Material and Methods
MATERIAL AND METHODS

The present study was conducted in the department of Anaesthesiology, MLB, Medical College, and Hospital, Jhansi (U.P.), on 120 patients from different surgical specialities, scheduled for various elective surgeries under general anaesthesia.

Selection Of Patients

Subjects for the present study were selected randomly, observing the following criteria:

1) Patients of either sex, in the age group of 20-60 years, belonging to ASA grade I and II, were selected as subject for the present study.

2) Patients having pre-existing problems of difficult intubation were excluded from the study.

3) Patients having paralysis, or any neuromuscular disorder were not included in the study.

4) Any history of drug intake by the patient, that might affect the neuromuscular blocking agents were also excluded from the study.

5) Patients with cardiovascular disease or any other systemic disorder, other than that for which they are to be scheduled for surgery were excluded form the study.

6) Patients with impaired renal or liver function were not included in the study.
**Pre-Anaesthetic Check Up**

All the patients were subjected to a detailed pre-anaesthetic check-up in regard of history, a thorough general and systemic examination. After this, they were ordered routine and any specific investigation if required. An informed consent of all the patients were also taken after the evaluation. Patient's name, Age, Sex, Weight and MRD number were noted.

**Study Design :**

Patients were randomly divided into three groups:

**Group A:** All patients were given an intubating dose of rocuronium, 0.6 mg/kg.

**Group B:** In this group all patients received an intubating dose of suxamethonium, 1.5 mg/kg.

**Group C:** All patients in this group, were given an intubating dose of vecuronium, 0.08 mg/kg.

**Pre-Operative Parameters**

Pulse rate, blood pressure, and SpO\textsubscript{2} were monitored preoperatively and recorded in all the cases.

**Pre-Medication And Induction**

All the patients were premedicated with 0.2 mg glycopyrrolate. The patients were pre-oxygenated with 100% oxygen for 3 minutes before induction. Induction of anaesthesia was performed with thiopentone
sodium 2.5%, 4-5 mg/kg given intravenously. After the abolition of eye
lash reflex, intubating dose of muscle relaxant was pushed intravenously
according to the group. Group A, received 0.6 mg/kg rocuronium, group B,
1.5 mg/kg suxamethonium and group C, 0.08 mg/kg vecuronium. The time
of administration of the relaxant was noted.

The onset of apnoea was appreciated by the loss of respiratory effort
felt in the reservoir bag. The time interval from the administration of the
relaxant to the onset of apnoea was noted. After the onset of apnoea, direct
laryngoscopy was performed and the intubating conditions were assessed
according to ‘Copenhagen consensus conference rating scale’.

The patient was then intubated with adequate size cuffed
endotracheal tube and intermittent positive pressure ventilation was started
with N₂O and O₂ mixture through Bain circuit. Just immediately after
intubation, pulse rate and blood pressure were recorded. After an interval
of 10 minutes these parameters were again recorded.

When the respiratory excursions were first felt in the reservoir bag,
the time was noted. The time interval from the onset of apnoea to the
return of first respiratory excursion was noted, which gave the clinical
duration of action of the respective relaxant used.

Maintenance Of Anaesthesia

All the patients were maintained on nitrous oxide and oxygen
mixture (66.6% & 33.3% ) and intermittent injection of vecuronium.
Analgesics and halothane were given as per requirement. The patients were
given IPPV by Bain circuit.
Reversal And Extubation

At the end of the operative procedure, reversal was done by neostigmine and glycopyrolate. After the return of adequate respiratory effort and upper airway reflexes along with spontaneous eye opening, extubation was done. The patient was then shifted to the recovery room.

Parameter Observed

The following observations were made and recorded during the peri-operative period.

1) Onset of action (assessed by onset of apnoea)
2) Intubating conditions –
   (i) Laryngoscopy : Jaw relaxation
       : Vocal cord position
       : Vocal cord movement
   (ii) Response to intubation - Coughing
        Limb Movement
3) Cardiovascular Response :
   Pulse rate, blood pressure and oxygen saturation (SpO₂)were recorded immediately after intubation and 10 minutes later.
4) Fasiculations
5) Duration of action, (assessed by the interval from the onset of apnoea to the return of first respiratory effort)

Intubating conditions were assessed as excellent, good or poor using the ‘Copenhagen Consensus Rating Scale’.
## Copenhagen Consensus Conference Rating Scale

<table>
<thead>
<tr>
<th>Intubating Conditions Variables</th>
<th>Clinically Acceptable</th>
<th>Clinically Un-Acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent</td>
<td>Good</td>
</tr>
<tr>
<td>Laryngoscopy</td>
<td>Easy</td>
<td>Fair</td>
</tr>
<tr>
<td>Vocal Cords</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position</td>
<td>Abducted</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Movement</td>
<td>None</td>
<td>Moving</td>
</tr>
<tr>
<td>Response to Intubation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Movement of limbs</td>
<td>None</td>
<td>Slight</td>
</tr>
<tr>
<td>Coughing</td>
<td>None</td>
<td>Diaphragmatic</td>
</tr>
</tbody>
</table>

### Laryngoscopy

Easy: Jaw relaxed, no resistance to blade in the course of laryngoscopy.

Fair: Jaw relaxed, slight resistance to the blade.

Difficult: Poor jaw relaxation, active resistance of the patient to laryngoscopy.

### Intubating Conditions

Excellent: All variable listed under ‘excellent’ must be present.

Good: Only variable listed under ‘excellent’ or ‘good’ must be present.

Poor: The presence of any variable listed under ‘poor’.