



Self-knotting of Nasogastric Tube: Case Report and Review of Literature

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Authors' contributions

This work was carried out in collaboration between both authors. Author OLO wrote the case report, reviewed the literature and wrote the first draft of the manuscript. Author NSU also reviewed and managed the literature searches. Both authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Naso-Gastric (NG) tube use is very common in patients' care at all levels of healthcare service delivery Worldwide. However, it is not without its complications. Naso-Gastric tube self-knotting is an unusual complication associated with its insertion and removal. A review of literature shows that no such case has been documented in our environment. Therefore, we thought it necessary to report this first case of self-knotting of NG tube encountered in the management of a 60 year old male post laryngectomy patient in the University of Port-Harcourt Teaching Hospital (UPTH), Port Harcourt, Nigeria. We want colleagues and other healthcare providers to be conversant with this unusual complication.

Keywords: Naso-gastric tube; self knotting; post-operative management; total laryngectomy; complications.

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1. INTRODUCTION

Naso-Gastric tube is a flexible tube made of various materials of which polyurethane is the commonest material used in our environment. It varies in length (90 -300 cm) and in size (5-20 French gauge). Its use is very common in patients' care at all levels of healthcare service delivery Worldwide [1].

In a total laryngectomy patient, NG tube maintains the integrity of the pharyngeal repair; it is used for feeding the patient and equally serves as a route for drug administration during the postoperative management. Furthermore, it can be used for gastrointestinal decompression before abdominal surgeries and in patients with intestinal obstruction. Naso-Gastric tube use is not without complications. Self-knotting of the tube could occur during its insertion when the tube passes through a coil of excess length [1].

Furthermore, during removal of the NG-tube the knot already formed during insertion may tighten. Knotting of NG-tube could also be associated with narrow bore of tube, altered anatomy of the stomach, multiple manipulations of the tube, deep insertion, neck movement and chronic cough [2]. Softening of the tube at body temperature [3] and endotracheal intubation [4] are other risk factors associated with self-knotting of NG-tubes. Literature is awash with reported cases of self-knotting of NG tubes in many parts of the world [1,2,3]. However, none has been documented in our environment. Therefore, we thought it necessary to report this first case of self-knotting of NG-tube encountered in the management of our post laryngectomy patient in the University of Port-Harcourt Teaching Hospital (UPTH), Port Harcourt, Nigeria.

2. CASE REPORT

A 60 year-old male civil servant presented to our Ear, Nose and Throat outpatient clinic of the University of Port Harcourt Teaching Hospital (UPTH) with features of advanced laryngeal tumour for which he was offered total laryngectomy as part of the treatment. Post operatively, the NG tube which was inserted intra-operatively functioned well in the first 4 days and patient was comfortable with it (Fig. 1).

However, on the 5th day post-operatively the patient complained of slight pain and discomfort

around the throat and abdomen. Besides, the NG tube was equally noticed to be non-functional. Several attempts to flush it with fluid were unsuccessful. The plain radiograph of the chest and abdomen requested could not be done before the patient pulled out the tube because of the discomfort he felt. On inspection of the NG tube that was pulled out by the patient, it was knotted in the distal portion of the tube (Fig. 2). Moreover, the patient post-operative management continued without the NG tube and was discharged home satisfactorily on the 14th day post-operatively to continue further treatment on outpatient basis.

3. DISCUSSION

Self-knotting of NG-tube is a well-documented unusual complication associated with NG-tube insertion and removal. Knotting is commoner with narrow bore tubes [2] as against the wide bore tubes. In our patient we used size 18 French Gauge tube as shown in Fig. 1. There are different types of knots that could arise from nasogastric tube use; a simple knot was formed in our case which could be best described as an overhand knot. However, a 4-loop complex knot [5] and a lariat knot have been reported by other researchers [6]. There was also a report of nasogastric tube knotting around a naso-tracheal tube in an infant [7].

The knot forms when the tube passes through a coil of excess length [2] and tightens on removal. These actions must have accounted for the self-knotting encountered in our case (Fig. 2). A tight knot of the nasogastric tube insitu can cause non functionality of the tube for obvious reasons and makes feeding impossible. This must have accounted for the non-functioning of the NG tube of our patient on the 5th day post-operatively when the complication was noticed.

Likewise, the knot could also pose as a source of great danger to surrounding structures during removal. Although, we did not encounter any complication associated with the removal in this case but sudden onset of respiratory distress when the knot is around naso-tracheal tube [7,8] and trachea-esophageal fistula in a patient with corrosive oesophagitis have been reported [9]. Furthermore, mechanical trauma to the pharynx and nose with pains and epistaxis can occur following sustained pressure of the knot during removal.



Fig. 1. Showing the patient with N-G tube in situ on the 4th day post-operatively



Fig. 2. Showing knotted NG tube towards the distal portion

The complications associated with the removal of knotted NG-tube can be avoided if knotting is suspected to have occurred when the tube starts malfunctioning and it can be confirmed by radiological investigations such as plain radiographs of the chest and abdomen [3,10] and further complications can be excluded through contrast studies via the nasogastric tube [9]. In our case, the patient pulled out the tube before we could carry out radiological investigations to confirm the integrity of the NG-tube insitu. Confirmation of knotting by carrying out flexible naso-pharyngoscopy has also been reported [7,11]. In another report, the knotting was visualized during oropharyngeal examination as it was being removed [2].

Removal of the knotted NG-tube by the patient using sustained gentle pull and manipulations through the mouth and nose without any complication is possible [5]. Conversely, removal through the oropharynx with the aid of Magill's forceps after cutting the proximal end of the tube is very common and has been well documented [4]. In addition, removal with rigid oesophagoscopy under general anaesthesia has been done successfully by some researchers in the past [9].

To avoid complications, the standard technique in passing NG-tube should be followed judiciously. This involves lubrication of the distal end and proper length estimation by measuring the distance from the tip of the nose through the post-auricular groove to about 5 cm below the xiphoid process. The tube is then marked at this estimated length to avoid passage of excess length and deep insertion [2]. It must also be firmly secured in place to prevent displacement during neck movement and coughing of the patient [2]. Proper placement of the tube can be confirmed traditionally by injecting air into the tube while auscultating over the epigastrium to listen to the gush of air into the stomach and by aspiration of gastric contents.

4. CONCLUSION

Even though, self-knotting of NG-tube is a rare occurrence in our environment, we want colleagues and other healthcare providers to be conversant with this unusual complication. They should suspect self-knotting of NG-tube in situ particularly when the tube is non-functional and the patient is complaining of pain and discomfort in the chest or abdomen. Besides, health workers are advised to adhere strictly to the

standard techniques of insertion and removal of NG-tubes to avoid pitfalls associated with the use of NG-tubes.

CONSENT

All authors declare that informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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