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Postoperative complications of Okabayashi's operation for carcinoma of the cervix in recent 5 years

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Abstract

Okabayashi's radical extensive hysterectomy is one of the excellent operations for carcinoma of the cervix. In this study on the postoperative complications during the recent 5 years, we obtained the following results. 1. In the total of 861 cases studied, the primary mortality amounts to 1.2 per cent, the incidence of the uretero-vaginal fistula 2.7 per cent, the pelvic abscess 16.8 per cent, and the lymphocyst 23.3 per cent. 2. On comparing the results with our previous ones as well as those of other investigators, it is found that satisfactory results have been obtained due to the advent of various antibiotics in recent years and also due to a marked advance made in the technics of blood and fluid administration as well as anesthesia. 3. Since the various complications have not completely been overcome and they still pose an important problem, an effort should be made toward a better postoperative care in order to prevent the complications.

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POSTOPERATIVE COMPLICATIONS OF OKABAYASHI'S OPERATION FOR CARCINOMA OF THE CERVIX IN RECENT 5 YEARS

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In Okabayashi's radical extensive hysterectomy for carcinoma of the cervix, we have often encountered some postoperative complications that are far more troublesome than in other gynecological operations because of its extensiveness. The literature is replete with complications, especially with ureterovaginal fistula, pelvic abscess, the inflammation of the extraperitoneal pelvic cavity, with coccygeal drainage and vaginal insertion of polyethylene tube as a postoperative drainage and the use of various antibiotics. With recent advance in medical science some excellent results have been attained in prevention and management ofsuc hcomplications. It is the purpose of this paper to present the complications which occurred during the recent 5 years in our department. They were classiied into primary death, uretero-vaginal fistula, pelvic abscess and lymphocyst.

MATERIALS

The present study includes 861 cases with carcinoma of the cervix, which underwent Okabayashi's radical extensive hysterectomy in our department during the period of 5 years, 1954—1958 (The cases without any histological verification were excluded).

RESULTS

1. *Primary Death*

Primary death is the greatest concern in surgery for carcinoma of the cervix. Reports on the primary death following Okabayashi's operation from various investigators and our previous results are shown in Tables 1 and 2, and those of the recent 5 years are illustrated in Table 3.

Table 3 shows the mortality rate to be 1.2 per cent, 10 deaths out of 861. The rate which reached its maximum immediately after the 2nd World War has

Table 1. Primary death reported from other institutions

Institution (Investigators)	Cases operated	Primary Death		Year of Study
		Number	Incidence (%)	
Takeyama Hosp. (Ogino)[1]	509	20	3.9	1932—1951
-ditto-	194	5	2.6	1952—1957
Kyushu Univ. (Hata)[2]	125	23	18.4	1946—1948
Tohoku Univ. (Shinoda)[3]	182	16	8.8	1939—1944
Nagasaki Univ. (Ohno)[4]	211	11	5.2	Apr. 1947—Dec. 1954
Wakayama Red Cross Hosp. (Katsu)[5]	95	2	2.1	1946—1952
Gifu Univ. (Natsume)[6]	153	1	0.65	1952—Jun. 1957

Table 2. Primary death (our previous reports)

Year of Study	Cases operated	Primary Death	
		Number	Incidence (%)
1934—1944	352	28	7.9
1945—1947	107	26	24.3
1948—	102	13	12.7
1949—	123	8	6.5
1950—1952	454	15	3.3
1953—1954	317	5	1.6

Table 3. Primary death during recent 5 years

Year of Study	Cases operated	Primary Death	
		Number	Incidence (%)
1954	153	1	0.7
1955	187	3	1.6
1956	165	4	2.4
1957	178	1	0.6
1958	178	1	0.6
Total	861	10	1.2

gradually declined due to improvement in social conditions and to the advent of various antibiotics. In comparing the previous rate of 1950—1952 of our department with the present data from statistical standpoint, there is a marked decline in the latter. Namely, with the advent of antibiotics the death from infection, one of the two greatest causes of the death has vanished, due to a

marked advance in the preventive measures against death of shocks by means of blood and fluid infusion as well as to a progress made in anesthesia. Particularly, death from the so-called heart failure has decreased strikingly as attested by the good results demonstrated above. This is clearly indicated by the causes and the time of their deaths, as shown in Table 4. Of the 10 primary deaths, there appear 2 cases of pulmonary embolism, 4 cases of pneumonia and one case of pyelonephritis, showing only a single case of so-called heart failure. In addition, there were 2 accidental deaths from blood and fluid infusion, but since this could have been avoided, the mortality rate would have been below 1 per cent, had it not been for the two deaths.

Table 4. Causes and time of primary death following hysterectomy

Causes	Weeks after Operation										Total
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	
So-called heart failure		1									1
Pneumonia		1				1		1		1	4
Pulmonary Embolism		2									2
Pyelonephritis								1			1
Accidental death after blood and fluid infusion	1		1								2
Total	1	4	1	0	0	1	0	2	0	1	10

In order to improve the cure rate in the cervical carcinoma in future we would endeavor our utmost efforts to eradicate the primary death completely by careful management and treatment before and after the operation.

2. *Uretero-vaginal Fistula*

It is one of the undesirable complications that occur postoperatively and what mental and physical tortures it imposes on the patients are beyond our expression, and it is well recognized how it affect the prognosis.

Reports by various investigators concerning the incidence are shown in Table 5 and our previous results in Table 6. The incidence of the present study is illustrated in Table 7, namely, it is 2.7 per cent (23 cases out of 861).

As regards the side on which the fistula develops, 15 cases had it on the left side while 8 on the right, as can be seen in Table 8, showing no difference in the incidence of the side. Moreover, in regard to the onset of the fistula the earliest had it on 5th postoperative day and the latest on 36th day, as shown in Table 9, indicating 18 cases of the 23 (78.4%) appeared within 3 weeks postoperatively. The findings nearly coincide with those reported by the various authors.

Table 5. Uretero-vaginal fistula reported from other investigators

Investigators	Cases operated	Fistula	
		Number	Incidence (%)
Ogino[1]	622	23	3.7
Shinoda[3]	182	29	16.0
Yano[7]	422	31	7.3
Mitani[8]	226	10	4.4
Kobayashi[9]	345	50	14.5
Okudaira[10]	147	17	11.5
Katsu[5]	95	4	4.2
Ohwada[11]	121	16	13.2

Table 6. Uretero-vaginal fistula (our previous reports)

Investigators	Year of Study	Cases operated	Fistula		
			Number	Incidence (%)	
Hashimoto[12]	1934—1945	372	28	6.7	
Tokura[13]	1934—1950	887	35	3.9	
Yagi-Akimoto[14]	1934—1954	1,528	54	3.5	
Saratani[15]	1951			3.1	Exclusive of primary Death
	1952			2.5	
	1953			4.6	
	1954			3.7	
	1955			7.2	
	1951—June 1955	719	29	4.0	
Masaoka-Shirakawa-Ikenoue[16]	1951—1956	unknown	38	3.7	

Table 7. Uretero-vaginal fistula during recent 5 Years

Year of Study	Cases operated	Fistula	
		Number	Incidence (%)
1954	153	5	3.3
1955	187	9	4.8
1956	165	6	3.6
1957	178	2	1.1
1958	178	1	0.6
Total	861	23	2.7

Table 8. Uretero-vaginal fistula and its side

Side	Cases	Incidence (%)
Left	15	65.2
Right	8	34.8
Total	23	

Table 9. Onset of uretero-vaginal fistula

Time of Onset (postop. day)	<5	6—10	11—15	16—20	21—25	26—30	>31	Total
Cases	1	9	5	3	0	2	3	23

Table 10. Uretero-vaginal fistula and stage of carcinoma

Stage	Fistula (+)	Fistula (−)	Total	Incidence of Fistula (%)
I	12	256	268	4.5
II	11	578	589	1.9
III	0	4	4	0
Total	23	838	861	2.7

Table 11. Uretero-vaginal fistula and age of patients

Age (yrs.)	Fistula (+)	Fistula (−)	Total	Incidence of Fistula (%)
<39	3	174	177	1.7
40—49	10	374	384	2.6
>50	10	290	300	3.3
Total	23	838	861	2.7

Looking over the relation between the stage of carcinoma and the fistula, its occurence is decidedly greater in Stage I group as illustrated in Table 10. This does not agree with the results of MITANI[8] and it is believed that this is probably due to the fact that Stage I group was operated on by the relatively inexperienced than Stage II group. Next, it is pointed out that there is no relationship between the incidence of the fistula and the patient's age (Table 11).

A relationship between pelvic abscess and the fistula is demonstrated in Table 12. Namely, out of 145 cases with complication of the pelvic abscess 10 cases (6.9%) had the fistula, while of 716 cases without the pelvic abscess 13 cases (1.8%) had it, showing a singnificantly greater incidence of the fistula in the cases with the pelvic abscess. However, MITANI[8] contends that pelvic abscess is in no way associated with incidence of the fistula. On the other hand, YANO[7], OKUDAIRA[10] and OHWADA[11] stated that while pelvic abscess was not the direct

Table 12. Uretero-vaginal fistula and pelvic abscess

Pelvic Abscess	Fistula (+)	Fistula (−)	Total	Incidence of Fistula (%)
(+)	10	135	145	6.9
(−)	13	703	716	1.8
Total	23	838	861	2.7

Table 13. Uretero-vaginal fistula and operative course

		Cases of Fistula	Development of Pelvic Abscess
Injury to ureter		1	0
Difficulty in ureteral separation		5	1
Operation with favorable course	P. I. D. (+)	8	5
	P. I. D. (−)	9	4

cause of the fistula, it favored a development of the fistula.

The relationship with operative course is illustrated in Table 13, i. e. one case had an injury to the ureter, 5 cases showed a difficulty in ureteral separation, and another 8 cases had relatively favorable course, although there were pelvic inflammatory disease found during the operation. Ten cases of the 23 with the fistula had complication of the pelvic abscess, namely about half of them complicated with pelvic abscess.

Table 14. Uretero-vaginal fistula and various drainage

	Fistula (+)	Fistula (−)	Total	Incidence of Fistula (%)
Coccygeal Drain	16	689	705	2.3
Vaginal Drain	1	14	15	6.7
Polyethylene Tube	0	5	5	0
Drain (−)	6	130	136	4.4
Total	23	838	861	2.7

Table 14 illustrates its relationship with drain methods. In recent 5 years, 705 cases (81.9%) out of 861, the majority of them, received the insertion of coccygeal drain, and the rest being so small in number, the method with and without drain does not statistically show a significant difference. As to the outcome of the fistula, with a single exception of primary death, 18 cases out of 22 recovered spontaneously (Table 15), requiring a minimal period of 22 days and a maximal time of 5 years and 5 months. Eight cases recovered within 3 months after operation, 6 cases within 6 months, and 4 cases required over 6

months to recover, showing spontaneous recovery within half a year in most of the cases. The remaining 4 cases showed the following outcome: one recovered with a X-ray castration to the kidney, another one recovered by unilateral nephrectomy, another one having the fistula up to postoperative 7 months but it was not followed, and the last castrated as above still showed an existence of the fistula in 3 years postoperatively, with unknown follow-up thereafter.

Table 15. Time required for spontaneous recovery of uretero-vaginal fistula

Time (months)	<3	4—6	7—9	10—12	>12	Total
Cases	8	6	0	2	2	18

Next, when we compare our previous results with those of the present study, it appears that the incidence of the fistula has declined during the recent 5 years, but no statistical significance of the difference is demonstrated.

Concerning the causes of the fistula, there are many reports, but the principal one seems to be nutritional disturbance of the ureter, injuries or manipulations to the ureter during operaion, postoperative pelvic abscess, and the general low resistance of the body. It is generally accepted, however, that the chief factor among the causes just mentioned is the unintentional injury to the anterior portion of the ureter during the procedure, particularly in its separation from the bladder.

On this problem, AKIMOTO[17] states that there can be difference in the incidence of the fistula according to different operators, pointing out a high incidence in operation performed by the less experienced. He also emphasizes that the operative injury is an important cause. MITANI[8] mentions that the injury to the sheath of the anterior portion of the ureter is the most important cause from his clinical statistics as well as from the results of animal experiments. In addition, KOBAYASHI[9] claims that as long as the ureteral sheath is maintained in a sufficiently good condition, the fistula can hardly develop. Furthermore, as is known that pelvic abscess does favor the occurence of the fistula, also in our study, the incidence of pelvic abscess has significantly declined as compared with the previous years, to be shown later. Consequently, it appears that the incidence of fistula tends to decline in combination of such factors as the low incidence of pelvic abscess, careful manipulation and skill of the surgeons.

Our policy on a prevention of the complication has been reported several times by YAGI[18,19,20] and HASHIMOTO[12].

3. *Pelvic Abscess*

There are now numerous reports on the pelvic abscess which likely occurs

after the radical extensive hysterectomy for carcinoma of the cervix. Despite a marked decrease in the incidence due to the application of various antibiotics, its incidence is still around 20 per cent as can be understood from various reports. OGINO[1,22], HATA[23], MASUBUCHI[24], OHNO[4], YANO[25] and OHWADA[11] have already obtained excellent results by means of coccygeal drain which was originally suggested by KOBAYASHI[21]. More recently ENDO[26] has designed a method of vaginal insertion of a polyethylene tube, which is quite efficient in the drainage of fluid despite its small calibre and which has hardly any danger of tissue injury, and he claims it is the best measure for the prevention of pelvic abscess. However, NATSUME[6] states that when bleeding in operation field is completely ceased and antibiotics with broad spectrum against intestinal bacteria causing the pelvic abscess is applied, the use of the drainage is, at present, no longer necessary but is rather useless.

In our department, ever since February 1951, we employ the coccygeal drainage in combination with a spray of sulfonamide-streptomycin solution into the extraperitonaeal pelvic dead space.

The incidence of the complication reported by various investigators are summarized in Table 16, and that of ours in Table 17. The incidence during the recent 5 years is 16.8 per cent (145 cases out of 861) as shown in Table 18, indicating no significant difference in the incidence according to each year. This complication is classified into four groups according to the symptom: viz. (++), (+), (both of these are considered to be severe), (±) (mild), and (−) (negative), based upon the findings of AKIMOTO-TAKAHARA[28].

When our results are compared with those of 5 year period from 1949 to 1953, there is a distinct decline in the incidence. AKIMOTO[17] and KUMAGAI-KATSUYA[29] have already made reports on excellent results obtained by coccygeal drainage in our department up to 1953. This method was applied mainly

Table 16. Pelvic Abscess reported from other institutions

Institution (Workers)	Cases operated	Pelvic Abscess		Year of Study
		Number	Incidence (%)	
Takeyama Hosp. (Ogino)[1]	252	8	3.17	1950—1957
Kyushu Univ. (Hata)[23]	61	28	45.9	1946—1948
Kyushu Univ. (Yano)[25]	329	35	10.6	Jan. 1950—Dec. 1954
Cancer Inst. (Masubuchi)[24]	73	4	5.4	Aug. 1952—Jul. 1953
Yokohama Univ. (Shiojima)[27]	30	7	23.3	Jan. 1950—Jan. 1952
Nagasaki Univ. (Ohno)[4]	200	64	32.0	Apr. 1947—Dec. 1954
Tohoku Univ. (Shinoda)[3]	64	1	1.6	1948—1949
Gifu Univ. (Natsume)[6]	153	0	0	1952—Jan. 1957
Nat. Sendai Hosp. (Ohwada)[11]	94	22	23.4	Jun. 1951—Aug. 1956

Table 17. Pelvic abscess (our previous reports)

Investigators	Year of Study	Cases operated	Pelvic Abscess	
			Number	Incidence (%)
Hashimoto[12]	1934—1945	372	141	37.9
Akimoto-Takahara[28]	1934—1941	189	54	28.6
	1942—1948	315	195	61.9
	1949—1951	349	131	37.5
	Total	853	380	44.55
Yagi-Akimoto[14]	1934—1941	189	54	28.6
	1942—1948	315	195	61.9
	1949—1953	659	235	35.7
	1954	164	30	18.3
Kumagai-Katsuya[29]	1949	116	55	47.4
	1950	126	36	28.5
	1951	158	62	39.3
	1952	158	55	34.8
	1953	153	50	32.7
	1954	164	30	18.3
	Total	875	288	32.8

Table 18. Pelvic abscess during recent 5 years

Year of Study	Cases operated	Pelvic Abscess	
		Number	Incidence (%)
1954	153	30	19.6
1955	187	26	13.9
1956	165	34	20.6
1957	178	32	18.0
1958	178	23	12.9
Total	861	145	16.8

to those which operation had not been so favorable that the incidence of this complication did not fall below 30 per cent. However, reappraisal of this method made since then afforded us satisfactory results, and thereafter the coccygeal drainage has been used on the majority of cases in our department. Therefore, we believe that the complication has been brought down not only by the use of antibiotics but also by the coccygeal drainage in combination of the antibiotics.

The age difference, as can be seen from Table 19, does not affect any group to any significant degree nor does the severity of the complication.

Table 19. Pelvic abscess and age of patients

Age (yrs.)	Pelvic Abscess (−)	Pelvic Abscess (±)	Pelvic Abscess (+)	Pelvic Abscess (++)	Pelvic Abscess Subtotal (+) & (++)	Pelvic Abscess Total	Total
<39	143 (80.8)%	9 (5.1)%	22	3	25 (14.1)%	34 (19.2)%	177
40—49	315 (82.3)	23 (5.98)	31	15	46 (11.97)	69 (17.96)	384
>50	258 (86.0)	14 (4.7)	23	5	28 (9.3)	42 (14.0)	300
Total	716 (83.2)	46 (5.3)	76	23	99 (11.5)	145 (16.8)	861

As Table 20 indicates, there can be recognized no significant difference between the stage of carcinoma and the incidence. However, with respect to its severity, Stage II shows decidedly a great number, and this fact seems to be not only due to the difficulty of operation but also due to factors such as the blood loss and the duration of operation.

Table 20. Pelvic abscess and stage of carcinoma

Stage	Pelvic Abscess (−)	Pelvic Abscess (±)	Pelvic Abscess (+)	Pelvic Abscess (++)	Pelvic Abscess Subtotal (+) & (++)	Pelvic Abscess Total	Total
I	215 (80.2)%	23 (8.6)%	22	8	30 (11.2)%	53 (19.8)	268
II	498 (84.6)	23 (3.9)	54	14	68 (11.5)	91 (15.4)	589
III	3 (75.0)	0	0	1	1 (25.0)	1 (25.0)	4
Total	716 (83.2)	46 (5.3)	76	23	99 (11.5)	145 (16.8)	861

The relationship between the incidence and duration of the operation is shown in Table 21. In those taken more than 3 hours, the incidence is 25 per cent proving to be markedly higher in those taken less than 3 hours, but no significant difference can be recognized among the other three groups. With respect to the severity there is no marked difference noted.

Table 21. Pelvic abscess and duration of operation

Duration of Operation (hrs.)	Pelvic Abscess (−)	Pelvic Abscess (±)	Pelvic Abscess (+)	Pelvic Abscess (++)	Pelvic Abscess Subtotal (+) & (++)	Pelvic Abscess Total	Total
<2	232 (85.6)%	12 (4.4)%	23	4	27 (9.96)%	39 (14.4)%	271
2—2.5	288 (81.1)	25 (7.0)	31	11	42 (11.8)	67 (18.9)	355
2.5—3	133 (88.1)	2 (1.3)	12	4	16 (10.6)	18 (11.9)	151
>3	63 (75.0)	7 (8.3)	10	4	14 (16.7)	21 (25.0)	84
Total	716 (83.2)	46 (5.3)	76	23	99 (11.5)	145(16.8)	861

Table 22. Pelvic abscess and blood loss

Blood Loss (g.)	Pelvic Abscess (−)	Pelvic Abscess (±)	(+)	(++)	Subtotal (+) & (++)	Total	Total
<500	286 (85.9)%	12 (3.6)%	27	8	35 (10.5)%	47 (14.1)%	333
500—1000	338 (82.2)	30 (7.3)	31	12	43 (10.5)	73 (17.8)	411
>1000	92 (78.6)	4 (3.4)	18	3	21 (17.9)	25 (21.4)	117
Total	716 (83.2)	46 (5.3)	76	23	99 (11.5)	145 (16.8)	861

Table 22 demonstrates the relationship of the blood loss with this complication. However, it is not in any way related to the incidence of inflammation nor the severity with the incidence. As shown in Table 23, the incidence of the complication is low at 15.0 per cent in the group with coccygeal drainage and the figure is signicantly lower than in the group without the drainage (25.7%) or with vaginal drainage (26.7%).

Table 23. Pelvic abscess and various drainages

	Pelvic Abscess (−)	Pelvic Abscess (±)	(+)	(++)	Subtotal (+) & (++)	Total	Total
Coccygeal Drain	599 (84.9)%	41 (5.8)%	55	10	65 (9.2)%	106 (15.0)%	705
Vaginal Drain	11 (73.3)	0	2	2	4 (26.7)	4 (26.7)	15
Polyethylene Tube	5	0	0	0	0	0	5
Drain (−)	101 (74.3)	5 (3.6)	19	11	30 (22.1)	35 (25.7)	136
Total	716 (83.2)	46 (5.3)	76	23	99 (11.5)	145 (16.8)	861

However, there can be recognized no significant difference in the incidence between the drain (−) group and the vaginal drain group. Considering the incidence with respect to the severity of the complication, the drain (−) group shows significantly higher incidence of severe cases than the coccygeal drain group. Therefore, the coccygeal drain as the drainage method is the most helpful one for the prevention of complication.

As to the occurence of this complication with respect to the side, it cannot be said that there is any noticeable difference between the right and the left side, as demonstrated in Table 24.

Although the incidence of the pelvic abscess has declined strikingly due to the recent advent of antibiotics, it is by no means completely eliminated. However, even if the complication does occur, those severe cases as to bear on the prognosis of the patient have disappeared. Despite opposing opinion[6], it seems advisable to perform coccygeal drainage as a prevention of the complica-

Table. 24. Pelvic abscess and its side

Sides	Cases	Incidence (%)
Left	61	42.1
Right	47	32.4
Bilateral	37	25.6
Total	145	

tion. However, since we still have the incidence at the rate of about 15 per cent, it is desired that an effort should be made toward its elimination.

4. *Lymphocyst*

KOBAYASHI[30] is the first one who has called an attention to it as one of the postoperative complications of radical extensive hysterectomy for carcinoma of the cervix. Since it mostly remains for a long period as long as it is disinfected, it is apt to be mistaken for recurrence of carcinoma. HAYASHI[31] made a detailed report on this complication in our department, informing the incidence of 15.5 per cent (Table 25).

The incidence of this complication for recent 5 years is 23.3 per cent, as shown in Table 26 (201 cases out of 861). It is noted that 125 of the 201 cases developed it during the hospitalization and the remaining 76 cases after discharge from hospital. This informs us there is no particular tendency of a greater incidence in the recent years but the trend is on the decline.

In reviewing the results of various investigators, NATSUME[6] assumes the incidence as 12.4 per cent, KOBAYASHI[32] as around 15 per cent, and ZUSHI[33] as 18 per cent. In contrast to this, OHNO[4] (48.4%) and HARADA[34] (58.5%) have recognized the incidence of the lymphocyst following radical extensive hysterectomy for carcinom of the cervix in about half of the cases, and they claim its trend is increasing.

Table 25. Lymphocyst (our previous results)

Year of Study	Cases operated	Lymphocyst	
		Number	Incidence (%)
1949	116	9	7.8
1950	126	20	15.9
1951	157	19	12.1
1952	158	36	22.8
1953	150	20	13.3
1954*	162	31	19.1
Total	869	135	15.5

Table 26. Lymphocyst during recent 5 years

Year of Study	Cases operated	Lymphocyst		Occurred in Hospital	Occurred after Discharge
		Number	Incidence (%)		
1954*	153	56	36.6	30	26
1955	187	40	21.4	22	18
1956	165	49	29.7	33	16
1957	178	33	18.5	21	12
1958	178	23	12.9	19	4
Total	861	201	23.3	125	76

* The discrepancy in the number of cases in 1954 as shown in Table 25 and Table 26 is due to the fact that the cases without any histological evidence were excluded.

Table 27. Lymphocyst and stage of carcinoma

Stage	Lymphocyst (+)	Lymphocyst (−)	Total	Incidence of Lymphocyst (%)
I	68	200	268	25.4
II	132	457	589	22.4
III	1	3	4	25.0
Total	201	660	861	23.3

Table 28. Lymphocyst and age of patients

Age (yrs.)	Lymphocyst (+)	Lymphocyst (−)	Total	Incidence of Lymphocyst (%)
<39	38	139	177	21.5
40—49	92	292	384	23.9
>50	71	229	300	23.7
Total	201	660	861	23.3

There can be seen no significant difference in the stages (Table 27) with respect to the incidence of lymphocyst, nor any relationship between the age and its incidence (Table 28).

The lymphocyst can be delineated on palpation in the right or left iliac fossa, and in regard to the incidence with respect to the side, there is no marked difference between the two, as illustrated in Table 29.

The relationship between the incidence and duration of the operation is shown in Table 30. On comparing the group taken less than two and half hours and the group over two and half hours, the former decidedly shows a greater incidence than the latter.

Table 29. Lymphocyst and its side

Side	Cases	Incidence (%)
Left	74	36.8
Right	77	38.3
Bilateral	49	24.4
Unknown	1	
Total	201	

Table 30. Lymphocyst and duration of operation

Duration of Operation (hrs.)	Lymphocyst (+)	Lymphocyst (−)	Total	Incidence of Lymphocyst (%)
<2	61	210	271	22.5
2—2.5	96	259	355	27.0
2.5—3	28	123	151	18.5
>3	16	68	84	19.0
Total	201	660	861	23.3

Table 31. Lymphocyst and blood loss

Blood Loss (g.)	Lymphocyst (+)	Lymphocyst (−)	Total	Incidence of Lymphocyst (%)
<500	84	249	333	25.2
500—1000	98	313	411	23.8
>1000	19	98	117	16.2
Total	201	660	861	23.3

The relationship between the incidence and the blood loss is shown in Table 31. Namely, the incidence in those showing under 500 g. bleeding is significantly higher than those with over 1,000 g., but it is not much different from that of the group with 500—1,000 g. In addition, between the group with under 1,000 g. bleeding and the group with over 1,000 g. there is not marked relationship.

The relationship between the incidence of the lymphocyst and the complication of the pelvic abscess is demonstrated in Table 32. There is no significant difference between the group with the complication and those without the complication as well as between the groups with the various degrees of severity of the pelvic abscess. Previously HAYASHI[31] reported that the occurence is more frequent in the cases complicated with very severe pelvic abscess, but in our results no such a tendency can be observed. This seems to be due to the fact that the pelvic abscess itself as well as the severe cases have actually decreased.

Table 32. Lymphocyst and pelvic abscess

Pelvic Abscess		Lymphocyst (+)	Lymphocyst (−)	Total	Incidence of Lymphocyst (%)
(−)		172	544	716	24.0
(+)*	(±)	13	33	46	28.3
	(+)	15	61	76	19.7
	(++)	1	22	23	43.5
Total		201	660	861	23.3

* The mark is the same indication shown in Table 19.

The relationship with drain methods is shown in Table 33, and the incidence is lowest in the coccygeal drain group with 21.7 per cent and it is significantly lower than the drain (−) group. However, since the number of the vaginal drain group is so small that there is no significant difference between this group and the coccygeal drain group.

Table 33. Lymphocyst and various drainages

	Lymphocyst (+)	Lymphocyst (−)	Total	Incidence of Lymphocyst (%)
Coccygeal Drain	153	552	705	21.7
Vaginal Drain	4	11	15	26.7
Polyethylene Tube	1	4	5	20.0
Drain (−)	43	93	136	31.6
Total	201	660	861	23.3

As for the time of detection of the lymphocyst, that detected while in the hospital amounted to 125 cases and 82 cases (62.6%) of them were detected within 3 weeks (Table 34). In 89 cases of 125, it still remained at the discharge from hospital (Table 35). Moreover, it is generally recognized that the lymphocyst lasts for a considerable time after the discharge. In addition, it is worthy of mention that this complication detected at the routine follow-up examination after the discharge amounts to 76 cases (37.8% of total number of lymphocyst).

Table 34. Lymphocyst and time of its detection

Time of Detection (postop. day)	<10	11—20	21—30	>31	Total
Cases	8	74	30	13	125
Per cent	6.4	59.2	24.0	10.4	

Table 35. Lymphocyst appearing at discharge

At Discharge	Cases	Incidence (%)
Lymphocyst (+)	89	71.2
Lymphocyst (−)	36	28.8
Total	125	

Interval until the disappearance after the discharge is shown in Table 36. It is evident from the table that approximately half of them disappeared within 2 months.

Table 36. Duration until disappearance of lymphocyst (on routine follow-up examination)

Months Elapsed	<2	4	6	8	10	12	>12	Unkown*	Died	Total
Cases	39	14	6	4	5	4	12	4	1	89
Per Cent	43.8	15.7	6.7	4.5	5.6	4.5	13.5	4.5	1.1	

* The "unknown" are those who did not visit hospital after discharge.

As is obvious from the above mentioned, since the complication persists for a long period, it should be careful not to regard it as the recurrent carcinoma of bone metastasis, simply by palpating a solid tumor that is fixed in the iliac fossae on the routine follow-up examination. It is also true that recurrence or metastasis should not be overlooked merely for this reason.

SUMMARY

Okabayashi's radical extensive hysterectomy is one of the excellent operations for carcinoma of the cervix. In this study on the postoperative complications during the recent 5 years, we obtained the following results.

1. In the total of 861 cases studied, the primary mortality amounts to 1.2 per cent, the incidence of the uretero-vaginal fistula 2.7 per cent, the pelvic abscess 16.8 per cent, and the lymphocyst 23.3 per cent.

2. On comparing the results with our previous ones as well as those of other investigators, it is found that satisfactory results have been obtained due to the advent of various antibiotics in recent years and also due to a marked advance made in the technics of blood and fluid administration as well as anesthesia.

3. Since the various complications have not completely been overcome and they still pose an important problem, an effort should be made toward a better postoperative care in order to prevent the complications.

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Note: *All references are written in Japanese.*