

# Ultrasound Guided Bilateral TAP with Bilateral Inter Costal Block in Patient with History of GBS for Caesarean Delivery: A Case Report

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## Abstract:-

**Background:** Guillain Barré syndrome (GBS), is an autoimmune neurological disease. A patient with history of GBS may present as a challenge for the anaesthesiologist, due to the possibility of impairment of neuromuscular function and occurrence of respiratory complications in the postoperative period.

**Case report:** We are reporting here the anaesthetic management of a 29 year old female patient with 8 months of amenorrhea with premature rupture of membranes having history of Guillain Barre syndrome posted for Emergency Caesarean section. We have discussed here the intraoperative management and mode of anaesthesia for such a patient.

**Conclusion:** Anaesthesiologist rarely may encounter such patients in regular practice, so it is important to understand the peculiarities of GBS to adequately manage the patient in the perioperative period.

## I. INTRODUCTION

Guillain-Barré syndrome (GBS) is an acute inflammatory demyelinating polyradiculopathy which is characterized by progressive motor weakness, areflexia, and ascending paralysis.[1] The incidence ranges from 0.75 to 2 cases per 100,000 persons per year.[1] GBS is known to be triggered by acute infections and symptoms typically begin with fine distal paraesthesia progressing to leg weakness which later advances proximally and is accompanied commonly by pain in the large muscle groups of the leg and back.[2] This may also later progress to weakness in the trunk, cervical area, facial muscles, as well as respiratory muscles, causing respiratory failure in severe cases. Some cases may present with sensory symptoms, including cranial nerve deficits and autonomic nervous system dysfunction.[4]

There are no as such established guidelines for delivery or safest anaesthetic methods for parturient with history of GBS. [3] So we have used a novel technique which included TAP + subcostal block with LMA insertion without giving neuromuscular blocking agents.

## II. CASE REPORT

A 29 year old female G2A1 with 37 weeks of amenorrhea came with complaint of leaking per vagina (due to premature rupture of membranes) with history of being diagnosed with GBS 5 years ago which progressed to respiratory paralysis requiring tracheostomy for 2 months. She was treated with IV immunoglobulins and recovered gradually over time, however, still had right foot drop. Patient didn't have any other comorbidities. Patient's height was 162 cm and weighed 84 kg. Preoperatively her vitals showed heart rate 84 beats /min with 130/80 mmhg blood pressure and 99% saturation on room air. Laboratory investigations were within normal limits and the patient was posted for emergency LSCS with acceptance under ASA grade 3(E). The plan of anaesthesia was decided as bilateral Transverse Abdominal Plane (TAP) with bilateral intercostal block along with General anaesthesia without muscle relaxant. Patient was explained about the risk and informed consent was taken.

After attaching all monitors to the patient and securing a peripheral IV line with a 20 G angiocath, under all aseptic precautions USG guided TAP and intercostal block was given bilaterally using stimplex needle 100 mm with Inj. 0.25% Ropivacaine 20 ml (total volume 40 ml bilaterally). As pre-emptive analgesia Inj. Paracetamol 1 gm was given. Patient was pre-oxygenated and premedicated with Inj. Glycopyrrolate 0.2 mg and was induced on Inj. Propofol 150 mg and airway was secured with LMA supreme number 3 and connected to breathing circuit. For maintenance Sevoflurane was used along with propofol infusion (2mg/kg/hr). As soon as the baby was delivered patient was given Inj. Oxytocin 20 IU IV infusion, Inj. Oxytocin 10 IU IM, Inj. Midazolam 1 mg and Inj. Fentanyl 60 mcg IV were given after the delivery. The baby weighed 2.8 kg and cried immediately after birth with the APGAR score of 9. Patient's intra operative haemodynamics remained stable and blood loss was around 250-300ml. Before removal of LMA Inj. Ondansetron 4 mg and Inj. Dexamethasone 8 mg IV were given. LMA was removed after patient was fully awake and achieved power in all four limbs as it was preoperatively. The procedure was completed uneventfully and the patient was shifted to ICU for observation.

Patient was discharged after 7 days.

### III. DISCUSSION

In general population, GBS has an incidence of 1.7/100,000 per year. Usually, GBS is preceded by infection, especially of upper respiratory pathways and gastrointestinal tract. It might involve the mechanism of molecular mimicry. The specific characteristic of this disease is progressive ascending paralysis which will be followed by areflexia and albuminocytologic dissociation in cerebrospinal fluid. Weakness may be mild in beginning, like difficulty in walking, or severe, like quadriplegia and complete respiratory depression.[3] This patient when diagnosed with GBS 5 years back had developed respiratory depression for which tracheostomy was done and patient was put on ventilatory support for 2 months and at present reported with foot drop in right lower limb.

Preoperative assessment of such a patient should include: Assessment of airway, mouth opening, dentition, neck extension, bulbar function (to prevent aspiration during induction) and pulmonary functions. As this patient previously needed ventilatory support at the time of infection (shows affected pulmonary function) there might be chances of exacerbation postoperatively. So ventilatory support should always be available.[3]

In patients with history of Guillain-Barré syndrome, both spinal and general anaesthesia can be performed. It has been reported that there is no better or absolute mode of anaesthesia for such cases, as administration of both spinal and general anaesthesia each have their own potential risks.[4]

It is considered better to avoid spinal anaesthesia in patients with history of neurological diseases because there are increased chances of patient getting new lesions or worsening of the old ones during the perioperative period.[3] This syndrome is known as double-crush, which was first described by Upton and McComas. It suggests that a nerve which is already compromised can

become more susceptible to injury. Thus, a neurological disease which patient had already would be considered as the first risk factor (first crush) and any mechanical trauma which might be caused by the needle or catheter, ischemia caused by the vasoconstrictor agent, or chemical injury (neurotoxicity) produced by the local anaesthetic itself would be considered as second crush.[3][5] So we did not choose spinal anaesthesia for this patient.

The extra junctional acetylcholinergic receptors increases in number, so during depolarization caused by the action of succinylcholine, there will be a large efflux of intracellular potassium to the plasma which will lead to hyperkalaemia which may lead to cardiac arrest. It is advised to avoid succinylcholine in patients with history of GBS, because it may take years for the normal functioning to return after the initial cause has ceased.[3] Also there should be cautious use of non-depolarizing muscle relaxants, because it may lead to prolonged neuromuscular block and raise the need for postoperative mechanical or assisted ventilation.[4] So we avoided the use of muscle relaxant for this patient.

The goal of anaesthesia for this case included good analgesia, amnesia and areflexia without giving muscle relaxant, which was achieved by giving TAP block with LMA insertion with Inj. Propofol infusion.

TAP block: It is a regional block of thoracolumbar nerves (T6 to L1) which lies between transversus abdominis and internal oblique muscle. Anterior primary rami lie between internal oblique and transversus abdominis which divides into lateral and anterior cutaneous nerves at approximately midaxillary line. USG guided TAP block can be given in 3 methods: Lateral, subcostal and posterior.[6] Here we have used lateral TAP block bilaterally. TAP block does not provide visceral analgesia which is its major disadvantage, so we have given Inj. Fentanyl after delivery of baby. (image no.1) (image no.2)



Image no.1: Performing USG guided TAP BLOCK



Image no.2: Sonoanatomy of TAP BLOCK

Intercostal block: Intercostal nerves arise from thoracic nerves branching into anterior and lateral cutaneous nerve. They lie beneath the internal intercostal muscle. Lateral cutaneous nerve of T12 joins L1 and forms iliohypogastric,

ilioinguinal and genitofemoral nerves. The anterior cutaneous branches of T7 to T12 pierce the posterior rectus sheath to supply motor nerves to the rectus muscle and sensory fibers to the skin of the anterior abdominal wall.

Some final branches of T7 to T12 continue anteriorly and, together with L1, innervate the parietal peritoneum of the abdominal wall.[7]We have given usg guided bilateral intercostal block at level of T6 to T11 with Inj. 0.25% Ropivacaine 2 mg/ intercostal space.(image no.3)



Image no. 3: Performing Intercostal NerveBlock

To avoid awareness in this patient we have given Propofol infusion, which can be given at dose of 5 mg/kg/hr [8], but we have used 2 mg/kg/hr as per the requirement of this patient.



Image no.4: Incision of LSCS

So the emergency caesarean delivery was performed uneventfully without any neurological exacerbation in patient. Although there is no established guideline for delivery and anaesthetic technique yet, any patient having history of GBS should be evaluated individually and carefully anesthetized according to medical judgment by the anaesthesiologist.

#### IV. CONCLUSION

GBS is a serious autoimmune disease with musculoskeletal involvement, thus impairing the patients capacity to maintain adequate oxygenation during stress.

A meticulous approach and anaesthesia protocol for such patient with judicious use of monitoring and the available options will lead to successful outcome.

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