

Outcomes for Endoscopic and Open-Neck Approaches for Zenker’s Diverticulum

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Abstract

Subject Area: Head and Neck

Evidence Based Medicine Level: 4

Objective: To compare long-term symptomatic outcomes between open-neck surgery and endoscopic stapling diverticulotomy (ESD) for Zenker’s diverticulum.

Method: Patients undergoing operation for Zenker’s diverticulum during the last ten years (1998 through 2007) at our institution were telephoned and questioned of dysphagia, coughing and choking, regurgitation, halitosis, weight loss, and recurrent pneumonia based on a validated Gastrointestinal Quality-of-Life Index. Symptom degree pre-operatively, one-month post-operatively, and time of phone call were recorded.

Results: 39 of 81 patients were contacted. Of these, 14 underwent ESD and 25 had open-neck procedures. Average follow-up time was longer for the open-neck group (4.6 versus 1.8 years, p=0.002). Age at operation, diverticulum size, pre-operative and follow-up symptom scores were not statistically different between the two groups. For both surgical techniques, the symptom scores showed significant symptom improvement post-operatively (p<0.01) and not differ in degree of improvement. Complete resolution or improvement of symptoms were experienced by most patients (92% for open neck and 85% for ESD, p=0.49). However, a greater proportion of open-neck patients claimed a complete response (80% for open and 46% for ESD, p=0.03) at time of phone call.

Conclusion: Both the open neck and ESD surgeries significantly helped the patients, regardless of diverticulum size. Long-term symptomatic outcomes between the two populations are similar. However, a greater proportion of patients with open-neck procedures claimed complete response. This may be due to fundamental differences between the surgical techniques. Studies with larger patient numbers are needed for further analysis.

Introduction

Treatment of patients with a symptomatic Zenker’s diverticulum (ZD) is accomplished primarily by two surgical techniques. These are: 1) the open-neck approach involving diverticulectomy and cricopharyngeal myotomy, and 2) the endoscopic approach involving stapling diverticulostomy (ESD) and myotomy. We aimed to provide a long-term comparison of these two techniques performed over the same period of time.

Methods

Patients undergoing operation for ZD during the last ten years (1998 through 2007) at the Cleveland Clinic were telephoned. Chart review and a verbal questionnaire adopted from the validated Gastrointestinal Quality-of-Life Index¹ were used to collect data.

Patient Questionnaire

The patient was asked to answer the following questions and provide answers for each of the three time points of pre-operation, 1 month post-operation, and present:
1) On a scale of 0-4 (0 is no symptoms, 1 is once per month, 2 is once per week, 3 is more than once per week, 4 is daily/always), how would you rate your symptoms of:
1)Difficulty in swallowing?
2)Regurgitation of food?
3)Bad breath?
4)Pain when swallowing?
5)Choking or coughing with swallowing?
2) Did you have any symptoms of:
1)Weight loss? (0=no, 1=yes)
2)Recurrent pneumonia? (0=no, 1=yes)
3) Overall, would you say your symptom relief is complete, improved, without change, or worse

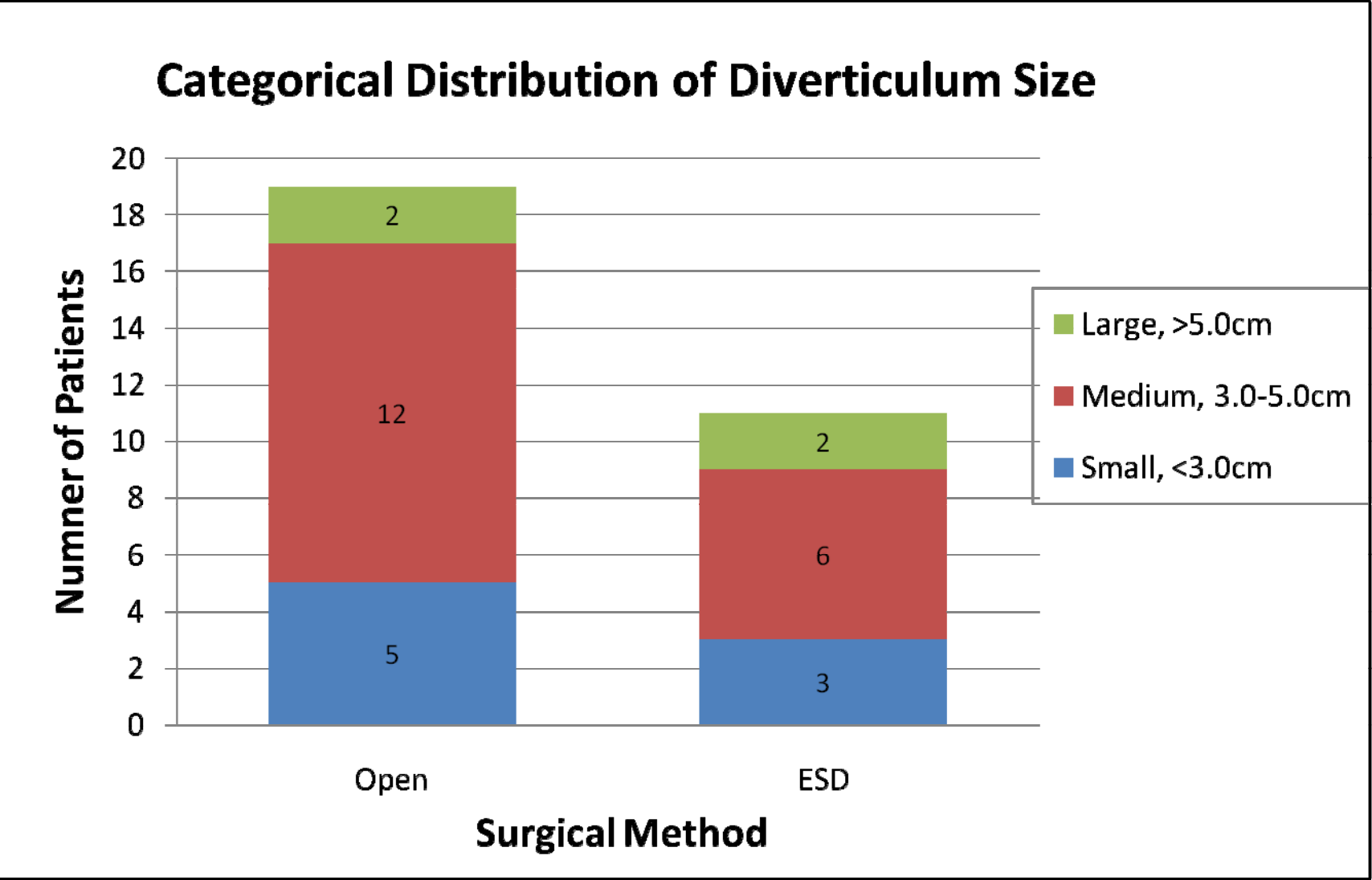
Results

1. Patient Characteristics

	Surgical Method		P-value
	Open (N=25)	ESD (N=14)	
Male, N (%)	19 (76)	8 (57)	NS
Age at Operation, years	68.3 (13.1)	69.8 (9.2)	NS
Case Time, minutes	123 (43)	49 (21)	<0.0001
Follow-Up Time, years	4.6 (2.8)	1.8 (1.2)	0.002
Size of diverticulum, cm	3.0 (1.2)	3.2 (1.5)	NS

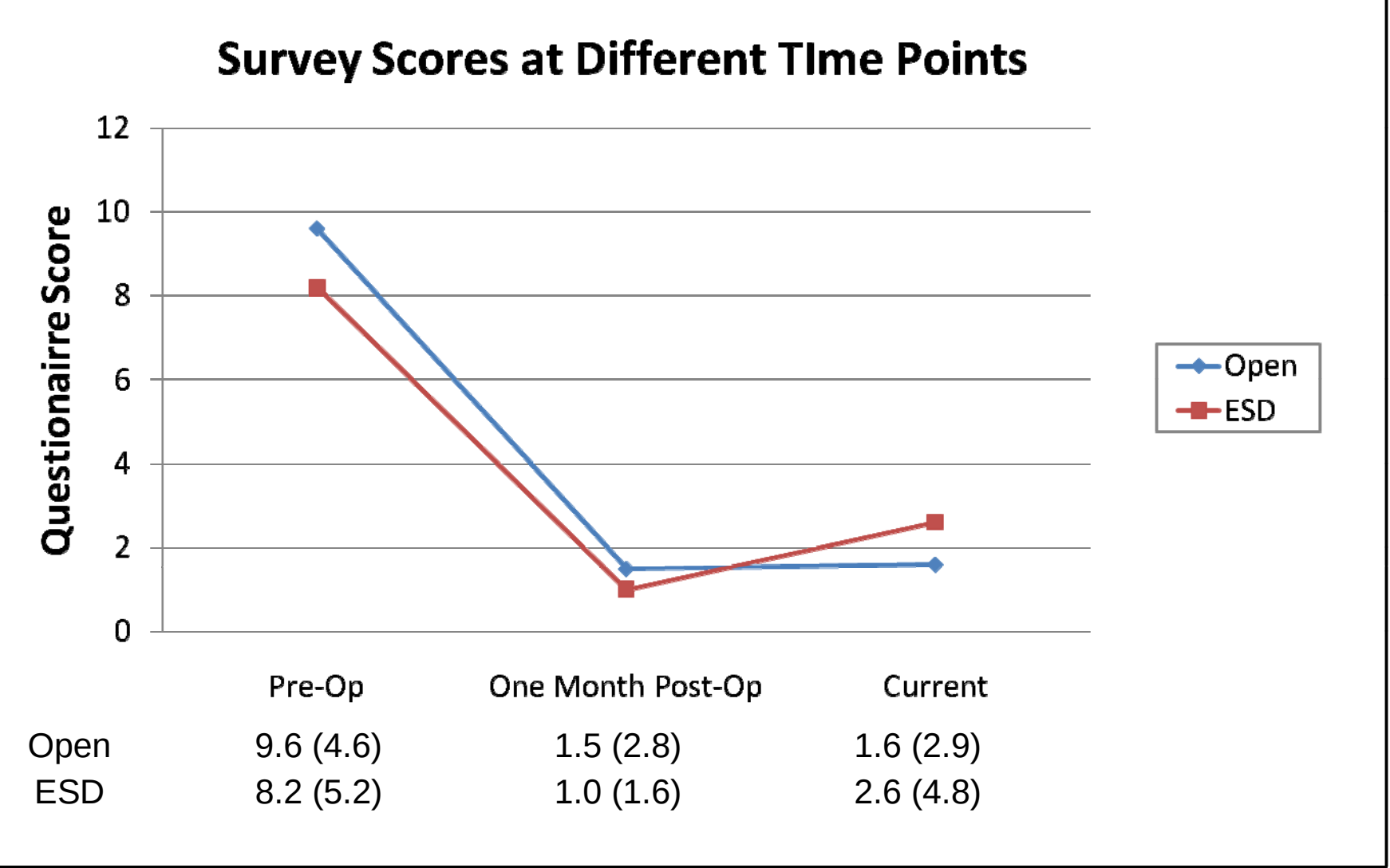
39/81 patients were successfully contacted. Of these, 14 underwent ESD and 25 had open-neck procedures. Follow-up time and case time was longer for the open-neck group. Gender, age at operation, and size of diverticulum were not different between the groups. All values except the number of males are given as mean (standard deviation).

2. Categorized Diverticulum Size



There was no statistically significant difference of size distribution among the two surgery groups.

3. Survey Scores



Within each surgical technique, scores were significantly different when comparing the pre-operative scores to post-operative scores (p<0.01 for each comparison). Scores during the post-operative time period did not significantly change for both procedures. There was no significant score difference found between the two groups at any time point.

Discussion

Both surgical techniques have demonstrated effective improvement of symptoms.²⁻⁴

Chang et al⁵ and Bonavina⁶ et al have directly compared ESD and the open technique, and show that ESD has a comparable or lower complication rate, morbidity, and mortality when compared to the open procedure. Chang et al found that of 159 patients, 98% had either complete resolution or improvement of symptoms, while 63.3% claimed complete resolution of symptoms. Palmer et al also described 91% of patients reported improvement of symptoms, but 22% had some decline in result over time after ESD.⁷

References

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6)Bonavina L, Bona D, Abraham M, et al. Long-term results of endosurgical and open surgical approach for Zenker diverticulum. World J Gastroenterology (2007) 13:2586-2589.
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4. Change in Survey Score

	Change in Survey Score		
	Open (N=25)	ESD (N=14)	P-value
Pre-Op to One Month Post-Op	8.1 (4.7)	7.2 (5.7)	NS
Pre-Op to Current	8.0 (5.1)	5.6 (5.7)	NS
One Month Post-Op to Current	-0.12 (1.7)	-1.6 (3.9)	NS

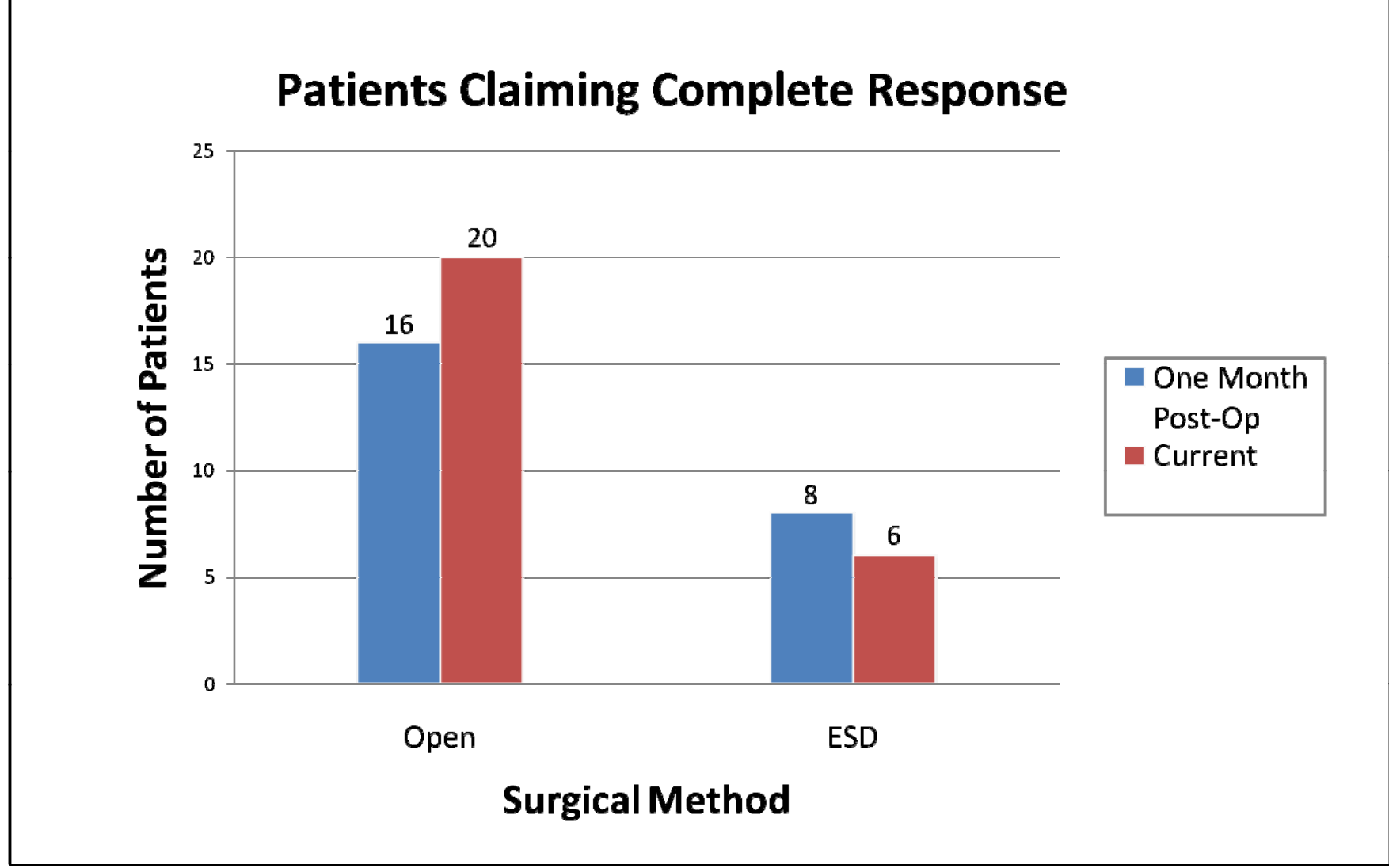
There was no significant difference of this change between the two operative techniques during any of the time intervals, and was not affected by diverticulum size. The change in score is shown as mean (standard deviation), and negative score indicates worsening.

5. Subjective Response

	Complete Response			Complete or Improved Response		
	Open	ESD	P-value	Open	ESD	P-value
One Month Post-Op	16 (67)	8 (62)	NS	23 (96)	12 (92)	NS
Current	20 (80)	6 (46)	0.03	23 (92)	11 (85)	NS

Patients were asked to describe their symptoms as completely resolved, improved, without change, or worse. There was no difference in number (percentage) of patients when comparing those who described their symptom resolution as complete or improvement. However, there was a significant difference when comparing those who had a complete response.

6. Complete Response



Patients undergoing open technique had a higher rate of complete symptomatic resolution.

7. Morbidity and Mortality

Recurrence of symptoms leading to re-operation occurred once in each of the surgical techniques. One patient who underwent open neck surgery developed a neck infection, which resolved. There was no mortality associated with either procedure

Conclusion

Both the open neck and ESD surgeries significantly improved symptoms, regardless of diverticulum size.

More patients in the open surgery group reported a complete resolution of symptoms.

With ESD, complete resolution of symptoms may not occur as frequently, and symptoms may return over time. This may be due to the fundamental differences between the open and ESD techniques.