

The Webinar Series

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ASSOCIATION OF SURGEONS IN **PRIMARY CARE**

The Webinar Series

Revisiting the Pros and Cons of Steroid Injections



Recommendations of the British Society of Skeletal Radiologists

The safety of corticosteroid injections during the COVID-19 global pandemic

19th March 2020

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FACULTY OF PAIN MEDICINE
of the Royal College of Anaesthetists

FPM response to concern related to the safety of steroids injected as part of procedures during the current COVID-19 virus pandemic

Introduction

Members have asked questions as to the safety of use of injected steroids for pain procedures during the current COVID-19 virus pandemic.

Steroid use is common in pain procedures with the aim of easing pain, increasing mobility and quality of life. Their duration of effect is variable but can provide several months of benefit. The immunological impact of steroids given this way in patients with COVID-19 is unknown. As a result of the long quarantine period of an average of 14 days, there is also a risk that asymptomatic patients who are carrying the virus could be treated, potentially putting them at increased risk of an adverse outcome from the virus. There does appear to be higher risk patient groups, notably the elderly and those with comorbidities resulting in higher mortality rates.

Moreover, one must consider the risk of admitting patients for elective procedures in a hospital setting where they may be exposed to patients being acutely treated for COVID-19 infection or other illnesses. There is also the risk of hospital staff being exposed to potentially infected patients.

Use of steroids in treatment of COVID-19

Current WHO guidance¹ for the management of severe acute respiratory infection in patients with COVID-19 is not to routinely give systemic corticosteroids unless indicated for another reason. This is because steroids have been associated with an increased risk for mortality in patients with influenza and COVID-19. Clearance in patients with Middle East respiratory syndrome coronavirus (MERS-CoV) infection. Steroids were widely used in management of severe acute respiratory syndrome (SARS), there was no benefit, and there was persuasive evidence of adverse short- and long-term harm². A recent study in patients with COVID from China, reports that patients receiving corticosteroids did not have a mortality, but rather delayed viral clearance.³

As is current practice, injections must not be undertaken in individuals with active infections but the potential arises to do harm to individuals who may be incubating or later develop COVID-19. Long acting, usually insoluble steroid formulations are frequently used in procedures to manage pain. To put this into context, Triamcinolone Acetonide 40mg is equivalent to ten times the normal daily physiological steroid production. Epidural steroids have been shown to cause a variable degree of adrenal suppression for at least some weeks.⁴ The potential impact of this immunological suppression in a patient incubating COVID at the time or in the future is unknown.



Corticosteroid use for musculoskeletal and rheumatic conditions during COVID-19 pandemic

Version number: 'BSR/CSP/BASS/BOA/1', published for BSR, CSP, BASS and BOA members 23/3/2020.

This is a prepublication version of a document due to be published by NSEngland and has been made available for members of these bodies in advance of that publication. Some changes in the document are still possible, and members should review the final NSEngland version once published.

Lay summary

This guidance is to help doctors and other relevant healthcare professionals. Steroids – oral and injected – can be an important and effective treatment for some musculoskeletal conditions, particularly rheumatic conditions, some types of arthritis and joint pain. Sometimes these can be lifesaving. Stopping steroids suddenly can be dangerous, and should only be done under clinical supervision. There is a concern that steroids can increase risk from the novel coronavirus (Covid-19). Because of this, we should consider alternatives to steroids where possible. If steroids are needed, use the lowest possible dose for the shortest possible time. If people are already taking steroids, see if the dose can be safely reduced. And only give steroid injections for severe symptoms, and where there are no other options.

- Don't stop existing steroids but taper dose if possible and clinically safe
- Think before starting steroids in the current epidemic
- Use lowest possible dose of oral steroids
- Only give steroid injections if significant disease activity and no alternatives

Background

The current WHO guidance¹ for the management of severe acute respiratory infection in patients with COVID-19 is to avoid giving systemic corticosteroids. We therefore need to be cautious when using steroids for other indications during the pandemic. Steroids have been associated with an increased risk of mortality in patients with influenza and delayed viral clearance in patients with Middle East respiratory syndrome coronavirus (MERS-CoV) infection. Although they were widely used in management of severe acute respiratory syndrome (SARS), there was no good evidence for benefit, and there was persuasive evidence of adverse short- and long-term harm². A recent study of patients with COVID from China, reports that patients receiving corticosteroids did not have an effect on mortality, but rather delayed viral clearance.³

Long acting, usually insoluble steroid formulations are frequently used in Rheumatic diseases. To put this into context, Triamcinolone Acetonide 40mg is equivalent to ten times the normal daily physiological steroid production. Injected steroids have been shown to cause a variable degree of





EDITORIAL

COVID-19: A rethink of corticosteroid injection?

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Surgery of the Hand

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Keywords: Corticosteroid, Injection, joint, COVID

Corticosteroid injection (CSI) is a mainstay of treatment for many musculoskeletal conditions. We are concerned with the apparent wholesale withdrawal of CSI as a legitimate treatment option for patients who are suffering from hand, wrist and other musculoskeletal conditions during the COVID-19 pandemic. As patients suffer and routine operating (based on the COVID-19 triage system) seems months away, surgical alternatives are unlikely to be available, and indeed it is good practice to consider an injection before committing to surgery (which is often a requirement prior to funding in the NHS). For hand-related conditions such as nerve compression, base of thumb arthritis and several tendon-related pathologies (trigger digit and de Quervain's), there are few reliable alternatives.

The onset of the current COVID-19 viral outbreak prompted appropriate reviews of clinical services and practice to prevent patients from attending healthcare institutions, in particular those with underlying conditions that would render them vulnerable to severe viral infection, in order to minimize the spread of the COVID-19 virus and to allow hospitals and healthcare services to realign their focus in order to prevent the available resources from being overwhelmed. Given the potential immunosuppressive effects of CSI, various national professional bodies issued guidance surrounding the safety and appropriateness of its use as a part of this national effort, discouraging clinicians from offering CSI as a treatment modality.¹⁻⁴ The rationale underpinning the published guidance appears to have been influenced by observations which were attributable to the administration of systemic corticosteroids during previous Middle East Respiratory Syndrome, Severe Acute Respiratory Syndrome and influenza epidemics.¹⁻⁴ While

close reading of the published guidelines shows they have recommended a cautious risk-benefit analysis on a case-by-case basis, in practice the guidance has been widely interpreted as representing an instruction to cease CSI to treat most musculoskeletal conditions.

Given the true impact of CSI on a patient's immunity during the outbreak remains poorly understood, as patients return to seeking treatments for their painful and debilitating musculoskeletal conditions, it is increasingly important to determine which treatments can and should be offered to them, balancing the risks of CSI against the established efficacy of the injections, and the relatively unavailable surgical alternatives. We have therefore critically appraised the literature and evidence that the British Pain Society, British Society of Skeletal Radiology (BSSR), and other societies have used when generating their respective guidance in order to inform clinicians when counselling patients who present to them for treatments now that the initial peak of COVID-19 epidemic appears to be passing.

The cited papers describe safety concerns related to injections and changes to recipients' systemic physiology resulting from the exogenous steroid. In a paper looking at the effects of epidural CSI, Friedly et al⁵ observed that adrenal suppression occurred following injection with no relationship to other patient characteristics, although reported that only 1/149 suffered an adverse event that could have potentially related to immunosuppression (pneumonia) despite the relatively high steroid doses being used (up to 120 mg methylprednisolone). A review by Youssef et al⁶ considering the infection risk and safety of corticosteroid use in patients with rheumatic conditions found that for systemic infections, evidence

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THE BRITISH PAIN SOCIETY
EXPERTISE WHERE IT MATTERS



Management of patients with musculoskeletal and rheumatic conditions who:

- are on corticosteroids
- require initiation of oral/IV corticosteroids
- require a corticosteroid injection

16 June 2020

This supersedes the specialist guidance "Management of Patients with Musculoskeletal and Rheumatic Conditions on Corticosteroids" published as part of the NHS England and Improvement phase 1 response to the coronavirus pandemic. It relates to musculoskeletal (MSK) service provision across primary, community and secondary care and is applicable to adults and children. The use of steroid medication is one of the management options for a range of musculoskeletal conditions and in particular rheumatic conditions, and this guidance aims to assist decisions on the use of such medication during the pandemic.

It is supported by the British Society for Rheumatology, British Association of Orthopaedics, British Association of Spinal Surgeons, Royal College of General Practitioners, British Society of Interventional Radiology, Faculty of Pain Medicine, British Pain Society and Chartered Society of Physiotherapy

COVID-19

- Original guidance DOES NOT advocate the complete cessation of corticosteroid injections (CSI)
- Advises that prior to proceeding with CSI, clinicians should think about and discuss the potential risks and benefits for the CSI to their patients.

nhs.uk/coronavirus

nhs.uk/coronavirus

nhs.uk/coronavirus

Potential Risks and Benefits

- *If there was a localised m/s problem that hurt and was tender, I stuck steroids into it and 9/10 it got better.*



Tendinopathy

Tendon Injuries

Tendon injuries can be secondary to

- a) Acute trauma
- b) Repetitive overuse



Overuse Injury

- Is more common
- Hx: gradually increasing load-related localised pain coinciding with increased activity.
- The long-term response to anti-inflammatory drugs is poor.





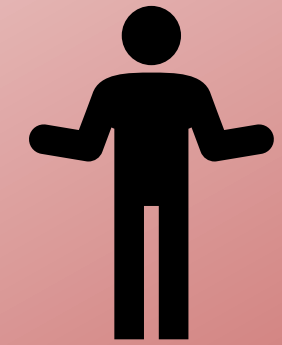
NSAID

ACCURACY



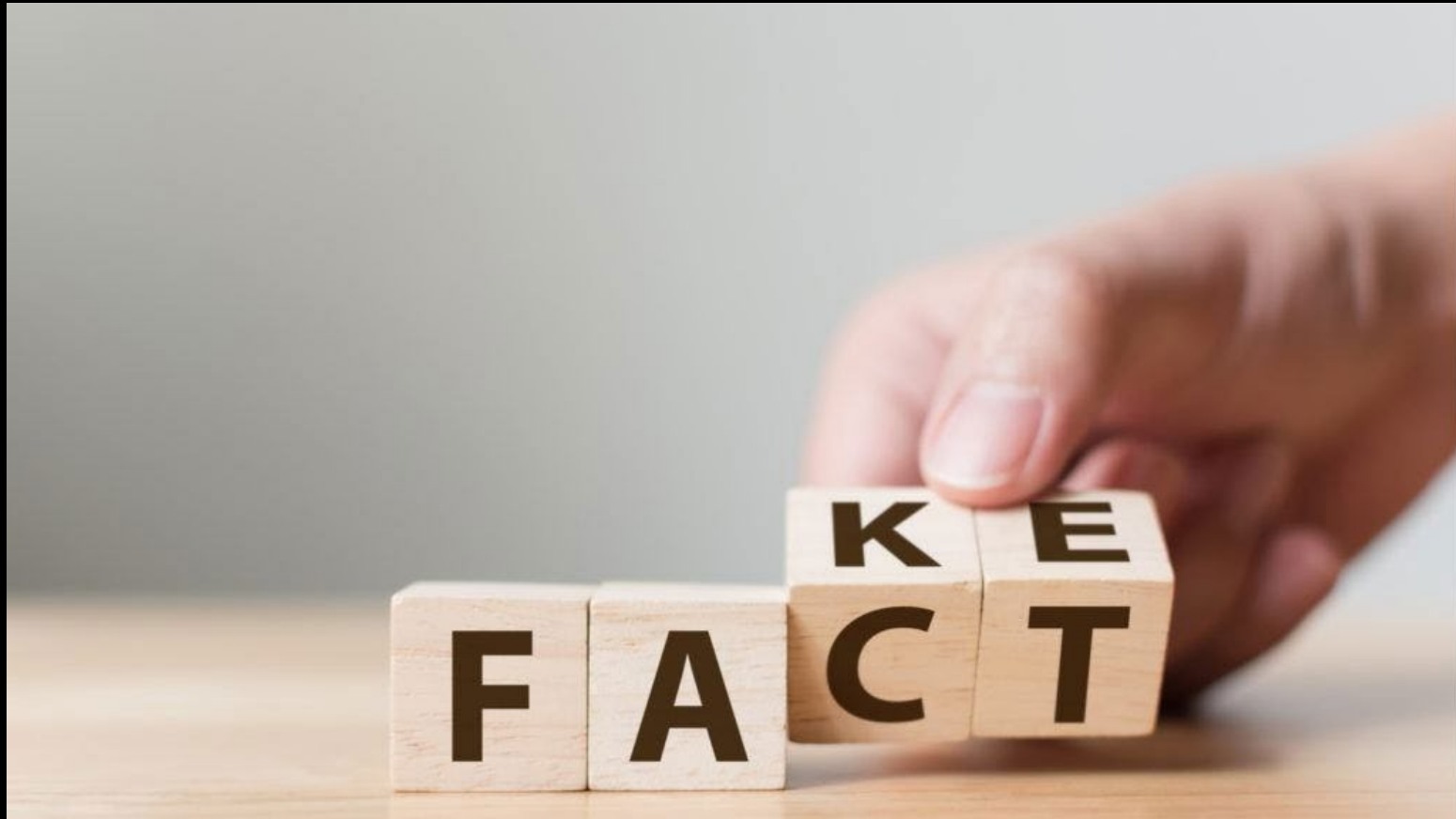
PATHOLOGY

CLINICAL





Time to Abandon the “Tendinitis” Myth. BMJ 2002



Time to Abandon the “Tendinitis” Myth.

- Critical review of anti-inflammatory medications in soft tissue conditions:
- Limited evidence of short-term pain relief
- No evidence of their effectiveness in providing even medium-term clinical resolution of clearly diagnosed tendon disorders

NSAIDs for treating tennis elbow pain in adults. Cochrane 2013



NSAIDs for treating tennis elbow pain in adults.

There remains limited evidence from which to draw firm conclusions about the benefits or harms of topical or oral NSAIDs in treating lateral elbow pain.

Greater Trochanteric Pain Syndrome. NICE 2016



Greater Trochanteric Pain Syndrome

- There is strong evidence of a short-term benefit from peri-trochanteric corticosteroid injections for up to 3 months with the greatest effect at 6 weeks, however, recurrence of pain in the long term is common.

Rotator Cuff Disorders

NICE 2017



Rotator Cuff Disorders

- A recent meta-analysis found corticosteroid injection was no more effective than placebo injection at reducing pain at the 3 month follow up, and gave transient pain relief in a small number of people

Tennis Elbow

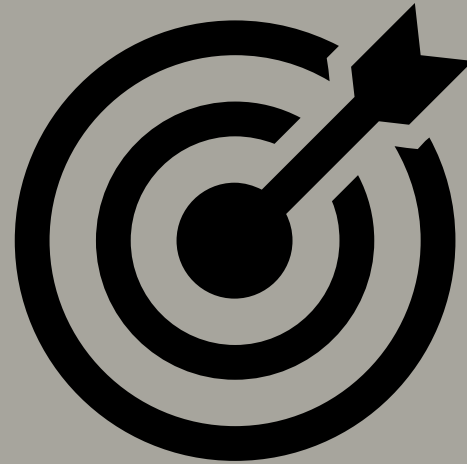
NICE 2017



Tennis Elbow

- Corticosteroid injection — may provide short-term relief for severe pain, especially if function is affected, but is unlikely to affect long-term outcome, and relapses are common.

ACCURACY



The targeting accuracy of subacromial injection to the shoulder: An arthrographic evaluation 2002



Arthroscopy. 2002 Oct;18(8):887-91

The targeting accuracy of subacromial injection to the shoulder: An arthrographic evaluation 2002

A high incidence of injections missed the
subacromial bursa.

Corticosteroid injections for trochanteric bursitis: is fluoroscopy necessary? A pilot study. 2005



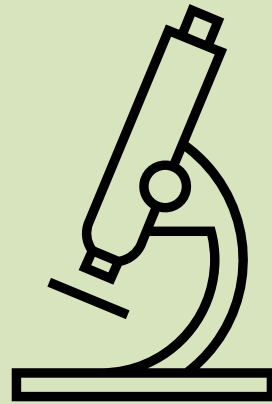
Br J Anaesth. 2005 Jan;94(1):100-6

Corticosteroid injections for trochanteric bursitis: is fluoroscopy necessary? A pilot study. 2005

A bursagram was obtained in
45% of patients on the first needle placement.
23% of patients on the second attempt,
23% on the third attempt.
10% required four or more needle placements.



PATHOLOGY



TIMELINE SLIDE



THE MOVE AWAY FROM
TENDINITIS

'TENDINOPATHY' – A CLINICAL
SPECTRUM

<1990

1990s

2000s

2010s

2020s

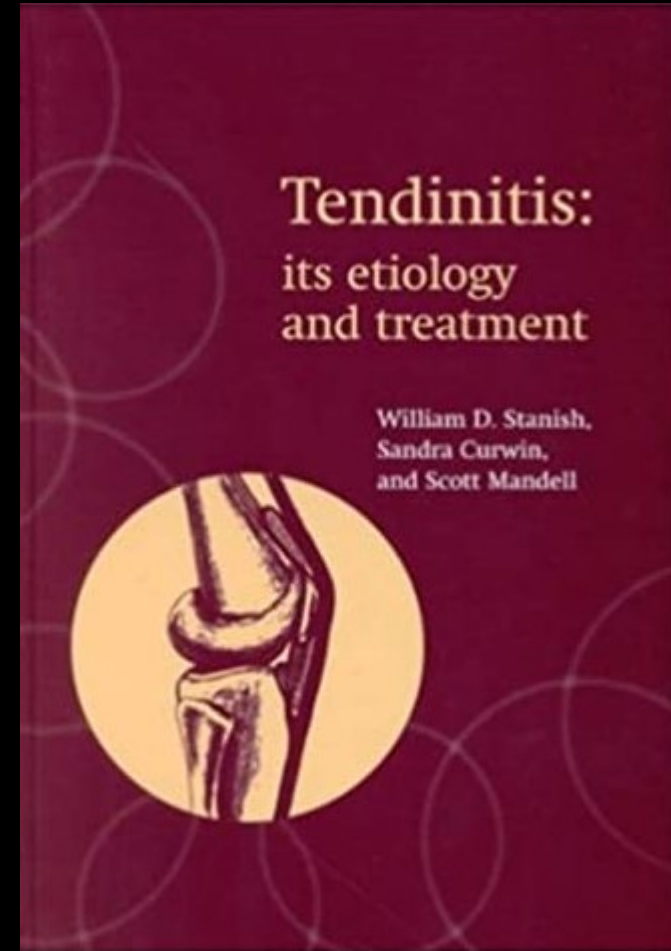
THE 'TENDINITIS' MODEL

DEGENERATION WITHOUT
INFLAMMATION

EVIDENCE OF HARM

Pre 1990s

- The 'tendinitis' model



1990s

- The move away from 'tendinitis'
- Several studies demonstrate little or no inflammation is actually present in tendons exposed to overuse.
- Treatment modalities aimed at modulating inflammation have had limited success.
- (Treatment of Tendinopathy. What Works, What Does Not, and What is on the Horizon. Clin Orthop Relat Res. 2008 Jul; 466(7): 1539–1554.)

2000s

- Degeneration without inflammation
- Because the pathology is no longer thought to be inflammatory, the “itis” suffix is a misnomer, and it is more accurately described as a partially reversible but degenerative overuse-underuse tendinopathy.
- (J Orchard. The management of tennis elbow. BMJ 2011;342:d2687)

2010s

- 'Tendinopathy' – a Clinical Spectrum
- New immunohistochemistry methods detect inflammatory cells suggesting chronic inflammation.
- Different 'tendinopathy' conditions may have different pathophysiology & the same condition has different disease stages.
- (A systematic review of inflammatory cells and markers in human tendinopathy. BMC Musculoskelet Disord. 2020; 21: 78.)

2020s

- Evidence of Harm
- The local administration of glucocorticoid has significant negative effects on tendon cells in vitro, including reduced cell viability, cell proliferation and collagen synthesis.
- There is increased collagen disorganisation and necrosis as shown in vivo studies.
- (Nuffield Department of Orthopaedics, Oxford)

WHAT DO WE KNOW?

Evidence for short-term pain relief but not long-term benefit and a high recurrence rate with NSAIDs and corticosteroids.





WHAT DO WE DO?

1st corticosteroid injection for pain control

2nd or 3rd injection to help the patient through the rehabilitation process.

WHAT WE DON'T KNOW

Is the poor long-term outcome from corticosteroid injections a product of the nature of the disease or the steroid?

Should we withhold steroid injection before a trial of physical therapy?



Osteoarthritis

Osteoarthritis

A disease characterised by

- a mixture of degradative and reparative processes
- in the articular cartilage & subchondral bone associated with
- marginal osteophyte formation, and low-grade inflammation.



Corticosteroid Injections

Exert their anti-inflammatory action by interrupting the inflammatory and immune cascade at several levels to

- Reduce osteophyte formation
- Reduce cartilage lesions

Conflicting Evidence

No evidence of destruction or accelerated deterioration

- Keagy RD, Keim HA.
- Intra-articular steroid therapy: repeated use in patients with chronic arthritis. Am J Med Sci 1967;253:45–51.

Four main adverse joint findings have been observed

- Kompel A et al.
- Intra-articular Corticosteroid Injections in the Hip and Knee: Perhaps Not as Safe as We Thought? Radiology 2019; 293: No 3

Hip	307	30 problems
Knee	152	6 problems
Total	459	

Mail Online

ALL-NEW KUGA PLUG-IN HYBRID

Steroid jabs meant to relieve joint pain can make it worse, study claims as it blames the treatment for US patients needing hip and knee replacements

- Injections intended to release osteoarthritis pain may be having opposite effect
- Experts say jab may carry significant risk, and may even worsen the arthritis
- Dr Ali Guermazi said: 'These injections are likely not as safe as we thought'

By DAILY MAIL REPORTER
 PUBLISHED: 00:01, 16 October 2019 | UPDATED: 00:11, 16 October 2019

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News

Cortisone injections for hip and knee pain are more dangerous than was thought

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The anti-inflammatory jabs are used by athletes to mask pain, and to treat symptoms of osteoarthritis
 CREDIT: PETER DAZELEY

METRO

NEWS... BUT NOT AS YOU KNOW IT

NEWS SPORT ENTERTAINMENT SOAPS MORE

CORONAVIRUS UK US WORLD WEIRD TECH COVID-FREE ZONE

Cortisone injections used by sports stars 'may cause joints to disintegrate'

Comment

Jimmy Nsubuga Tuesday 15 Oct 2019 3:12 pm

88 SHARES



The Bad

1. accelerated OA progression,
2. subchondral insufficiency fracture,
3. complications of osteonecrosis, and
4. rapid joint destruction, including bone loss.

Warns that steroid injections are "**perhaps not as safe as we thought**" and that people should be warned about the possibility that a steroid injection might make their joint symptoms worse.

Risk factors

- Pain that cannot be explained by radiographic images,
- No sign of osteoarthritis
- Signs of mild osteoarthritis on scans.

The authors suggest **more people should have radiographic or MRI images taken before joint injections**, to be sure they do not have existing bone weakness that could be made worse by the injection.

Analysis

- Many weaknesses to the study.
- Some people who have joint injections go on to have joint damage at a faster rate than expected, which might be linked to the injection.
- Large scale, long-term studies required.

WHAT IS YOUR RISK APPETITE

In depth Guide to evaluate your risk
profile and investing

injecting