Carcinoma of the Fallopian Tube

APM HEINTZ, F ODICINO, P MAISONNEUVE, U BELLER, JL BENEDET, WT CREASMAN, HYS NGAN and S PECORELLI

STAGING

Anatomy

Primary site

The Fallopian tube extends from the posterior superior aspect of the uterine fundus laterally and anteriorly to the ovary. Its length is approximately 10 cm. The lateral end opens to the peritoneal cavity.

Metastatic sites

Carcinoma of the oviduct can metastasize to the regional lymph nodes, including the para-aortic nodes. Direct extension to surrounding organs, as well as intraperitoneal seeding, occurs frequently. Peritoneal implants may occur with an intact tube.

Rules for classification

(i) Carcinoma *in situ* of the Fallopian tube is a defined entity; therefore, it is included in the staging under Stage 0.

(ii) The Fallopian tube is a hollow viscus, and tumor extension into the submucosa or muscularis and to and beyond the serosa can be defined (a concept similar to that of Dukes' classification for colon cancer). These facts are taken into consideration in Stages Ia, Ib, and Ic, in addition to laterality and the presence or absence of ascites. As in ovarian carcinoma, peritoneal washings positive for malignant cells or malignant ascites are included in Stage Ic.

(iii) It should be noted that in Stage III the classification of the tumor is based on the findings at the time of entry into the abdominal cavity, not on the residual at the end of the debulking. In addition, surface involvement of the liver occurs in Stage III, as do inguinal node metastasis. As with ovarian cancer, pleural effusion must have malignant cells to be called Stage IV.

Laparotomy and resection of tubal masses, as well as hysterectomy, form the basis for staging. Biopsies of all suspicious sites, such as the omentum, mesentery, liver, diaphragm, and pelvic and para-aortic nodes, are required.

Table 1
Carcinoma of the Fallopian tube: FIGO nomenclature (Singapore, 1991)

Stage 0	Carcinoma *in situ* (limited to tubal mucosa)	
Stage I	Growth limited to the Fallopian tubes	
	Ia	Growth is limited to one tube, with extension into the submucosa and/or muscularis, but not penetrating the serosal surface; no ascites
	Ib	Growth is limited to both tubes, with extension into the submucosa and/or muscularis, but not penetrating the serosal surface; no ascites
	Ic	Tumor either Stage Ia or Ib, but with tumor extension through or onto the tubal serosa, or with ascites present containing malignant cells, or with positive peritoneal washings
Stage II	Growth involving one or both Fallopian tubes with pelvic extension	
	IIa	Extension and/or metastasis to the uterus and/or ovaries
	IIb	Extension to other pelvic tissues
	IIc	Tumor either Stage IIa or IIb and with ascites present containing malignant cells or with positive peritoneal washings
Stage III	Tumor involves one or both Fallopian tubes, with peritoneal implants outside the pelvis and/or positive retroperitoneal or inguinal nodes. Superficial liver metastasis equals Stage III. Tumor appears limited to the true pelvis, but with histologically-proven malignant extension to the small bowel or omentum	
	IIIa	Tumor is grossly limited to the true pelvis, with negative nodes, but with histologically-confirmed microscopic seeding of abdominal peritoneal surfaces
	IIIb	Tumor involving one or both tubes, with histologically-confirmed implants of abdominal peritoneal surfaces, none exceeding 2 cm in diameter. Lymph nodes are negative
	IIIc	Abdominal implants >2 cm in diameter and/or positive retroperitoneal or inguinal nodes
Stage IV	Growth involving one or both Fallopian tubes with distant metastases. If pleural effusion is present, there must be positive cytology to be Stage IV. Parenchymal liver metastases equals Stage IV	

Correspondence to: FIGO Annual Report Editorial Office, European Institute of Oncology, via Ripamonti 435, 20141 Milan, Italy
fax: +39-0257489872, e-mail: figo@ieo.it

Table 2
Carcinoma of the Fallopian tube: Stage grouping for Fallopian tube carcinoma

FIGO	UICC		
	T	N	M
Ia	T1a	N0	M0
Ib	T1b	N0	M0
Ic	T1c	N0	M0
IIa	T2a	N0	M0
IIb	T2b	N0	M0
IIc	T2c	N0	M0
IIIa	T3a	N0	M0
IIIb	T3b	N0	M0
IIIc	T3c	N0	M0
	any T	N1	M0
IV	any T	any N	M1

The final histological findings after surgery (and cytological ones when available) are to be considered in the staging.

Clinical studies, if carcinoma of the tube is diagnosed, include routine radiography of the chest. Computed tomography and ultrasound may be helpful in both initial staging and follow-up of tumors.

Surgical staging classification

Staging for Fallopian tube is by the surgical pathological system. Operative findings prior to tumor debulking may be modified by histopathologic as well as clinical or radiological evaluation.

Histopathologic types
Adenocarcinoma is the most frequent histology seen. Sarcomas may occur but are extremely rare.

Histopathologic Grade (G)
- GX: Grade cannot be assessed
- G1: Well differentiated
- G2: Moderately differentiated
- G3: Poorly or undifferentiated

DEFINITIONS OF TREATMENTS

Treatment definitions are given in Table 3.

Table 3
Carcinoma of the Fallopian tube: Definitions of treatments

Treatment	Definition
None	No treatment.
Surgery alone	Surgery as first therapy; subsequently, patients can be given any further treatment.
Radiotherapy alone	External radiotherapy and/or intracavitary irradiation as first therapy(ies). No other therapy within 180 days. Subsequently, patients can be given any further treatment.
Neoadjuvant chemotherapy + surgery	Two to four cycles of chemotherapy as first therapy and then surgery within 42 days from the end of chemotherapy. Subsequently, patients can be given any further treatment.
Surgery + adjuvant radiotherapy	Surgery as first therapy and then radiotherapy within 90 days from the date of surgery. Subsequently, patients can be given any further treatment.
Surgery + adjuvant chemotherapy	Surgery as first therapy and then chemotherapy within 90 days from the date of surgery. Subsequently, patients can be given any further treatment.

DATA ANALYSIS

Summary and comments

The number of cases reported to the FIGO Annual Report Editorial Office for Volume 25 is about the same as in Volume 24. In fact, the numbers are small which makes the analysis less conclusive.

The 5-year survival rate increased from 25% to 69.1%, which is much better than the overall 5-year survival rate of ovarian carcinoma. This must be due to the fact that nearly 50% of the patients were diagnosed as Stage I.

Carcinoma of the Fallopian tube is a disease of postmenopausal women; 82% of the patients are over 50 years, and 55% are over 60 years of age (Fig. 1).

Most patients are treated with surgery and chemotherapy as shown in Figure 2.

Survival analysis in Table 10 shows improved survival in all stages, however especially in Stages II and III. It is not clear what the background of this improvement is.

Maybe, it can partly be explained by the wider use of cisplatin and taxanes in the treatment of this disease.

As can be expected, the low stages have the best prognosis (Figs. 4 and 8). Figure 5 clearly shows the relatively good prognosis of serous and endometrioid carcinomas compared with the other histologic types.

Although the number of cases reported is small, it seems that most patients are treated primarily with surgery and chemotherapy. The disease is often treated similarly to ovarian cancer. In the past, overall survival was worse than for ovarian cancer patients. This is the first Annual Report with a better prognosis for Fallopian tube carcinoma. However, also here the majority of patients eventually die from this disease.

Table 4
Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution of patients by center and stage

		All	Not available	Stage I	Stage II	Stage III	Stage IV
All centers		115	3	47	20	38	7
Canada	Montreal (GW Stanimir)	1	–	–	–	1	–
USA	Jacksonville FL (BU Sevin)	1	–	–	–	1	–
	Nashville TN (HW Jones)	4	1	1	–	1	1
	New York NY (R Barakat)	14	–	2	–	10	2
China	Hong Kong (HYS Ngan)	14	1	8	3	2	–
	Hong Kong (VSY Yu)	1	–	1	–	–	–
Japan	Kumamoto (H Okamura)	4	–	2	–	2	–
	Nagasaki (T Ishimaru)	1	–	–	1	–	–
	Osaka (A Suzuki)	1	–	1	–	–	–
	Sagamihara (H Kuramoto)	3	–	1	1	1	–
Korea	Seoul (JE Mok)	2	–	2	–	–	–
Thailand	Songkhla (V Wootipoom)	1	–	–	–	–	1
Austria	Innsbruck (C Marth)	6	–	3	–	2	1
Croatia	Zagreb (S Jukić)	6	–	3	3	–	–
Czech Republic	Brno (A Dörr)	1	–	1	–	–	–
Finland	Jyväskylä (H Sundström)	3	–	–	–	3	–
	Turku (T Salmi)	6	–	2	1	3	–
France	Bordeaux (ML Campo)	3	–	3	–	–	–
	Lille (E Leblanc)	3	–	2	–	1	–
Germany	Jena (A Schneider)	3	–	1	2	–	–
	Kiel (D Weisner)	1	–	–	1	–	–
Italy	Brescia (S Pecorelli)	1	–	1	–	–	–
	Trento (E Arisi)	3	–	–	2	1	–
Slovenia	Maribor (I Takač)	1	–	–	–	–	1
Spain	Barcelona (J Pahisa Fabregas)	1	–	–	1	–	–
Sweden	Ghotenburg (G Horvath)	15	–	8	4	3	–
	Örebro (B Sorbe)	9	–	3	1	4	1
Australia	Carlton (M Quinn)	6	1	2	–	3	–

Table 5
Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution of patients (%) by country and treatment (Stage I), $n = 47$

Country	Number of patients	First line of treatment (%)					
		None	Surgery alone	Neoadj CT	Surg + adj RT	Surg + adj CT	Other non-standard
All	47	–	30	–	6	45	19
USA	3	–	33	–	33	33	–
China	9	–	67	–	–	22	11
Japan	4	–	25	–	–	75	–
Korea	2	–	100	–	–	–	–
Austria	3	–	–	–	–	100	–
Croatia	3	–	–	–	–	100	–
Czech Republic	1	–	–	–	–	100	–
Finland	2	–	–	–	–	100	–
France	5	–	40	–	40	20	–
Germany	1	–	100	–	–	–	–
Italy	1	–	–	–	–	100	–
Sweden	11	–	–	–	–	27	73
Australia	2	–	50	–	–	50	–

Table 6
Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution of patients (%) by country and treatment (Stage II), $n = 20$

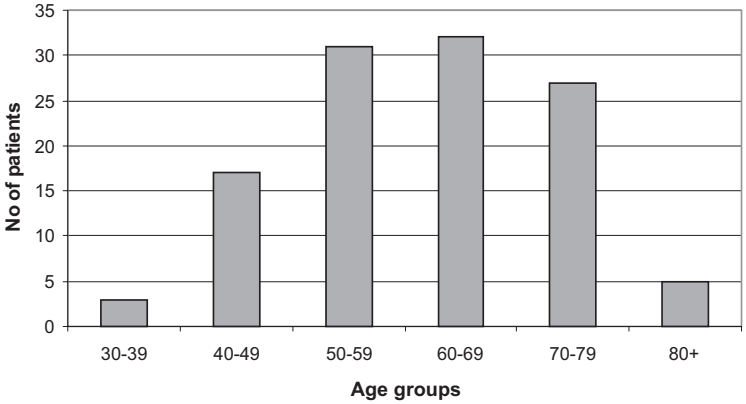
Country	Number of patients	First line of treatment (%)					
		None	Surgery alone	Neoadj CT	Surg + adj RT	Surg + adj CT	Other non-standard
All	20	–	15	–	5	60	20
China	3	–	33	–	–	67	–
Japan	2	–	–	–	50	50	–
Croatia	3	–	–	–	–	100	–
Finland	1	–	–	–	–	100	–
Germany	3	–	–	–	–	100	–
Italy	2	–	50	–	–	50	–
Spain	1	–	100	–	–	–	–
Sweden	5	–	–	–	–	20	80

Table 7
Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution of patients (%) by country and treatment (Stage III), $n = 38$

Country	Number of patients	First line of treatment (%)					
		None	Surgery alone	Neoadj CT	Surg + adj RT	Surg + adj CT	Other non-standard
All	38	–	8	5	–	76	11
Canada	1	–	–	–	–	100	–
USA	12	–	17	17	–	58	8
China	2	–	–	–	–	100	–
Japan	3	–	33	–	–	67	–
Austria	2	–	–	–	–	100	–
Finland	6	–	–	–	–	100	–
France	1	–	–	–	–	100	–
Italy	1	–	–	–	–	100	–
Sweden	7	–	–	–	–	57	43
Australia	3	–	–	–	–	100	–

Table 8
Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution of patients (%) by country and treatment (Stage IV), $n = 7$

Country	Number of patients	First line of treatment (%)					
		None	Surgery alone	Neoadj CT	Surg + adj RT	Surg + adj CT	Other non-standard
All	7	–	14	–	–	71	14
USA	3	–	33	–	–	67	–
Thailand	1	–	–	–	–	–	100
Austria	1	–	–	–	–	100	–
Slovenia	1	–	–	–	–	100	–
Sweden	1	–	–	–	–	100	–



Age group	Patients (*n*)	Percentage (%)
30–39	3	2.61
40–49	17	14.78
50–59	31	26.96
60–69	32	27.83
70–79	27	23.48
80+	5	4.35
Total	115	100.00

Fig. 1. Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution by age groups.

Table 9
Carcinoma of the Fallopian tube: patients treated in 1996–98. Review of the 5-year survival rates reported in volumes 22–25

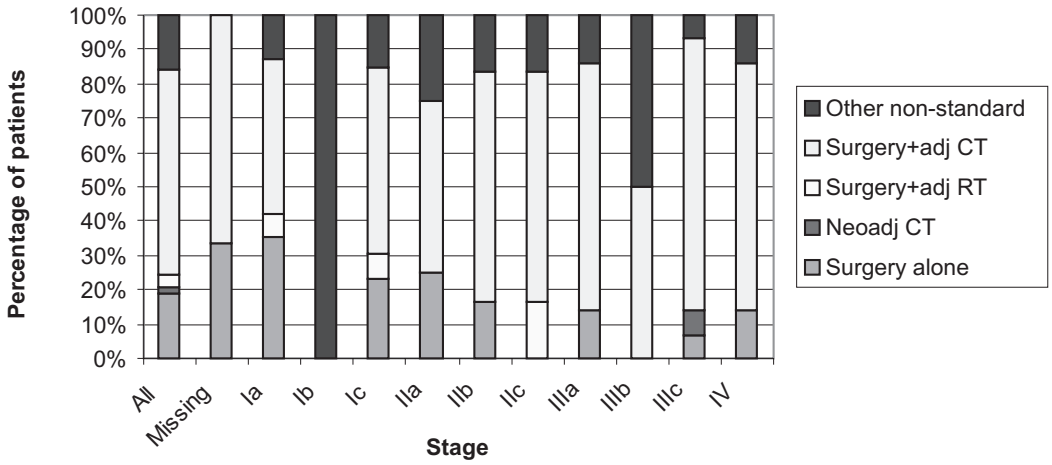
Vol.	Year	Patients (*n*)	Survival (%)
22	1987–89	275	50.0
23	1990–92	83	56.1
24	1993–95	118	44.6
25	**1996–98**	**103**	**69.1**
Total		**579**	

Table 10
Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution by FIGO stage and 5-year survival

Stage	Patients (*n*)	Percentage (%)	5-year survival (%)
Stage I	42	40.8	79.0
Ia	27	26.2	
Ib	3	2.9	
Ic	12	11.7	
Stage II	17	16.5	82.4
IIa	5	4.9	
IIb	6	5.8	
IIc	6	5.8	
Stage III	35	34.0	60.5
IIIa	7	6.8	
IIIb	2	1.9	
IIIc	26	25.2	
Stage IV	7	6.8	28.6
Missing	2	1.9	
Total	103	100.0	69.1

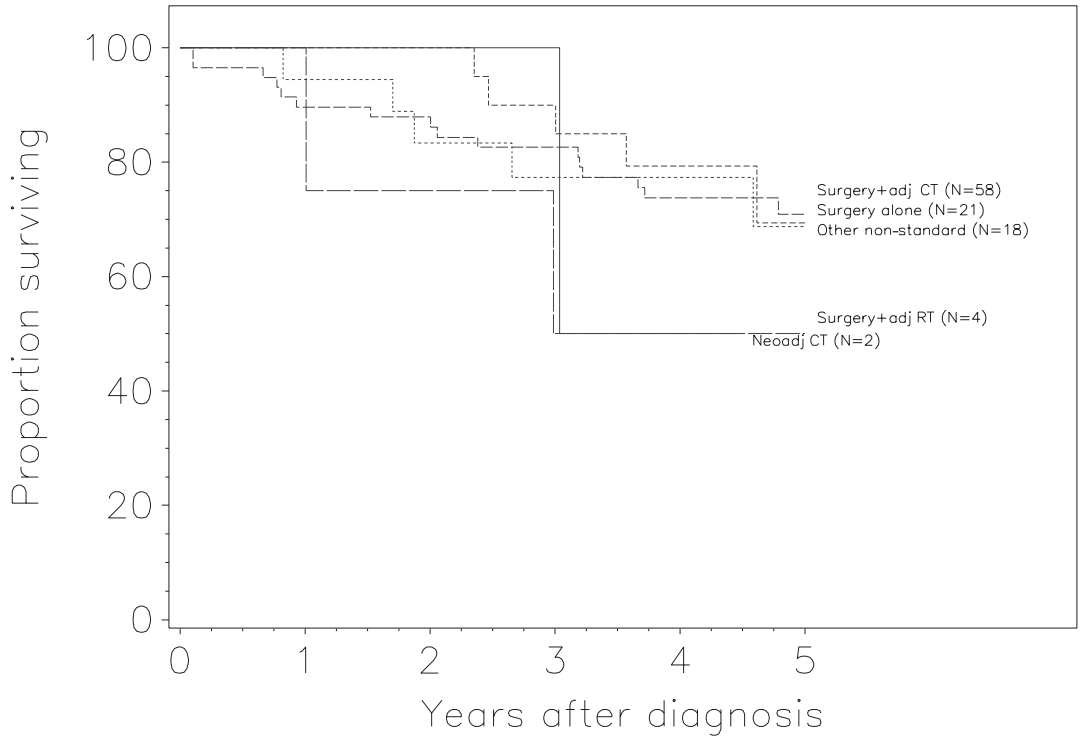
Table 11
Carcinoma of the Fallopian tube: patients treated in 1996–98. Mean age at diagnosis by FIGO stage

Stage	Mean age at diagnosis
Stage I	58.2
Ia	57.7
Ib	59.3
Ic	59.0
Stage II	66.1
IIa	69.3
IIb	68.8
IIc	59.0
Stage III	63.0
IIIa	58.3
IIIb	66.5
IIIc	63.9
Stage IV	56.6



Treatment	All	Missing	Ia	Ib	Ic	IIa	IIb	IIc	IIIa	IIIb	IIIc	IV
Surgery alone	22	1	11	0	3	2	1	0	1	0	2	1
Neoadj CT	2	0	0	0	0	0	0	0	0	0	2	0
Surgery + adj RT	4	0	2	0	1	0	0	1	0	0	0	0
Surgery + adj CT	69	2	14	0	7	4	4	4	5	1	23	5
Other non-standard	18	0	4	3	2	2	1	1	1	1	2	1

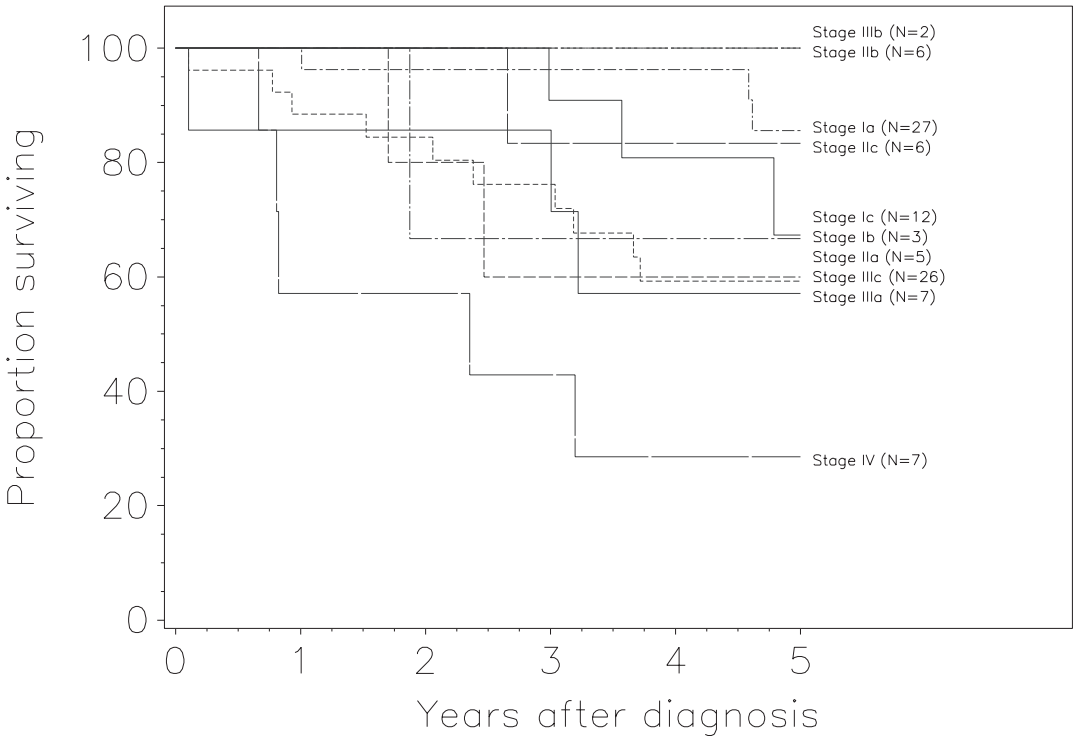
Fig. 2. Carcinoma of the Fallopian tube: patients treated in 1996–98. Distribution of patients by stage and mode of treatment.



Treatment	Patients (*n*)	Mean age (yr)	Overall survival (%) at					Hazards ratio[a] (95% CI)
			1 year	2 years	3 years	4 years	5 years	
Surgery alone	21	63.4	100.0	100.0	90.0	78.4	67.9	Reference
Neoadj CT	2	65.5	100.0	100.0	100.0	50.0	–	1.5 (0.1–17.6)
Surgery + adj RT	4	57.0	100.0	75.0	50.0	50.0	50.0	6.4 (0.8–49.5)
Surgery + adj CT	58	60.7	89.7	87.9	82.6	73.4	70.9	1.1 (0.3–4.6)
Other	18	59.9	94.4	83.3	77.6	77.6	69.4	2.6 (0.3–20.7)

[a]Hazards ratio and 95% Confidence Intervals obtained from a Cox model adjusted for age and country.

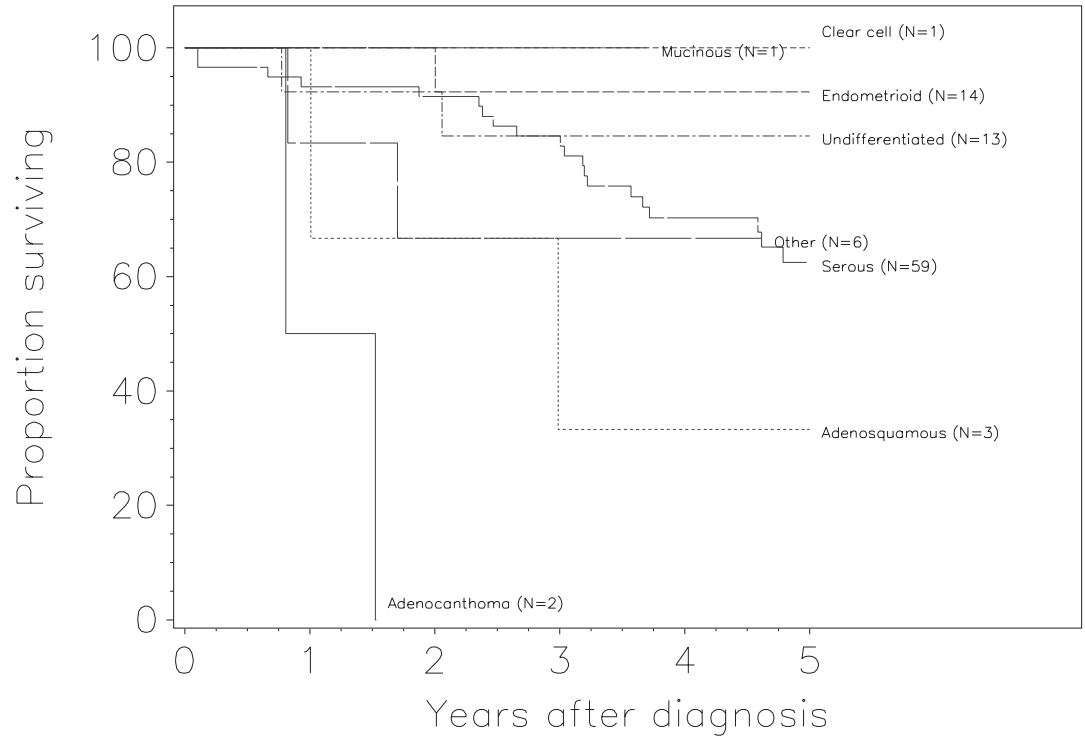
Fig. 3. Carcinoma of the Fallopian tube: patients treated in 1996–98. Survival by mode of treatment, $n = 103$.



Stage	Patients (*n*)	Mean age (yr)	Overall survival (%) at					Hazards ratio[a] (95% CI)
			1 year	2 years	3 years	4 years	5 years	
Ia	27	58.6	100.0	96.3	96.3	96.3	84.6	Reference
Ib	3	59.3	100.0	66.7	66.7	66.7	66.7	4.2 (0.3–54.2)
Ic	12	59.1	100.0	100.0	90.9	81.3	68.8	0.9 (0.1–5.7)
IIa	5	68.0	100.0	80.0	60.0	60.0	60.0	5.5 (0.8–39.6)
IIb	6	68.8	100.0	100.0	100.0	100.0	100.0	–
IIc	6	59.0	100.0	100.0	83.3	83.3	83.3	1.2 (0.1–14.9)
IIIa	7	58.3	85.7	85.7	85.7	57.1	57.1	6.4 (0.9–48.2)
IIIb	2	66.5	100.0	100.0	100.0	100.0	100.0	2.6 (0.2–31.3)
IIIc	26	63.8	88.5	84.5	76.3	58.3	58.3	3.9 (0.9–16.8)
IV	7	56.6	57.1	57.1	42.9	28.6	28.6	12.0 (1.9–77.1)

[a]Hazards ratio and 95% Confidence Intervals obtained from a Cox model adjusted for age and country.

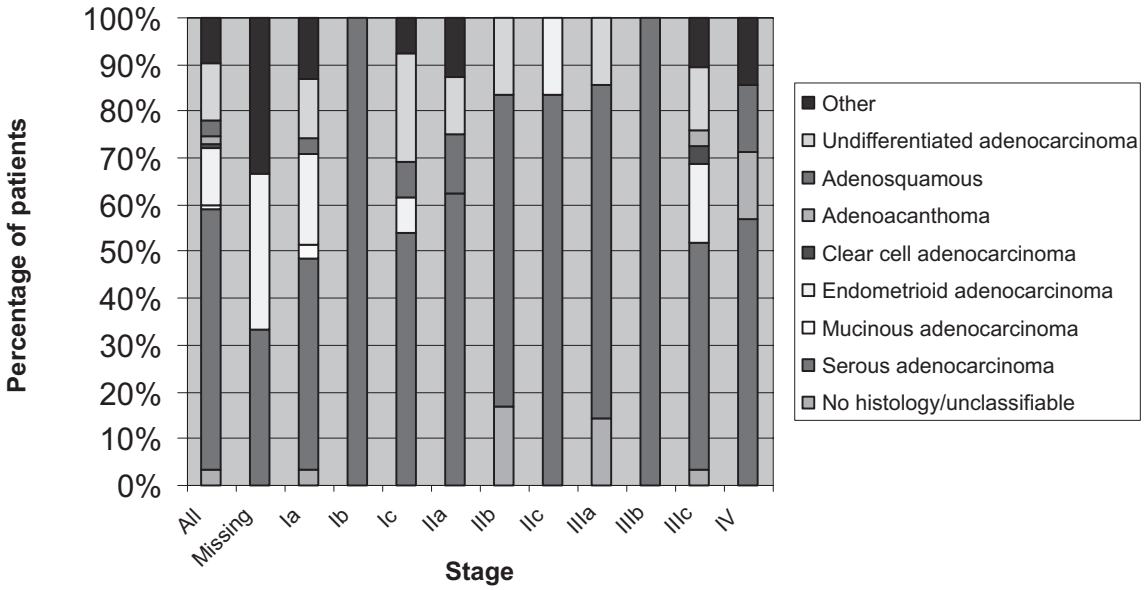
Fig. 4. Carcinoma of the Fallopian tube: patients treated in 1996–98. Survival by FIGO stage, $n = 101$.



Histotype	Patients (*n*)	Mean age (yr)	Overall survival (%) at					Hazards ratio[a] (95% CI)
			1 year	2 years	3 years	4 years	5 years	
Serous	59	63.0	93.2	91.5	84.6	70.2	63.2	Reference
Mucinous	1	69.0	100.0	100.0	100.0	–	–	–
Endometrioid	14	57.3	100.0	100.0	92.0	92.0	92.0	0.4 (0.1–1.4)
Clear cell	1	65.0	100.0	100.0	100.0	100.0	100.0	–
Adenoacanthoma	2	66.0	50.0	–	–	–	–	–
Adenosquamous	3	55.0	100.0	66.7	33.3	33.3	33.3	0.8 (0.1–5.1)
Undifferentiated	13	61.5	92.3	92.3	84.6	84.6	84.6	0.2 (0.0–1.1)
Other	6	49.7	83.3	66.7	66.7	66.7	–	7.4 (0.7–76.0)

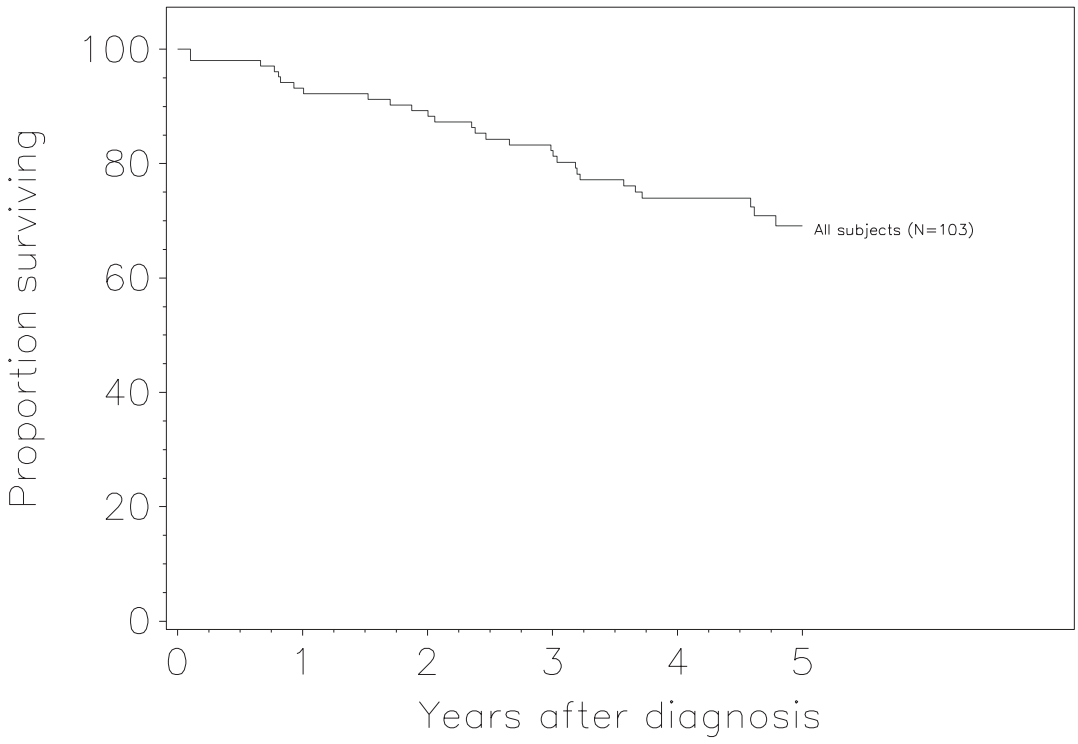
[a]Hazards ratio and 95% Confidence Intervals obtained from a Cox model adjusted for age and country.

Fig. 5. Carcinoma of the Fallopian tube: patients treated in 1996–98. Survival by histologic type, $n = 99$.



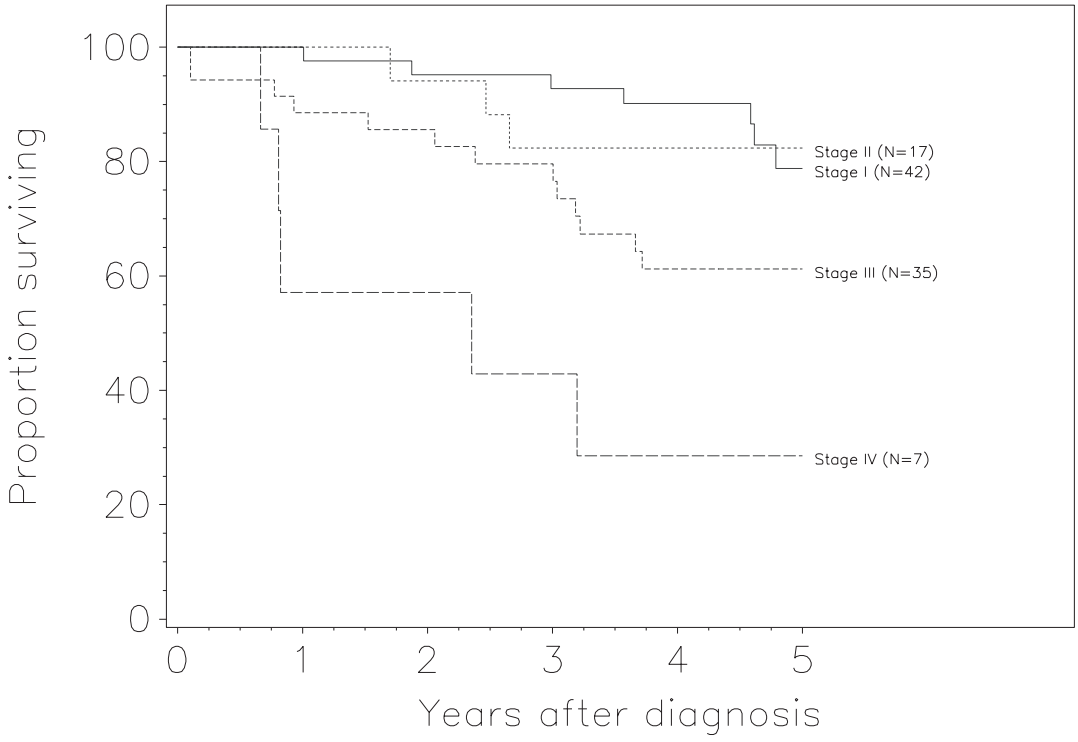
Histotype	All	Missing	Ia	Ib	Ic	IIa	IIb	IIc	IIIa	IIIb	IIIc	IV
No histology/unclassifiable	4	0	1	0	0	0	1	0	1	0	1	0
Serous adenocarcinoma	64	1	14	3	7	5	4	5	5	2	14	4
Mucinous adenocarcinoma	1	0	1	0	0	0	0	0	0	0	0	0
Endometrioid adenocarcinoma	14	1	6	0	1	0	0	1	0	0	5	0
Clear cell adenocarcinoma	1	0	0	0	0	0	0	0	0	0	1	0
Adenoacanthoma	2	0	0	0	0	0	0	0	0	0	1	1
Adenosquamous	4	0	1	0	1	1	0	0	0	0	0	1
Undifferentiated adenocarcinoma	14	0	4	0	3	1	1	0	1	0	4	0
Other	11	1	4	0	1	1	0	0	0	0	3	1
Total	115	3	31	3	13	8	6	6	7	2	29	7

Fig. 6. Carcinoma of the Fallopian tube: patients treated in 1996–98. Histopathology by stage.



	Patients (*n*)	Mean age (yr)	Overall survival (%) at				
			1 year	2 years	3 years	4 years	5 years
All subjects	103	61.1	93.2	89.3	82.3	73.6	69.1

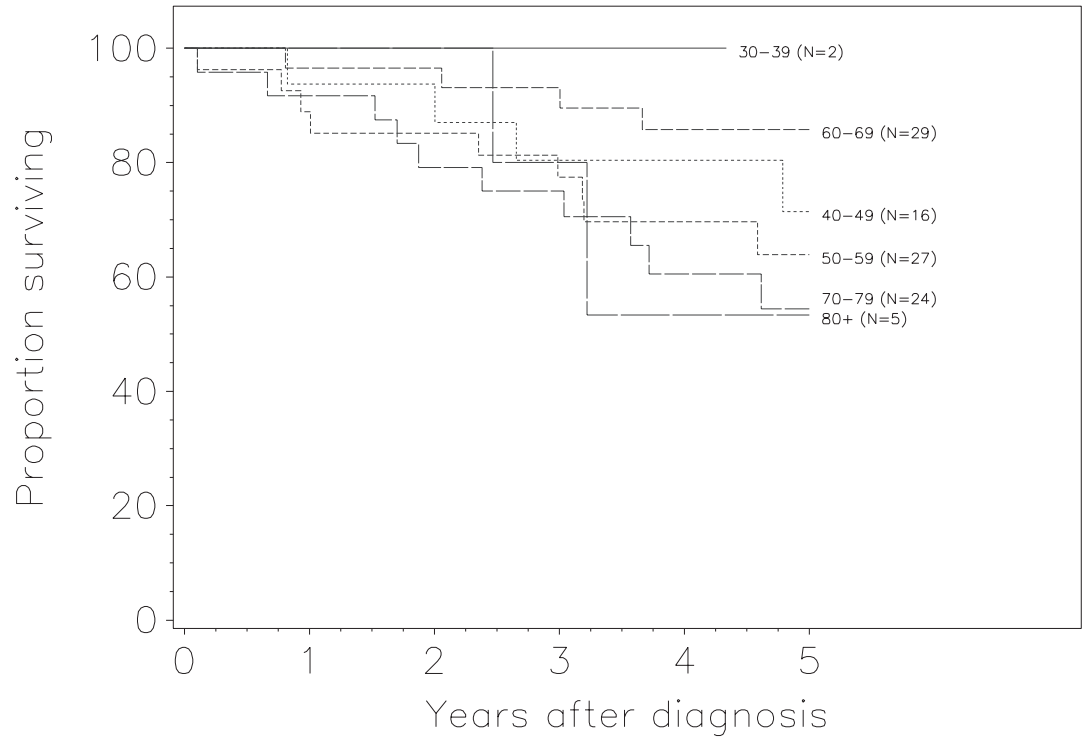
Fig. 7. Carcinoma of the Fallopian tube: patients treated in 1996–98. Overall survival, $n = 103$.



Stage	Patients (*n*)	Mean age (yr)	Overall survival (%) at					Hazards ratio[a] (95% CI)
			1 year	2 years	3 years	4 years	5 years	
I	42	58.8	100.0	95.2	92.7	90.1	79.0	Reference
II	17	65.1	100.0	94.1	82.4	82.4	82.4	2.2 (0.5–10.3)
III	35	62.9	88.6	85.7	79.7	60.5	60.5	3.5 (1.1–11.1)
IV	7	56.6	57.1	57.1	42.9	28.6	28.6	8.6 (1.8–41.9)

[a]Hazards ratio and 95% Confidence Intervals obtained from a Cox model adjusted for age and country.

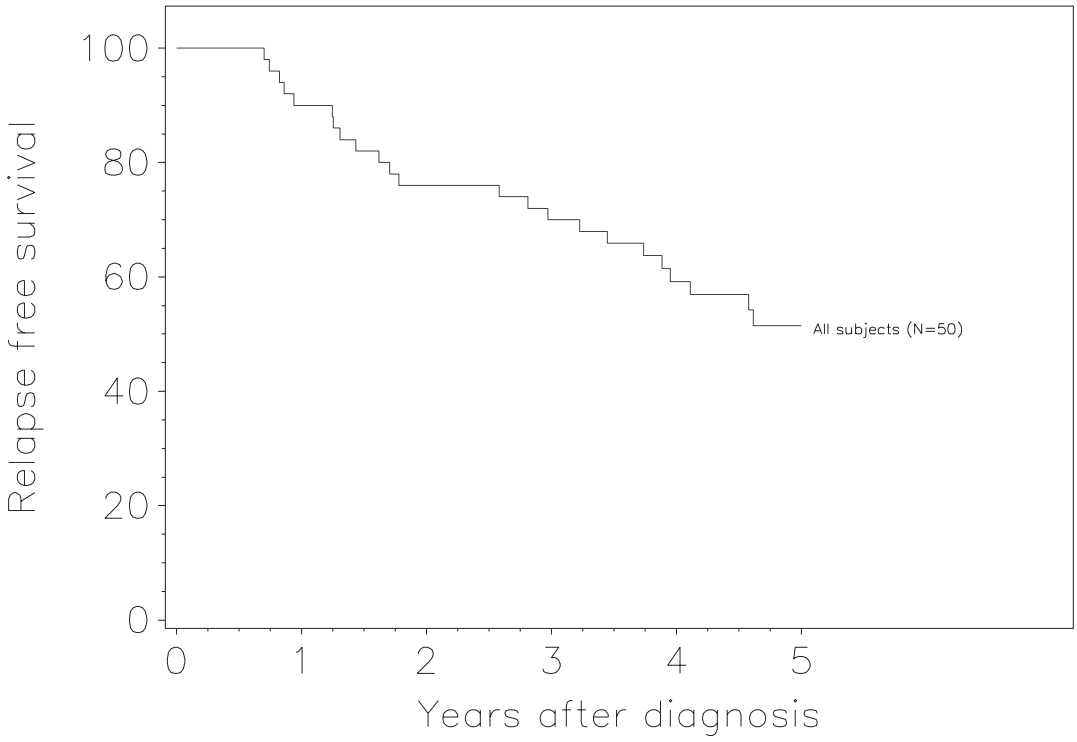
Fig. 8. Carcinoma of the Fallopian tube: patients treated in 1996–98. Survival by FIGO stage, $n = 101$.



Age group	Patients (*n*)	Mean age (yr)	Overall survival (%) at					Hazards ratio[a] (95% CI)
			1 year	2 years	3 years	4 years	5 years	
30–39	2	35.5	100.0	100.0	100.0	100.0	–	–
40–49	16	44.3	93.8	93.8	80.4	80.4	71.4	0.6 (0.1–2.5)
50–59	27	54.4	88.9	85.1	77.4	69.4	64.1	Reference
60–69	29	65.1	96.6	96.6	93.0	85.3	85.3	0.4 (0.1–1.2)
70–79	24	72.8	91.7	79.2	75.0	60.9	54.5	1.7 (0.7–4.2)
80+	5	81.4	100.0	100.0	80.0	57.1	57.1	2.2 (0.4–11.9)

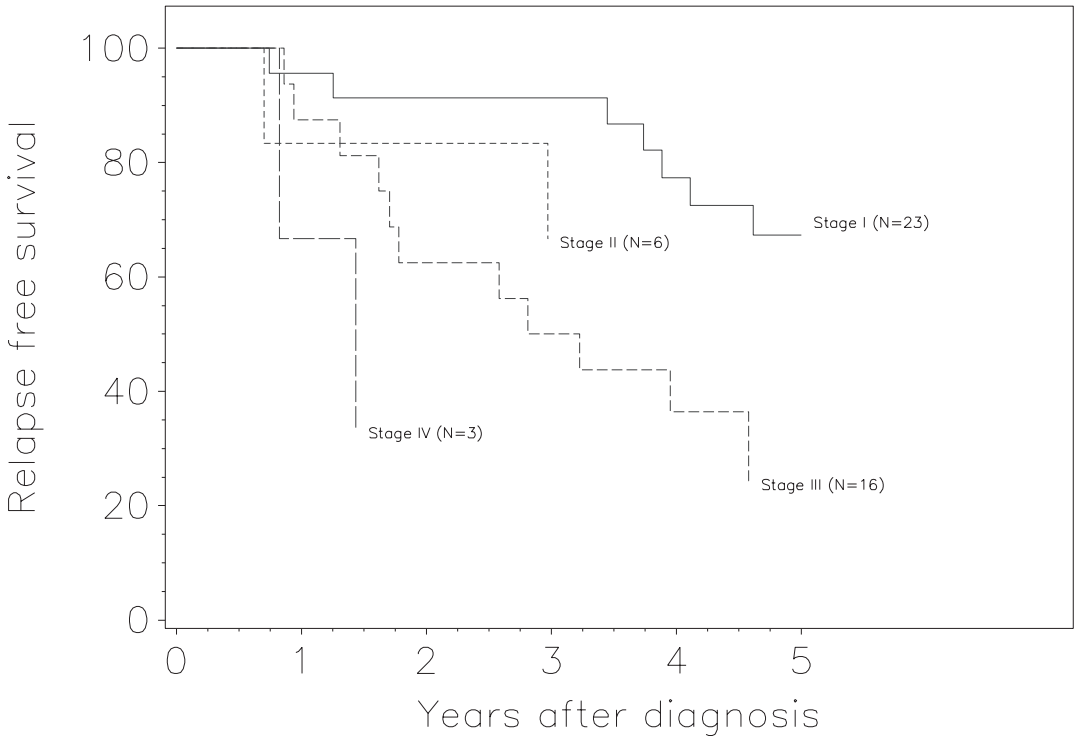
[a]Hazards ratio and 95% Confidence Intervals obtained from a Cox model adjusted for age, FIGO stage and country.

Fig. 9. Carcinoma of the Fallopian tube: patients treated in 1996–98. Survival by age group, $n = 103$.



	Patients (*n*)	Mean age (yr)	Relapse-free survival (%) at				
			1 year	2 years	3 years	4 years	5 years
All subjects	50	60.2	90.0	76.0	70.0	59.4	51.3

Fig. 10. Carcinoma of the Fallopian tube: patients treated in 1996–98. Relapse-free survival, $n = 50$.



Stage	Patients (*n*)	Mean age (yr)	Relapse-free survival (%) at					Hazards ratio[a] (95% CI)
			1 year	2 years	3 years	4 years	5 years	
I	23	57.8	95.7	91.3	91.3	77.6	66.1	Reference
II	6	66.7	83.3	83.3	66.7	66.7	66.7	2.0 (0.3–13.5)
III	16	62.9	87.5	62.5	50.0	36.7	27.5	3.0 (0.9–9.5)
IV	3	52.0	66.7	33.3	33.3	33.3	33.3	–

[a]Hazards ratio and 95% Confidence Intervals obtained from a Cox model adjusted for age and country.

Fig. 11. Carcinoma of the Fallopian tube: patients treated in 1996–98. Relapse-free survival by FIGO stage, $n = 48$.