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DISEASES OF THE ESOPHAGUS

Symposium report

Best palliation in esophageal cancer: surgery, stenting, radiation, or what?*

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SUMMARY. **Palliation of patients with obstructing or fistulizing esophageal cancer is not easy. Median survival cannot be expected to be longer than 3–6 months, regardless of which therapy is carried out. Self-expandable metal stents have revolutionized the treatment of these patients because of easy insertion, relatively low complication rates and reasonably good functional results. Plastic tubes are mainly indicated in situations in which removal may be needed. The palliative effect of external beam radiation is well established, endoesophageal brachytherapy having the advantage of delivering a high dose in a short time. More recently, there has been increasing interest in locally destructive therapies, mostly in combination with palliative radiation or radiochemotherapy. Obviously, a single best palliation for every situation does not exist. The most appropriate method to alleviate symptoms must be worked out for each individual patient depending on the specific patient situation and the specific expertise of the physician.**

INTRODUCTION

Before giving an overview on the best palliation in patients with esophageal cancer, the term palliative therapy must be clearly defined. Considering a common situation, it becomes evident that palliative therapy is not always defined the same way; a surgeon, treating a patient with esophageal cancer, may only realize intraoperatively that he cannot achieve a complete resection of the tumor including clearance of lymph node metastases, although this was thought possible before the operation. The operation will end with a residual tumor load left inside the patient. Some surgeons would call this situation a palliative resection. However, as the intention was potentially curative, this is not a true palliative therapy. Thus, palliation affects the patient who cannot be cured because of far-advanced local tumor spread, distant metastases or low functional reserves, which rule out major surgery.

There is only one aim of palliation. It is to improve the quality of life for the limited span of life left to the patient. Mean survival in these patients is only 4–6 months, whatever therapy is carried out. The most devastating symptom is dysphagia. Dysphagia can be classified into four grades (Table 1).[1,2] The second frequent symptom requiring palliative therapy is aspiration. The symptoms are either caused by aspiration of saliva as a result of complete dysphagia, or aspiration of food owing to a tracheoesophageal fistula. Pain is the third important symptom that demands therapy.[3]

PALLIATIVE SURGERY

In order to relieve the patient from dysphagia, palliative resection or palliative bypass surgery may be considered. Results of some large series of palliative surgery are illustrated in Table 2. It is obvious from these data that the median survival in this group of patients is usually less than 6 months and mortality exceeds 20%. Virtually no patient survived for more than 5 years.[4–7]

For these reasons, less invasive and less dangerous procedures should be considered and most authors agree that there is only very seldom, if ever, an indication for palliative surgery. There is a recent paper by Meunier *et al.*,[7] who performed a bypass procedure in 32 patients who had either persistent dysphagia after radiochemotherapy or a tracheo-esophageal fistula. In this series, the mortality rate was over 30%. Most of the survivors were able to

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Table 1. Dysphagia score

Symptom	Grade
No dysphagia	0
Dysphagia to solids	1
Dysphagia to semisolids	2
Dysphagia to liquids	3
Complete dysphagia	4

Table 2. Results after bypass procedures performed for unresectable esophageal cancer

Author	Number of patients	Mortality (%)	Median survival (months)
Wong *et al.* 1981[4]	142	41.5	5
Conlan *et al.* 1983[5]	71	21	5
Orringer 1984[6]	37	26	6
Meunier *et al.* 1996[7]	32	34	3.5

resume oral nutrition, but postoperative median survival was only 3.5 months. However, in 6 out of the 32 patients (about 20%), the quality of life was reported as excellent. The authors claim that a bypass operation may be proposed for young people in relatively good physical condition, particularly as a second-line treatment.

Quality of life after esophageal surgery has been investigated in a recent prospective study.[8] The authors stated that, in patients who survived for at least 2 years ($n = 17$), the quality of life returned to preoperative levels within 9 months, but patients who died within 2 years of surgery ($n = 38$) never regained their former quality of life. The conclusion was that only those patients who survived for more than 2 years recovered a good quality of life. As survival for more than 2 years is extraordinarily rare in patients undergoing palliative surgery, this finding supports the concept that surgical palliation is not usually the best palliation.

INTUBATION OF THE ESOPHAGUS

Intubation of the esophagus is a very attractive and effective means of improving severe dysphagia or relieving aspiration as a result of a tracheoesophageal fistula. Various prostheses have been developed, including self-expendable stents and plastic esophageal tubes.[9,10] Advantages of expandable stents are easy deployment and minimal or no necessity for prior dilation, as well as a low complication rate. Furthermore, the stent can be lengthened by inserting another device. However, an expendable stent is hardly removable. The rate of stent migration and tumor growth depends on the type of device,[11] particularly whether it is covered or not (Table 3).

Table 3. Comparison of expandable stents and plastic tubes

	Expandable stents	Plastic tubes
Deployment	Easy	More difficult
Dilation	Minimal or unnecessary	Necessary
Complications	Seldom	Common
Lengthening of the device	Possible	Not possible
Removability	No	Yes
Tumor ingrowth	Seldom/often	Seldom
Migration of the device	Seldom/often	Often

There are three prospective randomized trials comparing immediate results and complications after expandable stent placement vs. plastic tube intubation.[12–14] Improvement of dysphagia was similar with all devices in all three studies (Table 4). The initial complication rate seems to be uniformly lower for the expandable stent placement than for the plastic tube placement (Table 5). However, the 30-day mortality, the rate of recurrent dysphagia, and median survival were not significantly different in these trials (Table 5). There are some recent reports showing excellent results with a low complication rate for the placement of plastic tubes, if the procedure is carried out by a highly experienced endoscopist.[15,16] Thus, the question of which stent is the best may depend mostly on the preference of the endoscopist rather than on the individual patient situation.

PALLIATIVE RADIATION THERAPY

It has been shown that external beam radiotherapy can cause significant shrinkage of an esophageal cancer, thus relieving the patient from dysphagia and improving the quality of life.[17] However, the response is usually of short duration.[18] The advent of intraluminal brachytherapy allowed the delivery of a very high dose to the luminal aspect of the tumor, thus rapidly restoring patient swallowing.[2,19,20] It can be applied in combination with external beam radiotherapy or alone.[1,2] Doses above 15 Gy are associated with good palliation with respect to relief from dysphagia. Median survival is no longer than with other therapy (Table 6).

ENDOLUMINAL TUMORICIDAL TREATMENTS

Recently, there has been great interest in endoluminal tumoricidal treatments, mainly for short tumors. Laser treatment,[21–24] photodynamic therapy,[2,25–27] and argon plasma coagulation[28–30] are recently introduced methods for treating dysphagia. These methods can be applied as monotherapy or in combination with radiotherapy. Other therapeutic concepts, such as intratumoral cisplatin injection,[31,32] are only experimental at present.

Table 4. Results of three prospective randomized trials comparing improvement of dysphagia score after expandable stent vs. plastic tube placement

Author	Device	Number of patients	Improvement of dysphagia score
Knyrim *et al.* 1993[12]	Wallstent (uncovered) Wilson-Cook tube	42	2 2
De Palma *et al.* 1996[13]	Ultraflex stent (uncovered) Wilson-Cook tube	39	2.4 2
Siersema *et al.* 1998[14]	Gianturco stent (covered) Celestin tube	75	2.5 2.2

Table 5. Results from the same three prospective randomized trials as in Table 4 comparing complications and longer-term results after expendable stent vs. plastic tube placement

Author	Compli-cations	30-day mortality	Recurrent dysphagia (%)	Median survival (months)
Knyrim *et al.* 1993[12]	0	14	33	5.6
	43	29	33	4.9
De Palma *et al.* 1996[13]	0	17	38	6.6
	22	0	54	6.2
Siersema *et al.* 1998[14]	16	26	24	2.3
	47	22	26	2.7

Table 6. Palliative radiation of esophageal cancer

Author	Method	Median survival (months)
Rider and Medoza 1969[17]	External beam radiotherapy	5
Sur *et al.* 1998[1]	External beam radiotherapy	4.7
Harvey *et al.* 1993[19]	Intraluminal brachytherapy	4.9
Jager *et al.* 1995[20]	Intraluminal brachytherapy	5.5
Sur *et al.* 1998[1]	Intraluminal brachytherapy	6.2

Table 7. Results after esophageal stent placement for closure of tracheoesophageal fistulae

Author	Success rate for closure (%)	Improvement of dysphagia score (%)
May and Ell, 1998[40]	91	2.4
Raijman *et al.* 1998[41]	100	2.2
Bartelsman *et al.* 2000[42]	87	1.5

COMBINATION THERAPIES

There is an abundance of literature dealing with combinations of radiation, chemotherapy, locally destructive methods, stents, and so on, used in a concomitant or subsequent way.[23,33,34] The results from multimodal therapies are often inconsistent,[34–36] probably as a result of the lack of prospective randomized studies. Inconsistencies in results are probably a consequence of selection bias. Sometimes, radiochemotherapy is offered to patients who are in a fairly good general condition.[37,38] Even in this selected group of patients, median survival seldom exceeds 6 months.

TRACHEOESOPHAGEAL FISTULAE

The only methods that can reliably deal with tracheoesophageal fistulae are surgery[7,39] and esophageal intubation.[40–42] Expandable stents represent a definite step forward in the management of this condition with excellent success rates and good improvements of dysphagia scores, such that it is now a rare event if an operation is required (Table 7).

References

1. Sur R K, Donde B, Levin V C, Mannell A. Fractionated high dose rate intraluminal brachytherapy in palliation of advanced esophageal cancer. Int J Radiation Oncol Biol Phys 1998; 40: 447–453.
2. Maier A, Tomaselli F, Gebhard F, Rehak P, Smolle J, Smolle-Jüttner F M. Palliation of advanced esophageal carcinoma by photodynamic therapy and irradiation. Ann Thorac Surg 2000; 69: 1006–1009.
3. Ginsberg R J, Korst R J. Surgical palliation of inoperable carcinoma or the esophagus. In: Shields T W, LoCicero III J, Ponn R B eds. General Thoracic Surgery, 5th edn., Vol. 2. Philadelphia, PA: Lippincott Williams & Wilkins, 2000: 1947–1957.
4. Wong J, Lam K H, Wei W H, Ong G B. Results of the Kirschner operation. World J Surg 1981; 5: 547–552.
5. Conlan A A, Nicolaou N, Hammond C A, Pool R, De Nobrega C, Mistry B D. Retrosternal gastric bypass for inoperable esophageal cancer: a report of 71 patients. Ann Thorac Surg 1983; 36: 396–401.
6. Orringer M B. Substernal gastric bypass of the excluded esophagus – results of an ill-advised operation. Surgery 1984; 96: 467–470.
7. Meunier B, Spiliopoulos Y, Stasik C, Lakéhal M, Malledant Y, Launois B. Retrosternal bypass operation for unresectable squamous cell cancer of the esophagus. Ann Thorac Surg 1996; 62: 373–377.
8. Blazeby J M, Farndon J R, Donovan J, Alderson D. A prospective longitudinal study examining the quality of life of patients with esophageal carcinoma. Cancer 2000; 88: 1781–1787.
9. Ell C, May A. Self-expanding metal stents for palliation of stenosing tumors of the esophagus und cardia: a critical review. Endoscopy 1997; 29: 392–398.
10. Dittler H J, Pfister K G M. Palliation of esophageal cancer: stents and tubes. Dis Esophagus 1996; 9: 105–108.
11. Siersema P D, Hop W C J, van Blankenstein M, Dees J. A new design metal stent (Flamingo stent) for palliation of malignant dysphagia: a prospective study. Gastrointest Endosc 2000; 51: 139–145.
12. Knyrim K, Wagner H J, Bethge N, Keymling M, Vakil N. A controlled trial of an expansile metal stent for palliation of esophageal obstruction due to inoperable cancer. N Engl J Med 1993; 329: 1302–1307.
13. De Palma G D, di Matteo E, Romano G, Fimmano A, Rondinone G, Catanzano C. Plastic prosthesis versus expandable metal stents for palliation of inoperable esophageal

thoracic carcinoma: a controlled prospective study. Gastointest Endosc 1996; 43: 478–482.
14. Siersema P D, Hop W C J, Dees J, Tilanus H W, van Blankenstein M. Coated self-expanding metal stents versus latex prostheses for esophagogastric cancer with special reference to prior radiation and chemotherapy: a controlled, prospective study. Gastrointest Endosc 1998; 47: 113–120.
15. Segalin A, Bonavina L, Carazzone A, Ceriani C, Peracchia A. Improving results of esophageal stenting: a study on 160 consecutive unselected patients. Endoscopy 1997; 29: 701–709.
16. Bohnacker S, Thonke F, Hinner M. *et al*. Improved endoscopic stenting for malignant dysphagia using Tygon plastic prostheses. Endoscopy 1998; 30: 524–531.
17. Rider W D, Mendoza D R. Some opinions of treatment of cancer of the esophagus. A J R 1969; 105: 514–517.
18. Keane T J, Hay J H. Radiation therapy of carcinoma of the esophagus. In: Shields T W, LoCicero III J, Ponn R B, eds. General Thoracic Surgery, 5th edn., Vol. 2. Philadelphia, PA: Lippincott Williams & Wilkins, 2000: 1959–1965.
19. Harvey J C, Fleischman E H, Bellotti J E, Kagan R E. Intracavitary radiation in treatment of advanced esophageal carcinoma: a comparison of high dose rate vs low dose rat brachytherapy. J Surg Oncol 1993; 52: 101–104.
20. Jager J, Langendijk H, Pannebakker M, Rijken J, de Jong J. A single session of intraluminal brachytherapy in palliation of esophageal cancer. Radiother Oncol 1995; 37: 237–240.
21. Fleischer D, Sivak M H. Endoscopic Nd: YAG laser therapy as palliative treatment for advanced adenocarcinomas of the gastric cardia. Gastroenterology 1984; 87: 815–820.
22. Eckhauser L M. Laser therapy for gastrointestinal tumors. World J Surg 1992; 16: 1054–1059.
23. Gevers A M, Macken E, Hiele M, Rutgeerts P. A comparison of laser therapy, plastic stents, and expandable metal stents for palliation of malignant dysphagia in patients without a fistula. Gastrointest Endosc 1998; 48: 383–388.
24. Norberto L, Ranzato T, Marino S. *et al*. Endoscopic palliation of esophageal and cardial cancer: neodymium-yttrium aluminum garnet laser therapy. Dis Esophagus 1999; 12: 294–296.
25. Heier S K, Rothman K A, Heier L M, Rosenthal W S. Photodynamic therapy for obstructing esophageal cancer: light dosimetry and randomized comparison with Nd: YAG laser therapy. Gastroenterology 1995; 109: 63–72.
26. McCaughan J S, Jr Ellison E C, Guy J T. *et al*. Photodynamic therapy for esophageal malignancy: a prospective twelve-year study. Ann Thorac Surg 1996; 62: 1005–1010.
27. Lightdale C J. Role of photodynamic therapy in the management of advanced esophageal cancer. Gastrointest Endosc Clin N Am 2000; 10: 297–408.
28. Robertson G S, Thomas M, Jamieson J, Veitch P S, Dennison A R. Palliation of oesophageal carcinoma using the argon beam coagulator. Br J Surg 1996; 83: 1769–1771.
29. Heindorff H, Wojdemann M, Bisgaard T, Svendsen L B. Endoscopic palliation of inoperable cancer of the oesophagus or cardia by argon electrocoagulation. Scand J Gastroenterol 1998; 33: 21–23.
30. Van Laethem J L. Endoscopic palliation of inoperable cancer of the esophagus by argon electrocoagulation. Gastrointest Endosc 1999; 50: 295–297.
31. Saidi R F, Marcon N E. Nonthermal ablation of malignant esophageal strictures. Photodynamic therapy, endoscopic intratumoral injections, and novel modalities. Gastrointest Endosc Clin N Am 1998; 8: 465–491.
32. Monga S P, Wadleigh T, Sharma A. *et al*. Intratumoral therapy of cisplatin/epinephrine injectable gel for palliation in patients with obstructive esophageal cancer. Am J Clin Oncol 2000; 23: 386–392.
33. Maier A, Anegg U, Fell B. *et al*. Effect of photodynamic therapy in a multimodal approach for advanced carcinoma of the gastroesophageal junction. Laser Surg Med 2000; 26: 461–466.
34. Funami Y, Tokumoto N, Miyauchi H, Kuga K, Sato S. Improvement of oral ingestion in patients with inoperable esophageal cancer treated with radiotherapy, chemotherapy and insertion of a self-expanding nitinol stent. Dis Esophagus 1999; 12: 289–293.
35. Siersema P D, Hop W C J, Dees J, Tilanus H W. van Blankenstein M Coated self-expanding metal stents versus latex prostheses for esophagogastric cancer with special reference to prior radiation and chemotherapy: a controlled, prospective study. Gastrointest Endosc 1998; 47: 113–120.
36. Maier A, Pinter H, Friehs G B, Renner H, Smolle-Juttner F M. Self-expandable coated stent after intraluminal treatment of esophageal cancer: a risky procedure? Ann Thorac Surg 1999; 67: 781–784.
37. Ludwig D, Dehne A, Burmester E, Wiedemann G J, Stange E F. Treatment of unresectable carcinoma of the esophagus or the gastroesophageal junction by mesh stents with or without radiochemotherapy. Int J Oncol 1998; 13: 583–588.
38. Mŭto M, Ohtsŭ A, Miyamoto S. *et al*. Concurrent chemoradiotherapy for esophageal carcinoma patients with malignant fistulae. Cancer 1999; 86: 1406–1413.
39. Low D E, Kozarek R A. Comparison of conventional and wire mesh expandable prostheses and surgical bypass in patients with malignant esophagorespiratory fistulas. Ann Thorac Surg 1998; 65: 919–923.
40. May A, Ell C. Palliative treatment of malignant esophagorespiratory fistulas with Gianturco-Z stents. A prospective clinical trial and review of the literature on covered metal stents. Am J Gastroenterol 1998; 93: 532–535.
41. Raijman I, Siddique I, Ajani J, Lynch P. Palliation of malignant dysphagia and fistulae with coated expandable metal stents: experience with 101 patients. Gastrointest Endosc 1998; 48: 172–179.
42. Bartelsman J F, Bruno M J, Jensema A J, Haringsma J, Reeders J W, Tytgat G N. Palliation of patients with esophagogastric neoplasms by insertion of a covered expandable modified Gianturco-Z endoprosthesis: experiences in 153 patients. Gastrointest Endosc 2000; 51: 134–138.