US guided hyaluronic acid intra-articular injections

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- Membro ISMuLT (Italian Society of Muscles, ligaments and Tendons)

This systematic review and meta-analysis has revealed that US-guided hip joint injections are significantly more accurate (close to 100% Vs 72%) than those that are landmark guided.
ULTRASOUND-GUIDE TECHNIQUE

Ultrasound-guide allows:

- A real-time visualization of the needle placement,
- The identification of neurovascular bundle and soft tissue structures and the aspiration of intra or peri-articular effusions (for example iliopsoas bursitis),
- Ultrasound technique is simpler and less painful than fluoroscopy-guided injections and it produces no ionizing radiation,
- Ultrasound device is more portable and less costly than fluoroscopy or CT device,

Ultrasound-guide allows:

- To detect joint effusion, joint capsule distension and synovial hyperemia,

- Follow-up of US-guided intra-articular HA injections.
HYALURONIC ACID INDICATIONS

- OSTEOARTHRITIS
- FEMOROACETABULAR IMPINGEMENT
- OSTEONECROSIS
- POST-TRAUMATIC HIP PAIN
- HIP DYSPLASIA
CONTRAINDICATIONS

- ACUTE INFLAMMATION WITH JOINT EFFUSION
- AUTOIMMUNITY
- SEPTIC CONDITIONS
HYALURONIC ACID EFFECTS

- Restoration of elastic and viscous properties of the synovial fluid,
- Anti-inflammatory (reduce the production of pro inflammatory mediators and MMPs) and antinociceptive effects,
- Normalization of hyaluronan synthesis by synoviocytes,
- Delayed onset, but prolonged duration of clinical effects (6-12 months)

<table>
<thead>
<tr>
<th>AUTHOR, YEAR</th>
<th>BRANDED HA</th>
<th>PAT. N.</th>
<th>FOLLOWUP (WEEKS)</th>
<th>COMPARATOR</th>
<th>INJECTION COURSE</th>
<th>IMAGE GUIDANCE</th>
<th>PRIMARY ENDPOINT</th>
<th>SAEs</th>
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<td>44</td>
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<td>1 injection</td>
<td>US</td>
<td>Pain, Lequesne, NSAID</td>
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</tbody>
</table>

- 24 STUDIES
- 15 RCT S
- 9 COHORT S
- 14 US-G
- 2 NONE

Migliore A. et al, 2016
VS OF THE HIP: CURRENT EVIDENCE

- Studies suggest that VS of the hip is effective in reducing pain and increasing function. Only 2 trials (1 under US and 1 under fluoroscopic guidance) showing no difference compared with placebo (Qvistgaard E. et al, 2005; Atchia I et al, 2011),
  

- VS appears to be a safe and reasonable alternative to NSAIDs or intra-articular steroids for the treatment of osteoarthritis pain,
  

- Ultrasound guided HA injections seem to reduce the consumption of NSAIDs,
  
VS OF THE HIP: CURRENT EVIDENCE

- **VS may reduce or delay the need for hip replacement surgery,**

- **VS appears to work better in patients with fewer radiographic changes of osteoarthritis.**

- **Placement of HA in the hip under real-time ultrasound guidance is safe and well tolerated, with few and only local side effects (5-10%).**
The Author studied a patient's gait after ultrasound guided hip injections with HA:

- The patient showed an early clinical and biomechanical improvement during walking after a single intra articular injection of hyaluronic acid.
- Gait analysis parameters obtained suggest that the pre-treatment slower speed may be caused by antalgic walking patterns, the need for pain control and muscle weakness.
- After hip viscosupplementation, the joint displayed different temporal, kinetic and kinematic parameters associated with improved pain patterns.
Can Viscosupplementation Be Used in the Hip? An Italian Perspective

FABRIZIO RIVERA, MD

Although the literature has unequivocally proven the possibility of reducing pain in patients affected by hip arthritis the molecular weight and density, the number of infiltrations required for long-term results, and the most appropriate indications for infiltration treatment have yet to be clarified. Selecting the patient is the first obstacle to be overcome.

HA vs CORTICOSTEROIDS

- 2 Studies (Qvistgaard E. *et al*, 2005; Atchia I *et al*, 2011) suggest reduced efficacy of HA compared with CS at 8-12 weeks.

- Spitzer *et al.* (2010) in a prospective randomized study of 313 patients, highlighted that functional scores for Hylan G-F 20 were higher than methylprednisolone for patients with more severe OA (Grade 3) and similar for less severe OA (Grade 2) at 6 months.

100 patients with chronic unilateral symptomatic hip OA were consecutively enrolled and randomly assigned to 1 of 2 groups: group A received PRP and group B received HA administered via intra-articular ultrasound-guided injections. Patients were evaluated at baseline and after 1, 3, 6, and 12 months using the Harris Hip Score (HHS) and visual analog scale (VAS).

Intra-articular injections of PRP are efficacious in terms of functional improvement and pain reduction but are not superior to HA in patients with symptomatic hip OA at 12-month follow-up.

The ultrasound-guided intra-articular treatment with platelet gel and after ialuronan in patients with symptomatic hip osteoarthritis demonstrates in almost all the treated patients (93.7% of cases) a significant reduction of subjective pain (on a VAS scores) and consumption of NSAIDs greater than the ialuronan or platelet gel alone.
Current results indicate that intra-articular PRP injections offer a significant clinical improvement in hip OA, better than HA alone or combined with HA, stable up to 12 months and without relevant side effects.

- 23 hips (3 bilateral cases) were treated.
- Each patient received a 2-ml intra-articular ultrasound-guided injection of HA at baseline and after 40 days; the same dosing schedule was repeated after 6 months. The clinical evaluation was performed at baseline and after 6 and 12 months of follow-up.
- Hyaluronic acid is safe and effective in the treatment of mild femoroacetabular impingement, with significant pain reduction and function improvement.

The results of this review suggest that (1) pain relief obtained from an intra-articular hip injection supports a diagnosis of FAI, (2) therapeutic relief at 12 months may be achieved, particularly with hyaluronic acid, and (3) a negative response to preoperative injections may predict poor short-term surgical outcomes.
Anterior parasagittal approach (superior or inferior) vs lateral approach.
<table>
<thead>
<tr>
<th>Patients</th>
<th>88 (106 hips)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Males 50</td>
</tr>
<tr>
<td></td>
<td>Females 38</td>
</tr>
<tr>
<td>Age (mean)</td>
<td>59.4 (range 27-72 years)</td>
</tr>
<tr>
<td>BMI (mean)</td>
<td>25.8</td>
</tr>
<tr>
<td>Side affected</td>
<td>Right 58 (55%)</td>
</tr>
<tr>
<td></td>
<td>Left 48 (45%)</td>
</tr>
<tr>
<td></td>
<td>Bilateral 18 (17%)</td>
</tr>
<tr>
<td>Radiological grade</td>
<td>1° 12</td>
</tr>
<tr>
<td></td>
<td>2° 44 (50%)</td>
</tr>
<tr>
<td></td>
<td>3° 27 (32%)</td>
</tr>
<tr>
<td></td>
<td>4° 5</td>
</tr>
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</table>
RESULTS

3 Injections:
- T0
- 15 days
- 45 days

Drugs:
- Donegal HA 40 mg
- Jointex 32 mg
- Hyalubrix

VAS mean values

Harris Hip Score mean values
RESULTS

Harris Hip Score

- T0: 70% Poor, 36% Fair, 0% Good, 0% Excellent
- T0 +1: 14% Poor, 80% Fair, 5% Good, 1% Excellent
- T0 +3: 18% Poor, 79% Fair, 5% Good, 2% Excellent
- T0 +6: 20% Poor, 75% Fair, 5% Good, 6% Excellent
TAKE HOME MESSAGES

- Us guided viscosupplementation (US-G VS) of the hip appears to be safe, well tolerated and effective to reduce pain and improve function up to 6-12 months,

- US-G VS seems to reduce the consumption of NSAIDs and the need for joint replacement,

- US-G VS appears to work better in patients with mild or moderate forms of OA and FAI.
Thanks