

## Autosuture GIA gun: a new application in the treatment of hypopharyngeal diverticula

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### Abstract

A new surgical technique for the treatment of moderate to large hypopharyngeal diverticula is described. The procedure is particularly useful in debilitated patients in that it is quick and guarantees closure of the party wall between the pouch and upper oesophagus.

**Key words:** Hypopharyngeal diverticula; Surgery, instruments, Autosuture GIA gun

### Introduction

Moderate to large hypopharyngeal diverticula are classically treated either by open diverticulectomy usually associated with cricopharyngeal myotomy or by Dohlman's technique recently modified with the use of the CO<sub>2</sub> laser. Complication rates for these techniques range from 10 to 50 per cent (Bertersem and Aasted, 1976; Overbeek and Van Hocksema, 1982; Overbeek *et al.*, 1984; Bowdler and Stell, 1987; Freeland and Bates, 1987) and include recurrent laryngeal nerve palsies, fistulae, strictures, recurrences, mediastinitis and peri-operative death. The high complication and mortality rates can be attributed not only to the hypopharyngeal diverticulum and associated respiratory deterioration but to other age-related medical conditions. There is therefore a definite need for a quick procedure which guarantees closure of the pharyngeal mucosa without contamination of the neck spaces. The following technique fulfills these criteria utilizing the Autosuture Multifire Endo GIA 30 disposable surgical stapler. This device has been employed in many general surgical and gynaecological endoscopic/laparoscopic procedures.

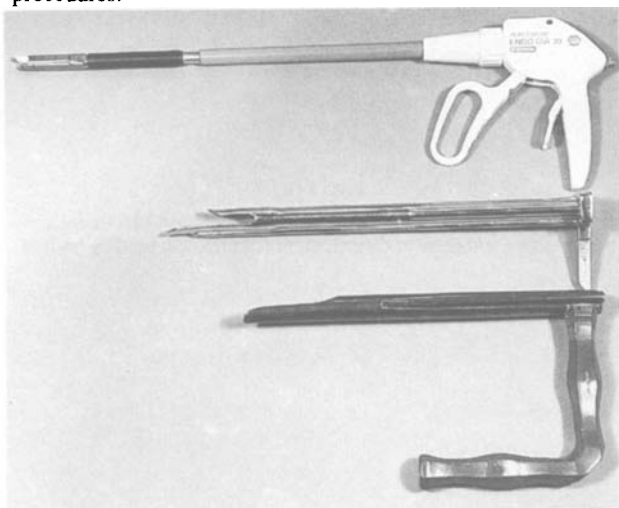


FIG. 1

Relative size of the GIA 30 stapling device compared to Dohlman and Negus endoscopes.

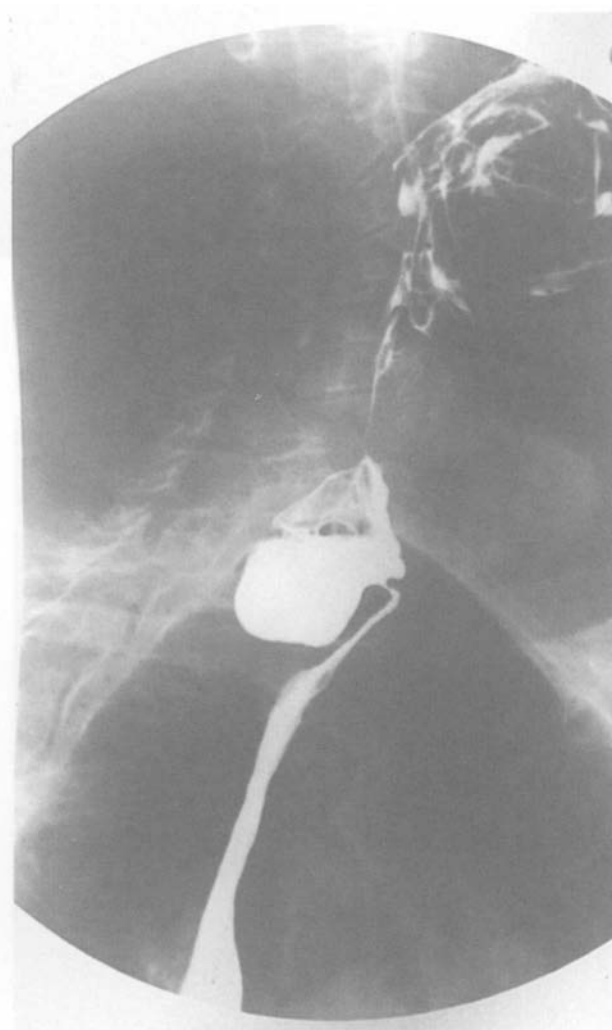


FIG. 2

Pre-operative barium swallow showing tight cricopharyngeal sphincter and narrow neck of diverticulum.

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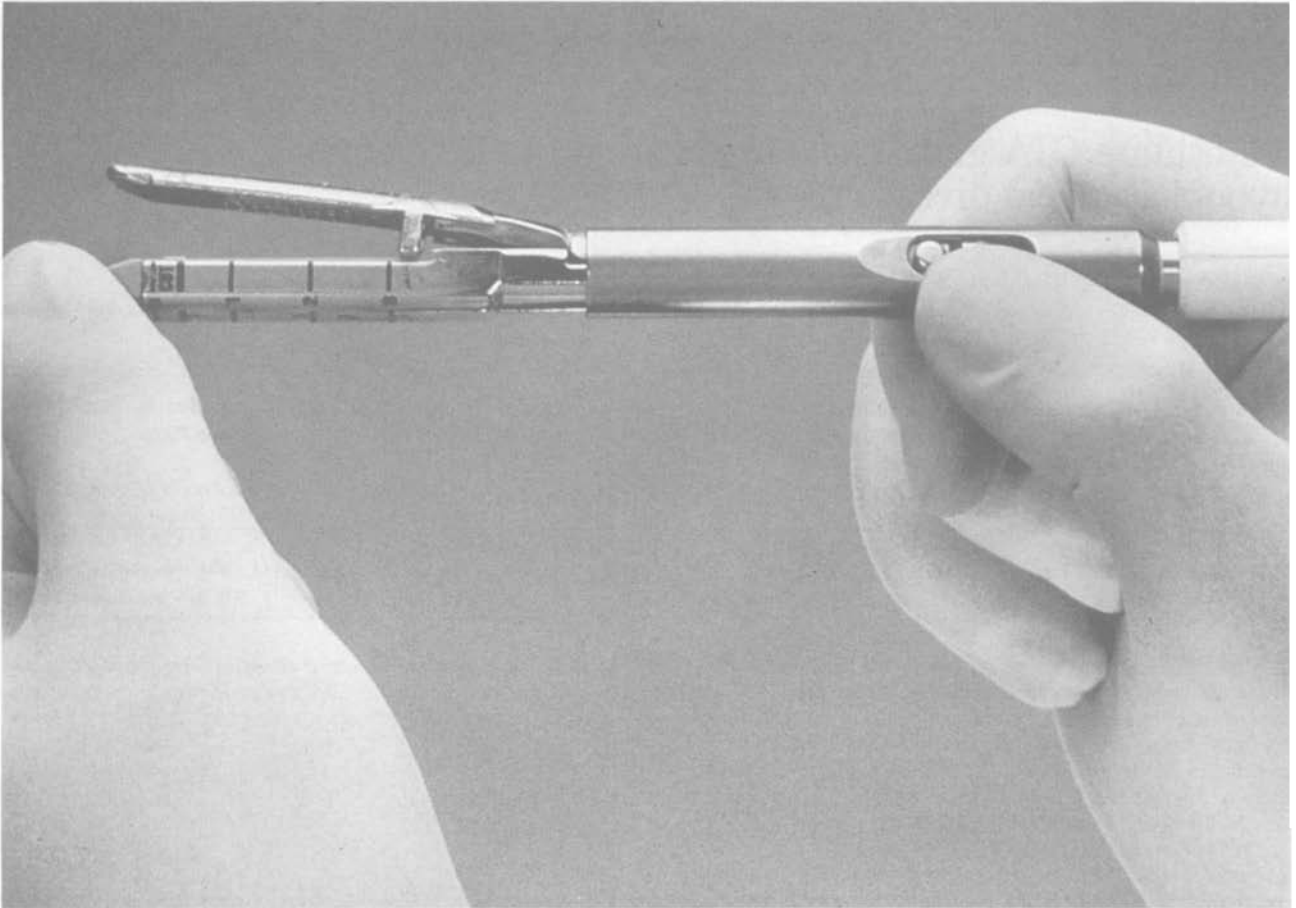


FIG. 3 (above)  
Close-up of head of stapler-gun.

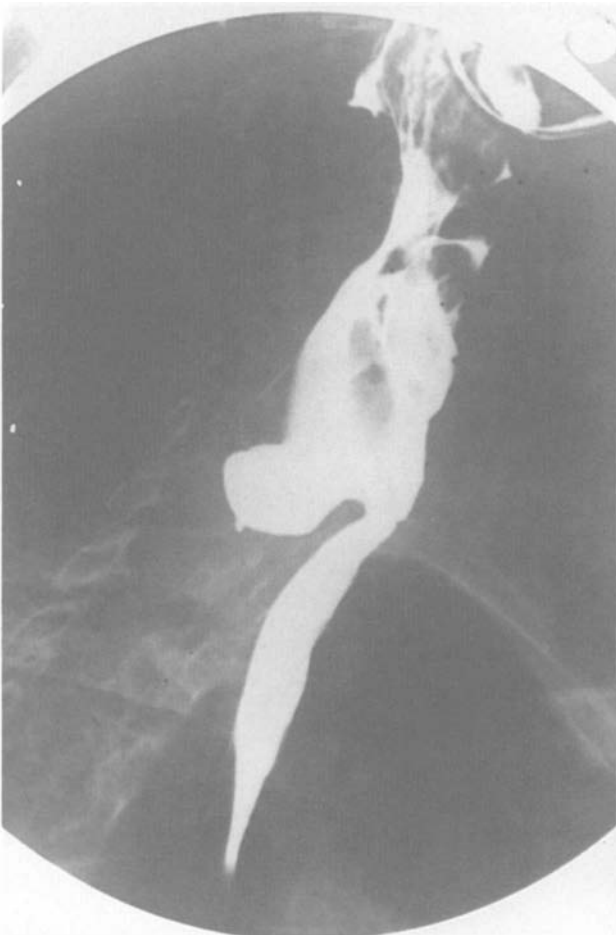


FIG. 4 (left)  
Post-operative barium swallow showing opening of cricopharyngeus muscle and neck of diverticulum (staples obscured by barium).

The stapler places two triple staggered rows of titanium staples and simultaneously divides the tissue between the two innermost rows, leaving three rows of staples on each side of the transection. The comparative size of the staple gun is shown in Figure 1 alongside the Dohlman pharyngoscope and Negus oesophageal speculum. The width and length of the staple gun allow easy passage through the Negus oesophageal speculum, which is the preferred instrument for this procedure, having an internal diameter of 13 mm.

### Surgical technique

The pre-operative radiographical appearance of the pouch is shown in Figure 2 demonstrating anterior displacement of the oesophagus with loss of continuity and marked narrowing at the level of the cricopharyngeus muscle.

Twenty-four hours pre-operatively the patient swallows a silk thread and is then endoscoped under general anaesthesia with endotracheal intubation. The diverticulum is usually easily visualized and the silk thread identifies the true oesophageal lumen. Following oesophageal dilatation the Autosuture GIA 30 gun (Figure 3) is passed with one jaw within the diverticulum and the other into the upper oesophagus as in Dohlman's technique. The jaws are closed and locked in place and the gun fired. The neck of the diverticulum is opened and the cricopharyngeus muscle divided, with guaranteed closure of the party wall between the pouch and upper oesophagus. The post-operative barium swallow (Figure 4) shows a forty-fold increase in the diameter of the oesophagus with return of continuity of the oesophagus. This technique takes approximately 15 minutes to perform. Post-operatively the patient can commence oral fluids within several hours.

### Discussion

Stapling devices have been used in open diverticulectomy since 1969 to reduce operative time (Hoehn and Payne, 1969). Endoscopic stapling has not been previously described but has distinct theoretical advantages. As yet complication rates cannot be commented on due to insufficient data.

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