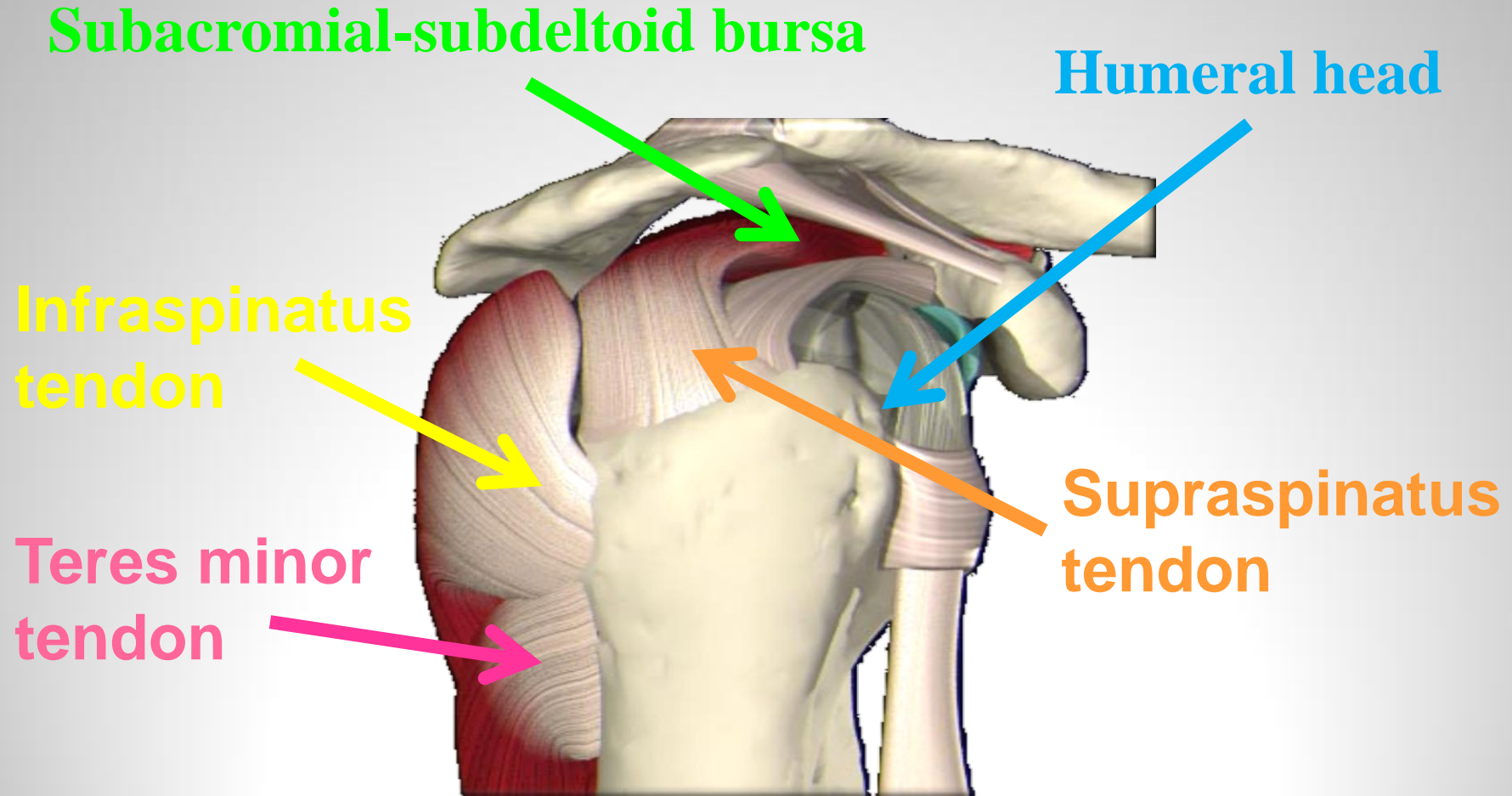
Improving injection accuracy of the elbow, knee, and shoulder: does injection site and imaging make a difference? A systematic review.

[Daley EL](#), [Bajaj S](#), [Bisson LJ](#), [Cole BJ](#).

Section of Sports Medicine, Department of Orthopedic Surgery, Rush University Medical Center, 1611 W Harrison, Chicago, IL 60612, USA.

The apparent improvement in accuracy of needle placement:
Localisation: GH - front access vs rear shoulder - 85 vs 45%;
Joint: GH 95 vs. 79% blind, SubACR 100 vs 63%, AC 100 vs 45%, knee 99 vs 79%

Lateral shoulder



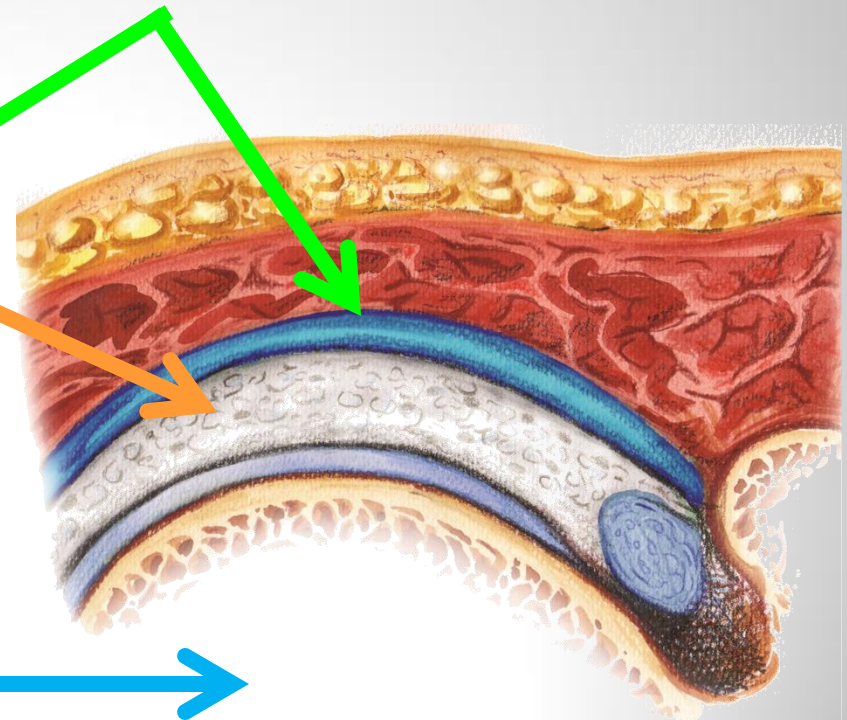
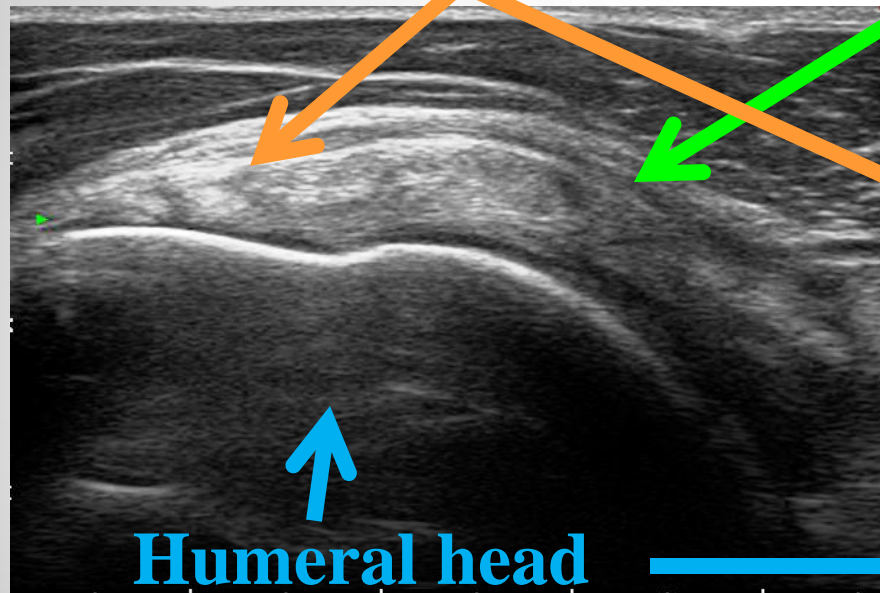
Supraspinatus tendon trans



Full internal rotation and adduction

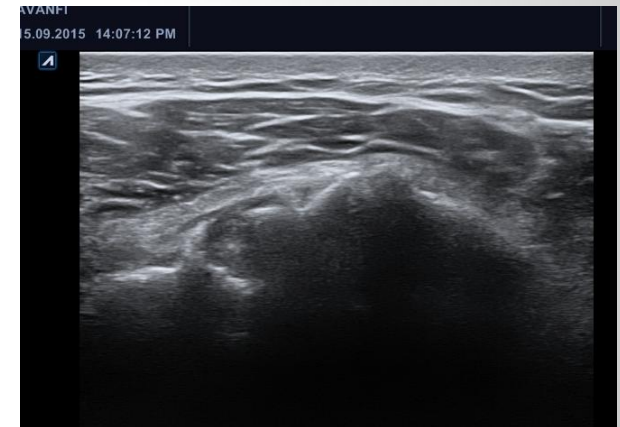
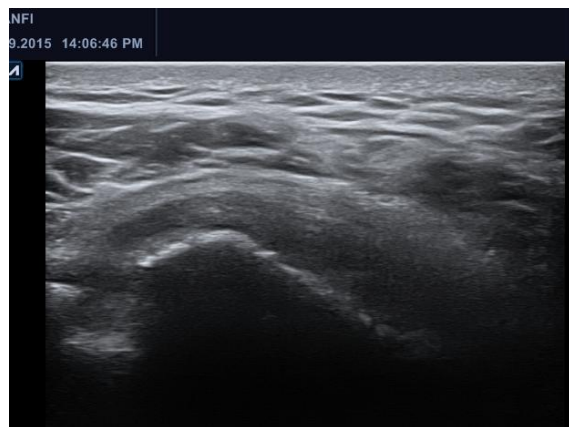
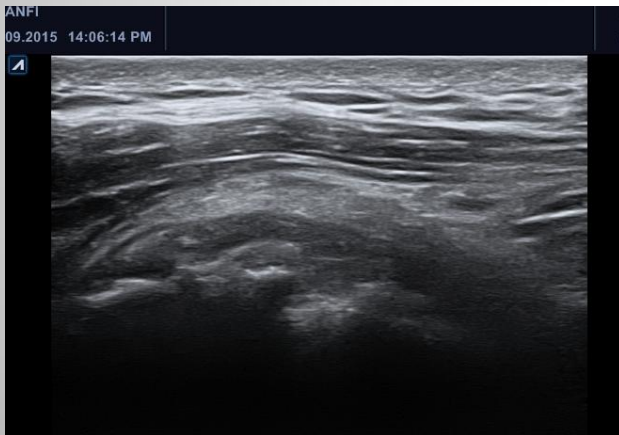
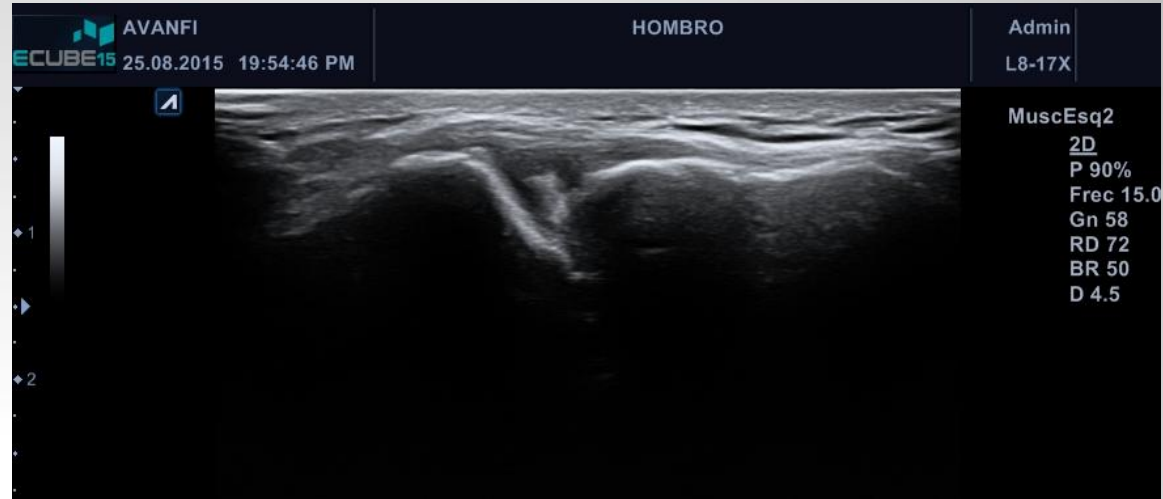
Subacromial-subdeltoid bursa

Supraspinatus tendon

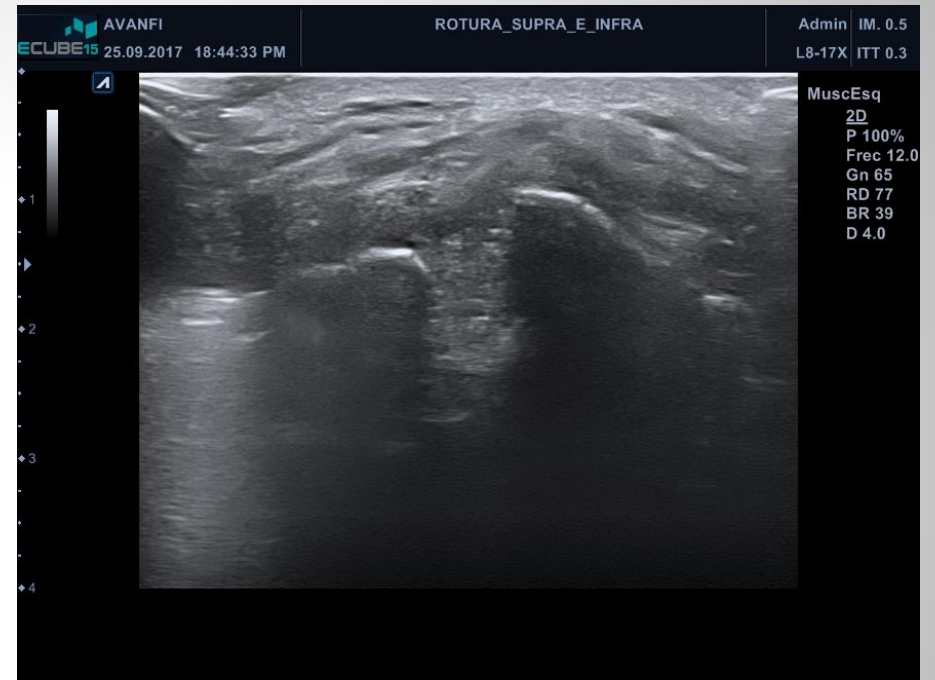
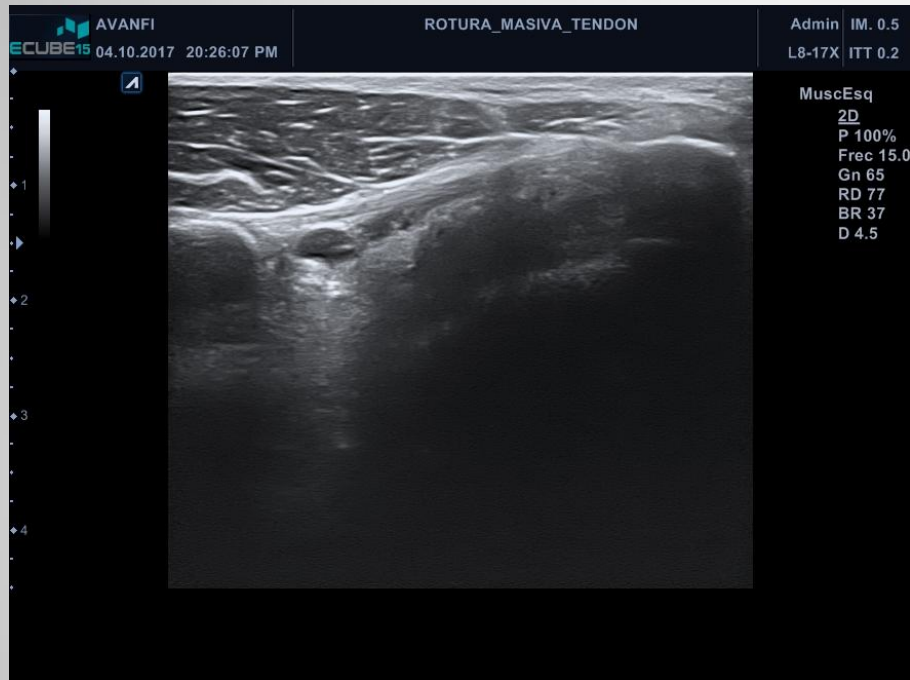


ROTURAS MASIVAS....asociación otras lesiones

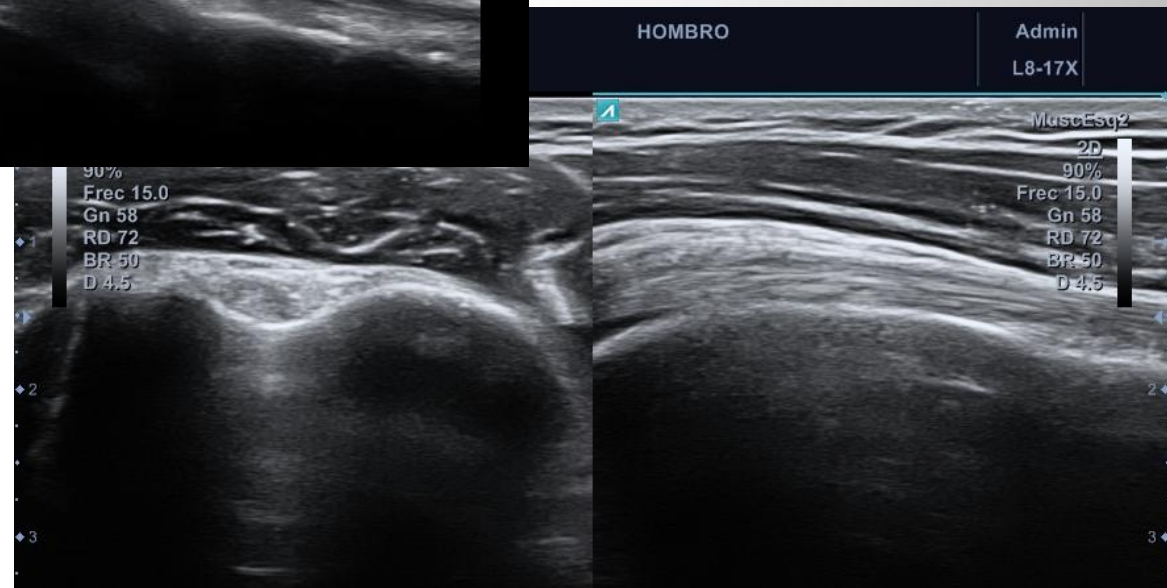
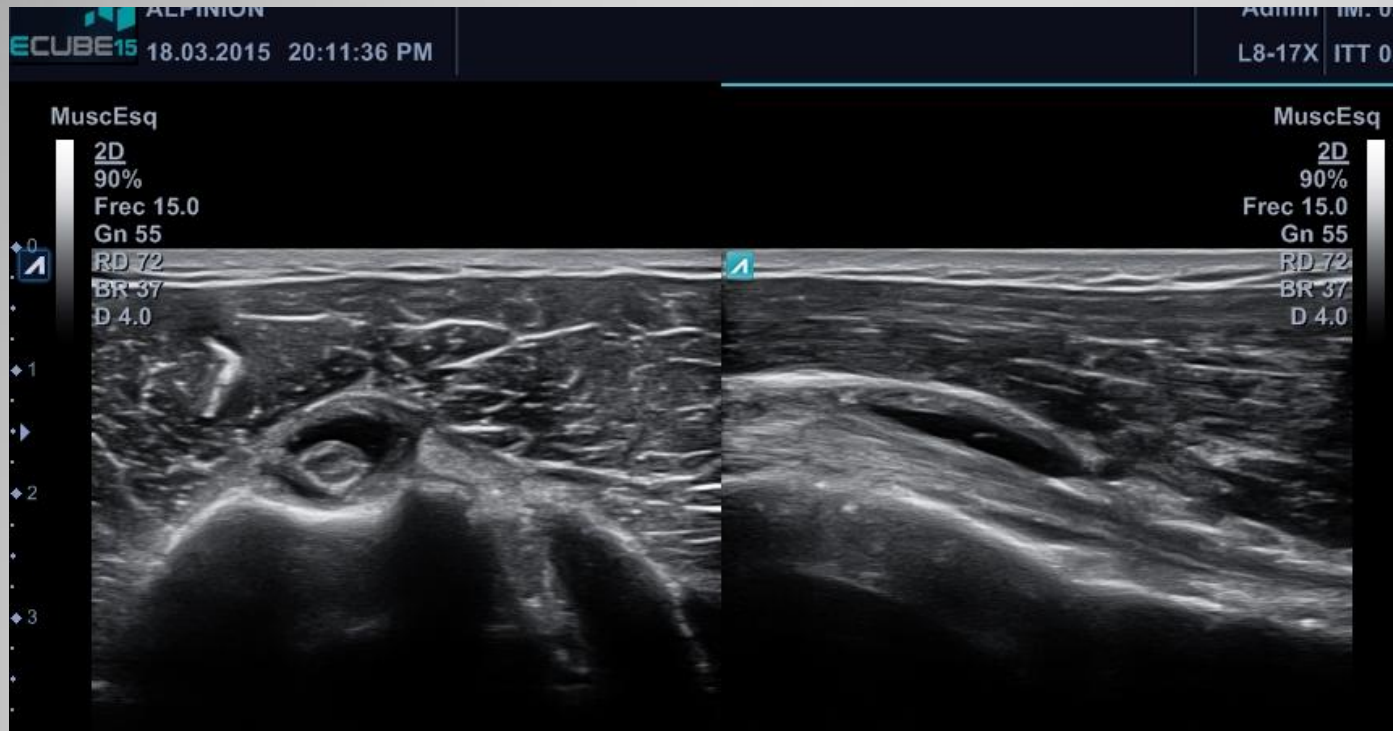
Artrosis
hombro
Artrosis A-C



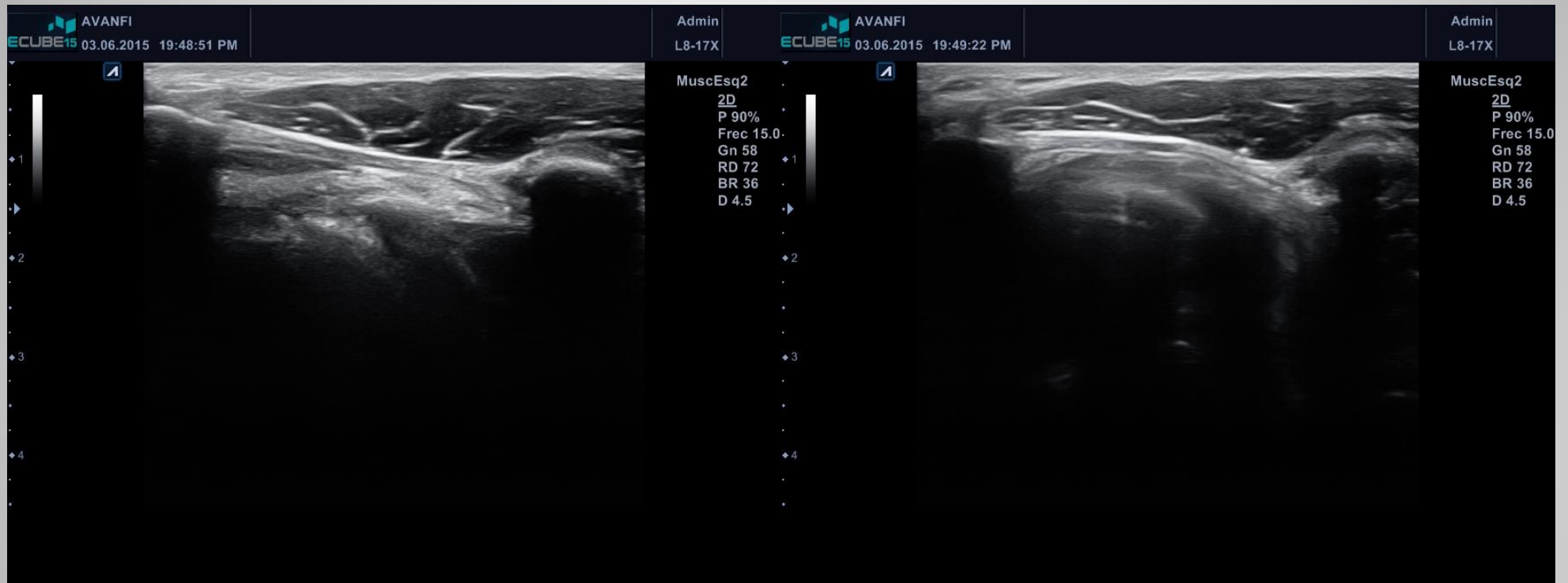
Articulación AC, ligamento coraco-acromial- compromiso dinámico, artrosis gleno-humeral



Tenosinovitis PL Biceps



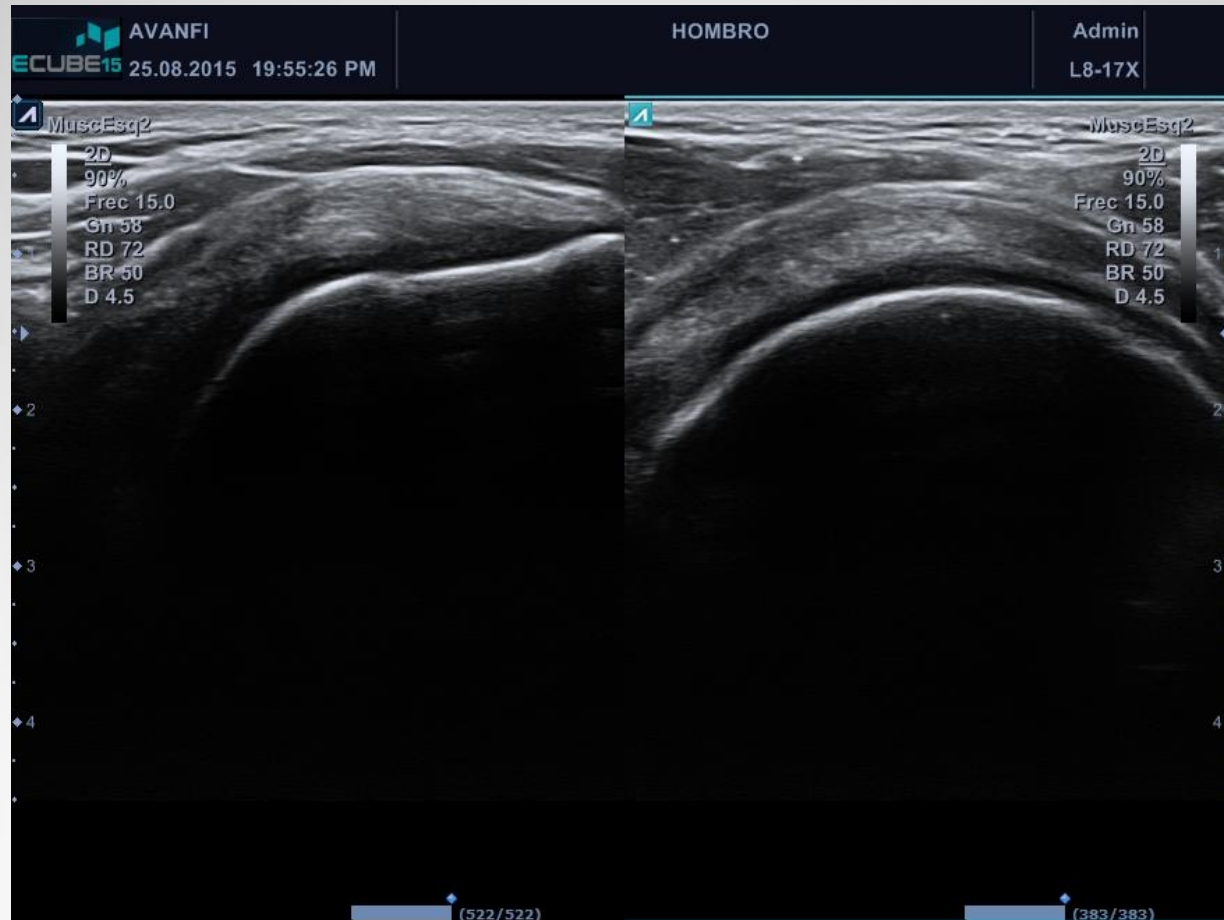
Ligamento coracoacromial



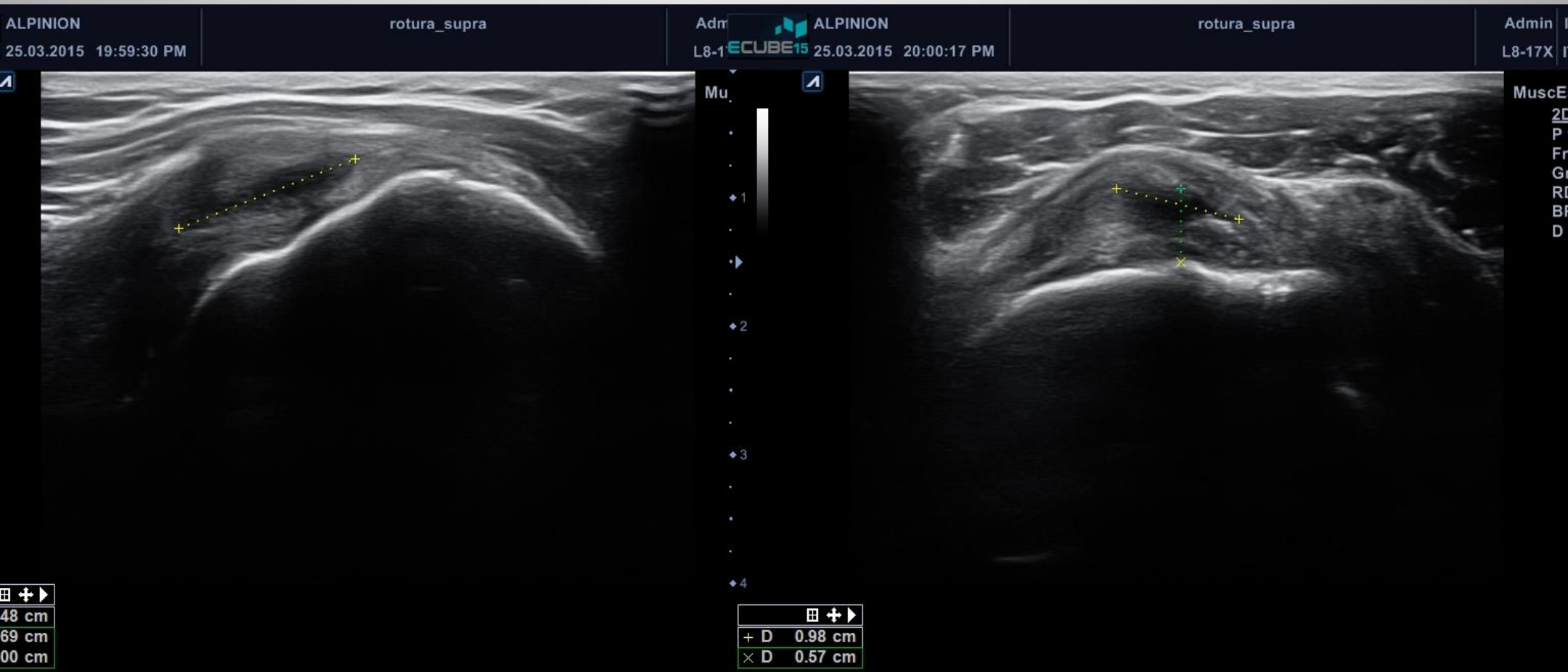
Compromiso subacromial estudio dinámico



Tendón supraespinoso-manguito rotadores



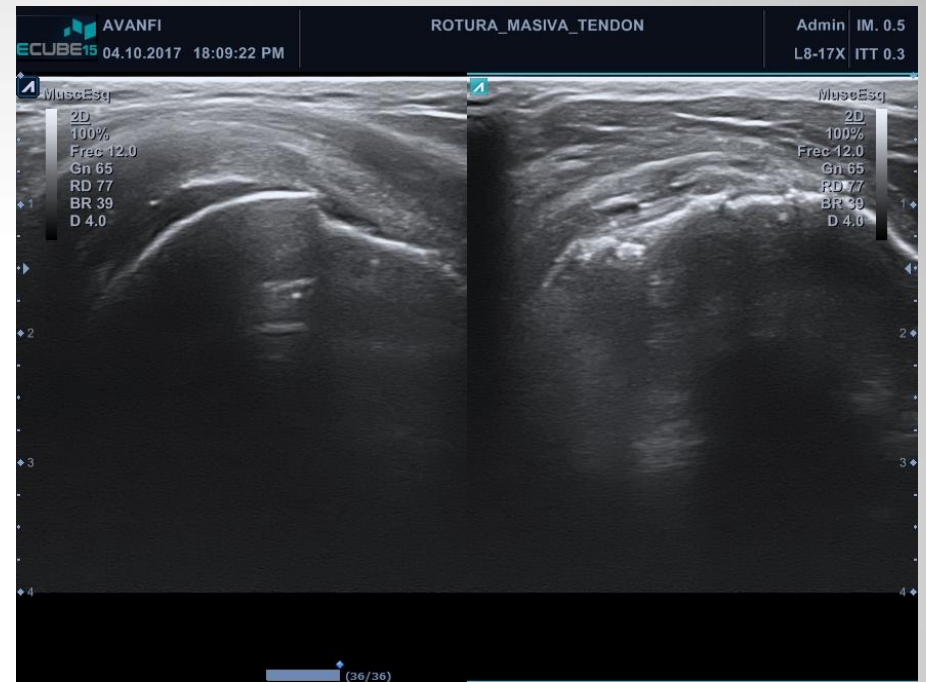
Rotura parcial supraespinoso



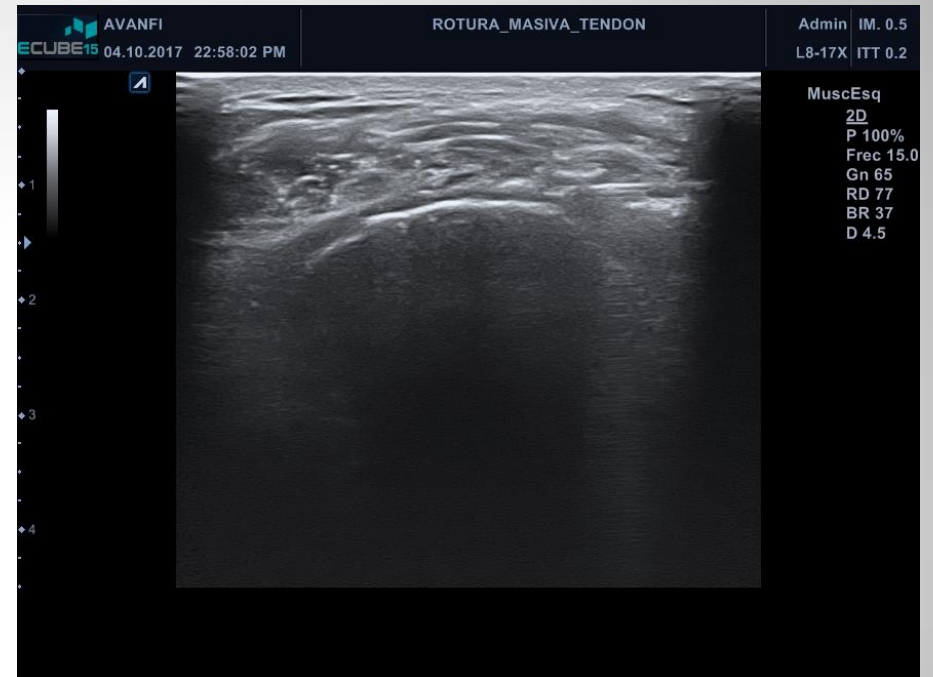
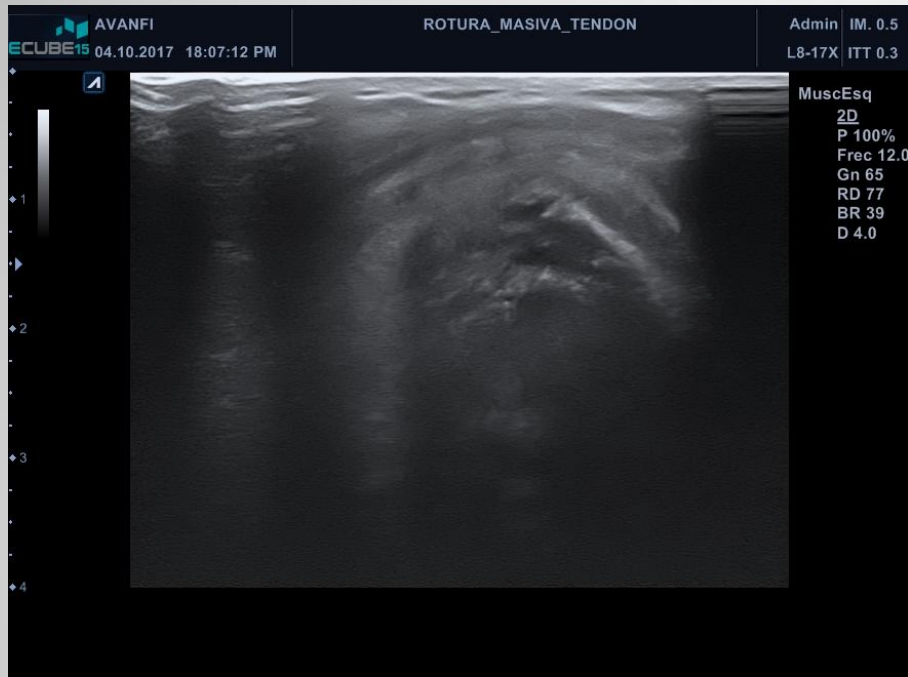
Infiltración supraespinoso



Tendón sano y contralateral



¿ORTHOKINE FOR MASSIVE ROTATOR CUFF TEARS?



Infiltración orthokine bajo control US



Orthokine

4 infiltraciones
separadas 1 semana

Control ecográfico

Bursa e inserciones
tendinosas



66 años,
dolor nocturno

Limitación movilidad

Abd 80°

Flex 80°

Rotación interna L4

Rotación externa 35°

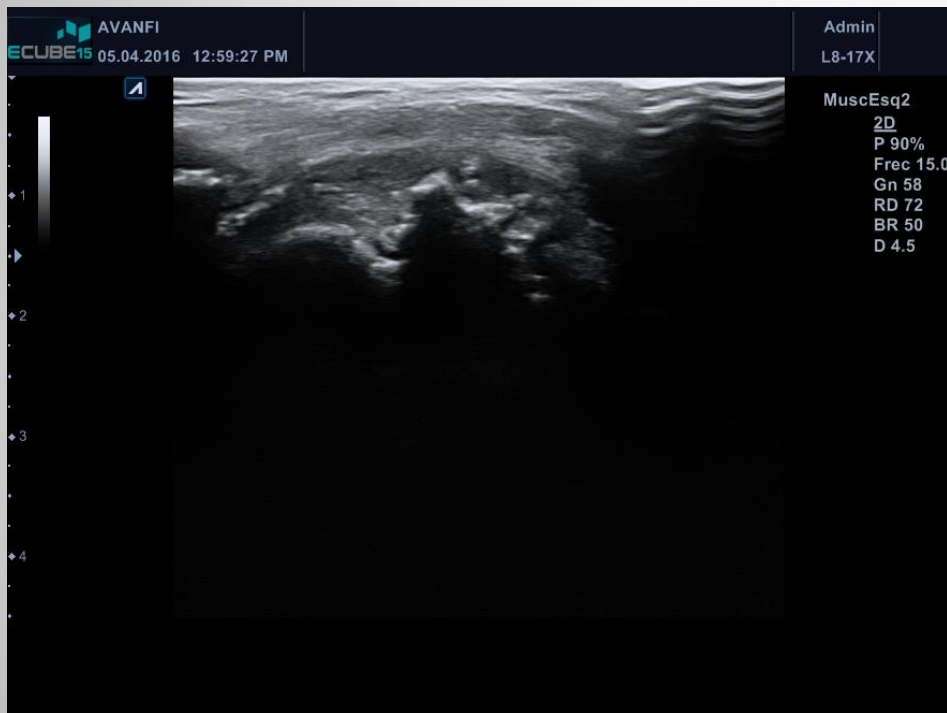


Mujer 85 años, rotura masiva manguito



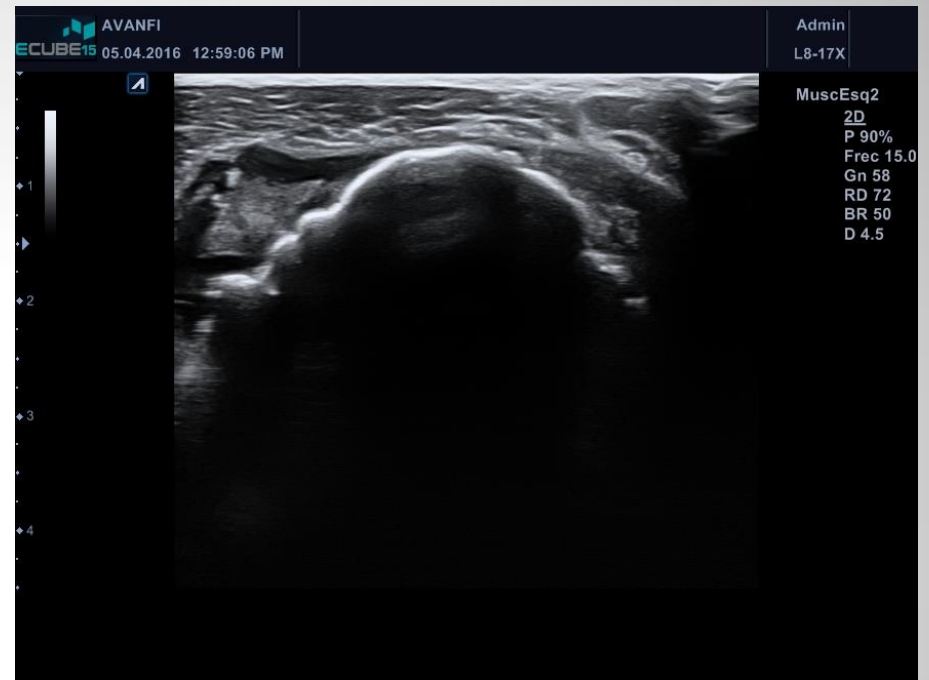
Mujer 85 años, rotura masiva manguito

VAS 9. Abd 50°, Flex 60°, RI 10°, RE 30°



Orthokine, 4 dosis.

Sin dolor: abd 160°, flex 160°, RI L3, RE 45°

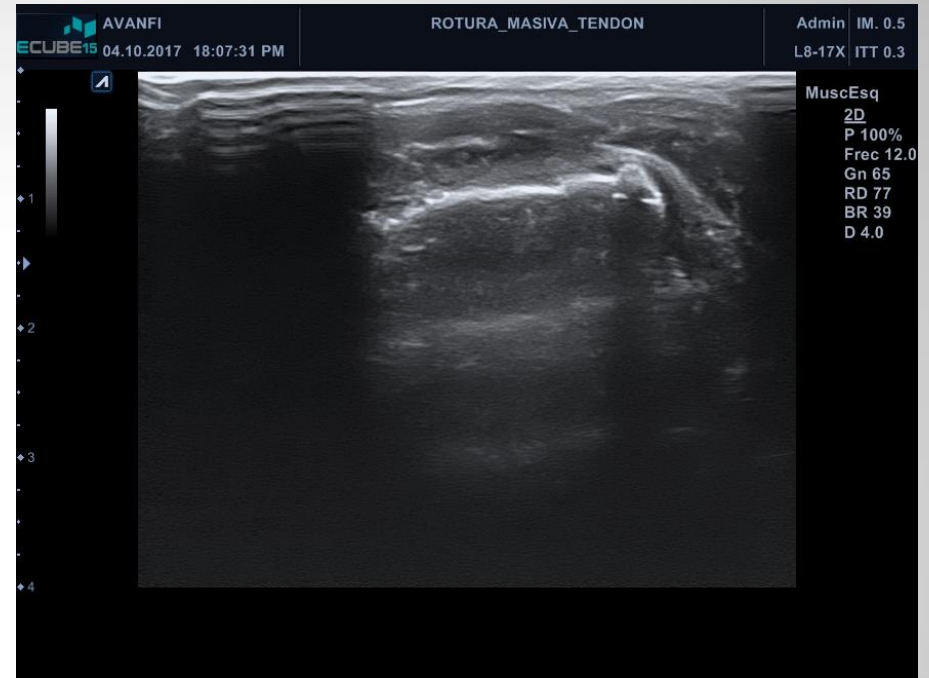
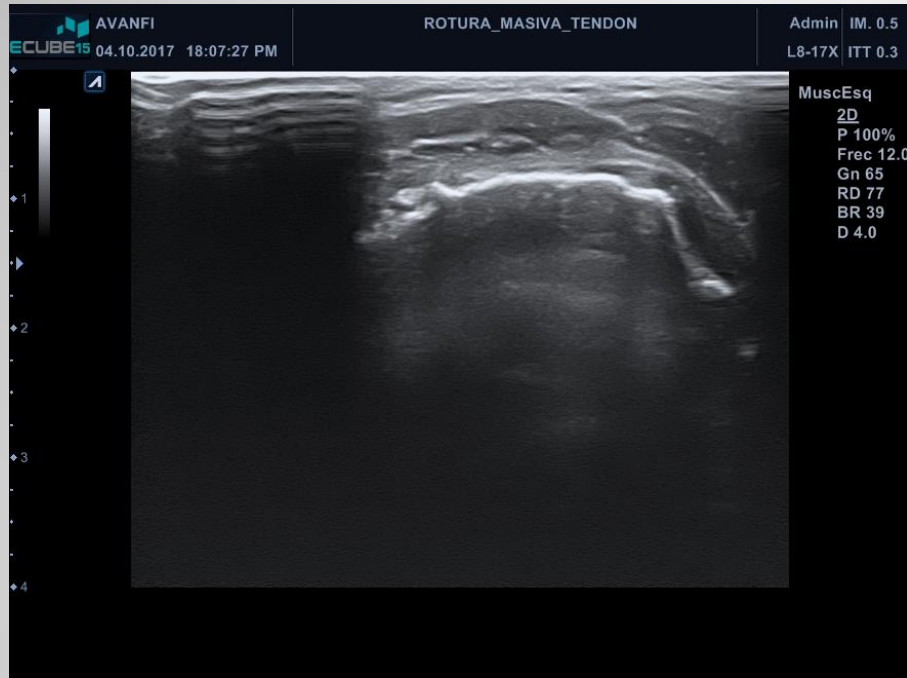


Varón 70 años, rotura masiva, funcional, dolor, limitación ROM

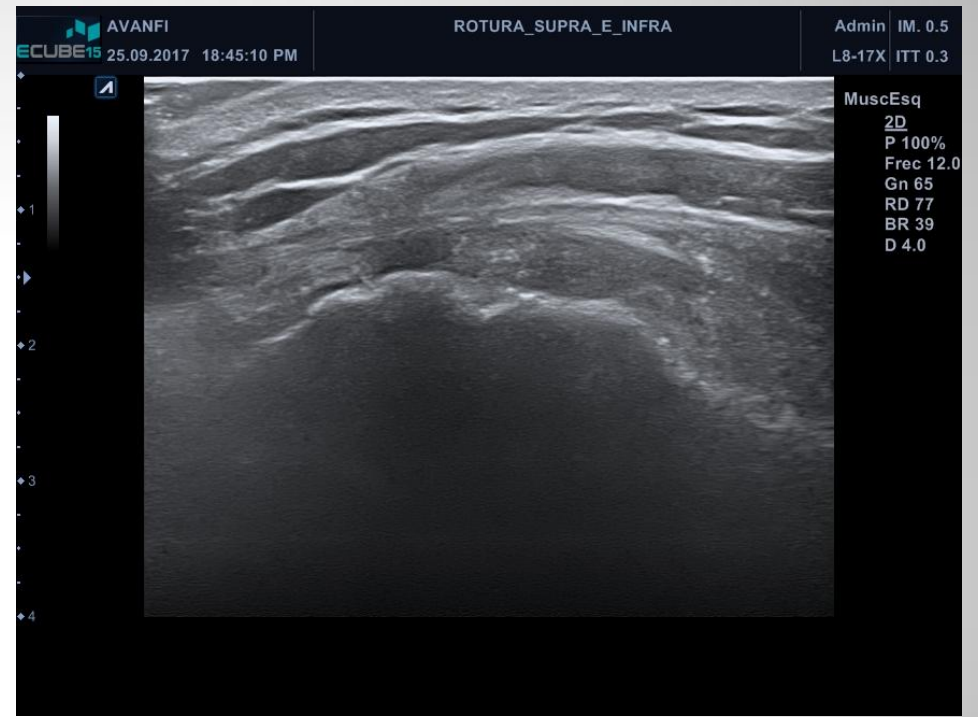
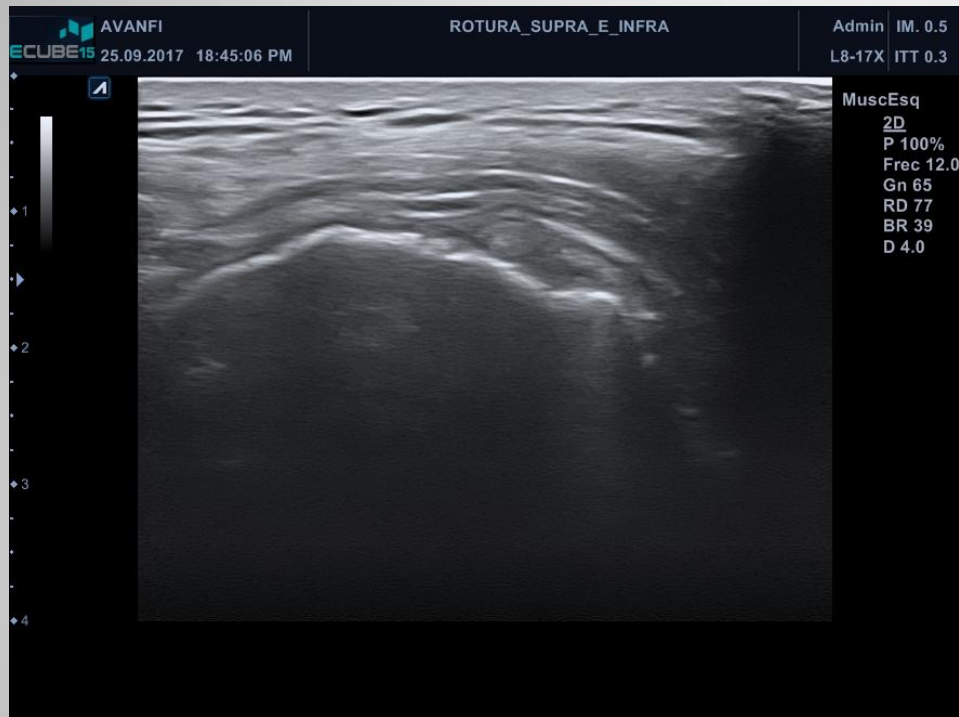


Rotura masiva

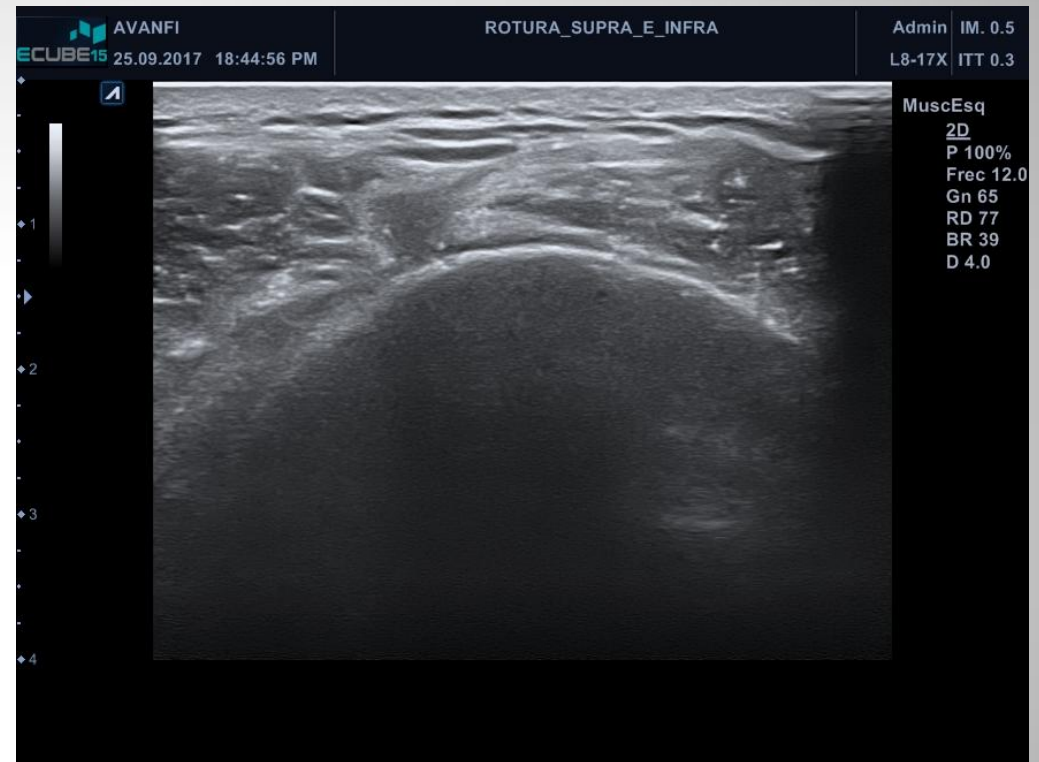
VAS 8. Abd 70°, Flex 65°, RI 20°, RE 40°



Comparativa ecográfica

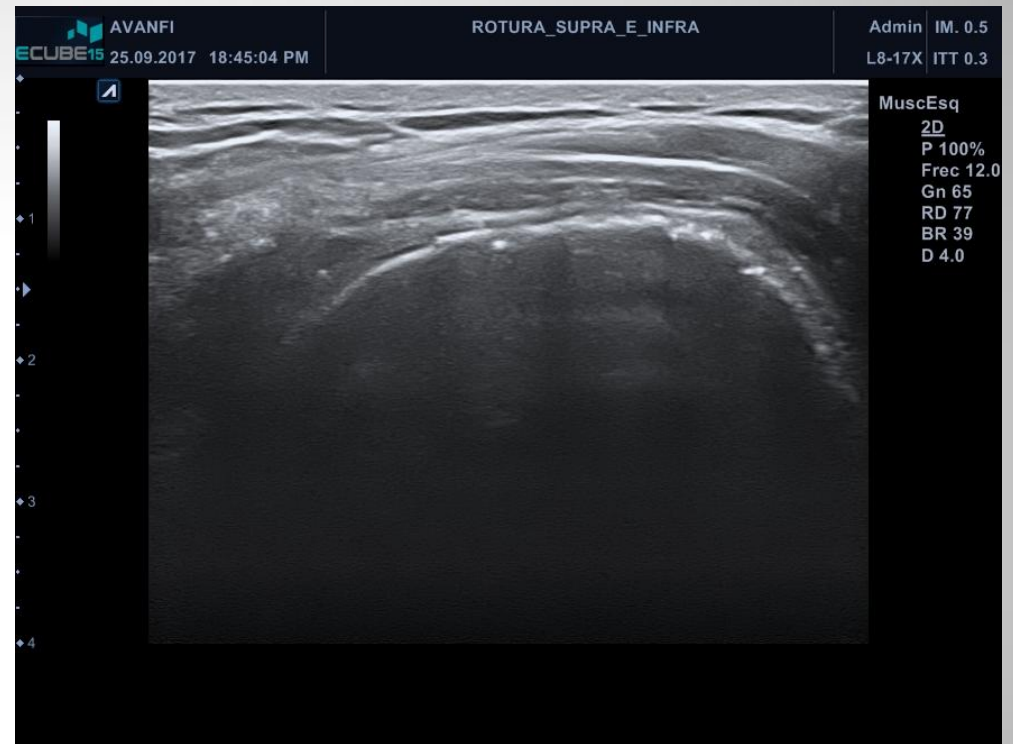
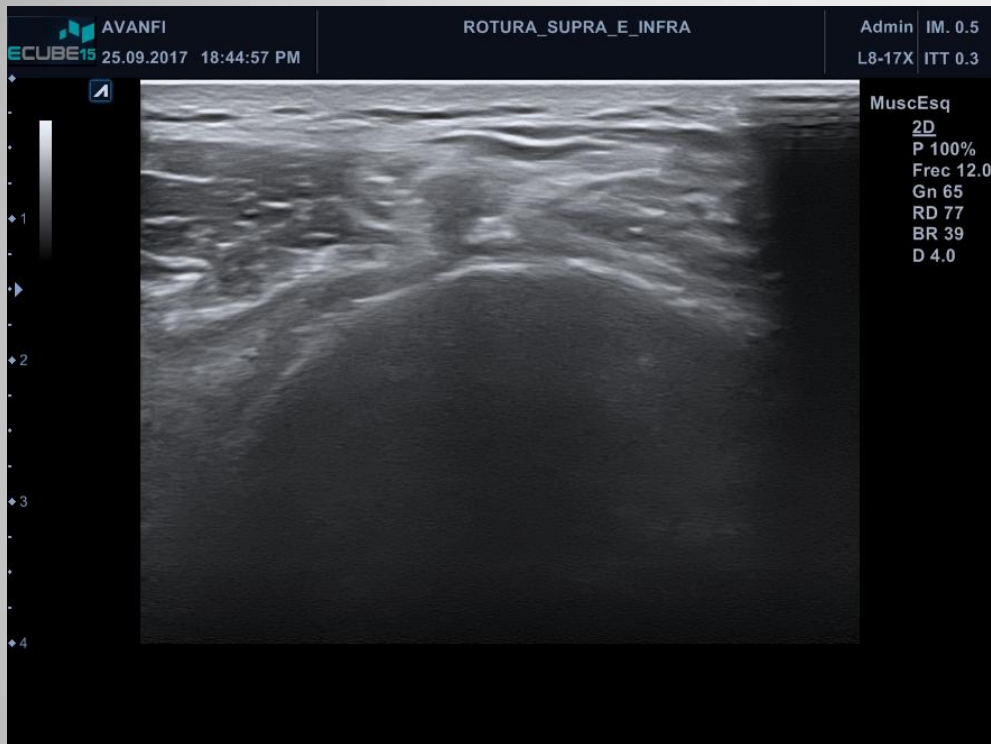


5 dosis ortokine



VAS: 8 a 1.

ROM: 160° Fle y Abd. RI L3, RE 70°



Orthokine for Massive Rotator Cuff Tears



- 7 cases, 6 patients
- Partially functional
- 62-85 years
- 4-5 injections. 1-2/w
- 3-8 tubes
- Associated joints:
 - AC
 - Glenohumeral
- VAS: 9 to 1
- ROM: Flex 70 to 140
- No adverse effects
- Partially functional to completely functional
- Follow up:
 - 3 months to 2 years

Conclusions



- Orthokine may play a role not just in rotator cuff and degenerative disorders of the shoulder
- In cases with mild-to moderate pain plus a moderate functional shoulder alleviated with anesthetic injections orthokine may play a role for pain relief and function improvement without surgery and with lasting effects
- Rehabilitation of periarticular structures is part of the protocol
- More studies are required

!!!GRACIAS!!!



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DOCENCIA E INVESTIGACIÓN

En **cirugía ortopédica y traumatología** tenemos un sólido perfil científico. Nos avalan 20 años de trabajo con decenas de publicaciones, ponencias, conferencias nacionales e internacionales y **premios exclusivos en el mundo** (como los reconocimientos y técnicas avaladas y premiadas por la AAOS en el campo de las prótesis de cadera y de rodilla, dirigidos por el Dr. Villanueva).

Demasiadas veces en la medicina vemos que los cirujanos olvidan que los avances son para compartirlos, por el bien de los pacientes y para que su desarrollo sea mas rápido y preciso.