

JOINT PROCEDURES fall into 3 general categories, all (mis)posted as 'ARTHROGRAMS", with slight modifications of set-up: **ASPIRATION** (r/o infection), **PAIN STUDIES**, and **GADOLINIUM FOR MRI**.

BASIC SET-UP: ALL 3 start with:

Informed and witnessed consent, documented 'Time Out" to confirm **patient** (wristband plus verbal ID) and **joint/side identities**

Basic Tray

Iodine (skin prep) and Alcohol (post-injection skin clean-up)

Lidocaine 2%

20 G spinal needle

1 1/2" 25 G needle (NOT the 5/8")

1 1/2" 22 G needle

1 1/2" 16 G needle (purple—for drawing fluids into syringe)

2 10 ml syringes-- one for Lidocaine 2% (can be 5 cc for thin/smaller person), one for contrast-- put tubing on contrast-filled syringe immediately to clarify identity of clear fluids, or written labels!

Labels and pen often included on sterile tray; label syringes as load them

50-cc tubing (don't open, don't always need)

contrast (don't open, don't always use)

mammo-spot type metal marker for localization

waterproof 'Sharpie' pen (non-sterile)

6.5 (or your size) sterile gloves, prefer *not* purple-- use OVER non-sterile gloves

ASPIRATIONS to R/O INFECTION

Goal: extract joint fluid, or at least stick a needle tip in joint and rub on bone, if no fluid, to test for infections. You are done when samples successfully reach correct labs in correct format. We do any non-Neuro joint, most often hips/SI/knees/shoulders.

PAIN STUDY: seeks to inject long-acting anesthetics and steroids, to test both immediate and long-term response; no samples taken (unless, of course, pus comes rolling out at you--then culture it!). We usually do hips or shoulders (supine) or SI joints (prone, towel roll under contralateral hip).

GADOLINIUM INJECTION: for MR to follow; usually shoulders, wrist, occasional hip, elbow, others.

ASPIRATION needs intra-articular fluid samples, so to Basic set-up add:

5 cc syringe to use when attempting to extract fluid

green port-a-cul vial (ie make sure available in room **before** samples drawn)

purple OR green vacutainer (ditto, in room)

red vacutainer (ditto, in room)

small vial NONBACTERIOSTATIC saline (in room, don't open, may not need)—if tap 'dry' sometimes pays to inject 5-8 cc NONBACTERIOSTATIC saline and re-try aspirating. You will need image of small amount of radiographic contrast in joint documented to prove you were **in** the joint; don't use too much or dilutes cultures and cell counts.

Lab sheets-- Pathology 5, Path 2, forms

Path 5, green port-a-cult --standard requests are "C&S, Gram, anaerobic/aerobic and **R/O P.acnes**"; may need TB, fungal, prn. Tell HO to send correct lab forms if bizarre requests. If no free fluid aspirated, stab spinal needle tip into culture and label form 'needle-tip, dry tap". Goes to MICROBIOLOGY LAB.

Path 2, purple or green top--body fluid cell count and differential. Goes to CORE LAB.

red top--"DidJa" tube, put extra fluid here in case you missed something ("DidJa sent the extraterrestrial DNA test sample, DidJa get the SpongeBob titres...")

clear plastic sample envelopes-actual labeled sample goes to deep main pocket, paperwork to shallow pouch.

about 6-10 extra pt. labels for samples, paperwork

SAMPLES must have machine-stamp label on tube or they get tossed at lab. Must be **hand-delivered** to relevant labs, by you or trusted tech/accomplice to whom you gave custody--do NOT leave on counter assuming 'someone' will take them. "Someone" doesn't exist.

PAIN TEST additions to basic set-up:

During consent, explain test may 'make them better, may lead to no change, or even make you slightly more sore later today. These are all normal and possible outcomes and help separate out possible causes of your pain".

10 cc syringe to fill with 9cc Bupivacaine:1cc Kenalog 40 (shaken just before you draw up)

Bupivacaine (aka Marcaine, Sensorcaine) .5%, 20 ml bottle

Kenalog 40, one 5cc vial—shake well (cloudy)

lots of chit-chat to relax pt and send out endorphins and block 'I'm so scared' thought gateways

Post-injection, one needs to ask the pt. to assess any immediate change in pain or ROM (ambulate in room, get up/down from chair, whatever), and to then keep track over next few days/hrs to note (and then report to referring doc) when pt. returned to pre-injection baseline (anesthesia good for 3-4 hrs, steroids may kick in and go days/weeks).

REMIN D PT. that joint may be numb for hours/days but is NOT 'better'; no activities that would not have been allowed/comfortable yesterday—no sports, push-ups, weight-lifting, ambitious activities. If hip injection, warn of subtle leg numbness 'as if asleep' that could make them clumsy (it distorts proprioception), making them stumble on steps, door sills or uneven ground—"Be very careful next few days".

GADOLINIUM INJECTIONS: for MR which must follow immediately. Call MR and make sure they are aware of pt; give them estimate as to when they can expect pt. (make sure you ascertain which building/ scanners!)

Basic set up plus: smallest container **Gad** (may need to get from MR), tiny (1cc) **TB type syringe** marked in .1cc increments; ~20 cc or slightly less **sterile saline** (need not be non-bacteriostatic), 20 cc syringe.

Draw ~.4-.5 cc Gad into tiny syringe; and draw ~15-19 cc saline into 20 cc syringe; pull back 20 cc plunger a mm or two to make space at tip as hold upright. Inject ~.15cc from TB syringe into nipple of 20 cc syringe; put finger over nipple tip and invert 1ce or 2ce to mix. This creates the necessary dilution (1:100-170 seems to work well, which will be the net effect once your 1:100 dilution is added to the 2-3 cc of radiographic contrast injected first to confirm intra-articular position. Literature says "1:200" but Dr Carrino and I find this too diluted and find this slightly higher concentration has been working well for us).

Use **conventional radiographic contrast** for test injections through spinal to confirm intra-articular position under fluoroscopy; document for records.

Once confirmed intra-articular, remove the tubing from the radiographic contrast, put it on 20 cc Gd/saline syringe, and gently push ~2-3 cc saline solution through tubing to replace tubing contrast with Gd/saline; re-attach to intra-articular needle, and inject Gd/saline as tolerated (?7-10 cc shoulder or hip; watch pt's face, ask how feel—previous effusions leave joint space distended, surgery/prior procedures may scar it down tighter). Flick fluoro on intermittently to confirm radiographic contrast being displaced/diluted intra-articularly by radiolucent Gd/saline injection.

Help pt. off table minimizing joint motion (ie stay in hospital gown, don't change back to street cloths to move to MR area), ESCORT (wheelchair probably) to MR **yourself** if no one else can. DO NOT CALL ESCORT, minutes matter once the contrast is in.

Donna Magid MD, MEd