True knot in Ryles tube: a case report

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Abstract Insertion of Ryles tube is a simple routine procedure. During its insertion, minor complications like trauma to nose, nasopharynx and oral cavity do happen from time to time. But as the Ryles tube is usually inserted blindly, potentially life threatening complications like inadvertent entry into trachea, cranial cavity and intravascular penetration have been reported. Folds and kinks may occur, but true knot of the Ryles tube, which we now report, is very rare.

Keywords Ryles tube · Knot · Trauma

Introduction

The placement of nasogastric tube is a common practice during routine surgical procedure. However this simple tube can be a source of unexpected complications. Minor complications like injury to nasal or oral cavity, epistaxis may occur with the insertion of Ryle's tube. Major complications like inadvertent entry into tracheo-bronchial tree, intravascular penetration or entry into the cranial cavity, more so in patients with head injury are also reported. At times, the Ryle's tube may kink or get folded but a true knot formation is very rare [1]. We report one such case which was diagnosed intraoperatively.

Case report

A 60-year-old lady was planned for elective laparoscopic cholecystectomy. She was a known hypertensive, well controlled on medications. Systemic review was essentially normal, as were her pre-operative investigations. Her upper incisors were protruded and there was some difficulty in intubating the patient. Laparoscopy revealed a distended stomach thereby obscuring safe dissection of gall bladder. In order to deflate the stomach, a 14 Fr Ryles tube was introduced through the nasal cavity. Despite this, the stomach remained distended, prompting the anesthetist to manipulate the tube. But this did not yield the desired result and the Ryles tube was pulled out altogether, with the intention of introducing it again. In this process of removing the tube, there was some bleeding from the nose. On inspection there was a true knot at the terminal end of Ryles tube (Fig. 1). Subsequently, laparoscopic cholecystectomy was completed successfully and the lady was discharged on the 3rd post-operative day.

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Fig. 1 True knot in the Ryle's tube

Discussion

Insertion of Ryles tube is a very commonly performed clinical procedure. It is required to empty the gastric content or sometimes for enteral feeding. The complications arising from nasogastric tube placement are primarily due to the blindness of the procedure. It may kink, bend or fold. The chance is increased if frequent and vigorous movement is done, more so when the patient is unconscious due to trauma, stroke or anesthesia. Knots in the stomach form if the tube is advanced excessively and allowed to loop back on itself. True knot formation in the RT is very rare and very few incidents have been reported [1]. There has been a case report of RT getting into the trachea and making a knot around the tip of endotracheal tube compromising the ventilation [2]. Thus Ryles tube insertion during surgery or otherwise demands patience and purposeful organized movements. The tracheobronchopleural complications may sometimes become very serious leading to atelectasis, pneumonia, lung abscess, bronchial and pleural cavity perforation and pneumothorax [3]. Nasogastric tube has been reported to have penetrated right internal jugular vein and subsequently lodging into the right atrium leading to haemodynamic collapse. The diagnosis was made on CT scan [4]. The position of the nasogastric tube has been traditionally checked by air insufflation and epigastric auscultation which is not always the confirmatory sign of gastric placement. Benya et al found a 20% false gastric confirmation on auscultation [5]. Roubenoff and Ravich [3] described a two step safety protocol where a NG tube is advanced blindly to 30cm and the position is verified by X-ray.

Midline position of the tube confirms it to be in the esophagus, which can be further inserted to the optimum length. This is again confirmed with a second X-ray [3]. Metheny et al, described a method which estimated pH of NG tube aspirate and bilirubin level. This was based on the difference in mean pH level in lung (7.73) and intestine (7.35) with the stomach (3.9). Similarly mean bilirubin levels are different in lung and stomach which can be measured with colorimetric visual scale test strip [6]. Araujo et al reported use of capnography with specificity and sensitivity of 100% in 53 insertions where capnometer was used to detect end tidal CO₂ at 30cm tube position [7]. Small diameter flexible endoscopes have been used to put NG tube transnasally where a guidewire is introduced through the side channel and a nasogastric or nasojejunal feeding tube is fed over the wire [8]. The idea of this discussion is that although insertion of Ryles tube is a simple procedure utmost care and vigilance is required more so when the patient is anesthetized. Difficult airway and anatomical abnormality should be kept in mind and minimum manipulation is desired. Whenever in doubt, further attempts should be abandoned and its position should be checked by X-ray or other newer modalities to eliminate the blindness of insertion.

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