# Steroid-Induced Hiccups – a case study

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## INTRODUCTION

Hiccups occur commonly but the exact routes causing this reflex are poorly understood. This is a case of a patient who presented for an arthroscopic shoulder procedure who went on to develop severe intractable hiccups, thought to be secondary to administration of IV dexamethasone. Several theories have suggested how steroids are thought to disrupt the hiccup pathway both centrally and by peripheral routes.[1]

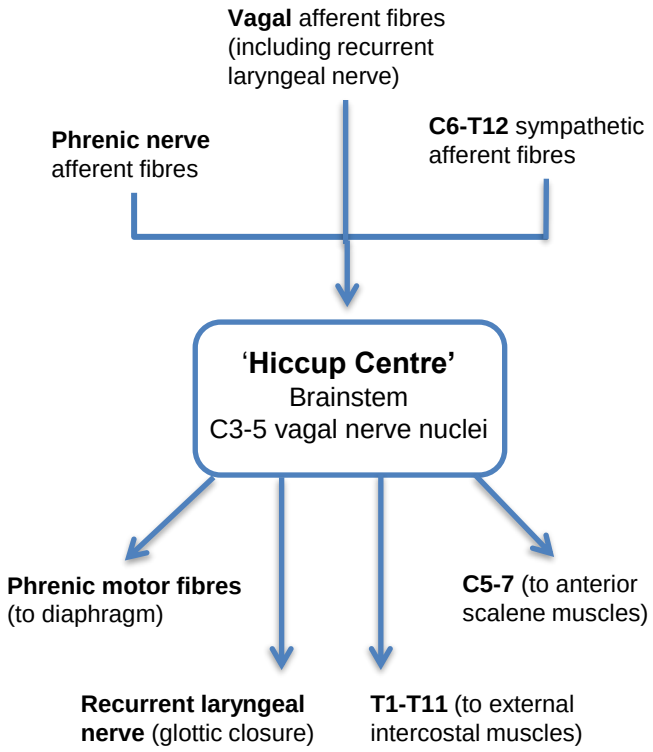
## CASE STUDY

A 42 year old man presented for day-case subacromial decompression and excision of distal clavicle. He did not report any allergies or history of chronic medical conditions at preoperative assessment.

He underwent uneventful induction of general anaesthesia with propofol and alfentanil which was maintained with sevoflufane/air/oxygen. He was administered dexamethasone 6.6mg for antemesis. Interscalene brachial plexus block was performed asleep, using an in-plane ultrasound guided technique with nerve stimulation. The phrenic nerve was visualised anterior to the scalenus medius muscle and avoided. Surgery progressed uneventfully and he was well prior to discharge, experiencing no adverse effects from the anaesthesia or surgery.

Twenty-four hours later, the patient presented to the Emergency Department with severe intractable hiccups. Following the administration of intramuscular chlorpromazine which provided temporary relief, he was discharged home. One week post-operatively, the patient had ongoing symptoms and was invited for an urgent review and ultrasound of the brachial plexus. Other than ongoing hiccups, examination was unremarkable and ultrasound revealed no abnormality along the cords and branches of the brachial plexus. Whilst scanning, the radiology consultant mentioned remembering a similar case of continuous hiccups following an intraarticular steroid hip injection 2 years prior, to which the patient confirmed that was himself. He had neglected to mention this as he felt it was not relevant both pre-operatively and at the time of review.

## HICCUP PATHWAY

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## TREATMENT AND OUTCOME

The patient was commenced on chlorpromazine, baclofen and pregabalin following discussion with a consultant neurologist. His hiccups reduced within one hour of starting the medication and by day 11 had stopped completely. He remained well with no further hiccup episodes at his 3-month review.

A year later, the patient underwent a similar procedure on the contralateral side. He was given the same anaesthetic, with the omission of dexamethasone (by the same anaesthetist) and there were no hiccupping issues.

## DISCUSSION

There have been many case reports of steroids causing intractable hiccups through various administrative pathways and although the exact pathway is unclear, many theories have been suggested.[2] Steroids are thought to disrupt the hiccup pathway centrally by lowering the threshold of dopaminergic and GABAergic transmission in the midbrain,[3] meaning that the neural pathways causing the diaphragm to spasm are now insufficiently inhibited to prevent hiccups. Another theory is that the level of interference by steroids is within the efferent part of the pathway, where steroid receptors are located.[4]

The studied patient experienced intractable hiccups both after a single-shot of dexamethasone given during general anaesthesia, and after intra-articular hip injection of triamcinolone acetonide 2 years prior, which suggests that this patient is somehow predisposed to this unusual side effect of steroid drugs.

Further research is required to fully understand the pathway through which steroids cause persistent hiccups in some patients, but the authors feel that this side effect is important to consider amongst anaesthetists who regularly administer dexamethasone as part of general anaesthesia, particularly within the orthopaedic patient cohort who may be receiving steroids via other routes as treatment for their underlying pathology.