Awake Fibreoptic Intubation in a Pregnant Patient with a Laryngeal Cyst

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ABSTRACT
We describe the case of a 30 weeks pregnant patient requiring general anaesthesia for urgent microlaryngoscopy and excision of an increasingly symptomatic left-sided vocal cord cyst. In view of the pregnant state of the patient combined with laryngeal pathology, an awake fibreoptic intubation was undertaken and an uneventful procedure ensued. The potential risks and merits of awake fibreoptic intubation in the obstetric population are discussed.

Keywords: Obstetric anaesthesia, Anaesthetic technique, Fibreoptic intubation, Laryngeal cyst.

INTRODUCTION
Problems with airway management in the obstetric population are more common than within the general population. Difficulty with airway management is known to contribute to maternal morbidity and mortality and the presence of laryngeal pathology is likely to increase this potential risk. Despite documented reports of success with awake fibreoptic intubation in the pregnant patient there has previously been some reluctance to employ this technique. General anaesthesia was safely accomplished with the prior awake fibreoptic intubation in our patient. There are no previous reports in the literature of awake fibreoptic intubation for anticipated airway difficulty secondary to a laryngeal cyst in a pregnant patient.

CASE REPORT
Our patient, a 32-year-old at 30 weeks gestation, presented to the ENT department, with 3-week history of increasing breathlessness and a 1 week history of hoarseness. On examination, she was noted to have mild stridor at rest and with mild dyspnoea on speaking.

Indirect laryngoscopy revealed the presence of a pedunculated mass arising from the left ventricle/false cord. The lesion was noted to prolapse between the cords on inspiration and was expelled on expiration. In view of the rate of progression and nature of the patient’s symptoms, she was booked for theatre the following morning for microlaryngoscopy and excision of the lesion.

The patient returned starved the next morning. Pre-operative assessment revealed a history of well-controlled asthma but nothing else of note. On airway assessment, she was found to have normal dentition, good neck movement and a mallampati grade of 2.

The patient was consented for an awake fibreoptic intubation and general anaesthetic. She was given a premedication of metoclopramide 10 mg and ranitidine 150 mg. A midwife was present pre- and post-operatively to monitor the foetal heart rate.

Intravenous access was secured and standard monitoring was applied. Oxygen was provided continuously throughout the procedure of awake fibreoptic intubation via nasal specs and oxygen saturations were maintained at 99 to 100%. Intravenous Glycopyrrolate 200 microgram was given as an antisialogogue. Sedation with remifentanil and propofol target controlled infusions was commenced, at respective concentrations of 0.5 ng/ml and 1 mcg/ml. Awake fibreoptic intubation was undertaken with the patient in the sitting position. Lignocaine 4% was administered as topical anaesthesia in an aerosolised form orally as per the McKenzie technique (i.e. using a 20 gauge cannula attached to a long piece of ‘bubble’ tubing in turn attached to a supply of medical oxygen from the common gas outlet of the anaesthetic machine. Drug delivery in his method is via a 2 ml syringe attached to the cannula port). The fibreoptic scope was passed orally through a size 3 Berman airway and advanced using the ‘spray as you go’ technique. In total, 4 ml of 4% lignocaine was used. According to the surgeon’s request, south facing, size 6 RAE endotracheal tube was chosen for intubation. This tube was immersed in lukewarm water for softening, 10 minutes prior to its use, for ease of railroading over the fibreoptic endoscope. A size six RAE tube was then passed into the trachea uneventfully and the position confirmed with the fibreoptic scope and end tidal CO₂. The patient was very comfortable and maintained communication throughout the procedure of awake fibreoptic intubation. The remifentanil and propofol target controlled infusions were then increased to 6 ng/ml and 4 mcg/ml respectively and general anaesthesia commenced. The patient was placed supine with a left lateral tilt intraoperatively. Microlaryngoscopy was undertaken. Left-sided lesion arising from the left ventricle was visualised (Fig. 1). The vocal cords were not involved. On excision, the lesion was found to be a cystic and full of mucoid material. Excision was undertaken uneventfully.

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Anatomical and physiological changes during pregnancy may result in an increase in general anaesthetic risk for several reasons. Increased circulating volume and hormonal changes contribute to oedema of the mucous membranes, resulting in a narrowed and more friable airway. Difficulty in passing an endotracheal tube may ensue, as may the risk of mucosal bleeding, particularly if the nasal route is utilised.1 Generalised weight gain may further increase the difficulty of airway management.9 Increased intra-abdominal pressure coupled with the effect of progesterone on the lower oesophageal sphincter increases the risk of aspiration during induction of anaesthetic in this population.1,9 This usually results in the need for pharmacoprophylaxis prior to anaesthesia and cricoid pressure after induction of anaesthesia until the airway is secure. In the presence of concomitant laryngeal pathology, such cricoid pressure may further hinder passage of an endotracheal tube. On the basis of both the risk of aspiration and foetal well-being when general anaesthesia is being provided for delivery, the use of sedation in the pregnant population has been queried.9 However, a study of awake fibreoptic intubation utilizing intravenous sedation in those at high risk of aspiration found no incidence of regurgitation or aspiration.10 Multiple case reports of awake fibreoptic intubation in obstetric patients also report no adverse effects of the use of sedative agents during awake fibreoptic intubation.2,3,5,6 We titrated target controlled infusions of propofol and remifentanyl such that the patient’s anxiety levels were reduced but at the same time she was able to maintain communication with us throughout the procedure. We experienced no problems with this approach.

The gravid uterus results in cephalad displacement of the diaphragm which together with increased weight of enlarged breasts, decreases chest wall compliance.9 Functional residual capacity is markedly decreased, particularly in the supine position. This, in combination with the 20 to 30% increase in oxygen consumption (at term), results in a more rapid desaturation than in the nonobstetric population9 and decreases the margin of safety should difficulty with ventilation or intubation occur after induction of anaesthesia. Vena caval compression becomes an increasing risk after 24 to 27/40 gestation11 and the left lateral tilt required to prevent it may further compromise attempts at intubation.9

Amidst concern that in a patient with laryngeal pathology, airway relaxation under anaesthetic may render the airway very difficult or impossible to intubate, it was felt that awake fibreoptic intubation was the most appropriate method by which to secure the airway. It was felt that this was also a suitable technique in view of the pregnant status of the patient, allowing us to overcome many of the potential difficulties associated with obstetric
intubation. Prokinetic and antacid prophylaxis was administered, as is standard in those deemed to be at risk of aspiration. The oral route for intubation was chosen both on the basis of surgical requirement and the need to avoid precipitating bleeding from the friable nasal mucosa. The use of the sitting position enabled ease of fibreoptic intubation whilst reducing the risk of aspiration and avoiding a further decrease in functional residual capacity, thus creating an overall increase in the margin of safety by ensuring a less rapid desaturation should any difficulty with intubation be encountered.

The possibility of cyst rupture during fibreoptic endoscopy was discussed with surgeon and we had attached suction tubing to the suction port of fibrescope, ready to suck out material from cyst if it did rupture.

We had taken into consideration the risks of total airway obstruction while carrying out awake fibreoptic intubation in a patient with stridor, and surgeon had kept a tracheotomy set ready to rescue if we were faced with that complication.

If this patient had presented with same pathology, in a non-pregnant state then gas induction using sevoflurane with patient breathing spontaneously could have been considered as an option. The commonly encountered problem with this technique is the risk of getting into the lighter planes of anaesthesia during attempts of intubation and rendering patient’s airway more susceptible to laryngospasm. So, our first choice under these circumstances would still have been the awake fibreoptic intubation with or without conscious sedation.

The combination of laryngeal pathology and pregnancy creates the potential for significant difficulty in securing the airway. There are no previous reports of awake fibreoptic intubation being undertaken in a pregnant patient with a laryngeal cyst. We found awake fibreoptic intubation to be an acceptable and safe method of securing the airway in this setting.

REFERENCES


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