

A rare case of vaginal delivery in a woman with tracheostomy due to bilateral vocal cord paralysis

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Summary

The authors present a rare case of a pregnant woman who had an emergency tracheostomy procedure during the third trimester of pregnancy due to respiratory distress, secondary to bilateral vocal cord paralysis. The patient achieved a vaginal delivery by coordinated occlusion of the tracheostomy during the pushing efforts. Data concerning antenatal management and mode of delivery in women with vocal cord paralysis and/or tracheostomy are extremely rare. Main concern in pregnant women with tracheostomy is their ability to perform Valsalva maneuver efficiently during the second stage of labor. However, when the woman desires a vaginal delivery, provided that there is a good support to the laboring woman and a team of experts available, vaginal delivery should be attempted.

Key words: Bilateral cord paralysis; Tracheostomy; Vaginal delivery; Labor.

Introduction

Performing a tracheostomy in pregnancy is extremely rare. Most cases involve critically ill pregnant women where delivery is expedited and cesarean section is the common mode of delivery. Herein the authors present a case of a pregnant woman who underwent tracheostomy due to respiratory distress secondary to bilateral vocal cord paralysis. The patient was able to deliver vaginally at term. The authors describe this case and also their dilemmas on choosing the appropriate mode of delivery.

Case Report

A 33-year-old pregnant woman, gravida 3, para 2, presented in the Emergency Department of the University Hospital of Larissa at 32 weeks of pregnancy, with respiratory distress. She had been diagnosed with bilateral vocal cord paralysis seven years before, following a thyroidectomy procedure. The patient reported breathing fatigue in exertion however she was compensating satisfactory at rest. Her obstetrical history was uneventful apart from the diagnosis of gestational diabetes for which she was treated conservatively with diet modification.

The patient presented with acute respiratory distress and inspiratory stridor with shallow breaths and increased respiratory effort. On examination her pulse rate was 110 bpm, her blood pressure was 120/80 mmHg, and her respiratory rate was 22/minute. Flexible fiberoptic endoscopy revealed an edematous larynx with bilaterally paralyzed vocal cords in paramedian position. Despite initial treatment with oxygen and corticosteroids, respiratory distress was worsening. The patient was offered and consented on having tracheostomy under local anesthesia. An obstetrician was called to assess fetal well-being. Ultrasonography

revealed a fetus appropriate for gestational age with normal biophysical parameters. The woman was discharged five days later with the tracheostomy tube in place and remained stable throughout the rest of the pregnancy. She opted on having a planned cesarean section, however a few days after her last visit in the antenatal clinic, she went into spontaneous labor. She was admitted in the labor ward with 5-cm dilatation and regular contractions. Admission cardiotocography was unremarkable. The woman was motivated to deliver vaginally. Progression of labor was rapid and after an hour the cervix was fully dilated. The woman was guided to aid the pushing efforts by intermittent occlusion of the tracheostomy. She gave birth to a healthy baby boy weighing 3,100 grams. The postpartum period was uneventful and the patient was discharged two days later.

Discussion

This is a rare case of a woman who undergone a tracheostomy procedure due to acute airway obstruction secondary to bilateral vocal cord paralysis. Data concerning antenatal management and mode of delivery of women with vocal cord paralysis and tracheostomy are very limited. A PubMed search revealed only two other relevant cases in which none of them delivered vaginally [1, 2]. Vaginal delivery has been reported in only a small number of pregnant women with tracheostomy due to different indications [3].

Vocal cord palsy following thyroidectomy is a well-known complication, with a reported frequency rate of 8% unilaterally and 1% bilaterally [4]. In bilateral recurrent laryngeal nerve palsy, the vocal cords remain usually in the

paramedian position commonly causing respiratory distress in effort due to airway stenosis. The patients usually achieve a compensatory state without serious symptoms at rest, however in cases of increased respiratory effort, there is not enough space for increasing the airflow through the paralyzed vocal cords. This narrowed upper airway condition can exacerbate by physiological changes in pregnancy such as increasing laryngeal edema. In addition, increasing abdominal pressure and diaphragmatic elevation combined with a lower chest wall compliance result in decrease of total lung capacity. Oxygen consumption increases by 30% and the metabolic rate increases by 15%. The increase in maternal oxygen consumption during pregnancy and the lower functional residual capacity indicate that pregnant women have lower reserves of oxygen and are at greater susceptibility to become hypoxic [5]. In the present case the authors assume that the combination of bilateral vocal cord palsy and the physiological changes caused by her pregnancy led to the acute respiratory distress.

Labor induction or elective cesarean section is not indicated in women without symptoms of respiratory distress, unless there is also an obstetrical indication. Main concern in pregnant women with tracheostomy is their ability to perform efficient Valsalva maneuver during the second stage of labor. Although an elective cesarean section was planned in this patient, vaginal delivery was feasible due to the rapid progression of labor. Provided that the patient is informed, vaginal delivery should be attempted. The use of oxytocin, with sufficient analgesia, could reinforce uterine contractions and instrumental delivery may be indicated. Although it has been suggested that prolonged Valsalva maneuvers

can result in surgical emphysema in patients with tracheostomy, [3] no definite conclusion can be drawn for pregnant women who choose to deliver vaginally. Due to the rarity of this case, the authors feel that the successful maternal and neonatal outcome is a result of a combined efforts from the woman and the obstetrician. A multidisciplinary approach of these patients should be employed by a team consisting of a senior obstetrician, an otolaryngologist, and an anesthesiologist.

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