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**OG Tube/Bougie
vs.
Suction Calibration System
During Laparoscopic Sleeve
Gastrectomy**

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Introduction

Expert consensus recommends a bougie should be in place when a sleeve gastrectomy is fashioned. However, this requires three gastric insertions: OG tube for decompression, bougie for sleeve sizing and OG tube for leak test. (Fig. 1A). Clinical risks of the current recommendation includes esophageal perforation, accidental stapling, and corkscrewing of the staple line.

Objective

The patient safety profile can be improved by reducing the above-mentioned steps. The aim of this study was to compare the current recommendation to a suction calibration system, ViSiGi 3D™, that performs all functions with one insertion, under a safe level of suction.

Materials/Methods

Unlike the regular bougie, anesthesiologist inserts ViSiGi 3D™ at the beginning of the case and only removes it once after stapling and leak testing is complete.



Fig. 1A One-step ViSiGi 3D™ vs. multi-step OG Tube/Bougie system.



Fig. 1B The distal end of ViSiGi 3D™ consists of a circumferential fenestration pattern.



Fig. 1C The circumferential fenestration pattern makes ViSiGi 3D™ more flexible.



Fig. 1D Integral regulator decompresses the stomach safely at 125 mmHg regulated suction

Comparison 1: Visual Confirmation of the Position

Primary sleeve gastrectomies were performed with a bougie or a ViSiGi 3D™ in a randomized, alternating order. Intraoperative pictures of the stomach prior to the first staple firing were captured in each case. (Fig. 3)

Comparison 2: Operating Time Savings

Times for completing stomach decompression, positioning, stapling, leak testing, and the total operating time, excluding complications, were obtained. (Fig. 4, Fig. 6)

Comparison 3: Staple Line Straightness

Three measurements were made at three locations on the inflated, excised gastric specimen: circumference, and distance from the greater curvature to both the anterior and posterior (Fig. 2). The variance of deviation from the midline at these locations was calculated for each specimen. (Fig. 5)

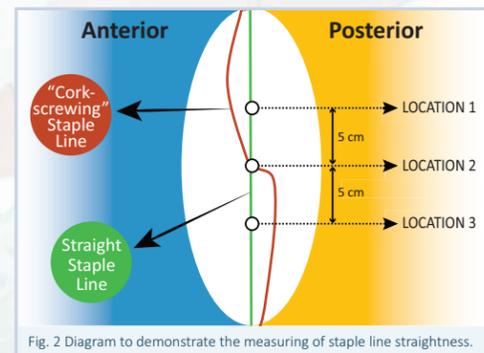


Fig. 2 Diagram to demonstrate the measuring of staple line straightness.

Comparison 4: Clinical Risk Reduction

The frequency of device movements for both groups were recorded. This record includes the number of intraluminal devices inserted as well as the number of times the surgeon inquired about the status/location of the devices. (Fig. 7)

Results

In a single-center randomized study, 26 patients were enrolled for a sleeve gastrectomy. The patient group consisted of 15 women and 11 men. The mean age was 36.8 years, ranging from 14 to 74 years. The overall BMI of patients averaged 45.3 kg/m².

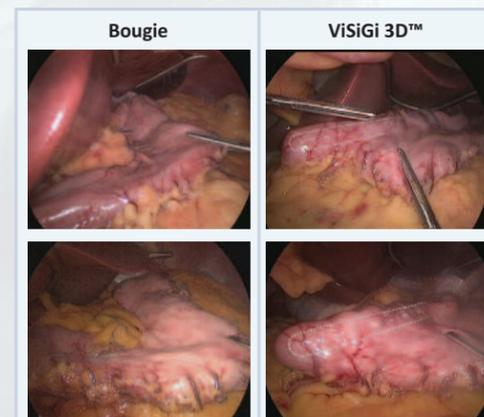


Fig. 3 Side-by-side comparison of the stomach after device placement, immediately before the first stapling. In contrast to the bougie, ViSiGi 3D™ retained its position along the lesser curvature and provided a clearer delineation, hence reducing the risk of accidental tube stapling.



Fig. 4 With ViSiGi 3D™, the time to fully decompress the stomach was reduced by 62%; device placement time was decreased by 52%; time to fire each staple load was lessened by 13%; leak testing time fell 78%. *p<0.05, significant

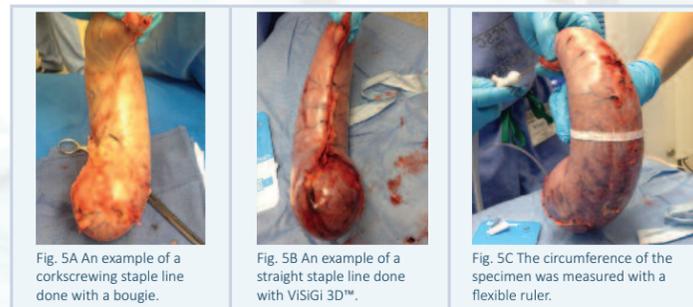


Fig. 5A An example of a corkscrewing staple line done with a bougie.

Fig. 5B An example of a straight staple line done with ViSiGi 3D™.

Fig. 5C The circumference of the specimen was measured with a flexible ruler.

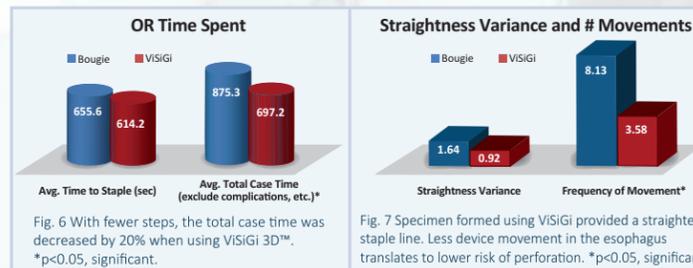


Fig. 6 With fewer steps, the total case time was decreased by 20% when using ViSiGi 3D™. *p<0.05, significant.

Fig. 7 Specimen formed using ViSiGi provided a straighter staple line. Less device movement in the esophagus translates to lower risk of perforation. *p<0.05, significant.

Conclusion

Comparison 1: The location of the bougie was difficult to ascertain, whereas ViSiGi 3D™ clearly delineated and indicated proper staple placement.

Comparison 2: ViSiGi 3D™ significantly decreases the time needed to complete each step of a sleeve gastrectomy, and therefore total operating time.

Comparison 3: ViSiGi 3D™ utilizes suction to maintain gastric placement, which equalizes tension on both sides of the stomach, thereby reducing corkscrewing.

Comparison 4: Fewer tube insertions may reduce esophageal damage and accidental tube stapling.

Acknowledgement and References

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