

Fig. 2. Massive right cheek soft tissue trauma from a gunshot wound. Fluorescence is seen in the wound bed demonstrating injury to the parotid duct.

Our results indicate that our technique enables one to identify and rule out parotid duct injuries in patients with deep penetrating facial soft tissue trauma using commonly available materials in the ED. The technique was performed for the first time by two of the authors with very little technical difficulty. Both patients also had no complications of parotid duct injury such as salivary fistula, sialocele, abscess formation, wound dehiscence, or parotitis at follow-up. The advantages of this technique include the ability to avoid surgical exploration and resultant potential additional trauma. If the fluorescein dye test is negative, sparing a trip to the operating room could help contain costs. The lacrimal probe could cause ductal injury, however only a small length of probe needs to be inserted. Injury is likely a greater risk using a lacrimal probe alone because it must be advanced much farther into the wound bed. A less rigid material such as prolene suture may not cannulate the papilla as easily and is difficult to visualize. Injection of another dye such as methylene blue could be attempted, but is not recommended due to tissue staining and difficulty identifying structures [3]. Other methods to identify parotid duct injury like sialography and sialoendoscopy are not as readily available and require more experience [4,5]. Fluorescein has been safely applied in several other medical applications [6–9].

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Tracheal intubation with a VivaSight-SL endotracheal tube by paramedics in a cervical-immobilized manikin☆☆☆



To the Editor,

The incidence of cervical spine injury is reported to be from 1% to 4% in all major trauma victims and may be as high as 34% in patients with severe injuries [1]. Endotracheal intubation is still considered a gold standard to secure the airway of severely ill or injured patients [2–4]. However, pre-hospital intubation using direct laryngoscopy is more difficult than in-hospital, with a relatively high rate of failed intubations [5]. A helpful option may be novel techniques of intubation, including video laryngoscopes, for example, the VivaSight-SL (ETView; ETView Ltd, Misgav, Israel). ETView is single-lumen airway tube with an integrated high-resolution imaging camera, so we can see the image from the end of the endotracheal tube.

We hypothesized that the videolaryngoscopes could be an alternative to direct laryngoscopy during intubation of adult with cervical spine immobilization. In the current study, we compared the efficacy of the ETView, and Macintosh laryngoscope (blade no.3; Mercury Medical, Clearwater, FL) in adult intubation with immobilized cervical spine.

This study was designed as an open, prospective, randomized, crossover, manikin trial. The study has been approved by the institutional review board of the International Institute of Rescue Research and Education (Approval 11.2015.08.22 on August 11, 2015). After written informed consent, 56 paramedics providers with no training in intubation using ETView and at least one year experience in emergency medicine were recruited. To simulate the scenario of difficult airway, a standardized advanced life support manikin (SimMan 3D; Laerdal, Stavanger, Norway) was placed on a Streyker trauma stretcher (Stryker, Kalamazoo, MI) in a neutral position. Subjects participated in 2 airway scenarios:

- A) low difficulty—cervical spine immobilization, with was reached using a standard cervical immobilization collar (CIC) (StifNeck Select, Laerdal, Stavanger, Norway)
- B) high difficulty—cervical spine immobilization and tongue swelling. Cervical immobilization was made using CIC, and tongue swelling was reached by inflating the tongue with a pressure of 110 mm Hg

An ETView SL (Figure) with 7.0 mm internal diameter lubricated with silicon aerosol was used. For direct laryngoscopy participants used standard 7.0 internal diameter endotracheal tube (Covidien, Mansfield, MA, USA)—with was also lubricated. A semi-rigid stylet was inserted in the endotracheal tube (ET) when intubation was performed with Macintosh, and ETView.

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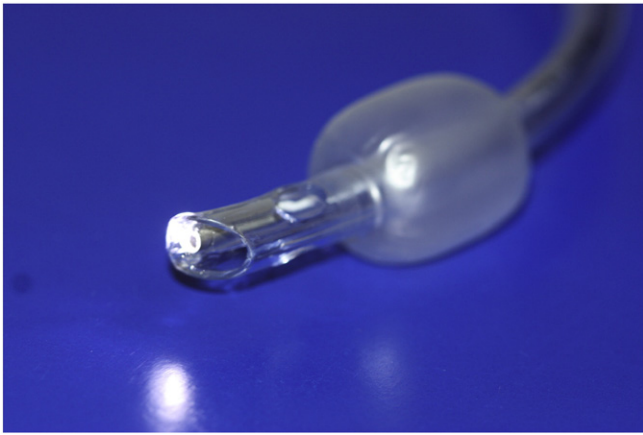


Figure. VivaSight-SL endotracheal tube used in study.

Prior the study, all participants were given a 30-minute standard training session. The equipment was demonstrated in detail by experienced anesthesiologist. After theoretical section participants were given ten minutes to practice intubation, with the instructor available to give advice. After the practice session, the participants were divided into four groups. The study was designed as a randomized crossover trial to minimize learning effects. Research Randomizer program was used [www.randomizer.com]. Participants were not allowed to watch each other during any of the intubation attempts to avoid any learning effects throughout the procedure. Each participant was instructed to insert the ET tube, attach a bag valve mas, and attempt to ventilate lungs of the manikin. Participants were reminded that the patient needs emergency endotracheal intubation as fast as possible before each attempt to give them a certain feeling of time pressure that would have been presented in real emergency situations.

The primary outcome was the time to intubation. Time was started when the participant picked up the ETView or MAC and ended at the point of manual ventilation after ET insertion. Secondary outcome was success of the first intubation attempt. Success of the intubation attempt was recorded when the success of the ventilation attempt was seen by the manikins ventilation indicators. The Statistica statistical package (ver.12.0 for Windows, StatSoft, Tulsa, OK) was used for statistical analysis. $P < .05$ was considered statistically significant.

The analysis showed that the shortest median intubation time during scenario A was achieved with ETView (19 [IQR, 17–22.5] s) and the longest when using MAC (25 [IQR, 23.5–29] s). Those difference was statistically significant ($P < .001$). Similar dependence was observed in scenario B, where time to intubation using ETView was 22.5 [IQR, 20–26] s, and using MAC was 39 [IQR, 31–47.5] s ($P < .001$). The success rate after the first attempt using the distinct intubation methods varied and amounted to 100% vs 72.3% (ETView, MAC, respectively) for scenario A and 96.4% vs 46.4%, respectively for scenario B.

In conclusion, this study indicates that the ETView may be a good first choice in tracheal intubation by a paramedic in a cervical immobilized condition and CIC with tongue swelling, due to the improved first-attempt success rate and shorter intubation time.

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Safety of laryngeal tubes[☆]



To the Editor,

We read with interest the study by Roth et al [1]. The authors concluded that prehospital use of the laryngeal tube (LT) during out-of-hospital cardiac arrest (OHCA) by basically trained emergency medical technicians seems to be safe and feasible and that “injuries were relatively rare.” It should be emphasized that the LT is by no means an airway device without complications [1] given the high incidence of severe and life-threatening complications with prehospital LT use (98/189 patients; 52%) [2], which is preventable in some cases using a device with gastric drainage [3]. Roth et al [1] reported cases of regurgitation in both the bag mask ventilation (BVM) (8/74; 11%) and LT group (22/395; 6%); this is comparable to data from another prehospital study [6]. They also found a high number of cuff ruptures in the LT group (16/395; 4%) [1]. The complication rate increased when ventilation with the LT could not be achieved and the user resorted to BVM (regurgitation 8/48 [17%], injury 1/48 [2%], and cuff rupture 3/48 [6%]).

In our study [4], we compared BVM with 2 supraglottic devices with gastric access, as recommended [2,3]. Stomach insufflation (confirmed by epigastric auscultation) was common and not statistically different between groups (BVM 11/33 [33%], laryngeal mask 20/47 [41%], and LT 15/39 [39%]; $P = .789$), which seems to underline this recommendation

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