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Methods of stent placement in patients with upper-third and middle-third esophageal cancer

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Summary

Relevance. At that moment of diagnosis patients with esophageal cancer (EC) are often inoperable due to locally advanced disease. Life expectancy in such cases augmented with dysphagia comprises 90 days in average. Curative treatment can be performed only in 20-30 % of patients with a 5-year survival rate varying from 10,3 to 35%.

Objective. Assessing short-term and long-term outcomes of patients with stents with EC depending on the localization of the primary tumor.

Materials and methods. We analyzed our experience of using intraesophageal self-expanding stents in EC patients. 49 of patients them had tumor in upper-third of esophagus and 73 patients had middle-third esophageal tumor location as compared to those who underwent stoma formation (53 patients) in EC patients.

Results. All patients who were stented had significantly lower grade of dysphagia and could eat in the ordinary way. It also improved quality of life, and many of such patients had an opportunity to continue treatment. It has been revealed that stenting of inoperable cancer patients with upper and middle-third esophageal cancer gives benefit to patients as it allows to continue to eat naturally and thereby significantly improves the quality of life in contrast to stoma placement. Patients with upper-third esophageal cancer who were not stented because of fistula formation had significantly better long-term survival than EC patients with stoma

and similar cancer patients with middle-third esophageal tumors. Survival rate of patients with cancer of upper-third of esophagus after stenting not because of fistula was significantly better. Patients with cancer of the middle esophagus, who experienced stent placement because of fistulae, had the same long-term survival rate as cancer patients with middle esophageal tumors and with fistula who were not stented. It shows high efficacy of stenting in cancer of the middle-third esophagus with presence of fistula.

Conclusion. Stent placement in case of inoperable cancer of upper and middle-third of esophagus shows significant benefit. It allows patients to eat in an ordinary way, and thereby significantly improves the quality of life in comparison with stoma formation.

Key words: Esophageal cancer; stent; stent placement

Introduction: On the moment of initial diagnosis most patients have inoperable tumors because of late stage and locally advanced disease. In such cases median survival rate with presence of severe dysphagia is 90 days [1]. Curative treatment can be performed in only 20-30% of patients and 5-year survival rate varies from 10.3% to 35% [2-6]. Locally advanced disease usually undergoes palliative esophagectomy, if resectable, so temporary relief of symptoms could be achieved. However, oncological relapse in anastomotic area or outbound compression of stomach or intestine brings all the problems back. Unresectable disease demands gastrostomy that usually does not give a possibility for sufficient nutrition and brings a significant psychological distress to patient as well. Bypassing procedures make it possible to eat in a usual way but it is quite invasive for patients with high risks of postoperative complications. Lots of techniques for eliminating dysphagia have been shown to be not as effective as it should be. They are balloon dilation, electrocoagulation and laser coagulation, rigid stent placement. Taking into account relatively short duration of life in the category of patients it is really a powerful trend to find out less invasive methods. One of such methods is self-expandable stent placement. It allows to improve quality of life as well as duration of life with ability to perform high quality of concurrent palliative care.

Despite dysphagia and cachexia there is one more point to think of. Esophageal fistula is well known severe complication with high mortality rate. It arises during lysis of esophageal tumor. It can appear not only with malignant lesions. Tuberculosis, neoplasms of trachea or bronchi or esophageal ulcer can also lead to fistulae formation. Iatrogenic fistulae can occur due to trauma made by endoscope, nasogastric or endotracheal tube or when dilation of esophagus is being performed. Prolonged endotracheal intubation may also lead to fistula formation. Anastomotic leakage or radiotherapy may cause the same scenario.

Regarding all mentioned above self-expandable intraluminal stents have some great advantages: possibility to be placed in an area with significant esophageal stenosis, coverage of stent with different materials, ability to pass food down and closure of any wall defects as a result of presence of specific coverage and dense diligence to esophageal wall. These characteristics allow to treat dysphagia and fistulae as well. There are also some disadvantages of stents. It is ability to be dislocated. Dislocation could happen distally due to collagen which surrounds stents. Stent can also be obstructed under or above luminal orifices. One more problem is extraction or replacement of the stent. Financial toxicity may also be a substantial problem for patients.

Conducting literature review, we found a few methods of stent placement. It could be placed using x-ray control. This method is thought to be the best one [8-11]. Visual control [12-16], double x-ray [17] and endoscopic control are also applied. Some authors describe stent placement without endoscopy using only length from incisors to upper part of tumor achieved during endoscopy [18]. Generally, methods of stent placement depend on experience and preferences of clinician and equipment available in hospital.

Aim of research: We aimed to assess short-term and long-term results in esophageal cancer patients depending on tumor location.

Materials and methods: 49 patients were included in the main group. They were diagnosed with cancer of proximal esophagus (CPE) whom esophageal stents were placed. 45 (91,84%) men and 4 (8,16%) women were included. Median age ranged from 40 to 78 years and comprised 59,9 years. 47 patients had squamous cell carcinoma and only 2 (4.08%) patients had undifferentiated carcinoma.

15 patients got stents before treatment had started. 10 patients had ECOG 3-4, dysphagia grade 3-4 and cachexia. 5 patients got stents because of fistulae. 28 patients got stents after special treatment had been performed when dysphagia appeared. 5 of them received stent after radiotherapy, 7 patients - after chemotherapy (5 patients had selective intra-arterial chemotherapy and 2 patients had systemic intravenous treatment) and 16 patients got it after concurrent chemoradiation (14 patients had selective chemotherapy and 2 patients had systemic treatment). 6 patients underwent stent placement due to fistulae appeared during treatment (in 4 patients after chemoradiation with selective chemotherapy approach and in 2 patients after chemotherapy).

There were 73 patients in control group with middle-third esophageal tumors who also underwent stent placement. The group was compounded with 69 (94,52 %) men and 4 (5,48 %) women with median age 58.9 years (20-82 years). 39 patients achieved stents immediately

after admission to our department due to severe dysphagia (24 patients) and presence of esophageal fistulae (15 patients). In 28 patients stents were placed after special treatment. It was done because of dysphagia appeared while treatment was being performed. Of those 16 patients underwent radiotherapy with following stent placement, 4 patients underwent chemotherapy and 8 patients received chemoradiation. 6 patients got stents because of fistulae formation during treatment (4 patients - after radiotherapy, 2 patients - chemoradiotherapy with selective approach).

Comparative group had 53 patients with esophageal cancer who underwent enterostoma formation due to dysphagia and other comorbidities.

Among this group there were 44 (83,02 %) men and 9 (16,98 %) women. Median age was 59.7 years (38-74 years). Tumor was located in upper esophagus (22 patients, 41.51%), middle (18 patients, 33.96%) and lower (13 patients, 24.53%) esophagus.

It is worth being stressed that patients who were not eligible for curative surgery were included in the study. They are patients with locally advanced or metastatic disease and comorbidities as contraindications to curative surgery. That is the reason for us not to rate patients by TNM classification. Assessment of complications was not our aim as well.

Methods of self-expandable stent placement. Despite that fact that particular clinicians use endoscopy for stent placement, we ensured in useless of this method during our first endoscopic stent placement. As a result we placed stents using fluoroscopy control. This procedure exists in 2 variants. Stent was placed using main method, when the stent was inserted into esophagus with help of delivery device. The second alternative method included bougie instead of stents on delivery device with following extraction of bougie and placement of stent. The main method was applied when narrowing of esophagus allowed to place a stent and had quite strait form. The alternative method was applied when a narrowing was 3-4 mm in diameter and had irregular form. Effectiveness of stent placement was significantly improved by modernisation of delivery device that allowed to conduct it using radio-opaque string. Patients had premedication with morphinum hydrochloride and atropine before stent placement. Barium solution was prescribed to determine borders of tumor-related narrowing or location of fistulae. We pointed upper and lower narrowing borders on skin with radiopaque label. Then we inserted angiographic catheter with J-form steel string-conductor per os and moved it through narrowing into stomach under fluoroscopy control, then we removed catheter. String-conductor was left inside. With significant winding narrowings it took much more time to place a conductor and required some maneuvers and, accordingly, made it more difficult. In the first method delivery device (a plastic tube with outer diameter

of 5-7 mm, in which the stent was compressed) was introduced into the esophagus and the device was advanced to the required level under X-ray control. After that, the delivery device was removed and the stent remained in the lumen of esophagus (using a fixed pusher located inside the device) and continued to expand for a few days. In the second method, a delivery device was introduced into the esophagus with a polyurethane esophageal bougie instead of a stent with a pointed end forward. This approach allowed to expand narrowed areas safely without risk of perforation of the esophagus wall. After that, the bougie was removed and a compressed stent was inserted into the oral end of the delivery device. With a pusher, the stent was carried through the entire delivery device to the desired level after that the delivery device was pulled out (as in the first method). After completion of the stenting procedure, patients usually received a radiopaque suspension per os again, which allowed to control the quality of the procedure: expansion of the narrowed area of esophagus, the absence of suspension in fistula and a satisfactory flow of the radiopaque substance through esophagus into the stomach. Intraoperative stent placement was used during surgery when the possibility of tumor removal was neglected. The stents were also installed through the mouth using a conductor string and delivery device. The position of the stent at the time of its extension was controlled manually by palpation of esophagus above and below the tumor.

Results. *Short-term results of treatment.* In the group of patients with CPE who were stented after diagnosis was complete (10 patients), 6 patients underwent stent placement alone, 4 patients after stenting were managed to undergo palliative treatment, of which 2 patients received course of radiotherapy, 1 patient - a course of systemic chemotherapy and 1 more patient - course of chemoradiation with selective chemotherapy.

Of those 5 patients with CPE who were diagnosed with esophageal fistula after additional diagnostic procedures only 2 patients were stented and 3 patients subsequently underwent palliative therapy (radiotherapy in 1 case and chemoradiation in 2 cases; systemic and selective chemotherapy was applied).

5 patients with CPE who were stented after a course of radiotherapy were not further treated in any way.

Among 2 patients who were stented after selective chemotherapy one patient got an additional course of radiotherapy and another patient got chemoradiation with systemic chemotherapy.

Among patients with CPE in whom esophageal fistulae appeared during treatment 2 patients managed to continue palliative therapy after stent placement. In one case systemic chemotherapy was performed after selective chemotherapy and subsequent stent placement.

In another case, systemic chemotherapy was performed after selective chemotherapy, and the stent was subsequently removed. It should be noted that one patient underwent stent placement after selective chemotherapy for three times because of fistula, and another patient who had systemic chemotherapy got stent because of fistula that emerged during treatment had another course of systemic PCT. All these contributed to the emergence of another fistula and accordingly another stent was placed.

14 of 24 patients with CMTIE got only stents after diagnosis. No further therapy was performed due to competing comorbidities, patients' condition, or neglect of the underlying process. The other 10 patients underwent special therapy after stenting: 5 patients underwent a course of palliative radiotherapy, 2 patients underwent a course of systemic chemotherapy, and 3 patients underwent a course of chemotherapy (in 2 cases with the use of systemic chemotherapy, in 1 case- selective chemotherapy).

12 of 15 patients stented for fistula without prior therapy had no further treatment. 3 patients underwent further palliative therapy: in one case, a course of radiotherapy, in the other case - systemic chemotherapy, and in the third case - systemic chemotherapy.

In 16 patients with CMTIE, stenting was performed after radiotherapy. 4 patients subsequently underwent another course of radiotherapy, and 4 patients underwent chemotherapy (3 - selective, 1 systemic).

1 patient got stent after systemic chemotherapy, with stenting performed twice. Among the 3 patients who were stented after selective chemotherapy, 1 patient underwent a radiotherapy course and 1 patient had selective chemotherapy.

In 6 patients with CMTIE stenting was performed after chemoradiation (in 3 patients - after systemic chemotherapy, in 3 patients - after selective chemotherapy). In 2 patients after systemic chemotherapy further treatment after stenting was performed: one patient had selective chemotherapy, and another one had selective chemotherapy.

6 patients with CPE were stented because of fistula that arose during treatment (4 patients - after radiotherapy, 2 patients - after chemoradiation with the use of selective chemotherapy). Further palliative therapy in these cases was not performed.

In the group of patients who underwent stoma formation 8 patients had no further therapy. Radiotherapy was performed in 12 patients and chemotherapy in 33 patients, respectively.

From the data described above it is obvious that stent placement in patients with both CPE and CMTIE in some cases allows to perform palliative therapy after the restoration of

satisfactory nutritional status for such patients. Moreover, possibility for further palliative therapy appears in some patients after stenting with esophageal fistula. It should be noted that a similar opportunity for further therapy appears in many patients with esophageal patients after stoma formation, however, as noted above, the stoma was not imposed in the presence of esophageal fistula.

Importantly, stenting during and after treatment in some cases allows to continue palliative therapy after restoration of patients' nutritional status. Stenting also eliminates complications of treatment associated with esophageal fistulas appeared during treatment. But it is noteworthy that 2 out of 6 patients with CPE were able to continue treatment after stenting because of fistula developed on the background of treatment, while none of the 6 patients with CMTIE could continue the treatment.

Long-term results of treatment. Table 1 and Figure 1 show the survival rate of patients after stent placement in the primary and comparative groups, depending on the location of primary tumor.

Table 1

Survival rate in main and comparative groups regarding tumor location

Time (month)	Survival (%)	
	CPE n=49	CMTIE n=73
3	83,33±5,38	76,81±5,08
6	60,13±7,10	44,62±6,01
9	40,45±7,19	31,24±5,62
12	26,97±6,57	22,31±5,06
15	15,73±5,42	14,87±4,33
18	13,48±5,09	8,92±3,47
21	6,74±3,75	4,06±2,47
24	5,62±3,45	3,04±2,23
27	3,75±2,76	2,28±1,91
30	1,87±1,91	1,14±1,25
33	0,94±1,34	0,57±0,85

Survival rate in esophageal cancer patients after stent placement regarding tumor location (Kaplan-Meier plot)

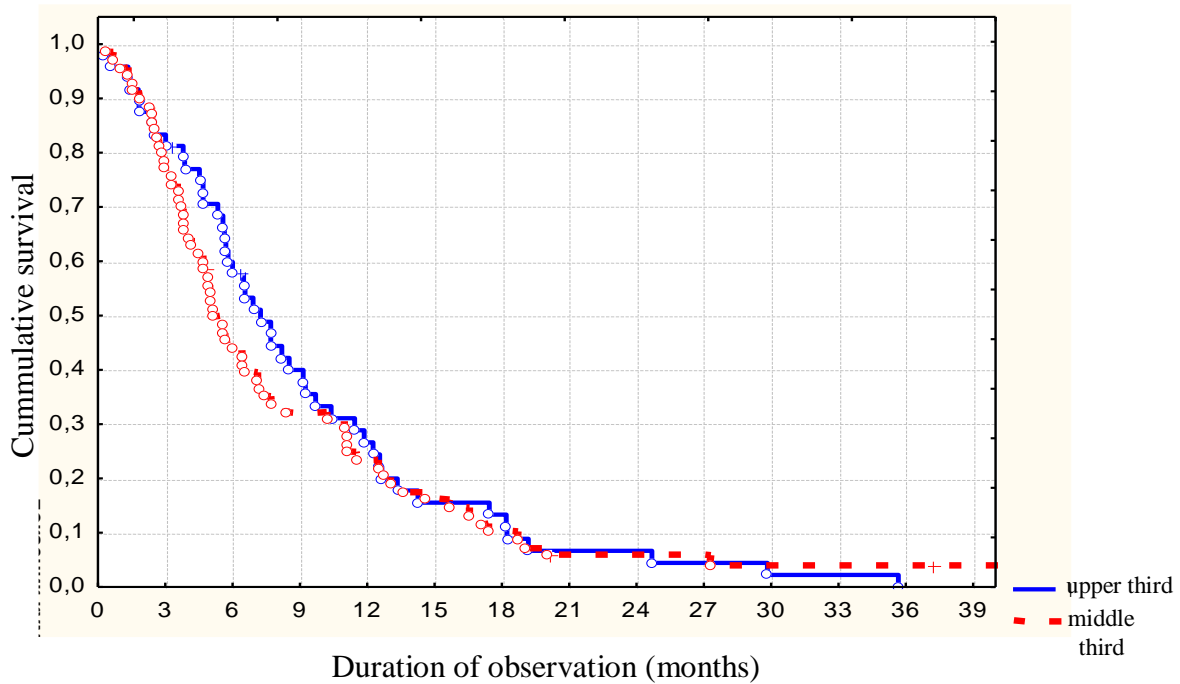


Figure 1. Survival rate in main and comparative groups regarding tumor location, Kaplan-Meier plot: upper third – patients with CME, middle third – patients with CMTIE

As we see on Table 1 and Figure 1 there is tendency to better survival rate in patients with CPE who underwent stent placement. CMTIE patients showed lower survival rate during all months of follow-up, but when examining the long-range criteria ($p = 0.59023$, $p > 0.05$) it is obvious that statistical discrepancies are not significant.

Figure 2 and Figure 3 show estimation of risk of sudden death in patients with CPE and CMTIE using the least squares method.

Risk of death estimation in patients with upper-third esophageal squamous cell carcinoma after stent placement
Exponential model; weighted coefficients (WF) are used

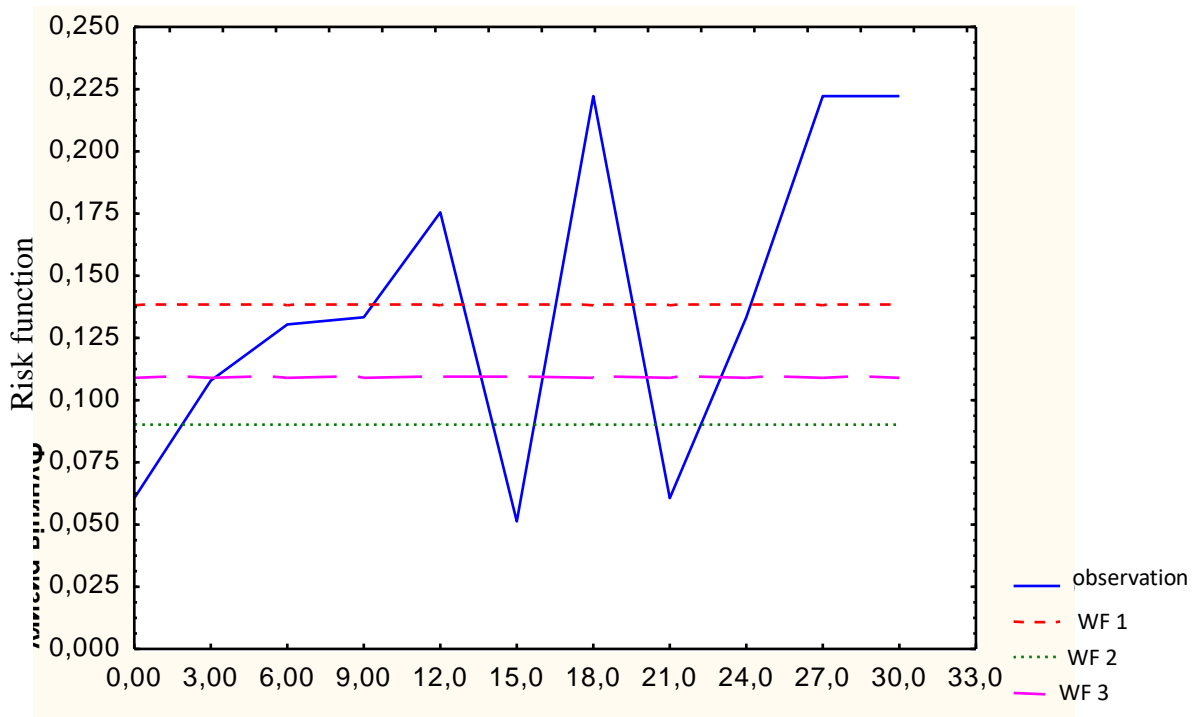


Fig. 2. Risk of death estimation in patients with CPE after stent placement: least squares method

Figure 2 shows that the risk of death is quite high in CPE patients. The risk increases within 1 year of observation, slightly decreases at 15 months of observation but then increases to even higher values at 18 months. It decreases again up to 21 months after that the risk of death increases again to the maximum. Such differences at different months of observation are explained by quite heterogeneous composition of the study group, different stages of disease, complications of the disease, treatment specificities and the competitive concomitant pathology as well as the general condition of patients.

Risk of death estimation in patients with middle-third esophageal squamous cell carcinoma after stent placement
Exponential model; weighted coefficients (WF) are used

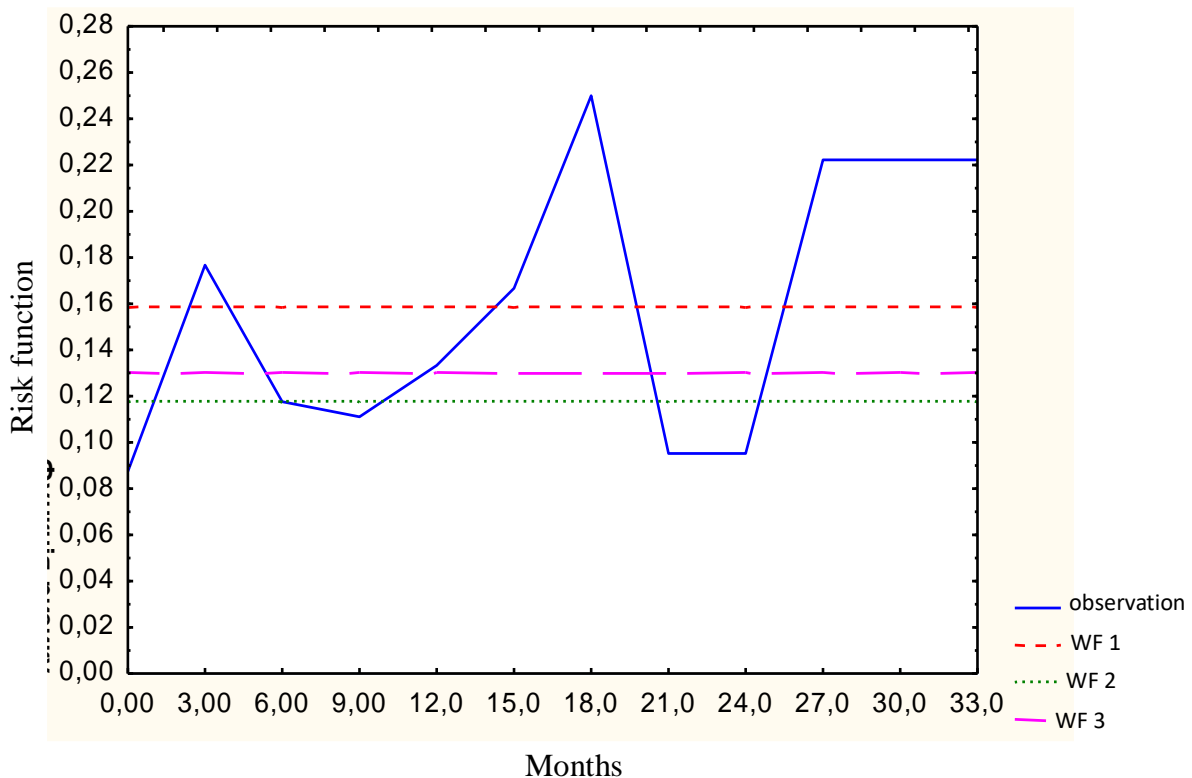


Fig. 3. Risk assessment of death of patients with esophageal cancer after stent placement; least squares method

It can be seen that the risk of death is also high enough for patients with CMTIE after stent placement. However, the risk reduces from 3 months of observation, significantly rising up to 18 months, but then again decreasing at the end of 2nd years of observation. Beginning at 3 years of observation the risk of death rises up in both groups.

The mediana and mean life expectancy of patients after stentplacement in the main and comparative groups depending on the location of the primary tumor are shown in Table 2. It is obvious that the differences are not significant.

Table 2

Mediana and mean life expectancy in patients after stent placement in the primary and comparative groups, depending on location of primary tumor

Location of primary tumor	Mediana of life (months)	Medium life duration (months)
CPE	6,74	8,96±0,30
CMTIE	5,13	9,16±0,36
Totally	5,90	9,08±0,20

Survival rate of patients after stent placement, depending on location of tumor in the esophagus, is not significantly different, but there is a tendency to better long-term results in patients with CPE, which confirms the median life expectancy and average life expectancy.

Further, it was logical for us to compare the survival of patients who were stented for esophageal fistula and for dysphagia without fistula (Table 3 and Figure 4).

Table 3

Survival of patients after stent placement with and without esophageal fistula

Months	Without fistula n=90	With fistula n=32
6	59,04±5,40	43,33±9,05
12	34,18±5,67	26,83±8,56
18	19,23±5,30	12,19±6,90
24	12,82±5.12	6,09±5,52

Survival rate in esophageal cancer patients after stent placement depending on presence of esophageal fistula

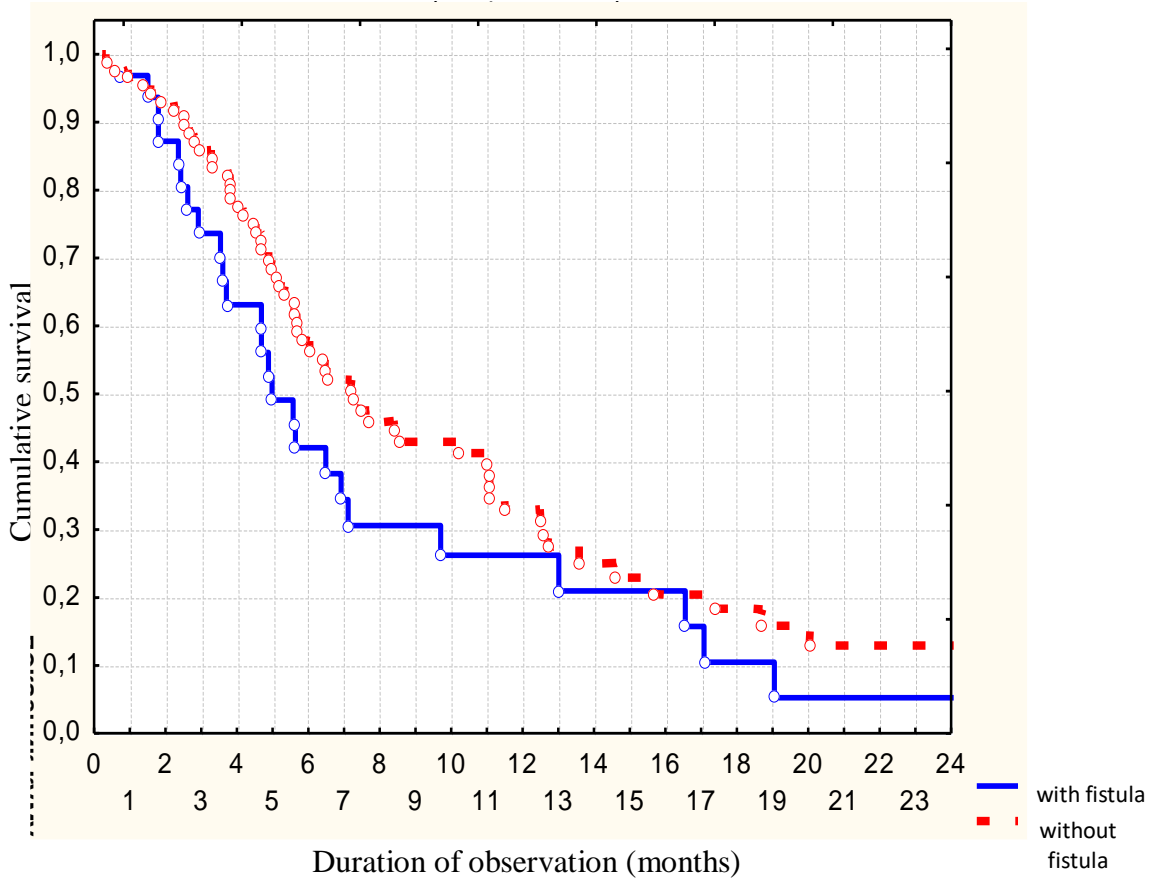


Fig. 4. Survival of patients after stent placement in the experimental groups, depending on the presence of esophageal fistula by Kaplan-Meier: esophageal cancer patients with and without fistula.

It is obviously better survival rate in group of patients who did not have esophageal fistula, which confirms the values of median and average life expectancy (Table 4). However, it should be noted that when comparing the long-range discrepancy criteria differences are not significant ($p = 0.16888$, $p > 0.05$),

Table 4

Survival of patients after stent placement with and without esophageal fistula

Primary tumor location	Mediana of life (months)	Average duration of life (months)
Without fistula	5,67	9,51±1,68
With fistula	4,79	4,79±1.29

After establishing better survival outcomes in patients who underwent stent placement not due to for fistula we examined the individual survival in each study group, depending on the presence of fistula (Table 5, figures 5-8).

Table 5

Survival rate of patients with CPE after stent placement, depending on the presence of fistula

Months	Without fistula n=38	With fistula n=11
3	91,43±4,73	89,47±9,96
6	69,92±8,49	61,94±17,60
9	59,93±9,78	30,97±17,81
12	56,18±10,51	15,49±14,11
15	43,70±13,71	
18	29,13±19,14	
21	14,57±17,43	

Survival rate in esophageal cancer patients after stent placement depending on presence of fistula; Kaplan-Meier

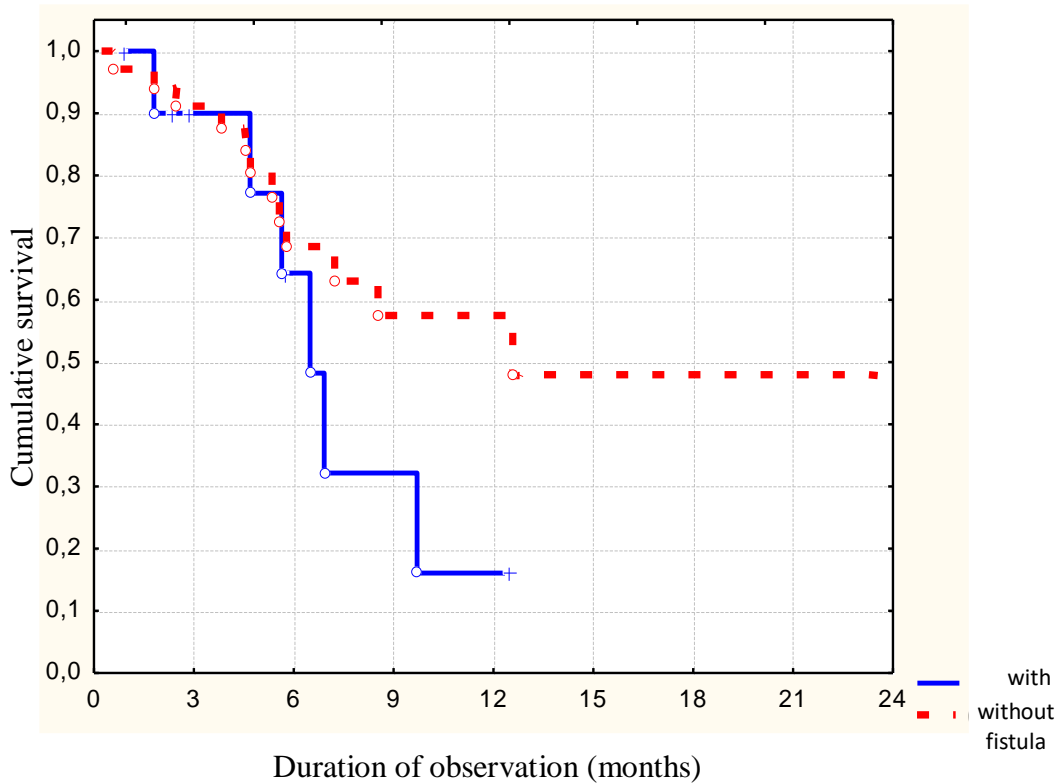


Fig. 5. Survival of patients with CPE after stent placement depending on the presence of esophageal fistula by Kaplan-Meyer curve: with fistula - patients with CPE with fistula, without fistula - patients with CPE with no fistulas.

Table 6

Survival of patients with RSHVVS after stent placement depending on the presence of fistula

Months	Without fistula n=52	With fistula n=21
3	82,00±5,43	66,67±10,28
6	49,60±7,10	33,33±10,28
9	33,07±6,72	28,21±9,90
12	20,67±5,80	25,38±9,68
15	12,40±4,73	20,31±8,98
18	8,27±3,96	10,15±6,78
21	3,54±2,77	5,08±4,94

Survival rate of patients with CMTIE after stent placement depending on presence of fistula (Kaplan-Meier plot)

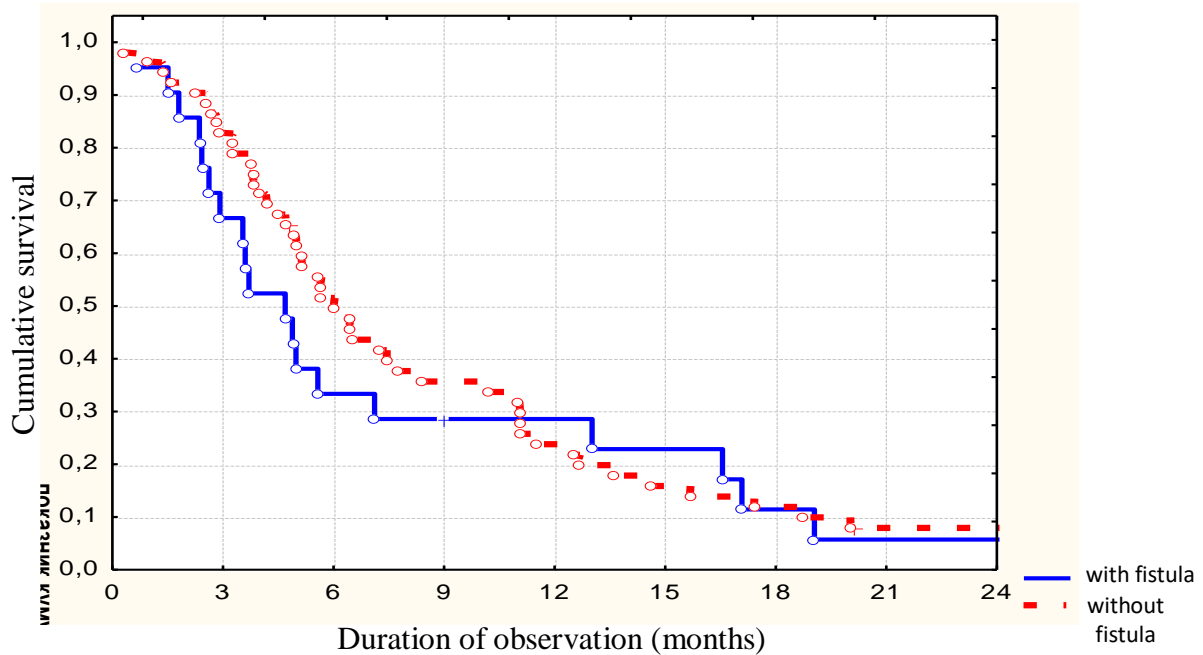


Fig. 6. Survival of patients with CMTIE after stent placement, depending on presence of fistula by Kaplan-Meier: with fistula - patients with CMTIE with fistula, without fistula - patients with CMTIE without fistula.

It is noteworthy that the survival rate of CPE patients without esophageal fistula was significantly better from 6th months of observation, although the discrepancy between the indicators of long-rank criteria is not reliable ($p = 0.16413$, $p > 0.16413$, $p > 0.05$). In the group of stented patients with CMTIE, depending on the presence of fistula, survival rates did not differ significantly ($p = 0.53077$, $p > 0.05$).

Accordingly, survival rates between the study groups were compared depending on the presence or absence of esophageal fistula and they were quite indicative.

Survival rate of patients in study groups after stent placement without fistula (Kaplan-Meier plot)

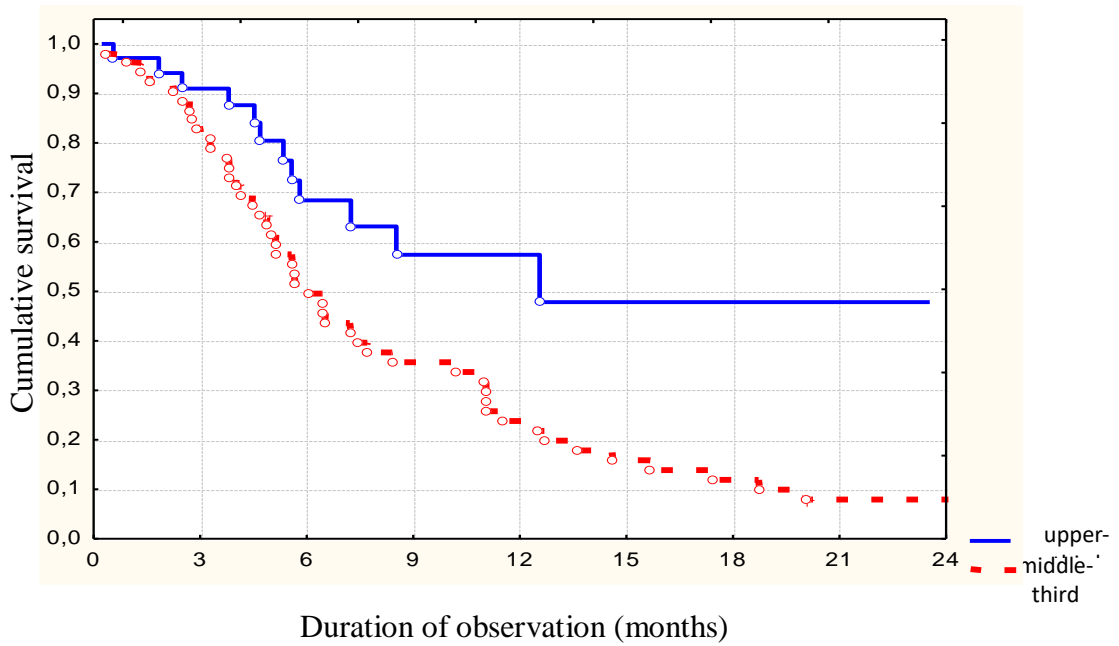


Fig. 7. Survival rate of patients in study groups after stent placement who had no esophageal fistula by Kaplan-Meier: upper-third - patients with CPE, middle-third - patients with CMTIE.

Survival rate in esophageal cancer patients after stent placement with fistula

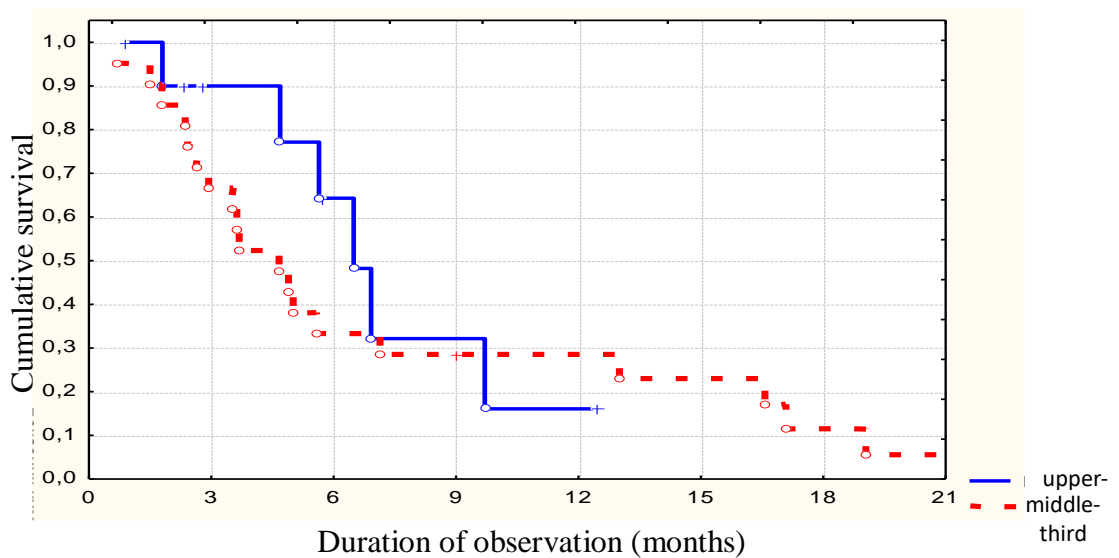


Fig. 8. Survival of patients in the experimental groups after stenting who had esophageal fistulas according to Kaplan-Meier: upper-third - patients with CPE, middle-third - patients with CMTIE.

From the data described above we see that in case of absence of esophageal fistula, the survival rate of patients with CPE with stents was significantly better than in patients with CMTIE ($p = 0.01351$, $p < 0.05$), and in case of presence of fistula survival did not differ significantly ($p = 0.56433$, $p > 0.05$) between groups. Therefore, the best long-term results of treatment after stent placement were found in patients with CPE who had no esophageal fistula.

For more detailed assessment of treatment outcomes, we assessed the risks of immediate death using the least-squares method separately in patients with CPE and CMTIE who were not stented because of fistula in both study groups (Figures 9-11). The assessment of risk of sudden death is the same as the definition of the so-called hazard ratio.

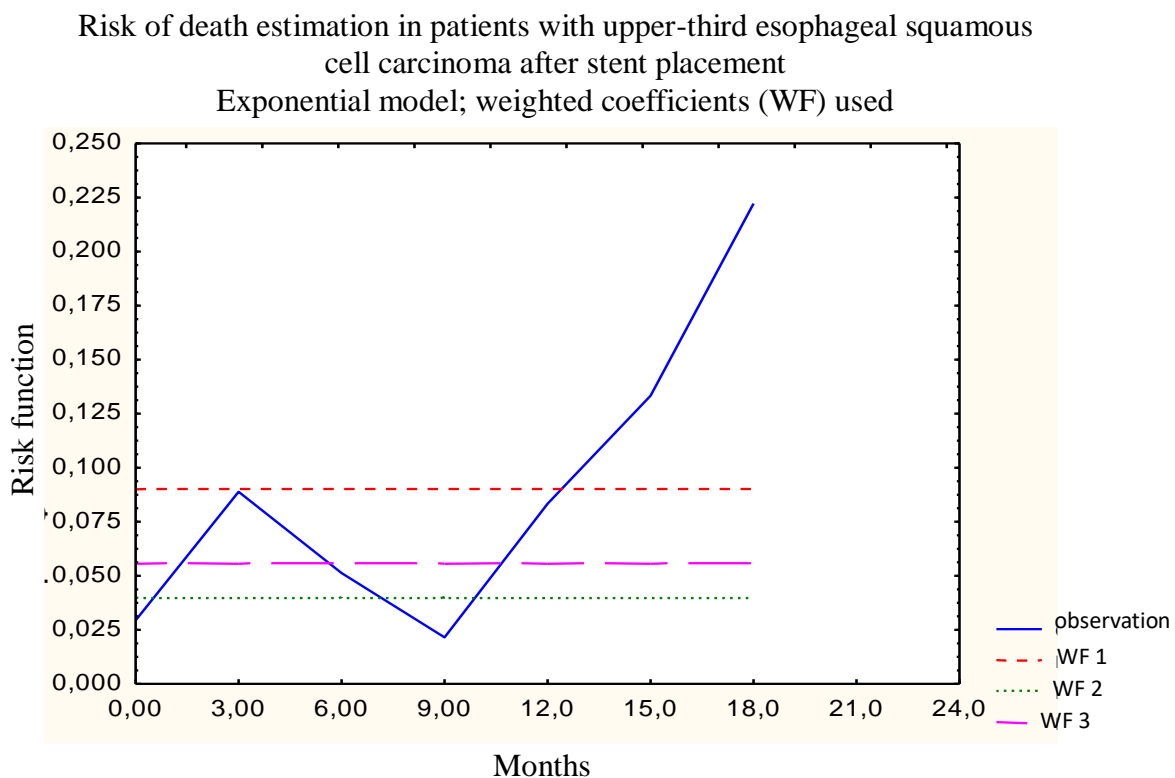


Fig. 9. Estimation of risk of death of patients with CPE after stent placement without regarding esophageal fistula; least squares method

Risk of death estimation in patients with esophageal squamous cell carcinoma after stent placement due to fistula
Exponential model; weighted coefficients (WF) used

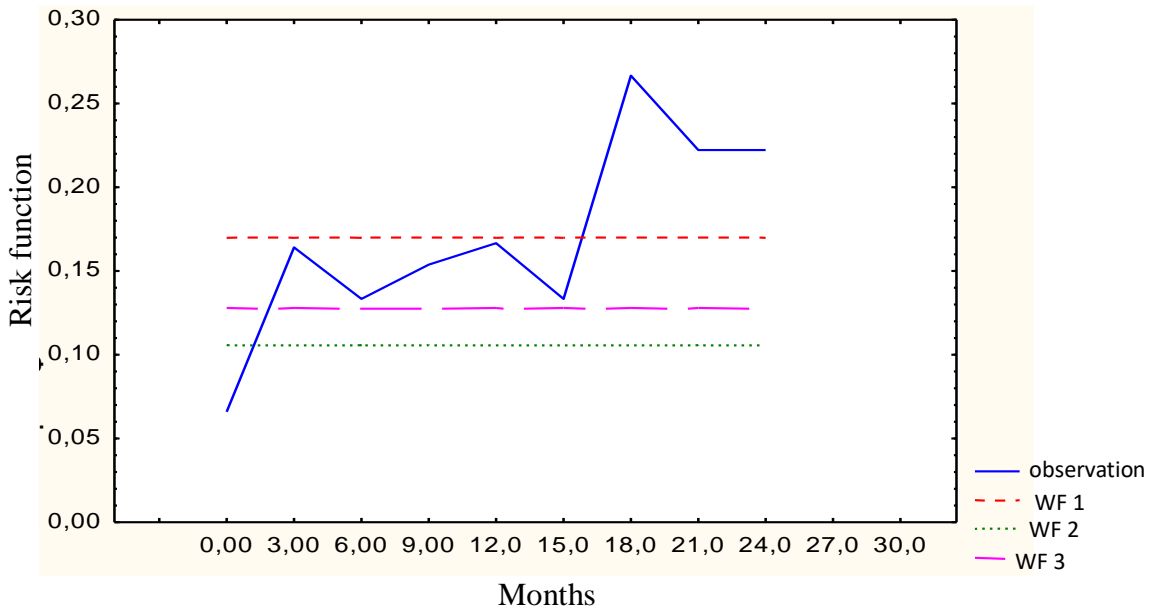


Fig. 10. Estimation of risk of death of patients without esophageal fistula after stent placement; least squares method

Risk of death estimation in patients with esophageal squamous cell carcinoma after stent placement due to fistula
Exponential model; weighted coefficients (WF) used

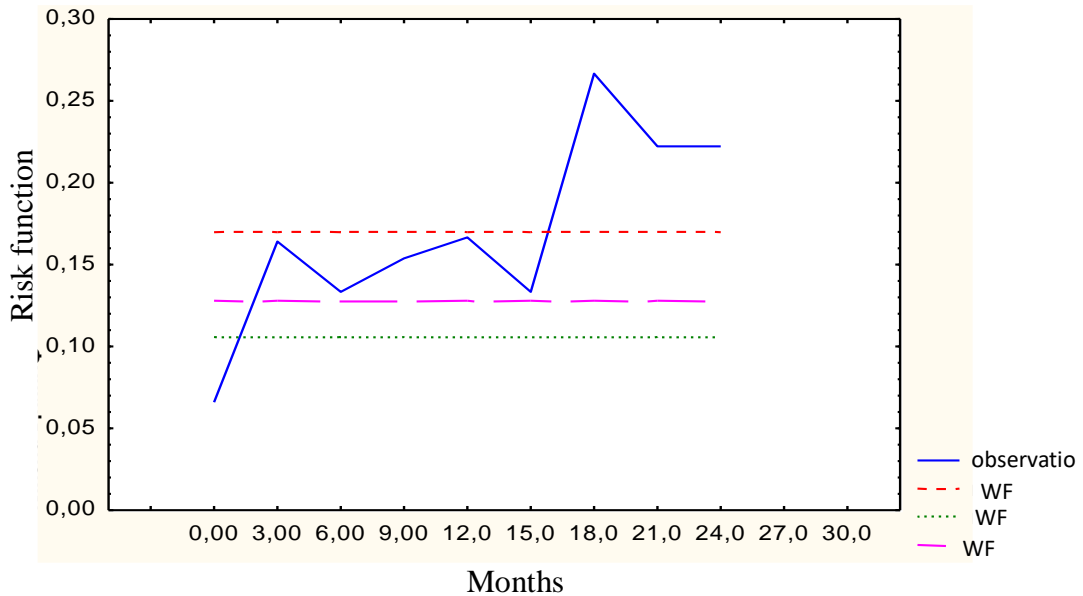


Fig. 11. Estimates of risk of death of patients with esophageal cancer after stent placement due to esophageal fistula; MNCs - least squares method

These figures show that stented patients with CPE (without fistula) have the lowest risk of sudden death (Figure 9). In stented patients with without fistula the risk of death is greater than in other starting from 3 months of observation and further increasing after 15 months of observation (Figure 10). In patients with stented fistulas the risk of death is also high at 3 months of follow-up and increases after one year of follow-up (Figure 11).

We compared the results of long-term follow-up after stenting of patients with specific tumor localization with survival rates of patients with esophageal cancer after stoma formation. It is shown in Table 8. and schematically in Figure 12.

Table 8

Survival rate of patients after stent placement and stoma formation

Months	Stoma formation n=122	Stent placement n=53
3	92,38±3,66	73,33±8,07
6	74,88±6,03	41,14±9,23
9	50,59±7,06	29,38±8,74
12	42,16±7,03	25,19±8,44
15	27,03±6,42	20,61±8,05
18	24,77±6,27	10,30±6,54
21	19,82±5,92	7,73±5,83

Survival rate in esophageal cancer patients after stent placement and stoma formation (Kaplan-Meier plot)

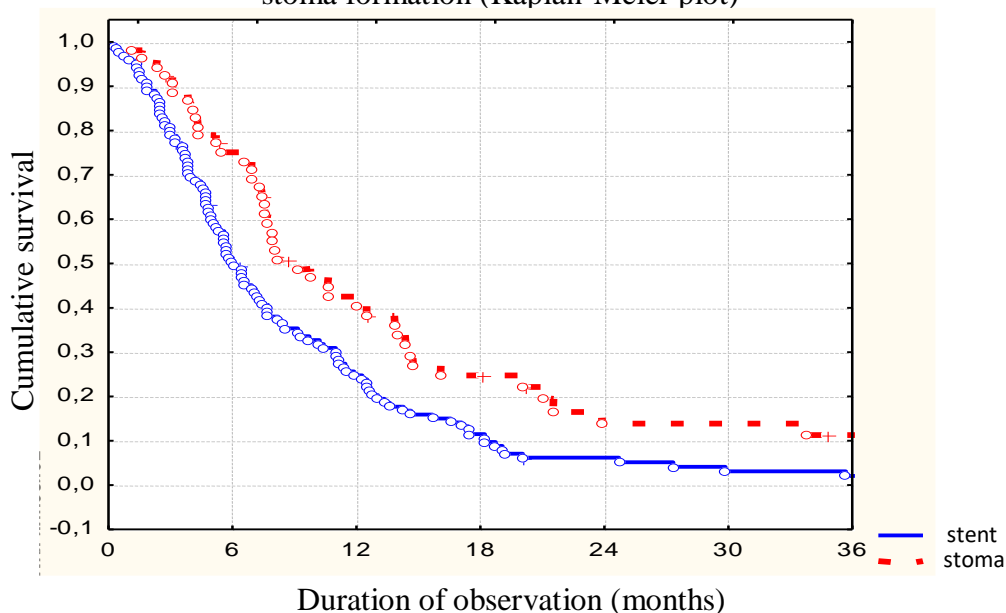


Fig. 12. Survival rate of patients after stent placement and stoma formation: stent - patients with esophageal cancer who got stented, stoma - patients with esophageal cancer who had a stoma.

We compared long-term results after stent placement and stoma formation in these groups of patients. While evaluating statistical criteria it was found that patients with esophageal cancer had significantly better quality of life after stoma formation as opposed to stenting at all periods of observation ($p = 0.00296$, $p < 0.05$). The obtained data were not unusual for us, because we included patients with esophageal fistula in group of stented patients whereas such patients with stoma were absent.

Risks of sudden death of patients was also assessed (Figure 13).

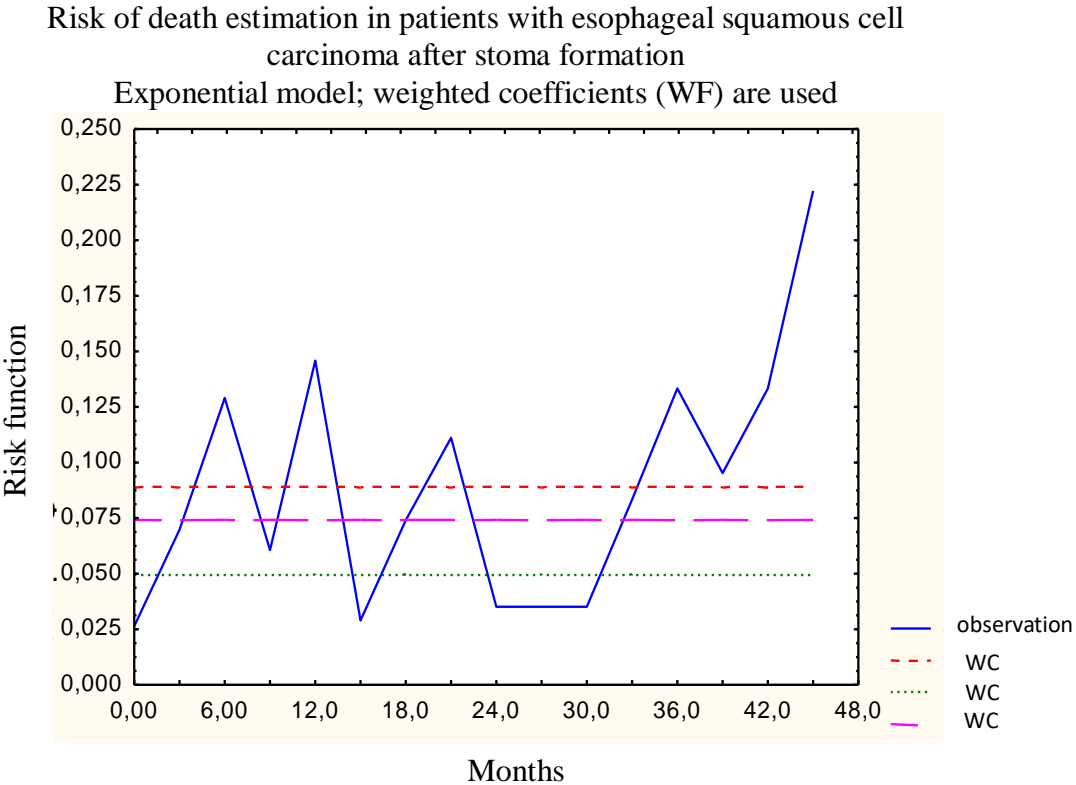


Figure 13. Estimation of death risk in esophageal cancer patients after stoma formation.

Based on Figure 13, we can say that there is a significant high risk of death in patients with esophageal cancer after the placement of stoma at 6, 12 and 21 months of observation and a minimum risk in 15, and from 24 to 30 months of observation with its logical growth in the future.

Based on the fact that the imposition stoma was performed in patients who had no esophageal fistula we compared the long-term outcomes in stent placement and stoma formation in patients in two groups. Patients without esophageal fistula were also included (Figure 14).

Survival rate in esophageal cancer patients after stent placement without fistula after stoma formation

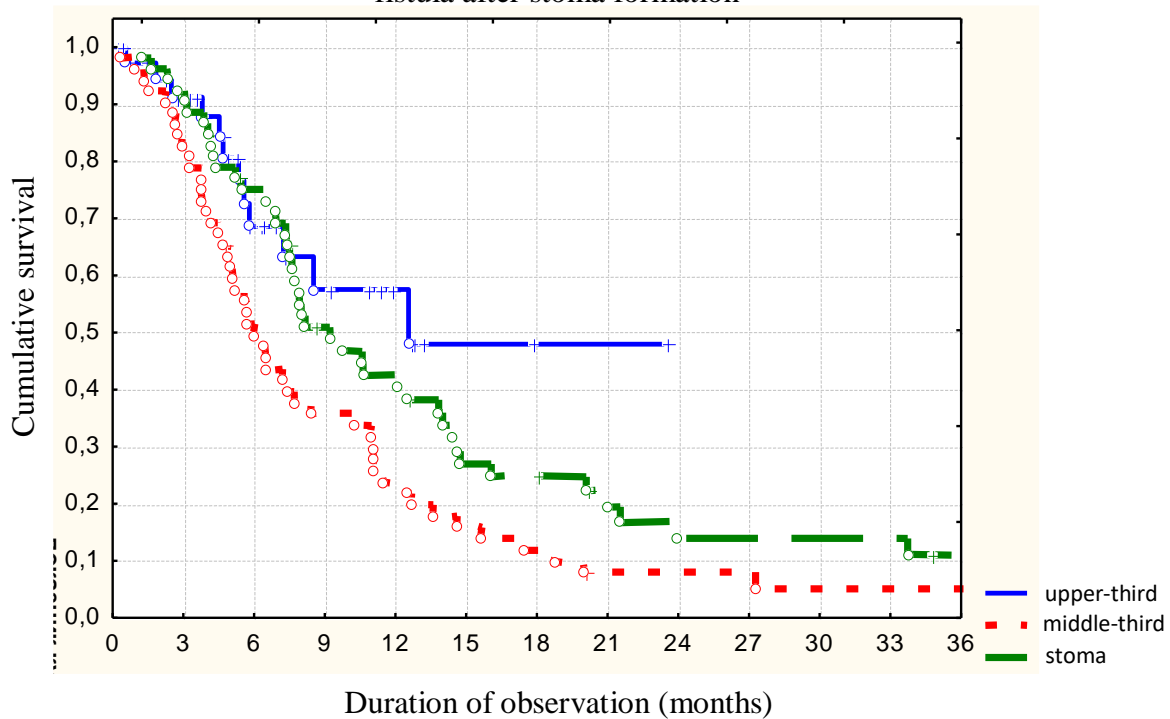


Fig. 14. Survival rate of patients after stent placement not due to esophageal fistula and the imposition of stoma: stent patients with CPE, stent patients with CMTIE, stoma - patients with esophageal cancer who had stoma.

It is seen that $\chi^2 = 8,214193$, $p=0,01646$ ($p<0,05$), these results are evident. When comparing the long-rank criteria between groups, it is obvious that the survival rate of stented patients with non-esophageal fistula was significantly worse than in the same patients with CPE ($p = 0.01289$, ie, $p < 0.05$) and after the imposition of stoma ($p = 0.04984$, $p < 0.05$). However, when comparing survival rates of stented patients with CPE and patients with esophageal cancer after stoma formation statistical differences are not reliable ($p = 0,44127$, $p > 0,05$), but it is noticeable that in the group of patients with CPE had tendency to better long-term results of treatment. Based on the data it can be noticed that better survival is observed in patients with CPE who got stented compared with patients who underwent stoma.

Thus, the above data show that stent placement in case of inoperable CPE, which is not complicated by the presence of esophageal fistula, is an effective alternative to formation of nutritional stoma, however, stent placement on CMTIE does not improve long-term results of treatment compared with stoma formation.

Conclusions. Stent placement in inoperable patients with CPE and CMTIE allows patients to continue to eat in a natural way and thus significantly improves the quality of life of patients in contrast to stoma placement.

Both stenting and stoma formation take place at normalization of a nutritional status of patients. Absence of contraindications allow to carry out further palliative therapy in these patients.

Stenting is an effective method to eliminat esophageal fistula. In some cases it allows to conduct palliative care in this extremely difficult contingent of patients to prolong their life expectancy. It is noteworthy that in primary patients who were stented for fistula further palliative therapy was succeeded only in 2 patients with CPE, whereas in similar patients with CMTIE, no further treatment was possible.

An important fact is that non-fistula stented patients with CPE had significantly better long-term survival outcomes than patients with esophageal cancer after stoma formation and similar patients with CMTIE. In addition, the survival rate of patients with CPE after stent placement was not significantly better than when fistula was present, although long-range differences were unreliable. All these indicates the high efficiency of stent placement in patients with CPE not due to fistula. It is also important is that patients with fistula who were stented for fistula had the same long-term survival results as patients with fistula who were not stented due to fistula, which indicates the high stenting efficiency for patients with fistulas.

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