

# COMPLICATIONS OF INTER-SCALENE BLOCK

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## SYNOPSIS

**72 patients presenting for surgery on the upper extremities were given inter-scalene block<sup>3</sup>. Two patients who developed complications arising from the block are presented — one patient developed an inadvertent epidural, and the second patient developed unilateral phrenic nerve paralysis.**

## INTRODUCTION

Of the 72 patients who had inter-scalene block administered for upper limb surgery (Table I), it can be seen that 1 in 3 patients developed a partial Horner's Syndrome and 1 in 5 patients developed hoarseness of voice. Both of these complications are transient and innocuous, and most patients should not be unduly disturbed by them if they have been forewarned of their arising by the anaesthetist. We document here 2 patients with potentially more dangerous complications. One patient developed an inadvertent epidural blockade, while the other had a unilateral phrenic nerve block.

## CASE 1

The patient, a 57-year old Chinese female weighing 55 kg was to have a ganglion removed from her left wrist. She gave no medical history of significance. Following pre-medication with pethidine 50 mg given intra-muscularly, inter-scalene block was proceeded with. Paraesthesia was easy to come by, and after repeated aspirations to ensure the needle tip was not in the blood vessels or sub-arachnoid space, 25 mls of 1.5% lignocaine with 1 in 200,000 adrenaline was given. 3 minutes following injection, the patient complained of numbness in the back followed soon by numbness in both upper limbs, the left more than the right. Her cardio-vascular parameters were stable throughout operation, respiration was not laboured and consciousness present. Onset of analgesia on the operated side took 15 minutes and pin-prick testing showed the extent of block to be from C2 to T6 on the left (operated side) and C5 to T6 on the right or contra-lateral side. Operation was completed uneventfully. Duration of analgesia lasted 4 hours 20 minutes on the left side and 3 hours 30 minutes on the right. The patient was discharged home on the next day without any complaint of numbness or paraesthesia anywhere.

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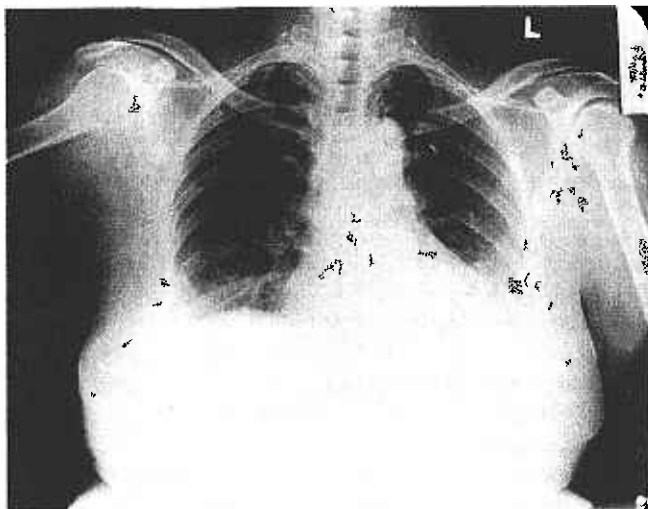
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TABLE I Types of Complications in the 72 patients

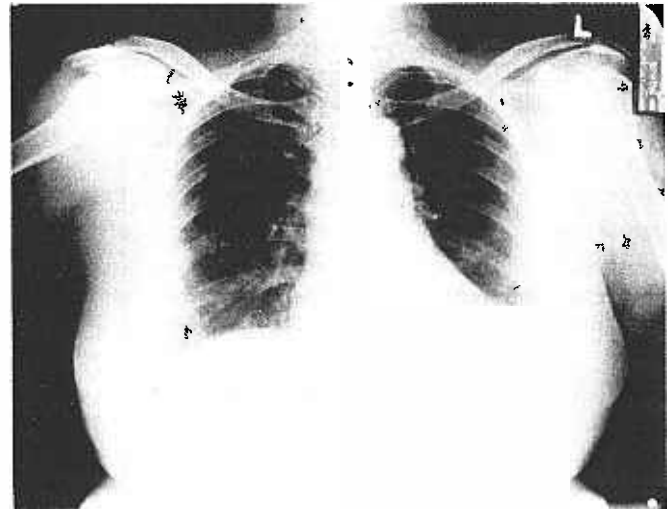
Type	No. of Cases	% Developing
Horner's Syndrome	24	33.33
Hoarseness of voice	15	20.83
Haematoma	3	4.17
Epidural/sub-arachnoid	1	1.39
Phrenic nerve block	1	1.39
Asthmatic attack	1	1.39

**CASE 2**

The patient, a 58-year old Malay female housewife weighing 68 kg had a needle embedded on the dorsum of the left hand between the 2nd and 3rd metacarpal, and was admitted for exploration and removal of the foreign body. She gave no medical history of past illnesses and routine pre-operative clinical examination revealed no abnormalities in the cardio-respiratory system. Pre-medication consisted of pethidine 75 mg given intramuscularly. Left inter-scalene block was preceded with and paraesthesia was easily obtained, following which 35 ml of 1.0% lignocaine with 1 in 200,000 adrenaline was given. The onset of analgesia took 15 minutes and the extent of block stretched from C3 to T2. Her pulse and blood pressure remained stable. The patient breathed deeply (on instruction) without complaint initially, but half an hour after onset of block (in the middle of the operation) she complained of epigastric discomfort when she breathed deeply — she felt as if there was a "lump" in the epigastrium and lower thorax. This uncomfortable sensation, however, persisted for only 15 minutes and only become apparent on deep inspiration. Operation was proceeded with uneventfully and following operation, as she was recovering from this discomfort, chest X-rays in both inspiratory and expiratory phases were taken. (Fig. 1 & 2). These showed that the left diaphragm did not move on inspiration, and was in fact higher than the right diaphragm — which was highly suggestive of left phrenic nerve paralysis. The duration of the block lasted 2 hours and the patient was discharged home uneventfully the same evening.



Expiratory phase



Inspiratory phase

**DISCUSSION**

Since Winnie's (1970) classic paper on inter-scalene block, numerous complications that can arise from the block have been documented. Although a rather high percentage of our patients developed a partial Horner's Syndrome and hoarseness of voice (due to blockade of recurrent laryngeal nerve), most of these are transient phenomena and cause no residual disability. The fact that these can occur in the presence of a highly successful block has been ascribed to the large volume of local anaesthetic tracing its way along the subclavian artery to reach the stellate ganglion and recurrent laryngeal nerve. (Seltzer, 1977). Ward (1974) in his series of 34 cases of inter-scalene block, found nearly half of them developed Horner's Syndrome. However, only 1 of his 34 cases developed hoarseness of voice, but this lasted throughout the duration of the block.

Bilateral epidural blockade following inter-scalene block has already been documented (Kumar, 1971). Epidural blockade can result in breathing difficulties, as seen in Kumar's (1971) two cases when the phrenic were concomitantly blocked. Our first patient had a block stretching from C5 to T6 on the contra-lateral side, so that even though she might have phrenic nerve paralysis on the operated side, the disability was not marked enough to have troubled her. Her bilateral blockade was almost certainly due to an inadvertent epidural as against a "total spinal." This is because with the large volume of local anaesthetic given with so high a block, her vital centres remained intact and she remained conscious and suffered no cranial nerves deficit. An inadvertent sub-arachnoid or "total spinal" in this region of the body would almost certainly produce a cardiac arrest, central respiratory paralysis and loss of consciousness (Edde, 1977).

Our second patient developed epigastric discomfort on deep inspiration only. This was almost certainly due to unilateral phrenic nerve paralysis. However, the duration of the discomfort only lasted 15 minutes, unlike the 2 cases present in Ward's (1974) series, when the phrenic nerve palsy returned to normal when the block had worn off. It was unfortunate that fluoroscopy was not available during the short episode of epigastric discomfort. Nevertheless, the chest X-rays done immediately following operation showed that the left diaphragm did not move

during the inspiratory effort. Because of the possibility of phrenic nerve block, it has always recommended that bilateral inter-scalene block should never be done.

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