Author's response to reviews

Title: Gastric tube insertion under direct vision using the King VisionTM video laryngoscope: a randomized, prospective, clinical trial

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Version: 7 Date: 1 September 2014

Author's response to reviews: see over
Dear Reviewer

We are very pleased to have been given the chance to revise and resubmit our manuscript (6997625511260300) to be considered further for publication in BMC Anesthesiology. The comments of the reviewers have been helpful in guiding the revision of our manuscript. We have attempted to make appropriate changes and have addressed the questions raised as follows:

Reviewer 1’s report:

1- Authors should give some information about other NGT insertion and confirmed techniques.
   Response: Thank you for this helpful comment. We have added detail of other confirmatory techniques and revised the manuscript accordingly (page 8, lines 10–16):

   There are many ways to confirm the successful placement of a gastric tube, such as injecting air into the tube while auscultating over the epigastrium, and aspiration of gastric contents and measurement of their pH. The use of a capnograph connected to the end of the gastric tube to detect tracheal malpositioning has also been suggested [5, 7, 8], but none of these methods is completely reliable. The gold standard for confirmation of correct placement remains X-ray, which may not be an entirely feasible choice in the operating room [5, 7].

2- What is the King vision.? Why authors did chose King vision? Why did not they use other videoscopic technique?
   Response: The King Vision laryngoscope is the device used in our institution, and is in widespread clinical use in Japan. We have added further detail about the King Vision device (page 4, lines 14–18), and a discussion of other videoscopic techniques (page 8, line 18 to page 9, line 5):

   The King Vision™ video laryngoscope (King Systems, Indianapolis, IN, USA) is a type of video laryngoscope that is mainly used when it is anticipated that endotracheal intubation will be difficult, and comprises a reusable color display and
a disposable blade: a standard blade without a tube-guiding channel, a channel blade with a tube-guiding channel (Figure 1).

Ikeno and colleagues reported that use of the Pentax-AWS system (Air Way Scope, AWS; Hoya, Tokyo, Japan) helped to prevent misplacement of the gastric tube into the trachea [9]. Kitagawa and colleagues also found that the AWS device reduced the incidence of oral damage caused by blind insertion, and recommended that a pediatric AWS blade be used to allow better maneuverability around the endotracheal tube in the oropharynx [10]. The standard AWS blade is 48 mm wide, compared with 44 mm for the thinner blade and 33 mm for the pediatric blade. These blades are all substantially wider than the 13 mm wide standard King Vision video laryngoscope blade, allowing easier insertion and maneuverability within the mouth, making it particularly suitable for transnasal gastric tube insertion (Figure 4).

3- Authors should give some information about anaesthesia.
   Response: As requested, we have added information about the conduct of anesthesia in our study (page 5, lines 14–16):

   In all patients, general anesthesia was induced with propofol and remifentanil, followed by endotracheal intubation facilitated by rocuronium. Subsequent anesthesia was maintained with propofol and remifentanil.

4- Which parameters did they use? I did not see any information in methods section.
   Response: We have given details of the outcome measures used (page 6, lines 16–18):

   The time required for placement of the gastric tube, and the incidence of oral hemorrhage, epistaxis and malpositioning in the trachea were compared between the groups.

5- Which did operation types include the study?
   Response: We have given details of the surgery that patients underwent (page 5, lines 4–7):

   We enrolled 60 patients (aged 42–84 years) in whom transnasal insertion of a
gastric tube was required before elective abdominal surgery under general anesthesia (31 underwent colectomy, 15 gastrectomy, six pancreaticoduodenectomy, three cholecystectomy and five underwent other procedures).

6- Did they have power analysis?
Response: Unfortunately we were not able to find similar previous studies to inform a power analysis. We have acknowledged the relatively small sample size of our study in the Discussion (page 9, lines 11–16), and made the point that our findings could be used to power future studies.

7- Discussion section is unclear. Background and discussion sections have similar information. I think, discussion section should rewrite.
Response: Based on your suggestion we have revised the Background and the first paragraph of the Discussion to avoid repetition (page 4, lines 2–7 and page 8, lines 8–16). We hope that you will find these changes satisfactory.

**Reviewer 2’s report:**

**Major Compulsory Revisions**
1. The first paragraph of the discussion is very similar with the background section. Repetitions should be avoided.
   Response: Based on your suggestion we have revised the Background and the first paragraph of the Discussion, on page 4, line 2-7, and page 8, line 8-16.

2. In methods, more detailed information should be given on the anesthesia induction and maintenance.
   Response: Thank you for this advice. We have added more detail about the anesthetic technique, page 5, lines 14–16:

   In all patients, general anesthesia was induced with propofol and remifentanil, followed by endotracheal intubation facilitated by rocuronium. Subsequent anesthesia was maintained with propofol and remifentanil.

3. More discussion is needed. Literature search can reveal studies with similar design. (Eq: Ikeno S, Nagano M, Tanaka S, Nishimura C, Kawamata T, Kawamata M Gastric tube insertion under visual control with the use of the
Response: Thank you for this helpful comment. To address this point, we have added Figure 4 and touched on this issue in the Discussion. The description that we have added to the Discussion can be found from page 8, line 18 to page 9, line 5:

Ikeno and colleagues reported that use of the Pentax-AWS system (Air Way Scope, AWS; Hoya, Tokyo, Japan) helped to prevent misplacement of the gastric tube into the trachea [9]. Kitagawa and colleagues also found that the AWS device reduced the incidence of oral damage caused by blind insertion, and recommended that a pediatric AWS blade be used to allow better maneuverability around the endotracheal tube in the oropharynx [10]. The standard AWS blade is 48 mm wide, compared with 44 mm for the smaller type and 33 mm for the pediatric blade. These blades are all substantially wider than the 13 mm wide standard King Vision video laryngoscope blade, allowing easier insertion and maneuverability within the mouth, making it particularly suitable for transnasal gastric tube insertion (Figure 4).

4. Limitations of the study should be addressed.
   Response: Based on your suggestion we have added a discussion of our study’s limitations on page 9, lines 11–16:

   Our study had some limitations. Although our method can be used to confirm that the gastric tube is in the esophagus, it cannot detect appropriate placement in the stomach, and conventional suction of gastric fluid or injection of a small amount of air must still be performed. Our sample size was also relatively small; but our findings can be used to power future, larger studies that will be needed to detect clinically significant differences in the success rate of gastric tube insertion and the incidence of complications when using the King Vision video laryngoscope.

**Minor Essential Revisions**

1. In background section Line 2-3 #In patients who are under general anesthesia or unconscious, insertion of a gastric tube can be difficult owing to the loss of the cough reflex and inability of the patient to assist with swallow# should be changed to #In unconscious patients or patients under general anesthesia, insertion of a gastric tube can be difficult owing to the patient#s inability in assisting with
swallowing. In addition, the loss of cough reflex can cause malpositioning of the tube.

Response: Thank you for this helpful advice; we have revised the manuscript accordingly on page 4, lines 2–4.

2. In Methods section, Line 3 #t# should be deleted. It has been probably miswritten.

Response: Thank you for this helpful advice; we have revised the manuscript as you suggest.

3. In Methods section Line 10-13 #Patients with the following complications considered to be contraindications for gastric tube insertion or video laryngoscopy were excluded: coagulopathy, esophageal varix, loose teeth, trismus, esophageal hiatus hernia, and base of skull fracture.# should be written as exclusion criteria, not as complications or contraindications. (Eq. #Patients with a history of coagulopathy, esophageal varix, loose teeth, trismus, esophageal hiatus hernia, or basilar skull fracture were excluded from the study. #)

Response: Thank you for this helpful advice; we have revised the manuscript on page 5, lines 11–13.

4. In methods Line 15 #The King Vision video laryngoscope was inserted intra-orally. A standard blade was used# was written. A more detailed description should be given about the blade sizes and the type of the blade (channeled or un-channeled).

Response: Thank you for this advice; we have added further detail about the King Vision laryngoscope (page 4, line 14–18) and information about blade size,(page 5, line 17–20):

The King Vision™ video laryngoscope (King Systems, Indianapolis, IN, USA) is a type of video laryngoscope that is mainly used when it is anticipated that endotracheal intubation will be difficult, and comprises a reusable color display and a disposable blade: a standard blade without a tube-guiding channel, a channel blade with a tube-guiding channel (Figure 1).

The standard blade is narrower than the channel blade (13 mm compared with 18
mm), allowing easier insertion and maneuverability within the mouth, making it particularly suitable for transnasal gastric tube insertion.

5. #If the time required for insertion was 5 minutes or more, the insertion was considered as having failed. If blind insertion was unsuccessful, an attempt at insertion was made with the King Vision video laryngoscope.## should be changed to #If the time required for insertion was 5 minutes or more, it was considered to be a failed attempt. If the blind insertion technique was the technique failed, a second attempt at insertion was made with the King Vision video laryngoscope.##

   Response: Thank you for this helpful advice; we have revised the manuscript on page 6, lines 13–15.

6. In conclusion line 2 #When inserting a gastric tube, a King Vision video laryngoscope is a useful means of avoiding tracheal malpositioning of the gastric tube, without increasing the time required to insert the tube or the incidence of complications.## Should be changed as #When inserting a gastric tube, a King Vision video laryngoscope is useful in means of avoiding tracheal malpositioning of the gastric tube, without increasing the time required to insert the tube or the incidence of complications.

   Response: Thank you for this helpful advice; we have revised the manuscript on page 9, lines 19–21.

Discretionary Revisions

1. In background section, a brief description of Kings Vision could be given. It is still not a very common device as some other videolaryngoscopes are.

   Response: We have added an explanation about King Vision to page 4, lines 14–18:

   The King Vision™ video laryngoscope (King Systems, Indianapolis, IN, USA) is a type of video laryngoscope that is mainly used when it is anticipated that endotracheal intubation will be difficult, and comprises a reusable color display and a disposable blade: a standard blade without a tube-guiding channel, a channel blade with a tube-guiding channel (Figure 1).

Your detailed review of our manuscript is greatly appreciated, and we hope that you will
find our responses to each of the questions raised meet your expectations.

Thank you for your consideration of the revised version.

Sincerely yours,

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