
Recently Reviewed and Updated CAT September 2017

Short Question:

Specific Question:

In patients presenting with acute or chronic tendinopathies, what is the incidence of harm for those receiving steroid injections compared to those receiving usual care?

Clinical bottom line

Since the previous CAT question was undertaken in 2014, the best evidence from systematic reviews, that included adverse events, remains and suggests that post injection pain and atrophy/depigmentation are the most common adverse events (9-10% and <1%-4% respectively) (Coombes 2013, Gaujoux-Viala 2009).

Serious side effects appear to be rare; tendon rupture has only been reported in 2% (1/48) of people following Achilles tendon injection (Coombes 2010; Kearney et al 2015).

Specifically, for **tennis elbow/ lateral epicondylopathy** (6-week symptom duration and over), steroid injection may result in poorer long term outcomes and greater recurrence at 12 months (Coombes 2013).

What is new?

Specifically, for people diagnosed with **subacromial impingement syndrome/ rotator cuff tendinopathy**, steroid injection as a first line intervention might result in increased GP visits, further steroid injections and physiotherapy compared to those who receive physiotherapy as a first line intervention (Rhon et al 2014).

The anti-proliferative and cytotoxic effect of steroid on tendon cells has also been reported and suggested as one potential mechanism for the poorer longer term outcomes associated with steroid injection use in tendinopathies (Dean et al 2014).

Why is this important?

Injection therapy is a common intervention offered to patients with acute and chronic tendinopathies. The reported harm or side effects of steroid injections, such as facial flushing and skin atrophy are reported in the literature. Worsening clinical outcome following this procedure should also be considered as 'harm'.

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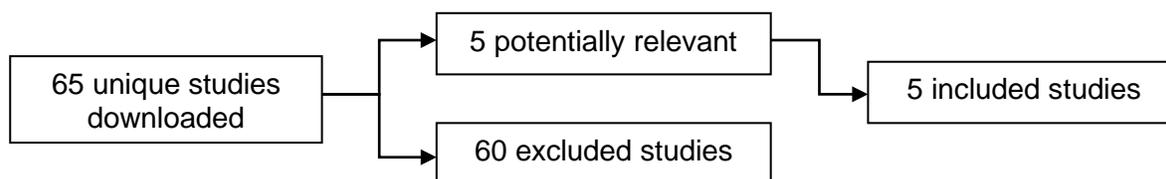
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It is important at that clinicians have up to date information on the evidence underpinning complications of this procedure to allow patient to make informed choices about treatment options.

Inclusion Criteria

	Description	Search terms
Population and Setting	Adults with tendinopathy-symptom	Adult, tendinopathy, tendinitis, tennis elbow, lateral epicondylitis, patella ligament, tendon injuries, rotator cuff, shoulder impingement syndrome, shoulder pain, golfers elbow, medial epicondylitis, suprasin*, jumpers knee,
Intervention or Exposure (ie what is being tested)	Corticosteroid injection (with or without local anaesthetic	Corticosteroid, injection, steroid, local anaesthetic
Comparison, if any		
Outcomes of interest	Tendon rupture	Rupture, tendon, adverse events, rupture, risk , safety, adverse events, complications
Types of studies	SR & RCTs only observational studies if no RCTs, longitudinal study	safety study

Results from CAT search 2014



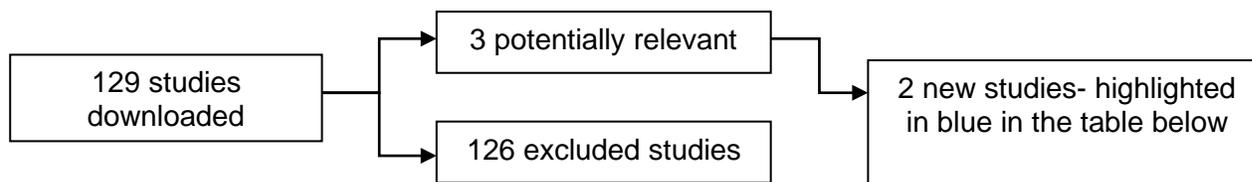
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Updated search September 2017



First Author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments
Coombes et al 2010 systematic review	Searched 8 databases without language or date restriction	RCTs assessing efficacy of one of more percutaneous injection with placebo or non surgical intervention for tendinopathy	3824 trial identified, 41 met inclusion criteria data for 2672 participants) Of 991 participants included in trials reporting adverse events 0.1% had serious event (tendon rupture) Of 416 patients receiving steroid injection; 9% (38) cases of atrophy, 8% (31) experienced pain, 2% tendon rupture of Achilles tendon and <1% (2) depigmentation	Used trials that scored over 50% on modified physiotherapy evidence database scale
Bisset et al 2011	Adults with lateral epicondylitis	Effective treatments for	80 SR, rcts and observational	Searched up to 2009,

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SR		tennis elbow	studies identified Corticosteroid injection may increase recurrence when compared to physio and wait and see. Repeated injections may lead to lower pain reduction and greater need for surgery than a single injection	major databases included harms. Used GRADE to evaluate findings. Included studies had at least 20 patient per group and 80% follow up. No summary of harms data
Coombes et al 2013, factorial RCT	Volunteers, aged 18 and over. Symptoms of lateral elbow pain for 6 week or longer . Community setting Brisbane Australia	4 arms 1.Cortico steroid injection 2.corticosteroid and physiotherapy 3 placebo injection 4 placebo injection and physiotherapy	Corticosteroid injection resulted in lower complete recovery at one year compared to placebo and resulted in greater recurrence	Good quality study. Blinding, appropriate outcomes, minimal loss to follow up, intention to treat analysis included
Gaujoux-Viala et al 2009	RCTs in French or English language	Steroid injection for shoulder or elbow tendonopathies	In 19 studies main side effects were transient pain after injection (10.7%) and skin atrophy or depigmentation (4.0%). No reported treatment discontinuations for toxicity	Good quality
Kearney et al	Adults diagnosed	Injection	Insufficient	High quality

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2015 Systematic review	with Achilles tendinopathy RCTs and non-randomised trials	therapies, including steroid	evidence to support routine use of injection therapies for Achilles tendinopathy. 17/18 included studies reported adverse events; primarily minor including mild increase in pain and skin reaction. Only one serious adverse event (tendon rupture) reported across all included studies	systematic review conducted within Cochrane framework
Nicols 2005 Review including 25 RCTs, 18 case series	Athletic related injuries	Complication or risk associated with steroid injection	22 RCTs examined efficacy, 3 retrospective or observational reports. 983 total number of subjects- only minor complications 18 case series described complications of these tendon and fascia rupture most commonly reported	Only 3 data bases searched Narrative review No detail of methods used data analysis
Rhon et al 2015	Adults diagnosed with subacromial impingement	40-mg triamcinolone acetone	No difference in clinical outcomes at 12 months.	High quality RCT (PEDro score 8/10)

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	<p>syndrome in a military hospital</p> <p>RCT (n = 104)</p>	<p>subacromial steroid injection versus 6 sessions of manual physical therapy</p>	<p>Steroid injection group required more visits to their primary care provider (60% vs. 37%); required additional steroid injections (38% vs. 20%), and 19% needed physical therapy.</p> <p>Transient pain from the CSI was the only adverse event reported</p>	
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Summary

The most commonly reported adverse events were post injection pain, local atrophy, skin atrophy and pigmentation.

The best evidence available was from the Coombes et al review (2010) that reported rates of 9% for atrophy, less than 1% for depigmentation, 8% for pain and 2% for tendon rupture of Achilles tendon. Similar findings were reported in the review by Kearney et al (2015).

However, the use of steroid injections specifically for tennis elbow/ lateral epicondylopathy, according to evidence from one recent RCT, cannot be recommended at present (Coombes 2013). In this trial steroid injection resulted in worse outcomes after 12 months compared to placebo, as well as a higher rate of recurrence of symptoms.

Further to the concerns relating to use of steroid injections for tennis elbow, there is concern about the longer-term implications for subacromial impingement syndrome/ rotator cuff tendinopathy. Although Rhon et al (2015) reported comparable outcomes between steroid injection and physiotherapy at 12 months, the group receiving a steroid injection required more subsequent visits to their GP, further steroid injections and physiotherapy to attain these similar outcomes. At a basic science level there is also

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concern about the effect of steroid on tendon tissue. Dean et al (2014) reported the anti-proliferative effects of steroid on tendon tissue and the cytotoxic effects on tendon cells as potential mechanisms to explain the longer-term harm associated with steroid use in some clinical presentations.

Implications for practice

Minor adverse events following a corticosteroid injection should be expected in a proportion of patients but the reported level of serious adverse events following a corticosteroid injection is low.

However, many studies lack longer-term (> 3 months) follow-up which is critical when evaluating the effectiveness and safety of steroid injections. If we accept that higher rates of recurrence and poorer longer-term outcomes are indicative of harm, then future studies must include adequate periods of follow-up.

There remains considerable uncertainty in relation to the use of steroid injections for tendinopathies. For a proportion of people there appears to be potential for small, short-term reductions in pain but these effects need to be considered in the context of the potential for longer-term harm, particularly in relation to patients presenting with tennis elbow. Due to this uncertainty and potential for longer-term harm, it is recommended that patients should be made fully aware of the implications prior to gaining consent to deliver a steroid injection for tendinopathy related pain.

Tweet; Corticosteroids in tendinopathy – pause, reflect and only proceed with caution and a fully informed patient

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