

Effective Use of the JCAHO “Time Out” Verification Process to Facilitate Intraoperative Management of a Tracheal Stent Removal

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Introduction: In an effort to improve the accuracy of patient identification and reduce the risk of wrong operative site procedures, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) issued National Patient Safety Goals in July 2002 (1). These goals resulted in mandating a preoperative multidisciplinary final verification process, “time out”, to confirm the correct patient, procedure and site using active communication techniques. We describe a case where this technique was successfully used both preoperatively and intraoperatively to ensure that complex management of removal of an intrathoracic tracheal stent achieved the perioperative goals.

Case Report: The patient is a 5-year-old 13 kg female with a history of VATER syndrome s/p multiple staged procedures to treat tracheoesophageal fistula and esophageal atresia. Postoperative severe tracheomalacia led to placement of two stainless steel, tubular mesh, balloon expandable Palmaz intratracheal stents (Johnson & Johnson Interventional Systems, Warren, NJ) (figure). Intermittent obstructive respiratory symptoms developed, managed by bronchoscopic resection of granulation tissue and balloon dilation. Progressive respiratory symptoms caused in part by partial distal stent obstruction led to the decision to remove the stents. A detailed preoperative plan was formulated by the anesthesiologists, cardiothoracic, ENT and pediatric surgeons, nurses, surgical techs and perfusionists and was discussed with the parents. The initial “time-out” confirmed an initial attempt at transoral endoscopic removal of the stents, followed by a right thoracotomy and removal of the stents while on cardiopulmonary bypass (CPB) if needed. The patient was premedicated and had an uneventful induction without muscle relaxation. After successfully demonstrating the ability to assist with ventilation, muscle relaxants were administered. Following placement of an arterial line, CVL, foley catheter and preparation for CPB by prepping the right groin and CPB circuit, the table was turned and a suspension laryngoscope was placed for rigid bronchoscopy and jet ventilation. The proximal end of the stent was dissected free of the mucosal ingrowth, but the stent could not be freed from the tracheal wall despite vigorous attempts at pulling and turning the mesh cage. Ventilation was still easily controlled via a patent stent. A second “time out” was called by the anesthesiologists and the three surgical services again conferred with the parents and the decision was affirmed to go to thoracotomy. Following femoral cannulation one final effort to remove the stent via rigid bronchoscopy, resulted in near complete occlusion of the airway. CPB was initiated, an oral 3.5 mm ETT was placed just above the stent and the patient was positioned for a right thoracotomy. With great difficulty, the stents were dissected out of an extensive tracheal incision. A 5.0 ETT was passed retrograde from the tracheal incision out the oropharynx by suturing it to the previously placed oral ETT and the trachea was closed. The patient remained hemodynamically stable throughout the case with excellent gas exchange. She was ventilated in the PICU until her extubation in the operating room on the eighth postoperative day. Follow up bronchoscopy five days later revealed some scarring and granulation tissue, but an adequate tracheal lumen. She was discharged home on the 14th postoperative day with minimal respiratory symptoms.

Discussion: Complicated tracheal stent removal is a high-risk procedure that may be accompanied by airway obstruction and death (2). A recent case report (3) describes urgent institution of life saving CPB in a child with near-total airway obstruction and severe hypoxemia and respiratory acidosis during tracheal stent removal. In this case report, careful preoperative planning and excellent intraoperative communication between the entire OR team (utilizing the “time out” mechanism) ensured successful management of a complex, potentially lethal problem.

References:

1. <http://www.jcaho.org/accredited+organizations/patient+safety>
2. Filler, RM et al. J of Ped. Surg., Vol 33, No2, 1998: pp 304-11.
3. Kao, SC et al. Br. J. of Anaesthesia 91 (2):294-6 (2003).

