

Results of 600 Wertheim Operations for Cancer of the Cervix

OTTO KÄSER

*Department of Obstetrics and Gynecology,
University of Frankfurt, Germany*

The 600 Wertheim cases are composed of three series; the first consisting of 405 cases (1950 to 1963) from Frankfurt under the chairmanship of Professor Naujoks; the second consisting of 85 cases (1953 to 1962) from St. Gall, Switzerland, where I was at the time head of the department; and the third consisting of 110 cases (1963 to 1965) from Frankfurt (table 1).

In these 600 cases neither the technique nor the indications were identical. Before 1958, lymphadenectomy was not used in Frankfurt; however, since then it has been an essential part of the procedure, and has been used in all cases from St. Gall. Since 1963, radical operations have not been used for so-called microcarcinomas or stage Ia League of Nations cases. In these cases we are now using a so-called "small" Wertheim operation consisting of a hysterectomy with a small parametrial and vaginal cuff and, for experimental reasons only, a bilateral lymphadenectomy.

Indications for Surgery

Presently only stage Ib, suitable stage II cases of cervical carcinoma, and also a few radioresistant tumors are treated surgically. The latter, however, are not included in this series. The operability rate in the last years has been about 25%; the remaining 75% are irradiated. The five-year apparent recovery rate for all cases is about 51%. In the last three years 83% of the operated cases were stage I and 17% were stage II.

Additional radiation has not been

used routinely in either series, but was used more often in Frankfurt from 1950 to 1962, than in the other two series. Presently we are using preoperative or postoperative irradiation, or both, only for special reasons: preoperative radium treatment in large exophytic tumors or infiltration of the vaginal wall, and postoperative telecobalt when carcinomatous infiltration of the parametria, lymphatic invasion, or positive lymph nodes are found on histologic examination. Before 1963, approximately 80% of our patients in Frankfurt received some form of additional irradiation (table 2); however, since this time, the number has decreased to about 65%.

Technique

The operative technique used has not been uniform throughout these years. Until 1958, the original Wertheim was used in Frankfurt, whereas in Frankfurt after 1958 and in St. Gall the Meigs' procedure has been performed. Our present technique includes elements of the Meigs, Okabayashi-Magara, Antoine, and other operations as follows: 1) the prevesical portion of the ureter is prepared only after the cardinal and sacrouterine ligaments have been sectioned; 2) the so-called "mesoureter" is left intact; and 3) the lymphadenectomy is done as a primary or secondary procedure according to the technical difficulties encountered. In recent years the number of nodes removed in each case varied between 10 and 30, with an average of 20. Lymphadenectomy is facilitated by preoperative lym-

TABLE 1
Material: 600 Wertheim Operations

Series	Location	Dates	No. Patients
1	Frankfurt (Main), Germany	1950-1962	405
2	St. Gall, Switzerland	1953-1962	85
3	Frankfurt (Main), Germany	1963-1965	110

TABLE 2
Use of Preoperative or Postoperative Irradiation or the Combination, 1950-1962 and 1963-1965

	1963-1965 (% of total)	1950-1962 (% of total)
Pre-op. radium	10.0	1.2
Post-op. x-ray	29.2	71.3
Pre-op. radium and post-op. x-ray	16.3	1.2
Post-op. radium and x-ray	5.4	6.5
Total irradiated	60.9	80.2
No radiation	39.1	19.8

phography with a chlorophyl-pigmented contrast medium which is now done in most cases.

Radicality

The radicality of our operation depends on the extension of the growth. For a stage I carcinoma of the cervix, we think that resection of one-third of the vagina and the corresponding parametrial tissue is radical enough. Also we do not usually resect the hypogastric vessels for stage I cases.

The results have been satisfactory, with 248 out of 295 living and well after five years, and 92 out of 116 after 10 years, giving an apparent five- and 10-year cure rate of 84% and 79%, respectively. In the 1950-1962 series, 13% of all cases had positive lymph nodes compared with 18% in the 1963-

1965 series. With negative nodes the five-year apparent cure rate was 92%, and with positive nodes 39% (table 3).

Complications and Mortality

There were two primary or hospital deaths in Frankfurt before 1963 (table 4). Both deaths resulted from postoperative shock, one after three hours and the other after 24 hours. This gives a mortality rate of .3% for all cases, or of .37% for the 515 Frankfurt cases. An additional 72 of the Frankfurt cases died within 15 years after the operation; 48 of cancer, seven possibly of cancer, and 17 of other causes. Four of the latter group died of uremia without evidence of cancer. It is probable that treatment was conducive to renal failure. In one case, au-

TABLE 3
Results of the Frankfurt series, 1950-1960

5-year apparent cure rate (248:295)	84.0%
with positive nodes (13%)	39%
with negative nodes (87%)	92%
10-year apparent cure rate (92:116)	79.0%
5-year apparent cure rate all cases	51.2%

TABLE 4
Mortality in 600 Wertheim Operations for Cancer of the Cervix

Primary or hospital mortality	2:600 (.30%)
Frankfurt only	2:515 (.37%)
Secondary mortality until 1965:	
Total, 72	
{ cancer	48
{ possibly cancer	7
{ uremia	4
{ other causes	13

topsy revealed polycystic kidneys, and in another, bilateral hydro-nephrosis after bilateral uretero-neocystostomy for fistulas.

Morbidity

Complications after these major operations have been frequent, although generally not serious. Table 5 shows the nature and the frequency of the different complications for the two Frankfurt series. The data for the two series are not completely comparable, since routine urine culture was only done for the second series, and routine follow-up by i.v. pyelogram has only been used since 1958.

In the most recent series only 14 out of 110 (12.7%) showed no complications, as compared to 30.9% in the earlier series. However, if afebrile urinary tract infec-

WERTHEIM OPERATION FOR CERVICAL CANCER

tions are excluded, the rates are identical, 48% and 49%, respectively. On the other hand, febrile pyelonephritis was reduced by 50% in the 1963-1965 series. While the frequency of most other complications was about equal, the rate of wound sepsis and of fistulas was markedly reduced after 1962. There were no bladder or rectal fistulas and only one uretero-vaginal fistula in the second series, giving a frequency of ureteral fistulas of .9% and 3.7%, respectively. The one case in the last series was cured by ureteroneocystostomy. In addition, 29 out of 99 (29%) followed for at least one year showed unilateral or bilateral reversible damage, and four revealed unilateral, irreversible ureteral damage.

Prevention of Urinary Tract Lesions

Damage to the ureters and its prevention has found much attention in the recent literature. Many different regimes and techniques were devised and proved to be successful, at least to some extent. We found that cessation of an antibiotic prophylaxis and the reduction of bladder drainage from three or more weeks to 8 to 12 days was not accompanied by an increase of urinary or other complications. Our measures to materially reduce urinary tract infection, however, have not proven very successful so far. The measures we use to reduce damage to the ureters, except for careful handling of these structures, are mentioned in table 6.

TABLE 5
Complications (% of total) in 600 Wertheim Operations for Cancer of the Cervix

	1963-1965	1950-1962
Mortality	0	.5
Intestinal obstruction	1.8	1.0
Thrombo-embolism	6.4	6.0
Pneumonitis	2.7	2.5
Urinary tract infection	81.0	46.0
Pyelonephritis	4.5	10.6
Febrile course (<48 hr)	21.8	36.8
Lesions of ureter	.9	1.2
Fistulas:		
ureter	.9	3.7
bladder or rectum	0	1.2
Wound infection:		
abdominal	4.5	4.7
vaginal	3.7	4.7
No complications	12.7	30.9

TABLE 6
Prevention of Urinary Tract Damage

1. Pre- and postoperative urography.
2. Preservation of mesurette.
3. Limited dissection of ureterovesical angle.
4. Preservation of umbilical artery.
5. Extraperitoneal suction drainage.
6. Double layer peritonealization.
7. Closed system bladder drainage.
8. No routine irradiation.