

## Orogastric Lavage: A Lifesaving Procedure Now Forgotten

PREMALATHA S, NIK AZLAN NM, MARYAM MF

*Department of Emergency Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia.*

### ABSTRAK

*Lavaj orogastrik telah dijalankan sejak 200 tahun yang lalu untuk pesakit yang telah diracun atau meracuni diri sendiri. Ke kerapannya ini telah menurun sedekad yang lalu disebabkan faktor risiko yang mengatasi manfaat. Seorang gadis remaja yang telah menelan sebotol racun perosak dalam tempoh masa yang sebelum pengosongan gastrik telah tiba di jabatan kecemasan kami. Pesakit itu diresusitasi dan lavaj orogastrik telah dilakukan. Lima puluh cc bahan toksik telah disedut dan penawar toksin itu telah diberi. Pesakit kemudian telah dimasukkan ke Unit Rawatan Rapi dan seterusnya dibenarkan pulang dari hospital lima hari kemudian. Pengurusan saluran pernafasan yang betul, teknik yang betul, pemilihan yang betul bagi pesakit dan pemantauan yang mencukupi adalah penting bagi kejayaan lavaj orogastrik.*

*Kata kunci: Lavaj orogastrik, racun, intubasi, pengosongan gastrik*

### ABSTRACT

Orogastric lavage has been performed since 200 years ago for intoxicated patients. Due to the risk that outweighs benefits it has fallen out of favour for the last decade. A teenage girl presented to Emergency Department with history of ingestion of a bottle of pesticide within the time frame before gastric emptying. The girl was resuscitated, intubated and orogastric lavage was performed. Fifty cc of the toxic substance was siphoned and antidote of the toxin was administered. She was admitted to the Intensive Care Unit, subsequently recovered and discharge five days later. Definitive airway management, proper technique, correct selection of patients and adequate monitoring are paramount to the success of orogastric lavage.

Keywords: orogastric lavage, toxin, intubation, gastric emptying

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**Address for correspondence and reprint requests:** Dr. Nik Azlan Nik Muhamad, Department of Psychiatry, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia. Tel: +603-91455703 Fax: 03-91456577 Email: nikazlanmuhamad@hotmail.com

## INTRODUCTION

Orogastric lavage was previously a common method for gastric emptying in the emergency department (ED). The frequency of its use has been decreasing over the past decade (Larkin & Claassen 2007). This is due to the complications that arise and the clinical efficacy of this method. However, given the correct selection of patient and the proper technique and safety profile, this method can be lifesaving

## CASE REPORT

An 18-year-old girl was brought into the Emergency Department with vomiting and reduced consciousness by her family members. According to her mother, she had consumed a clear liquid form insecticide, which was kept in a clear plastic bottle at home. It is known that she was upset with the recent death of her boyfriend. She ingested the toxin 20 minutes prior to arrival.

Upon arrival, she was brought into the red zone. She had an unspecified unpleasant odour. She was breathing spontaneously but in a labored manner. On examination, her vital signs included a temperature of 36.8 C, pulse rate of 100 beats/min, blood pressure 121/62 mmHg, respiratory rate 30 breaths/min and oxygen saturation of 96% under room air. She had flexion to painful stimuli and did not open her eyes nor make sounds. Her Glasgow Coma Scale (GCS) score was 6/15. She had pinpoint pupils. Lung auscultation revealed bilateral transmitted sounds. Examination of the heart and abdomen was unremarkable. She was passing

large amount of loose stool. The skin was warm and clammy with capillary refill (CR) of less than two seconds. She soiled the bed linen.

After orotracheal intubation and mechanical ventilation was performed for airway protection, intravenous atropine was administered (0.02 mg/kg every five minutes) and pralidoxime was initiated. At this point, intoxication with an organophosphorus compound (OP) was considered due to the toxidromes present, which were diarrhoea, pin point pupils, bronchorrhea and confusion. In view of early presentation, in the time frame of one hour from the time of alleged consumption, orogastric lavage was done. She was also given activated charcoal via orogastric tube. During orogastric lavage the patient is sedated and placed at lateral decubitus position. The patient was already intubated, hence pulmonary aspiration will no longer be a problem. The placement was confirmed with air insufflations and auscultations. Instantaneously approximately 50 cc of green-yellowish fluid with toxic (organophosphate) fluid was drained from the tube. Five hundred milliliters of water was added in the tube and siphoned out again draining remnants of the organophosphate toxin.

The patient was admitted to the Intensive Care Unit (ICU) and was extubated the following day. All laboratory values were within normal range except a high white cell count of  $16.4 \times 10^9/L$ . The white cell count normalized to  $5.5 \times 10^9/L$  four days later. The cholinesterase level was not available. She was referred to the internal medicine team. She was

discharged well with no complications five days later.

## DISCUSSION

Orogastric lavage is used to remove pills, fragments and toxic material from the stomach. The frequency of orogastric lavage has been reducing in the past decade. There is a downward trend over the last decade in the usage of gastric lavage in the US (Benson et al. 2013). It is seldom done to the fear of risk of complications such as insertion of tube in the trachea, aspiration, laryngospasm, arrhythmia, esophageal or stomach perforation, fluid/electrolyte imbalance and decreased oxygenation during procedure (Thompson et al. 1987). Many organizations, including the American Board of Applied Toxicology and the Canadian Association of Poison Control Centre has warned against the use of orogastric lavage.

The claim that orogastric lavage is unsafe should be reviewed. Certain guidelines amongst airway protection is mandatory should be drafted on this procedure. The cited consensus article updates the data on the basis of animal studies, studies of volunteers, experimental studies in patients, case studies, and clinical studies. Animal studies and experimental studies fail to represent the real clinical scenario. Nevertheless, several case reports showed positive outcomes for gastric lavage and endoscopy. With regard to clinical studies the cited studies are from 1942 to 1966 and did not consider the intoxication dose and the factor of time. Further citations (review of 56 small and heterogeneous,

exclusively Chinese, studies) produce a controversial picture. Although benefit of lavage is immediate return of pill fragments and prevention of further intoxication, studies demonstrate drug removal ranging from 35 to 56 percent. Two out of three large studies showed benefit from the procedure, only if performed within one hour of ingestion. (Merigian et al. 1990; Pond et al. 1995)

In cases of life-threatening intoxication, all possible options for detoxification should be considered. Gastric lavage is one such option. In such a situation, a benefit not supported by controlled studies should not be a deterrent factor against gastric lavage. Time factor should still be of a consideration, as of theoretically toxins would be cleared from the stomach within one hour. This also depends on the type of toxins, such as toxins that delays gastrointestinal motility and clearance (e.g. tricyclics) or toxins that have enterohepatic circulation (salicylates, paracetamol) should have a longer time frame in which lavage can be done. The physical nature of toxins should not be questioned, as in this case liquid form of the organophosphate was able to be siphoned out. We have repeatedly encountered situations where the lack of, or delay in, gastric lavage resulted in poor outcomes.

Deliberate self-poisoning is significantly more dangerous in the developing world than in the West. Orogastric lavage would have poor outcomes if done as reported in underdeveloped countries with no ICU setting or antidote availability. It was reported that gastric lavage was done forcefully with no sedation, no airway

protection and no proper monitoring. In addition to this, toxic substances that are more dangerous are widely available in developing countries (ie paraquat). The fatality of less than 0.5% in western world contrasts strongly with 10-20% in the developing world. (Eddleston et al. 2007). Lack of experience (Benson et al. 2013) is another contributory factor in the reducing trend of orogastric lavage performed. Since the range selection of patients that lavage can be performed is small, it is rarely done and few, if any new freshly graduates have neither any experience in performing or witnessing an orogastric lavage being done.

In Malaysia, where ICU setting is modernized, and facility to intubate and protect the airway in the Emergency Department is available, in addition with the widespread use of cardiostable drugs (ie etomidate) it is safe to intubate and protect the airway of a patient with fatal toxic ingestion prior to orogastric lavage. In view of this scenario, we have outlined a few recommendations based on previous literature in performing an orogastric lavage

### RECOMMENDATIONS

Selection of patients must be of time frame within one hour on ingestion. Amount and toxicity of substance ingested is perceived fatal, based on history and toxidromes obtained at that moment. Airway protection is mandatory, as patients will be intubated following the rapid sequence intubation (RSI) protocol. Staff and medical personnel should be protected and all should have the necessary personnel protective equipment (PPE).

The orogastric tube must be of a correct diameter (36-40 french tube in adults and 22-24 – French tube). The tube must be correctly measured from the chin to the xiphoid process. Insufflation of air and auscultation would ensure accurate placement of the tube. Siphon out any toxic substance that comes out as soon as the tube is inserted. Lavage with room temperature water until effluent becomes clear. Before removing the tube, instil activated charcoal in dose of 1g/kg (Vale & Kulig 2004).

### CONCLUSION

Orogastric lavage has fallen out of favour for the past decade due to complications, poor patient selection, poor technique and lack of experience. The benefits of orogastric lavage are yet to be elucidated through proper randomized controlled trials. This procedure should be limited to patients with presumed fatal intoxication and within the time frame of gastric emptying of 1 hour. Proper technique, adequate monitoring and securing definitive airway protection are necessary for safe orogastric lavage. Direct benefit in reducing toxin ingestion up to 50% could be lifesaving in conditions where the risk of this procedure is minimized.

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