Airway assessment and difficult intubation in patients with fractured mandibles

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Aim

1. To determine the incidence of difficult intubation in patients with fractured mandible (FM).

2. To assess the value of anaesthetic bedside tests in predicting difficult intubation in patients with FM.

Method

A prospective survey was carried out on patients admitted over a 12 month period for ORIF fractured mandible. Anaesthetic bedside tests were performed: Mallampati (MP) [1], IDD (inter-dental distance), TMD (thyromental distance) and mandible luxation (ML) score [2]. Cut-off points define ‘negative’ or ‘positive’ test results, and, in turn, are used to predict ‘easy’ or ‘difficult’ intubation, respectively (Table 1). Finally, glottic view on direct laryngoscopy was recorded i.e. Cormack-Lehane (CL) grade[3]. Difficult intubation was defined as CL III or IV.

Result

Table 1

<table>
<thead>
<tr>
<th>No of patients</th>
<th>MP (III or IV)</th>
<th>TMD &lt; 6.5 cm</th>
<th>IDD &lt; 2.5 cm</th>
<th>ML (B or C)</th>
<th>Difficult intubation (CL III or IV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of patients</td>
<td>72 / 96 (75.0%)</td>
<td>26 / 91 (28.6%)</td>
<td>61 / 94 (64.9%)</td>
<td>66 / 94 (70.2%)</td>
<td>2 / 94 (2.1%)</td>
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Normal mouth opening due to rotation and sliding forward of the mandibular condyle over the articular tubercle

Discussion

1. The incidence of ‘difficult intubation’ in FM patients is low (2.1%).

2. Induction of anaesthesia relieves pain, muscle spasm and trismus in FM patients. The airway is very different during the post induction period (CL grading) compared with that during pre-induction (bedside testing). Therefore, bedside tests are poor predictors of difficult intubation in FM patients.

3. Each bedside test has 100% sensitivity. This occurs if all patients with a rare condition (difficult intubation 2%) happen to exist within a large pool of test ‘positive’ patients (28.6-75.0%). This reflects a high rate of false positives! As a result, PPV for the tests are very low (2.9-3.8%).

Points to remember

1. Over 90% of CL III only require the additional use of a bougie to achieve intubation[4]. So, in fact, only 10% are ‘truly difficult’ intubation i.e. 0.2% of fractured mandible patients.

2. Consent involves discussing “the potential benefits, risks and burdens, and the likelihood of success, for each option ... in a balanced way” (e.g. conventional IV induction vs. awake FOI)[5]. Personal bias should not lead to pressurizing a patient to accept an awake FOI when its indication is only for training purposes rather than for a ‘truly’ difficult airway.

Conclusions

1. Majority of fractured mandible patients are easy intubations (97.9%, 95% CI 0.3-7.5%).

2. The lack of validity of bedside tests to predict difficult intubation, and the low incidence of difficult intubation, makes it difficult to justify performing routine awake FOI in fractured mandibles.

References


