

SYSTEMATIC RADICAL SURGERY FOR CARCINOMA OF UTERINE CERVIX

— Based on 1200 Operations —

Misao Natsume, M.D.

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Professor and Chairman, Department of Obstetrics and Gynecology,
University of Gifu School of Medicine, Japan

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in the research for the treatment of cancer, and these methods are being improved with surprising speed. Indeed, in curing cases whose "foci" have been assumed to be widely spread, chemotherapy is the only possible expedient for bringing under control extreme developments. But these chemical methods, too, have inherent difficulties to overcome. Human wisdom discovered antibiotics a quarter-century ago and has succeeded in curing diseases effected by pathological bacilli. But the foci of cancer are intractable entities, composed not only of cells of different characteristics but also characteristics quite heterogeneous with each person affected. Thus the cancer spectrum offers much more complex resistance than cases affected by pathological bacilli. Although chemical treatment seems to produce promising results, in its present stage such a treatment still has a long and arduous way to go to reach the final goal of universal validity.

The tackling of cancer cells by means of (1) radioactive or (2) chemical methods, in their present stage of validity, cannot as yet be relied upon as sufficient to destroy all the cancer cells completely.

Furthermore, both methods suffer from two related handicaps:

- a) how to moderate the dosage
- b) when to discontinue treatment

In neither situation can the real state of affairs be accurately ascertained.

It is the author's personal conviction that surgical operation to remove the affected organs, as long as the "foci" are yet in limited areas, is not only safer than these above-mentioned methods: there is a stronger possibility that the patient be entirely rid of cancer. Consequently, it seems that we cannot afford to abandon operative treatment in favor of radiation therapy or chemical treatment, at least until the chemotherapy truly comes into its own. Operative treatment has a definite place in combatting cervical cancer, particularly if it is conducted in the way these pages will describe, and continues to have its value. What is important is that we do our utmost to find out the "focus" at the earliest possible moment and also endeavour to improve and develop operative techniques.

The author recalls that just 40 years ago he first began to study under the late Prof. Dr. Okabayashi, a pioneer in the radical operation for cervical cancer. No more than two years had elapsed when he resolved to push beyond the existing limits, to find a more suitable method of making an operative treatment for cancer of the uterine cervix as his life-work. He has since persisted in that search. His endeavours to acquire the expertise necessary for operating were attended with difficulties, but encouragement and advice from friends and predecessors in this field helped him to make steady progress in his research. It was 26 years ago that he took up the scalpel for the first time, operating according to the technique of Dr. Okabayashi. Each operation was accompanied by deep reflection and careful computation of his experiences. His case book records more than 1,200 operations for cervical cancer, and he believes that many problematic points that concern this particular operation have been solved through long years of experience. The author sincerely believes

INTRODUCTION

Is there no more need for radical surgery in cancer of the uterine cervix? To hear tell, the cure rates of irradiation have all but made any operation irrelevant.

Nevertheless the author holds that either telecobalt treatment or supervoltage irradiation, even when conducted under a plan devised with strict care and the use of computer, means only a localized treatment, subject to the risk of imperfect irradiation. Either method of irradiation may miss some part of the lesions that require irradiation. Moreover, since the lesion is a mosaic structure of cancer cells with varying characteristics, and also having different susceptibility to radio-activity, the accurate determination of the most suitable amount of irradiation is almost impossible. Thus, successful cancer treatment cannot always be expected, even by means of an all-round homogeneous irradiation.

It often happens that even in the "focus" which has been apparently cured there still remain in a dormant state those cells which are resistant to the power of irradiation. These dormant cells often come alive later like some wild plague. This unfortunate fact is attested to by some reports that the frequency of later recurrence in the case of irradiation therapy is much higher than in cases of operative treatment.

The so-called selective therapy which holds that those cases which are responsive to irradiation should be given irradiation, and that other patients who are not so responsive to irradiation should be committed to operative treatment, has hitherto been followed by many practitioners. However, no conclusive solution of the problems involved has yet been reached. It should further be pointed out that in comparing the two methods of treatment, the mere number of statistical survivors with either method must not be taken as an index of greater merit. A very careful, prolonged follow-up inquiry must be conducted into the state of health of each person after the operation. And minute investigation also must be made of the factors assumed to have hindered the curative effects of either mode of treatment.

Here one must take into consideration that the radioactive effects of irradiation for medical purposes are essentially of the same nature as the radioactive effects of atomic explosions. The author, for one, cannot see how medical men who often show an admirable concern for radioactive aftermath in the atmosphere should be remiss in paying an equally scrupulous attention to the nature of medical radioactive rays.

It is true also that chemotherapies for cancerous growth have been recently invented

also that the statistical success surrounding his 1,200 operations will not be overlooked by any serious surgeon. And that the reasons for it will become quite clear after this book has been thoroughly read and digested.

In another vein, it should be noticed, too, that developing surgical techniques in an operation so radical as that for cancer of the cervix, might well overlook the fundamental purpose in operating: the tolerable rehabilitation of physical well-being to the patient. It is quite possible to save the patient—to win the battle as it were—and still lose the war. It is not enough simply to “save” life, as important as that is. As any person on crutches or impaired for life will tell you, there is more to life than sheer existence.

Thus, I firmly believe that the fundamental mind of medicine—the risk of surgery as well as its responsibility—must be to return the patient to as rich a life as is medically possible. And I also believe this is more feasible than one might think.

Thus, these pages underline ethical considerations of the broadest type. “How can I make this person survive” is important. But “How can happiness once more be attainable for this person in its fullest sense?” is perhaps no less a priority. This preoccupation, then, is given the fullest consideration in the meticulous surgical methods described here. These methods were hard won, a source of pardonable pride, and are an appeal for an enlarged spectrum of surgical values. If they are not seen as orthodox, still they deserve careful reading in view of the success with which they have met the challenges in operating for cervical cancer. In other words, this publication is a plea for human dignity through an insistence upon a more meticulous operative method before turning to other, less certain, but perhaps more inviting modes of treatment.

In explaining methods of the operative treatment of cervical cancer the author has refrained from referring to Exenteration, the Clearance of the para-aortic lymph nodes and so on, which methods have hitherto often incurred unfavorable criticism. Such descriptions, as is well understood by serious surgeons, might be better published in a research paper than in this kind of monograph.

It is the writer's fervent wish that those interested might be able to see the documentary color film (16 mm) of operations, with an explanation in English. Running time is about 28 minutes. Copies may be purchased from the author's address given below. This film in its first version was selected as one of the best three medical films at the 1969 Special AMA Convention held in New York. The second version was shown to an enthusiastic audience at the Sixth World Congress of Gynecology and Obstetrics. Through the film, much of what is stated in these pages will be clarified.

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MISAO NATSUME, M. D.
Professor of the University of Gifu

Address: 8-20 Nikko-cho, Gifu City, Japan

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CHAPTER I PREOPERATIVE EXAMINATIONS

First of all, it is indispensable to see if the patient can withstand serious, extensive surgical intervention and long anesthesia as is required in the radical operative treatment for cancer of the uterine cervix.

1. *Important Anamnestic Inquiries*

- (A) short breathing or palpitations e.g. when climbing stairs, sometimes appearances of edema in the lower extremities, which may indicate **latent** circulatory disturbances
- (B) hemorrhagic diathesis
- (C) drugs-hyperergy
- (D) marked decrease of body weight (This may sometimes be the only sign indicating the progress of the cancer.)

2. *General Physical Examination*

- (A) chest percussion and auscultation
- (B) abdominal inspection and palpation

3. *Cardiac Function and the Peripheral Blood Circulatory Function; Complications of Cardiac Diseases and Foreseeable Poor Risks*

- (A) pulse rate and blood pressure
- (B) chest X-ray: analysis of the cardiac and aortic shadows
- (C) E.C.G.: the most indispensable, typical cardiac function test

If any suspicions, one must not hesitate to conform to the specialist's therapeutic recommendations.

- (1) coronary insufficiency and myocardiac damage
 - (a) negative T wave, (b) descending of ST segment, (c) prolongation of QT interval
- (2) strain on the left ventricle

The E.C.G. findings are similar to the preceding case (1). The differential diagnosis of coronary insufficiency, myocardiac damage and the strain on the left ventricle is difficult. In case of angina pectoris in anamnesis, coronary insufficiency is suspected; likewise in cases of diphtheria or rheumatic fever, then, myocardiac damage, or with hypertension or valvular involvement, strain on both

ventricles, the left and the right, are suspected.

In case of strain on the ventricle, the operation can be performed, but special attention must be paid to the fluctuation of blood pressure and also to proper oxygen supply.

(3) bundle-branch heart block

Abnormal QRS complex and prolongation are characteristic; the block itself has no specific meaning for the operation, but the causative disease should not be neglected; if it is not found, the block itself will not matter in performing the operation.

(4) atrioventricular conduction disturbances

(a) prolongation of PR interval, (b) defective QRS complex, (c) P wave and QRS complex have their own proper frequencies, appearing in case of various myocardiac damage, coronary arteriosclerosis, parasympathicotonia or in digitalism.

(5) extrasystoles

There are supraventricular and ventricular extrasystoles; the former has P wave and appears earlier than the anticipated sinus rhythm but the latter has no P wave, having high R wave of QRS complex, enlarged width, and reverse T wave.

In case of no specific causative organic diseases, there is not much of a problem, but the multifocal and frequent occurrence of extrasystoles are indicative of complications of myocardiac damage.

(6) auricular fibrillation; arrhythmia absoluta

(a) irregular fluctuations of the base line (b) irregular intervals of R-R time

One must pay attention to the complications from organic diseases, heart rate, arrhythmia or defective pulse, or to changes of ST segment and T wave.

(7) myocardial infarction

(a) elevated ST segment (b) abnormal Q wave (c) coronary T wave

Even with the complication of myocardial infarction, sometimes, in E.C.G., no abnormal finding is observed at bed rest, which is attributable to the localization of the lesion as well as to the well developed collateral blood vessels of the coronary artery. In any case, if the complication of myocardial infarction is suspected, operative treatment is not to be the therapeutic option.

(8) low voltage

All QRS complex are less than 5 mm (less than 0.5 mV in the absolute values) in all limb leads, and less than 10 mm (less than 1.0 mmV in absolute values) in all chest leads, appearing in such cases as; a) myocardial damages, b) edema, c) intrapericardial fluid retention.

(D) Schellong-Bickenbach postural test

This is one of the peripheral blood circulatory functional tests; pulse rates, systolic and diastolic blood pressures are measured in the lying and the standing postures and compared, to foresee the possibility of shock during the operation.

Method: The patient is kept quiet physically and mentally and then the test is performed.

- a) In a supine posture, in a quiet room, the pulse rates, the systolic and diastolic blood pressures are measured every 2 min., 3 times, after stabilization of the values, and recorded.
- b) Then, slowly standing from a supine position, with both heels correctly set together, without leaning, the same items are measured in the same way, every 2 min., 5 to 7 times.
- c) Again, in a quiet supine posture, the same course of examination is repeated every 2 min., 4 times.

The obtained data are plotted in the diagram, in the order of postures taken i.e., supine, standing and then supine once more.

Assessment of the data:

Type I: this group has normal functions of the peripheral blood circulation; in the standing posture, in comparison to the values of the supine, no marked change of pulse rate is observed and the lowering of the systolic blood pressure is in a range of 15 mm Hg.

Type II: the peripheral circulatory functions are distorted to some extent.

Group 1: with postural change in standing, no marked change of the pulse rates is observed, but the lowering of the systolic blood pressure exceeds 15 mm Hg.

Group 2: on standing, no marked change occurs in the systolic blood pressure but the pulse rate ranges between 110 and 120 per min.

Type III: the peripheral circulatory functions are disturbed to a great extent. On standing, the systolic blood pressure is lowered more than 15 mm Hg., the pulse rate ranges between 110 and 120 or even more, and sometimes, in severe cases, the patients complain of dizziness, or collapse.

In Schellong-Bickenbach postural test, one can see, to some extent, possible occurrence of shock during the spinal anesthesia, but not clearly. Therefore, examining also with other functional tests for circulation, the general assessment of all results obtained is recommended.

4. Pulmonary Functional Tests

- (A) chest X-ray
- (B) respiratory rates, 18–20 per min.

5. Hematological Examinations

(A) anemia

For surgery, the hemoglobin level should be at least 60–65% (Sahli) or 10 g/dl, and if not, blood transfusion should be performed preoperatively.

(B) hemorrhagic diathesis

With the complication of diathesis, unexpected severe bleeding can occur during or after the operation, causing shock. Therefore, this must be carefully checked out before hand.

(1) anamnestic inquiries

The interview helps to find out the latent bleeding diathesis; a) hemorrhagic diathesis in the family's anamnesis, b) if the patient has hypermenorrhea, epistaxis, gingiva bleeding, soggillation or purpura, c) severe obstetrical bleeding, d) if she has suffered from any disease causing hemorrhagic diathesis, for example, some hepatic diseases, e) hypertension (arteriosclerosis), etc.

(2) clinical examinations in regards to the causative factors

(a) blood platelet count (therapy for thrombopenia: fresh blood transfusion or blood platelet transfusion)

(b) bleeding time (Duke's method)
normally in a range of 1–3 min.

(c) clotting time (Sahli-Fonio method, Lee-White method)
normal values: beginning in 5–10 min., completing in 10–20 min.

(d) prothrombin time
usually, measured by Quick's prothrombin time I stage method; the normal value: 12 sec.

(e) fibrinogen
normal value: 0.3 g/dl.

(f) capillary resistance test (Rumpel-Leede method)

For patients with lowered resistance, vitamin C and Adrenochrome should be administered.

(g) disturbances of liver function
(see the following specified items)

(C) general clinical examination

(1) erythrocyte count: average normal value 450×10^4

(2) leukocyte count: normally in a range of 6,000–8,000

(3) hemoglobin: 85% (75–100%), 14 g/dl (12–16 g/dl)

(4) hematocrit: normal value 38–42%

(5) hemogram

(6) blood sedimentation rate

usually in a range of 3–11 mm, and cases of more than 15 mm should be considered as accelerant.

(7) blood types (ABO-types, Rh-types)

(8) syphilis

6. Liver Function Tests

During or after the operation sometimes a large quantity of blood transfusion is needed, which increases the load on liver function to a great extent. For this reason, various kinds of liver function tests should be carefully conducted to ascertain even latent functional disturbances. The operation should not be performed until the liver functions are almost normalized.

(A) serum protein

Total serum protein: normal values in a range of 6.0–8.5 g/dl. Hypoproteinemia, in which the serum albumin decreases and the total serum protein value goes down to less than 6.0 g/dl, indicates the lowering of the liver functions. It is to be noticed that in case of hypoproteinemia, hematoma often develops.

serum albumin: normal values 4.0–5.0 g/dl

serum globulin: normal values 1.3–2.7 g/dl

serum albumin-globulin-index: 0.9–2.0 in normal cases, and in case of the functional disturbances the index is lowered.

(B) icterus index

measured by Meulengracht method; the normal index is in a range less than 5, and in case of latent icterus, ranging from 7 to 18.

(C) chromodiagnostic

Bromsulphalein Test (BSP Test): 5% solution of Bromsulphalein (Sulfo-bromophthalein sodium) is injected intravenously, in a dose of 0.1 ml per 1 kg of the body weight, and after 45 min. the remaining quantity in the blood is measured by colorimetry; normally ranging from 0–2%; in case of the slight disturbances, up to 15%; and in severe disturbances, more than 15%.

(D) serum colloid reaction

The pathological changes of serum protein are clarified in this method; clinically, the following methods are used: Thymol Turbidity Test (TTT): usually ranging from 0.9–3.7 units;

Kunkel's method (ZTT, using zinc sulfate): normally in a range of 4.9–11.7 units;

Cephalin-Cholesterol-Lecithin Flocculation Test (CCLF): normally, (–)~(±).

(E) serum alkaline phosphate

normally in a range of 3.1–12.7 units, and increasing in case of jaundice.

(F) serum transaminase

GOT: 16.2–41.8 units/mg, and GPT: 6.3–27.8 units/mg, in normal ranges.

Being very sensitive in reaction, these values are elevated markedly even at the initial stages of various hepatic diseases.

(G) lactic dehydrogenase (LDH)

It is concerned with the anaerobic glycolysis, normally ranging from 279–415 units/mg.

7. Renal Function Tests

Some narcotics disturb the renal functions and in the radical operation for cancer of the cervix it is inevitable and indispensable to separate and isolate the urinary bladder as well as the lower portions of the ureters extensively, which certainly cause various urinary disturbances; as is well known, the postoperative prognosis depends largely on the recovery of the urinary functions and for this reason renal insufficiency and the urinary tract diseases are of the utmost interest for surgeons.

(A) urine

Amount of urine, specific gravity, urinary protein, urinary sugar, sediments and bacteria are examined.

(B) blood pressure

(C) cystoscopy

Test of indigocarmine excretion

Usually the excretion begins in 2–3 min. and reaches the maximal concentration in 5–7 min. after the intravenous injection of indigocarmine solution and thereby the intensity of the flow as well as the peristaltic movement at the ureteral orifices should be carefully observed.

(D) intravenous pyelography

After intravenous injection of the contrast medium, the time is measured up to the beginning of the appearance of each renal pelvis, and the contours are examined; thus the renal excretory function is tested separately on both sides.

(E) Phenolsulfonphthalein Excretion Test (PSP)

In the Fractional Phenolsulfonphthalein Test, the PSP solution is injected intravenously exactly in a dose of 1.0 ml, and in 15 min. the urinary specimen should be obtained through catheterization, because the value at the 15 min. interval is the most significant, normally more than 25%.

(F) radioisotope renography

Simple to perform, less physically taxing to the patient, and the renal excretory function can be examined separately on each side.

CHAPTER II OPERATIVE INDICATIONS

1. *Age*

Usually up to 65 years of age, but in some cases over 70 also operable.

2. *Vaginal and Rectal Examinations*

Stage I, II and IIIa according to the international classification based upon the vaginal, rectal and rectovaginal examinations are all included in the operative indications.

3. *Contraindicative Complications*

Cardiac, Hepatic or Renal Diseases are considered to be contraindications only when no rapid therapeutic result can be expected.

4. *Urinary Sugar*

In case of diabetic diseases, even in the slightest degree, specific attention must be paid to the operative prognosis which can be sometimes unexpectedly worse.

Operation is indicated only when the diabetes is brought under the proper therapeutic control based upon the findings of the blood sugar measurements (the tolerance test at hunger time) or the examinations of the ocular fundus.

5. *Blood Pressure*

In complications from essential hypertension, the operation is indicated but one must always consider the possible occurrence of sudden lowering of blood pressure, oliguria or myocardial damage postoperatively.

6. *Cystoscopic Examinations*

Cystoscopically, only in one third of the total cases can the cancer infiltration to the bladder be proved. Erosion or necrosis of the vesical mucosa means Stage IV, which is out of the operative indications, but the edema, eminence or reddening does not always represent cancer infiltrations. Some say that the bullous edema, the most frequent finding, indicates lymphatic or blood circulatory disturbances due to cancer infiltration of the vesical wall. But in most cases, others say, no cancer metastasis in the vesical mucosa is confirmed. In some cases, even without any abnormal finding on the mucosa one can prove the cancer infiltration into the vesical wall.

In conclusion, the cystoscopic findings are not essential to determine the operative indications.

7. *Intravenous Pyeloureterography*

Hydronephrosis is sometimes etiologically attributable to compressed ureter due to the parametric or lymph node metastases of the cancer; consequently, with simultaneous considerations of other clinical findings, it can be an important reference in determining the operative indications.

8. *Rectal Examinations*

- (A) fecal examinations
- (B) rectovaginal examinations

The existence of pathologic changes in the rectum and hardening or thickening of the rectovaginal septum are examined by palpation.

- (C) romanoscopy

In suspected cases of rectal infiltration of the cancer, it is examined romanoscopically.

9. *Lymphography*

The radiological contrast medium is injected into the lymphatic vessel at the instep and the lymphatic vessels and nodes in the pelvic cavity are photographed roentgenologically. The irregular contour, insufficient filling or swelling of the lymph nodes, the obstruction and occlusion of the vessels and the increased collateral lymphatics indicate, to some extent, possible lymph node metastases and the extension of the cancer infiltration as well, relevant to determining the operative indications.

10. *Chest X-rays*

In rare cases, one sees the pulmonary or mediastinal metastasis of the cancer even in technically operable cases, which often occurs in cases with the anatomically anomalous lymphatic vessel afferent directly to V. cava inf.

CHAPTER III PREOPERATIVE TREATMENT

1. *Vaginal Treatment*

In case of much malodorous fluor, the vagina is irrigated and antibiotic suppositories inserted daily, up to the operation day.

2. *Intestinal Canals*

An enema is given to evacuate the intestines.

3. *Treatment of External Genitalia and Vagina (Just Before Surgery)*

After sufficient cleaning of the perineal parts with inverse soap solution in 1:1000 concentration, alcohol gauze is inserted at the vaginal fornix to prevent intraabdominal contamination. A string is attached to the gauze and the end protrudes out of the vagina for convenient withdrawal at given times during the operation (see chapter on operative techniques).

4. *Indwelling Catheterization (Marey-Cotte Method)*

The dilated bladder due to urine narrows the visual field for the operation.

5. *Rectal Catheter*

The evacuation of gas in the lower part of the colon is necessary to prevent the narrowing of the operative visual field, also.

