Acute, severe bradycardia with near-asystole in laparoscopic surgery with pneumoperitoneum

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Gas insufflation and peritoneal visceral manipulation during laparoscopic surgery may result in an intraoperative, vagally-mediated bradycardia. This bradycardia is typically self-resolving and without hemodynamic consequence to the patient. It is not known which patients are at risk for a more extreme physiological response to this vagally-mediated reflex. In rare cases, such a response could result in significant hemodynamic changes, such as severe, acute hypotension, bradyarrhythmia, and even cardiac arrest. Preliminary reports suggest that cardiac arrest during laparoscopic surgery does occur, albeit very rarely [1,2]. The proportion of cardiac arrests during laparoscopic surgery that are attributable to a vagally-mediated response is not clear. These studies suggest that an episode of acute bradycardia in laparoscopic surgery should be considered an “early warning sign” to a potentially severe, life-threatening physiologic event [1,2]. Thus early intervention is the key in preventing patient harm.

This case report presents a scenario of acute, severe bradycardia with near-asystole in a laparoscopic surgical procedure with pneumoperitoneum, attributed to abdominal insufflation and/or abdominal visceral manipulation. The patient, a 66 years old female with hypothyroidism (clinically euthyroid and on synthroid), underwent a two-part surgical procedure. The first part consisted of a dilatation, curettage and hysteroscopy that lasted roughly 75 minutes and was without incident. The second surgical procedure was a laparoscopic salpingo-oophorectomy. Severe, acute sinus bradycardia (heart rate in the 20â€™s) associated with severe hypotension (systolic blood pressure in the 40â€™s) occurred about 10 minutes after abdominal insufflation. Treatment included deflating the abdomen, and administering atropine 0.4mg intravenously (IV) with minimal response, followed by epinephrine 0.5 mg IV, which resulted in resolution of bradycardia and hypotension within 60 seconds, and normalization of patientâ€™s baseline vital signs within a few minutes. The surgery was then resumed and completed without further incident.

Post-operatively, in the PACU, the patient was evaluated by the in-service cardiology team. At the time, she denied chest pain or other symptoms of acute coronary syndrome. Her EKG revealed normal sinus rhythm without ST segment elevation or depression. However, she was found to have elevated cardiac enzymes and was admitted to the CCU. The next morning she was transferred to
an outside facility for further evaluation with cardiac catheterization and angiogram. The procedure revealed non-obstructive coronary vessel disease, thus no intervention was performed. The elevation in cardiac markers was attributed to demand ischemia from acute, severe hypotension, and/or intraoperative vasopressor treatment.

This case-report corroborates that acute bradycardia during laparoscopic surgery may potentially result in severe hemodynamic compromise and should be treated promptly. This case report will offer a treatment sequence algorithm of acute bradycardia after abdominal cavity insufflation in laparoscopic surgery.

Key References:


3. Mandy Perrin, FRCA, Anthony Fletcher, FRCA; Laparoscopic abdominal surgery, Continuing Education in Anaesthesia Critical Care & Pain 4(4): 107-110

