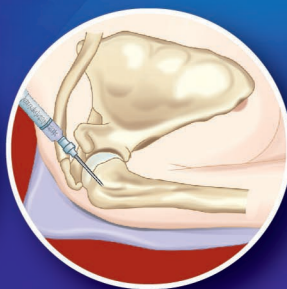
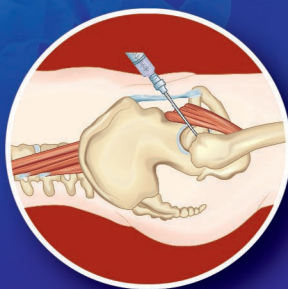


Intra-articular & Allied Injections



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4th
Edition



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Indications of Corticosteroid Injection

"Whatever is worth doing is not worth overdoing."

—Helen Mc Horstmann and Eugene E Black

CHAPTER OUTLINE

- | | |
|---|---|
| ◆ Definite indications of corticosteroid injection | ◆ Peripheral nerves |
| ◆ Relative indications of corticosteroid injections | ◆ Resistant (nonspecific or at times specific) backache |
| ◆ Tendons (mostly around the tendon cautiously, and very rarely into the tendons) | ◆ Skin conditions |
| ◆ Ligaments | ◆ Ophthalmic condition |
| ◆ Fibrofatty nodules | ◆ Gynecological conditions |
| | ◆ Reflex sympathetic dystrophy syndrome (RSDS) |
| | ◆ Trial indications |

It has become a very common fashion to prescribe intra or periarticular or intra/peritendinous injections of corticosteroids. We may not be blamed for the statement that in conditions where we are not able to assign any specific cause, and especially if we are not able to allay the patient of the pain, corticosteroid becomes an important feature of our prescription. Should we label it as a nonspecific chemotherapeutic agent for such conditions? This version has a base, because in several nonspecific painful conditions, corticosteroid infiltration does work. Patients get relieved of the symptoms, while the proper ailment remains undiagnosed. However, there are definite indications for its infiltrations. At several places, it is used empirically and at frequent occasions it is a 'hit and miss' prescription.

Local corticosteroid therapy is a very precious therapeutic aid in rheumatology. Awareness and respect of its indications, contraindications and risks by the clinicians lead to very successful use of local corticosteroids in optimal conditions with minimal complications. However, in rheumatoid arthritis concurrent medical management accelerates the recovery. When

the systemic gold therapy is contemplated even then local/intra-articular corticosteroid therapy should be considered.

Clear indications for intra-articular injection have not been charted out. However, workable indications may be put as follows: Though not beyond controversy, new studies are showing that intra-articular injections may be helpful in the management of postoperative pain, particularly when opiates are used.

■ DEFINITE INDICATIONS OF CORTICOSTEROID INJECTION

Convenient sites for intra-articular injection are the knee, ankle, wrist, elbow, shoulder, phalangeal, sternoclavicular and acromioclavicular joints. Difficulty is experienced in injecting into the hip joint. Anatomically, inaccessible joints, such as spinal joints and the joints devoid of synovial space, e.g., sacroiliac joints are also difficult to be injected exactly.

Clinical conditions where corticosteroid injections are definitely indicated:

1. Degenerative arthrosis of joint—primary or secondary.
2. Rheumatoid arthritis of joints—usually as an adjuvant to other appropriate medical and physical management.
3. Psoriatic arthropathy.
4. Peripheral synovial swelling of ankylosing spondylitis and of **Reiter's syndrome**.
5. Synovial structures (e.g., in joints, tendon sheath, bursae) are definite target, where local injection therapy prove useful. However, it should be avoided in uric acid gout, for which more effective treatments are available. Of course, in acute gouty arthritis it has been found to be useful.
6. **Post-traumatic stiffness of the joint.**
7. Post-immobilization stiffness of the joint.
8. Periarthritis shoulder. In frozen shoulder corticosteroid injections along with exercises produce significant improvement.
9. **Nonspecific fibrous ankylosis.**
10. Intra-articular fractures—after aspiration of hemarthrosis—injection should be given—cautiously and only once.
11. **Extra-articular tennis-elbow (lateral epicondylitis of humerus).**
12. **Golfer's-elbow (medial epicondylitis of humerus).**
13. **de-Quervain's disease.**
14. Apophysitis, e.g., **Osgood-Schlatter disease, calcaneal apophysitis.**

While targeting to inject certain zone/structure or/joint, there may be flowing of the injected fluid into the communicating pouches or sheaths or elsewhere. Sometimes there are naturally occurring communications such

as those often found between the ankle joint and neighbouring tendon sheaths. Sometimes adventitious communications exist such as those developed in the shoulder region, e.g., in rheumatoid arthritis when the glenohumeral joint and subacromial bursae join together. At times synovial cysts develop near joints, where the communication is usually valvular, when the injected material flows into the synovial cyst but the reverse is not true. In these conditions too, other conservative methods of treatment must be exhausted earlier. In degenerative arthritis, especially that of knee, there is definitive role of intra-articular corticosteroid injection. Other intra-articular substances such as orgotein, radiation synovectomy, dextrose prolotherapy, silicone, saline lavage, saline injection without lavage, analgesic agents, nonsteroidal anti-inflammatory drugs, glucosamine, somatostatin, sodium pentosan polysulphate, chloroquine, mucopolysaccharide polysulphuric acid ester, lactic acid solution and thiotepa cytostatica have been tried as potentially therapeutic agent in the treatment of osteoarthritic joints. Recent observations have indicated that in primary osteoarthritis of knee, intra-articular Hylan G-F₂₀ treatment is effective for pain, disability and improving functional capacity. Low dose of intra-articular steroids reduce the size, severity and progression of both lesions of the cartilage and osteophyte formation (Williams 1985, Pelletier et al. 1994). Even though there are possibilities of adverse effects on articular cartilage after repeated injections, its judicious use is mostly beneficial.

The strategy to use intra-articular steroids in late stages of osteoarthritis should be changed in the light of recent experimental evidences, which indicates that intra-articular steroids exert a chondroprotective effect probably by suppression of stromelysin synthesis—a metalloprotease implicated in osteoarthritic cartilage degradation (Pelletier 1989). However, though pain relief by intra-articular steroids can be dramatic, its long-term chondroprotective effects need further authentication.

The overall review of the medical literature reflects that in osteoarthritis corticosteroids and hyaluronic acid are widely used in patients who have not responded to other therapeutic modalities. As a practical approach for a joint (like knee) with effusion, steroid injection should be considered after aspiration of effusion, while in symptomatic dry joint hyaluronic acid approach should be useful.

■ RELATIVE INDICATIONS OF CORTICOSTEROID INJECTIONS

Conditions have to be picked out from the list given below depending upon the earlier response to other available therapeutic and conservative methods.

■ TENDONS (MOSTLY AROUND THE TENDON CAUTIOUSLY, AND VERY RARELY INTO THE TENDONS)

The objective is to bathe the tendon (not to infiltrate it) in conditions like:

1. Tenosynovitis.
2. Peri-tendinitis.
3. Tendinitis (not more than two injections, since tendons are liable to rupture after repeated injections).
4. Post-traumatic adhesions in and around tendons.
5. Ganglion in relation to tendon.
6. Tendon involvement in collagen disorders.
7. Post-operative after tendon repair to avoid adhesions—one or two injections only.
8. Reconstruction or substitution of tendon.
9. Early xanthomatous affection of tendon
10. To hasten the recovery from pain and other effects on the joint due to immobilization and/or operation (e.g., plaster cast, traction, arthroplasty).

■ LIGAMENTS

In most of the places where joint is infiltrated, ligaments (coming in the way) are also infiltrated but at places they may require specific infiltrations, e.g.,

1. Partial avulsion of ligaments leading to pain.
2. Pellegrini-Stieda disease.
3. Strained or sprained ligaments of a joint.
4. Post-traumatic adhesions of the ligaments.
5. Fibrotic nodule in relation to a ligament.
6. Collagen disorder affecting the ligaments.
7. Nonspecific inflammation of the ligaments (**e.g., plantar fasciitis**).

■ FIBROFATTY NODULES

Fibrofatty nodules in relation to or even quite distant from the joint have been blamed as a triggering point for some painful conditions (sometimes quite unexplainable). In many cases, they do respond to corticosteroid infiltration.

■ PERIPHERAL NERVES

Empirically along (perineural zone/sheath and intraneural) the main peripheral nerve or its branches in:

1. **Hansen's neuritis.**
2. **Post-traumatic perineural adhesions or adhesive neuritis.**
3. **Painful neuromas.**
4. **Nonspecific peripheral neuritis.**

5. **Meralgia paresthetica.**
6. Radiculitis—mostly following degenerative rupture of disc or altered joint conditions.
7. **Entrapment neuropathy.**

■ RESISTANT (NONSPECIFIC OR AT TIMES SPECIFIC) BACKACHE

Resistant (specific or at times nonspecific) backache, a truly unsolved problem, does respond to infiltration of corticosteroid (mostly without any true explanation). It may be given as local infiltration at the most tender spot, into the tender and/or triggering nodule, or as epidural injections (also see the chapter on “Spine”).

■ SKIN CONDITIONS

Local corticosteroid infiltration has been reported to have a definite role in certain skin conditions such as:

1. **Disseminated lupus erythematosus.**
2. Eczematous conditions.
3. Keloid.
4. Nonspecific dermatitis.
5. Leucoderma.
6. **Hard and soft corn.**
7. Alopecia.

Wound healing is a complex physiological process which can be considered and grouped into three phases: inflammation fibroblast proliferation and remodeling wherein abundant extracellular matrix is degraded and immature type II collagen is modified into type I collagen. Excessive scars form as a result of aberrations in this physiologic wound healing process and may arise following any insult to the deep dermis. Excessive scarring leads to hypertrophic scars and keloids.

Excessive scarring looks unesthetic and disfiguring. If it is around any joint, it may be disabling. Keloid and hypertrophic scar usually occurs in the second and third decade of both sexes. Hypertrophic scar usually occurs in all races and all skin types. However, keloids are found more in dark-skinned people of African descent.

Histologically hypertrophic scars and keloids contain mainly fine well-organized wavy type III collagen oriented parallel to the epidermal surface with abundant nodules containing myofibroblasts, large extracellular collagen filaments and plentiful acidic mucopolysaccharides.

Keloid tissue, mostly composed of disorganized type I and III collagen, can cause patient complaints of pain, pruritis and contractures.

Management of hypertrophic scars and keloids includes occlusive dressings, compression therapy, intralesional steroid injection, excision,

Radiation therapy, LASER therapy, interferon therapy. Intralesional steroid injections have been used since mid 1960s.

It has been concluded that corticosteroid injections with steroid ointment application following keloid or hypertrophic scar excision help in reducing the recurrence rate.

■ OPHTHALMIC CONDITION

Corticosteroid infiltration has been used in corneal ulcer to prevent scar. For the same purpose it has also been used in post-operative or post-traumatic ophthalmic conditions.

■ GYNECOLOGICAL CONDITIONS

A cocktail consisting of hydrocortisone acetate 1 cc and water for injection 9 cc plus crystalline penicillin/streptomycin plus hyaluronidase has been used earlier for hydrotubation in cases of tubal blockage, which has been replaced nowadays by instillation of placentex. Hydrocortisone acetate, sometimes, is given after tubal microsurgery.

It has been given intrafetally in cases of post-maturity due to anencephaly.

■ REFLEX SYMPATHETIC DYSTROPHY SYNDROME (RSDS)

In managing early stage of post-traumatic RSDS, regional intravenous blocks of a mixture of corticosteroids and lidocaine have been found to be highly effective. It is recommended as the first choice treatment because it is simple, safe and well-tolerated (Tountas et al. 1993).

■ TRIAL INDICATIONS

For the conditions where no specific explanation for the pain and/or stiffness around the joint or bursa, tendon or ligaments, muscle, bone or subcutaneous tissue is available, a trial local infiltration of corticosteroid cocktail in and around the affected area is recommended. In such circumstances, usually one to two injections should be tried. Depending upon the response further injections may be given.

In osteochondrosis of scaphoid (Preiser's disease), lunate (Kienbock's disease) and navicular (Kohler's disease), trial injections of corticosteroid must be given before embarking on surgery.

In **ischiolgluteal bursitis (weaver's bottom)** and epiphysitis of metatarsal (**Freiberg's infarction**) cocktail infiltration may give relief. Similarly, in painful **hallux valgus, hallux rigidus, tailor's bunion** (in varus angulation of the fifth toe) and interdigital neuroma (**Morton's toe**) there may be trial indications of corticosteroid cocktail injection.

Injections of corticosteroids can also provide relief but has been occasionally objected for its effect in causing atrophy of fat and leaving small depigmented patches in the skin, in various bursitis like olecranon bursitis (student's elbow), prepatellar bursitis (housemaid's knee) and other bursitis around the knee joint, aspiration followed by intrabursal injection of corticosteroid cocktail may be effective.

In spastic flat foot, if the spasm is dominating, infiltration of lignocaine into the sinus tarsi gives immediate relief. In such cases, infiltration of long-acting local anesthetic may provide lasting results.

Kumar and Siwach K (2019) have observed that periarticular local infiltration is significantly effective for pain control, barely mobilization and functional recovery in comparison to buprenorphine transdermal patch as observed in patients undergoing total hip and knee arthroplasty. Periarticular local infiltration also reduces the total consumption of analgesics postoperatively with better patient satisfaction.

Intra-articular & Allied Injections

Since Philip Hench and his colleagues introduced the corticosteroid for managing the rheumatoid arthritis, especially the pain associated with it at Mayo Clinic in 1949. Trails have been carried out right from its topical applications to intra-articular infiltrations. The results have been variably successful. To augment and/or replace the results of corticosteroids, various modalities have been tried with variable results. Other systems of treatment have been often tried. The "Acupuncture, Moxibustion, Reiki, Yoga, and Pranayama" have been also suggested for managing pain. All have helped but perhaps not as expected and probably that have been because they have not been properly practiced. However, increasing concept and practice of "Yoga" has proved its positive role in promoting good posture, overall figure and resilience of the body, preventing the obesity and thus, its complications, managing and preventing low backache, consciousness in reducing the sedentary habits, improving the working posture, reducing the stress and anxiety, improving work culture, agility and abilities—in all these indications and needs "Yoga" and "Pranayama" must be practiced as the routine of life. Hence, a chapter on the above aspects has been added in this book.

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