



Case Report

Treatment of Tracheal Mucoepidermoid Carcinoma by Argon Plasma Coagulation During Pregnancy

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Mucoepidermoid carcinoma of the tracheobronchial tree is a rare airway tumor (<1% of all lung tumors). In adults, the majority of primary tracheal tumors are malignant. Management during pregnancy is complex and requires weighing maternal and fetal prognosis. Reported cases describe surgical resection following cesarean section. We report the first case to be treated by Argon-Plasma Coagulation (APC) in pregnancy. A 35-year-old Caucasian woman G1P0, at 27 weeks of gestation was admitted to the emergency department because of hemoptysis and severe dyspnea. Bronchoscopy and biopsies diagnosed primary tracheal mucoepidermoid carcinoma. Following an episode of tracheal bleeding, she was intubated. After thorough explanations to the family and obtaining informed consent, therapeutic bronchoscopy, under general anesthesia using a rigid bronchoscope, was performed. The tumor was cored out with the tip of the bronchoscope and removed with an alligator forceps. The tumor bed was coagulated with APC. The obstetrical team was ready to intervene in case of maternal emergency. Immediate follow-up was good, and she left the hospital 4 days later. She delivered at 39 weeks of gestation by cesarean section because of dystocia. Five years later, the patient is doing well without any signs or symptoms of recurrence. Pediatric follow-up is normal. Argon Plasma Coagulation for treatment of mucoepidermoid tracheal carcinoma is feasible during pregnancy. Reporting this case could lead to less aggressive management of mucoepidermoid carcinoma in pregnant patients.

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Cancer complicates 0.1% of all pregnancies. Mucoepidermoid carcinoma of the tracheo-bronchial tree is a rare airway tumor (<1% of all lung tumors). It is histologically identical to the salivary gland tumor of the same name. In adults, the majority of primary tracheal tumors are malignant. The most frequent presenting symptoms are cough (72%), dyspnea (66%), hemoptysis (39%), stridor (39%), and hoarseness (31%), but the presence or absence of these symptoms has no prognostic implication.¹

We present a rare case of mucoepidermoid tracheal carcinoma during pregnancy and discuss its management, emphasizing the use of Argon-Plasma Coagulation (APC) and mechanical ablation of this low-grade tumor.

Case Report

A 35-year-old woman G1P0, complained at 22 weeks of gestation of mild hemoptysis without any other signs or symptoms. A normal chest X-ray showed nothing particular. At 27 weeks of gestation, she was admitted to the emergency department because of hemoptysis and severe dyspnea; arterial blood gas showed hypoxia pressure of arterial oxygen ($\text{PaO}_2 = 55 \text{ mmHg}$). The situation improved with conservative management, and she was transferred to the obstetrics unit for surveillance. Under general anesthesia, a diagnostic flexible bronchoscopy revealed a polypoid lesion located 3 cm above the carina obstructing 90% of the tracheal lumen. Bronchial clots were aspirated, but the patient's condition worsened after the procedure because of a central airway obstruction. She was intubated and admitted to the intensive care unit. She received intramuscular betamethasone every 12 hours for 2 doses for fetal pulmonary maturation. Fetal monitoring and obstetrical ultrasound were reassuring. Pathology favored primary tracheal mucoepidermoid carcinoma. After thorough explanations to the family and obtaining informed consent, therapeutic bronchoscopy under general anesthesia using a rigid bronchoscope, was performed. The endotracheal tube was withdrawn and replaced by a rigid bronchoscope inserted into the right main bronchus with a side manual ventilation using 100% oxygen. Backing out from the bronchus, the tumor appeared

on the right side of the tracheal wall just above the uptake of the right main bronchus. After decreasing the fraction of inspired oxygen (FiO_2) to 30%, the tumor was sprayed with APC using a 30-W setting and a spray mode; intermittent high FiO_2 was used to prevent maternal hypoxia while APC was put on hold. The tumor was cored out with the tip of the rigid bronchoscope and removed with an alligator forceps. The tumor bed was coagulated with APC. The obstetrical team was ready to intervene in case of maternal emergency. The procedure went well and lasted 1 hour. Bleeding was estimated around 150 mL. Immediate follow-up was good, and after once again checking for fetal well-being, the patient was discharged home 4 days later without any complications. The pathology report revealed mucoepidermoid carcinoma of low grade. At 39 weeks and 4 days of gestation, she went into labor and, because of the failure to progress, a cesarean section was performed, delivering a healthy male baby weighing 3100 g. Five years later, the patient is doing well without any signs or symptoms of recurrence. For the first 3 years, she had an annual thoracic computed tomography (CT) scan, each of which was normal. Pediatric follow-up has also been normal without any developmental problems.

Discussion

Primary carcinomas of the trachea are rare tumors occurring at 2.6 new cases per million per year. Besides adenoid cystic carcinoma and squamous cell carcinoma, which are the 2 most common primary tracheal malignancies, a large variety of other rare malignant tracheal tumors including carcinoids and mucoepidermoid carcinomas exist.²⁻⁴

Mucoepidermoid carcinomas are derived from minor salivary gland tissue of the proximal tracheo-bronchial tree. On the basis of mitotic activity, level of necrosis, and nuclear pleomorphism, these tumors are classified as low or high grade. Low-grade tumors behave in a benign fashion, as in our patient, whereas high-grade mucoepidermoid carcinomas progress rapidly. Bronchoscopic biopsy provides the diagnosis; optimal treatment remains surgical resection. Long-term survival is common when these tumors are completely resected (100% 5-

year survival), but unresectable tumors have a poor prognosis, with no patients surviving at 5 years.⁵

Three cases of mucoepidermoid carcinoma during pregnancy are described in the literature. The first one was managed at 36 weeks by dilatation of the trachea and establishment of an airway through the tumor, followed at a later stage by concurrent cesarean and posterior lateral thoracotomy with resection of the tracheal tumor.⁶ The second patient had cough and wheezing for 9 months before admission. At 39 weeks, a cesarean section was performed in addition to fibrobronchoscopy, which revealed a polypoid lesion narrowing the trachea. Pathologic diagnosis revealed low-grade mucoepidermoid carcinoma, and the lesion was resected.⁷ The third case was a 31-year-old pregnant woman in her 36th week, who complained of recurrent hemoptysis from bronchial mucoepidermoid carcinoma. As massive bleeding from the tumor was seen during the cesarean section, bronchial artery embolization was performed, followed by a sleeve resection of the left main bronchus.⁸ In our case report, explanations to the family included the different options, leading to surgery if needed. Therapeutic decision was complex and was based on bleeding and respiratory deterioration of the patient. Pregnancy being at 27 weeks played a major role in our decision, as we aimed to leave a more radical surgery if needed for a later stage of pregnancy.

Therapeutic bronchoscopy procedures can provide either palliation of surgically unresectable tracheal tumors or less-morbid treatment for some cases such as our patient, especially during pregnancy. Argon laser is hemostatic and, therefore, can be used for highly vascular tumors. Complications with argon laser include scar and stricture formation with multiple treatments, and possibly bronchopulmonary artery fistulas; the APC patient should be watched for venous gas embolism.⁹ In this case, no complications were seen.

Conclusion

Argon Plasma Coagulation for treatment of mucoepidermoid tracheal carcinoma is feasible during pregnancy and could lead to less-aggressive management. Larger studies are needed to validate our findings.

References

1. Yang KY, Chen YM, Huang MH, Perng RP. Revisit of primary malignant neoplasms of the trachea: clinical characteristics and survival analysis. *Jpn J Clin Oncol* 1997;**27**(5):305–309
2. Gaissert HA, Grillo HC, Shadmehr MC, Wright CD, Gokhale M, Wain JC *et al*. Uncommon primary tracheal tumors. *Ann Thorac Surg* 2006;**82**(1):268–272
3. Pearson FG, Todd TR, Cooper JD. Experience with primary neoplasms of the trachea and carina. *J Thorac Cardiovasc Surg* 1984;**88**(4):511–518
4. Regnard JF, Fourquier P, Levasseur P. Results and prognostic factors in resections of primary tracheal tumors: a multicenter retrospective study. The French Society of Cardiovascular Surgery. *J Thorac Cardiovasc Surg* 1996;**111**(4):808–813
5. Webb BD, Walsh GL, Roberts DB, Sturgis EM. Primary tracheal malignant neoplasms: the University of Texas MD Anderson Cancer Center experience. *J Am Coll Surg* 2006;**202**(2):237–246
6. Dieter RA Jr, Livermore J, Tu R, Pichiatti J. Mucoepidermoid tracheal adenoma during pregnancy. *Int Surg* 1983;**68**(3):271–272
7. Watanabe M, Tomita K, Burioka N, Yajima H, Nakamura H, Ohgi S *et al*. Mucoepidermoid carcinoma of the trachea with airway hyperresponsiveness. *Anticancer Res* 2000;**20**(3B):1995–1997
8. Tao H, Sano Y, Yamane M, Toyooka S, Oto T, Date H. Bronchial mucoepidermoid carcinoma with recurrent hemoptysis in a pregnant woman: report of a case. *Surg Today* 2008;**38**(9):850–852
9. McCaughan JS Jr, Williams TE. Photodynamic therapy for endobronchial malignant disease: a prospective fourteen-year study. *J Thorac Cardiovasc Surg* 1997;**114**(6):940–946