



## Anaesthetic Management of Myasthenia Gravis with Thymic Mass in Facial Trauma

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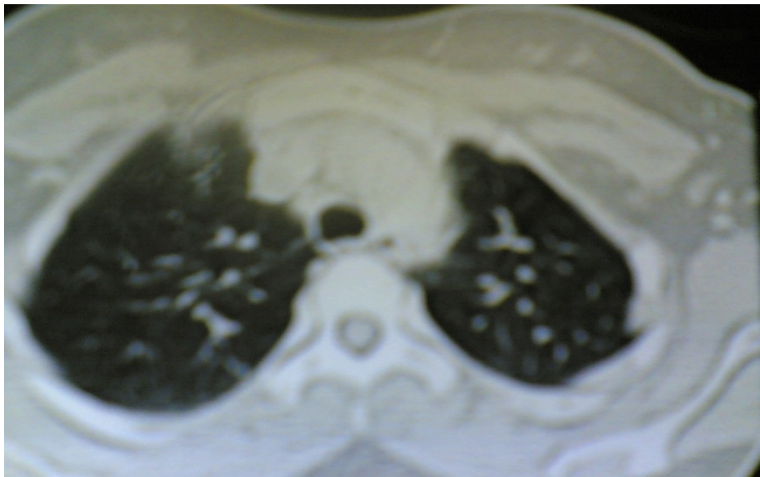
**Abstract:** Myasthenia gravis is an immunologic disorder characterised by polyclonal  
antibodies directed against nicotinic acetylcholine receptors at postneuromuscular junction.  
This case describes perioperative management of a patient suffering facial trauma with  
underlying myasthenia gravis with thymic mass operated in our institute.

**Case Report:** A 26 year old female weighing 45kgs who had suffered Lefort III fracture was  
posted for open reduction and internal fixation of fractured zygomatic process along with  
left body of mandible (figure 1) under general anaesthesia.



**Figure 1.** PNS depicting Lefort fracture III with  
fracture left body of mandible(arrow)

Her past history suggested drooping of upper eye lids, generalised weakness, loss of appetite which was diagnosed as myasthenia gravis 2 years back and was being managed with oral pyridostigmine bromide 60 mg qid and azathioprine 50 mg/day. Her anti acetylcholine receptor antibodies titre were determined and reported 0.86(normal 25%). Chest X-ray showed right paramedian soft tissue lesion merging with right lung field. CT scan revealed a well defined lobulated paramedian soft tissue lesion 27 × 11 mm size (figure 2).



**Figure 2.** CT scan showing a mass around the trachea

Other investigation reported were Hb 10.3g/dl, Hct 34.6%, platelet count 2.78lacs/mm<sup>3</sup>, serum Ca<sup>++</sup> 9.5mg%, PO<sub>4</sub> 5.2mg%, rheumatoid factor negative & blood sugar 88mg/dl. Oral pyridostigmine was replaced with intramuscular neostigmine 2mg repeat 6 hourly prior to surgery. She was premedicated with metoclopramide 10 mg iv, ranitidine 50mg iv. Rapid induction was achieved with propofol 75 mg iv and fentanyl 50mcg iv and inhalational technique using halothane in O<sub>2</sub> to deepen the plane. Fade was observed on neuromuscular monitoring implying train of four responses (TOF). Upper airway was sprayed with lignocaine 10% and trachea was instilled with 4ml lignocaine 2% through cricothyroid membrane. Airway was secured with cuffed reinforced endotracheal tube 7.0mm ID passed through submental route and fixed to skin at 20 cm mark in the anterior neck after withdrawing from right bronchus to final position of just above carina. Maintenance with inhalational technique allowed completion of surgery. For postoperative care she was shifted to intensive care unit for monitoring and on generation of 20 cmH<sub>2</sub>O inspiratory pressure and respiratory breathing index >100, she was discontinued from ventilator and subsequently extubated uneventfully on the second day.

**Discussion:** Myasthenia gravis is autoimmune disorder with an incidence of 1:10,000<sup>1</sup>, with higher occurrence in females(M:F 3:2) during third decade. Men usually present late, in their seventh or eighth decade. Characteristically the weakness of skeletal muscle is because



of antibodies directed against acetylcholine receptor at postsynaptic membrane. The muscle group involvement could be either generalised or confined to a group. Aggravating factors include pregnancy, hypokalemia, infection, stress, intercurrent infection and drugs which precipitate being  $\beta$  blockers<sup>2</sup>, opiates, procainamide and gentamicin<sup>3</sup>. Thymic involvement present as either hyperplasia in 70% and thymomas in 10% of myasthenic patients<sup>4</sup>. Rheumatoid arthritis, SLE and thyrotoxicosis are other associated autoimmune disorder. Anaesthetic management can pose difficulties in the peri-operative period. Exaggeration of myasthenic crisis could involve pharyngeal, laryngeal and bulbar muscle predisposing to risk of pulmonary aspiration and delay in extubation and extended need for postoperative ventilation<sup>5</sup>. To avoid myasthenic crises, anticholinesterase was continued in perioperative period. Preoperative fade on train of four responses indicated a need to shift from oral anticholinesterase preparation to parenteral formulation (30 mg oral pyridostigmine equals 1 mg im neostigmine)

Alternatively, preoperative plasmapheresis can be beneficial in poorly controlled<sup>6</sup>. Dose of anticholinesterase can be omitted on the morning of surgery to decrease the need for muscle relaxants<sup>7</sup> but the need for extended postoperative mechanical ventilation should be kept in mind in view of precipitating myasthenic crisis.

Difficult airway was anticipated in this case not only due to mandibular fracture but also thymoma encircling 2/3<sup>rd</sup> circumference of trachea which could cause airway obstruction at induction. Neuromuscular blocking agents were best avoided as response to suxamethonium is very unpredictable. These patients may either be resistant<sup>8</sup> or present with unusually prolonged response<sup>9</sup>. The increased sensitivity of non depolarizing muscle relaxants calls for avoiding this class of drugs in myasthenics<sup>10</sup>. Reversal with anticholinesterase can precipitate cholinergic crises in patients given non-depolarisers. We preferred not to include any neuromuscular blockers in this case and intubation and ventilation were performed using non-paralysing conditions as adequate relaxation was achieved with inhalational technique while monitoring neuromuscular response by train of four observation. Fentanyl was given in moderation as respiratory depressant effect is accentuated. A dose of more than 750mg per day pyridostigmine, duration of disease of more than 6 years, vital capacity less than 4ml/kg and peak inspiratory pressure less than 25 cm H<sub>2</sub>O are reliable indicators of need for post operative ventilation.

**Conclusion:** Anaesthetic management in a case of myasthenia gravis is a challenge, which requires proper preoperative evaluation and planning so that perioperative complications can be minimised to improve the outcome.



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