WERTHEIM'S OPERATION — A STUDY OF 130 CASES

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SYNOPSIS

The Hsu's method of radical hysterectomy and lymphadenectomy procedure is a modification of the Okabayashi's radical hysterectomy. It involves the creation of the pararectal and paravesical spaces completely down to the pelvic floor and the excision en block of the uterus with its appendages, the parametria and the entire cardinal ligaments and the upper ⅓ to ½ of the vagina with its paracolpia. The vagina is lengthened by the Hsu's technique of suturing the vagina with a Boston suture incorporating the cut margin of the rectal serosa to the posterior rim of the vagina and stitching the visceral peritoneum 2 cm above the cut margin of the rectal serosa. The ovaries are preserved in young patients. Lymphadenectomy involves the dissection of the anterior and posterior chains of the common iliac nodes, the external iliac, obturator, internal iliac and presacral nodes.

The author having been trained in the Hsu's method of radical hysterectomy by Professor Hsu himself, conducted a prospective study of the morbidity, sequelae and survival rates of this operation in Singapore. Between January 1982 and July 1987, 130 cases of cancer of the cervix were operated on by the author. Patients who had lymph node metastasis or parametrial infiltration were given adjuvant post operative irradiation. Every patient was followed up personally by the author. Only six patients were lost to follow-up at varying times after operation. Four cases were excluded from analysis. Of the remaining 126 cases, 67 were stage 1B, 20 stage 2A, 36 stage 2B, 2 were central recurrences following radiotherapy and one corpus cancer stage 2. Eleven patients (8.7%) had operative or post-operative morbidity.

Fifty-four percent of patients considered their sex life as normal, 15% as satisfactory. This is attributed to the Hsu's technique which lengthens the much shortened vagina. The resulting vagina is most impressive, both anatomically and functionally. Seventy-eight percent of patients considered their bladder function normal, 4% had severe bladder impairment, the remaining had only minor impairment. The pelvic node metastasis rate for stage 1 and 2 combined was 19%. The rate for adenocarcinoma was 38.5% compared with 14.4% for squamous cell carcinoma. In this series 6 out of 10 recurrences occurred in patients with node metastasis. The life-table 5-year survival rate for the whole series is 90%.

In conclusion this study has demonstrated the efficacy of the Hsu's radical hysterectomy as a primary treatment modality for stage 1B and selected 2A and B uterine cervical cancers. When performed by one well-trained in the procedure, it is associated with a low morbidity and a high survival rate comparing favourably with that of reputed centres.

Key words: Cervix Cancers, Wertheim's operation, Morbidity, Survival rates.

INTRODUCTION

Cancer of the uterine cervix has two comparable treatment options — radiotherapy and radical hysterectomy. The advantages of surgery over radiotherapy especially for younger patients are well known. In Singapore most patients prefer surgery to radiotherapy if given the choice. However for various reasons, radiotherapy was almost the only treatment available in the sixties and seventies. The eighties saw a renewed interest in radical surgery as a modality for the treatment of uterine cervical cancers.

The author in 1985 reported the operative morbidity, sexual, bladder and bowel function of his first 55 Hsu's method of Wertheim's operations (1). This paper presents the results of the extended series of 130 cases giving also the 5-year survival rates.

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MATERIAL AND METHOD

Patient Selection

Every confirmed case of carcinoma of the cervix underwent a standard FIGO staging procedure.

Between January 1982 and July 1987, 130 patients with stage 1B to 2B cancer of the cervix who were good surgical risks were operated on by the author. The first thirty-one cases were done in K.K.H. and the rest mainly in Thomson Medical Centre (a few were done in Mount Alvernia Hospital and Mount Elizabeth Hospital). Only in 3 cases was the operation unsuccessful or abandoned. They were excluded from the analysis. Of these three — two ended in extended hysterectomy and one was found to be inoperable at laparotomy. Another case was excluded from the analysis because a modified Wertheim's was performed and on retrospect this patient already had sacral bone secondaries before operation. Therefore 126 cases were analysed and presented (table I).

Pre-operative preparation and prophylactic antibiotics:

Includes a fleet enema the day before operation.

Patients who are at high risk for thromboembolism were started on Heparin 5000 units subcutaneously 2 hours before operation. Prophylactic antibiotic consists of I/V Gentamycin 80 mgm 12 hourly and Metrozine 500 mgm 8 hourly for 24 hours starting just before operation.

Operative Procedure: as described in the earlier paper (1).

Post-Operative Care:

The bladder was drained continuously through an indwelling Foley's catheter for 10 days. Thereafter, the patient was taught to pass urine with the help of suprapubic pressure. Residual urine was measured 3 hourly during the day until the volume was consistently less than 50 ml for 2 consecutive days and the patient discharged. Patients were given Nalidixic acid 500 mgm daily until catheterization was no longer required. Oral Senokot two daily was also given until no longer required.

Patients later in the series were discharged with indwelling catheter on the 8th P.O.D. They returned weekly to have their residual urine measured until the volume was consistently less than 50 ml.

Surgical Specimen: Was studied for several prognostic factors including tumour size, histologic type, differentiation, depth of infiltration, parametrial infiltration and lymph node metastasis by a single pathologist in a standard manner.

Adjuvant External Irradiation: Was given to patients who were at high risk of recurrence i.e. those who have lymph node metastasis, parametrial infiltration and surgical margin infiltration.

Follow-Up

Follow-up of patients as described in the earlier paper (1). Six patients were lost to follow-up at varying times after operation. The cut-off date for life-table analysis was 30th June 1987.

RESULTS

Age distribution (table I): over 60% of patients are 45 years and under.

Type of case and stage of disease: shown in table II.

Primary treatment given (table III): 73% had surgery only.

Operative and Post-operative Morbidity (table IV)

There were two patients who had complications during operation. One patient had excessive oozing during operation. Her platelets and white cell counts were low and at operation her liver was found to be small and cirrhotic which was probably the cause of the bleeding problem. This same patient had paralytic ileus but recovered with usual conservative treatment. One patient's ureter on one side was found to be severed sometime during operation and was reimplanted into the bladder. She recovered uneventfully.

Post-operative morbidity includes all complications detected within the first month after operation. One patient was found to have intrapelvic haemorrhage 36 hours post-operation. She was reopened and blood and clots were evacuated and haemostasis secured by internal iliac artery ligation. Deep vein thrombosis was detected in 2 patients. One of the two had a lymphocele which became infected 3 weeks after operation and had to be drained. After drainage her incision bled excessively and tests showed DIVC which subsided with heparin therapy.

Wound infection and dehiscence rate was remarkably low. Only 3 patients had minor infection or dehiscence of a small part of the incision.

In all, 8.7% (11 out of 126) patients developed operative or post-operative complications. There was no urinary fistula or rectal fistula encountered in this series.

Blood loss and Transfusion

The average blood loss was 759 ml and the average volume of blood given was 667ml.

Operating Time

For the first 20 cases the mean operating time from skin to skin was 3 hours 42 mins; for the second 20, 3 hours 50 mins; third 20, 3 hours 34 mins and the last 20, 3 hours 7 mins.

TABLE I
AGE DISTRIBUTION

Age (Years)	No.	%
26-35	23	18.3
36-45	53	42.0
46-55	31	24.6
56-65	19	15.1
Total	126	100

TABLE II
TYPE OF CASES AND STAGE OF DISEASE

	No.	%
Ca Cervix		
Stage 1b	67	53.2
Stage 2a	20	15.9
Stage 2b	36	28.6
Ca Corpus (Stage 2)	1	0.8
Central Recurrence following R.T.	2	1.6
Total	126	100

TABLE III
PRIMARY TREATMENT

	No.	%
Wertheim's Operation alone	92	73
Wertheim's + Pre-op Ext Irrad.	5	4
Wertheim's + Post-op Ext Irrad.	29	23
Total	126	100

TABLE IV
OPERATIVE & POST-OPERATIVE MORBIDITY

*	Excessive oozing from thrombo cytopenia due to cirrhosis of liver	1
	Delayed intra-pelvic haemorrhage	1
	Deep vein thrombosis (one had infected lymphocoele and DIVC in addition	2
	Ureteric Severance	1
	Pneumothorax	1
	Bleeding from ruptured urethral blood vessel after dilatation	1
	Paralytic Ileus	1
	Haematoma R.I.F.	1
	Minor wound dehiscence/infection	3

* Same patient R.I.F. = right iliac fossa

Duration of Hospital Stay

For patients done in the private hospitals the mean duration of stay was 15½ days as reported in the earlier paper (1). More recently patients were discharged on the 8th post-operative day with an indwelling Foley's catheter.

Stage of Disease and Node Metastasis (table V).

Overall, 19% had node metastasis. Stage 2 was associated with a node metastasis rate of 30% compared with 6% for stage 1b.

Tumour Differentiation and Node Metastasis (table VI)

Adenocarcinoma appears to be associated with a higher lymph node metastasis rate of 38.5% compared with 14.4% for squamous cell carcinoma. For squamous cell carcinoma, none of the 20 well differentiated cases had node metastasis. Whereas moderately and poorly differentiated cases were associated with a node metastasis rate of 16.7% and 19.1% respectively.

Sequelae (table VII)

Thirteen patients had sequelae. Two cases developed ureteric stricture. Both these patients underwent radical hysterectomy about a year following radiotherapy because of central recurrence.

Two patients did not regain normal function of the bladder but required intermittent self catheterization. Three more suffered poor control of urine or severe stress incontinence. Therefore 5 (4%) of the series developed severe bladder impairment.

Five patients developed mild lymphoedema of the lower limb. Of these five, 4 received post-operative external irradiation in addition to the radical operation. Only 1 patient developed a chronic lymphocoele. This patient was asymptomatic.

FIGO Clinical Staging Compared with Surgical Staging (table VIII)

Surgical staging involves the histological study of the operative specimen to determine if the tumour has infiltrated the parametrial tissue. Lymph node metastasis was not considered. Altogether 10 cases were found to have parametrial infiltration. Seven of 36 clinical stage 2b were found to be surgical stage 2b. Only 3 of 97 clinical stage 1b and 2a were surgical stage 2b.

Recurrences (table IX)

At cut-off date (30/6/87) 10 patients were discovered to have recurrence. Recurrence in the pelvis (sigmoid colon/bladder) occurred in 2 patients. Two had recurrence in the lung; one multiple peritoneal secondaries; one in cervical spine (C 1-4); and one supraclavicular node. For 3 cases the site could not be determined.

As for time of recurrence, 6 of 10 recurred within 24 months after operation. The remaining 4 recurred between 24 and 48 months.

Three of the 10 cases were still alive at cut-off date. None of these cases suffer the unpleasant odorous vaginal discharge associated with vaginal recurrence.

Mortality and Survival (figure 1)

The 17th patient was found dead on the 4th post-operative day. Post-mortem showed a saddle pulmonary embolism. The thrombus was from the deep calf veins.

Seven other patients died of recurrence. Two died within 4-6 months after operation; one 10-12 months, two 19-24 months and two 40-42 months post-operation. The calculated life-table survival rate at 5 years was 90% and 94% at 2 years.

TABLE V
NODE METASTASIS AND STAGE

	No. Cases	No. (%) with +ve node
Stage 1b	67	4 (6)
Stage 2a + b	56	17 (30)
Total	123	21 (19)

N.B. Only Cervix Cancers Included

TABLE VI
TUMOUR AND DIFFERENTIATION AND NODE METASTASIS

	No.(%)	No.(%) +ve nodes
Squamous Cell Ca:-		
Well Diff.	20 (15.9)	
Moderately Diff.	42 (33.3)	7 (16.7)
Poorly Diff.	47 (37.3)	9 (19.1)
Unknown	2 (1.6)	0
Adenocarcinoma of cervix	13 (10.3)	5 (38.5)
Adenocarcinoma of corpus	2 (1.6)	0
Total	126 (100)	21 (16.7)

TABLE VII
SEQUELAE

Ureteric Stricture +	2
Gross Bladder impairment (req. intermittent catheterization)	2
Poor control of urine/severe stress incontinence	3
Lymph oedema	5
Chronic lymphocoele	1

+ Both cases were recurrences following radiotherapy

TABLE VIII
CLINICAL STAGING VERSUS SURGICAL STAGING

	Surgical Stage			
Clinical Stage	1b	2a	2b	Total
1b	65		2	67
2a		19	1	20
2b	29		7	36
Total	94	19	10	123

N.B. 1 Corpus cancer and 2 recurrences were excluded

TABLE IX
RECURRENCE BY POST-OP INTERVAL AND SITE

Site of Recurrence	No. By Months Post Operative <6/12	6-12	12-24	24-36	36-48
Central (Sigmoid/bladder)				1	1
Lung		1		1	
Cervical Spine			1		
Multiple Peritoneal					1
Abdominal Wall + Supraclavicular node	1				
Unknown	1	1	1		

Life Table For 123 Patients With Ca Cx Stage IB & IIB Who Underwent Wertheim's Operation (Jan 1982 – June 87)

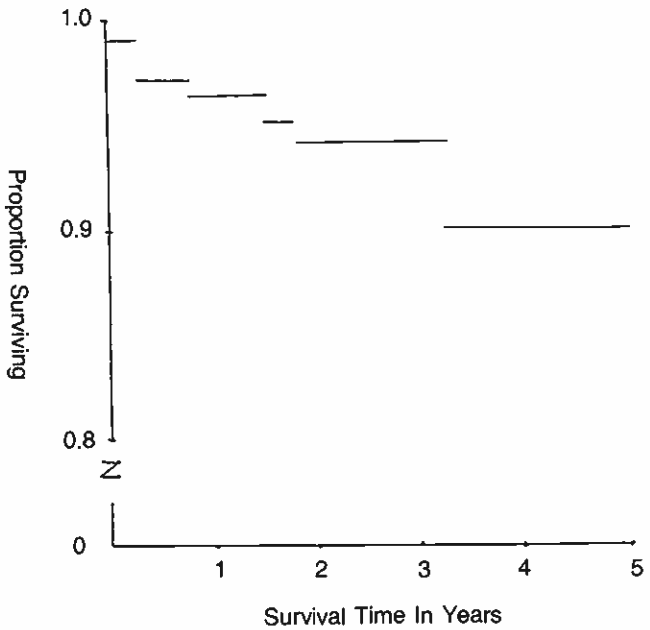

Figure 1

DISCUSSION

The operative and post-operative morbidity is low, only (8.7%). The rate of wound infection/dehiscence of 3/126 (2.4%) is lower than expected. There was not a single case of pelvic abscess. Prophylactic antibotic and adequate dralnage of the pelvic spaces may have been the major factors responsible for the low sepsis rate.

There was not a single case of urinary or faecal fistula. I believe the technique and skill of dissection of the lower end of the ureter and the bladder causing minimal damage to them and their blood supply is of major importance. Adequate drainage of the pelvic spaces is also important.

There was one operative mortality from pulmonary embolism in this series. This occurred to my 17th patient who was obese and not given prophylactic anticoagulation with subcutaneous Heparin, a reminder of the risks of pulmonary embolism even among the local Asians and, the need for prevention. Since then, older and obese patients were given prophylactic anticoagulation with subcutaneous Heparin and a leg pump applied during operation. Almost every patient was ambulated on the first post-operative day, subsequently.

The prospect of a difficult operation or worse an unsuccessful operation may have caused some surgeons to shun stage 2b cases. However this study has shown that only 7 out of 36 stage 2b cases actually had parametrial infiltration. All these 7 cases were operated on successfully. This shows the inaccuracy of the FIGO clinical staging. On the other hand I did encounter 2 cases where the operation was unsuccessful because the disease was more advanced than expected. One of these had received preoperative radiotherapy with residual tumour. A third patient was found to be inoperable at laparotomy and abdomen closed.

A more important reason for operating on stage 2b cases must be to achieve a better survival rate. The Japanese experience (2) appears to show that their better survival rate was attributable to their higher surgery rate for stage 2 cases. Their rate of surgery for stage 1 cases was about 85% and 75% for stage 2 cases. In this series the overall five-year survival rate is 90%. Taking into consideration that 45% of the cases were stage 2 cases (16% stage 2a, 29% stage 2b) the rate is very encouraging, comparing favourably with that of Prof Hsu's early series (3) of 87% for stage 1 and 72% for stage 2. A retrospective analysis of the results of radiotherapy in Singapore by Khor et al (4) for the period 1973-75 gave a 5-year survival rate of 86% for stage 1 and 65% for stage 2. The favourable survival rate of 90% in this series would justify performing radical surgery on selected stage 2b cases.

Radical surgery is not without sequelae (table VII). Gross bladder impairment occurred in 5 patients (4%) which is not insignificant. I encountered 2 cases of ureteric stricture associated with hydronephrosis. These two patients had been treated with full radiotherapy about 1 year prior to radical surgery. Both these patients are still alive, one after 39 months and the other 38 months. An earlier report showed 78% considered their bladder function normal, the rest had some minor impairment (1). Considering the extensiveness of the Hsu's operation it is surprising that 78% were able to regain normal bladder function.

Thirty-eight percent of patients suffer from constipation requiring medication (1). Although for this operation the upper ⅓ to ½ of the vagina was excised, the resulting length, and the state of the vagina is most impressive. This is attributable to Hsu's method of suturing the vagina with a Boston suture, incorporating the rectal peritoneum to the posterior rim of the vagina and closing the pelvic peritoneum 3 cm above the vagina stump. With this technique the vagina is lengthened by 2-3 cm. My earlier paper (1) showed that 54% consider coitus normal, 15% satisfactory but a little dry, 31% had stopped coitus because of age mainly. In comparison vaginal stenosis and rigidity occur in the majority of cases following primary radiotherapy. Khor et al (4) in his analysis of results of radiotherapy in Singapore reported a vaginal stenosis rate of 41%, chronic proctitis in 23% of case, 9.5% chronic cyctitis and 3% with major complications such as enteric strictures and fistulas.

Blood loss and operating time are indications of increasing skill with experience. In this study the median blood loss for the first 31 cases was 1800ml whereas for the next 24 cases it was 500ml. The average volume of homologous blood given after the first 31 cases was 667 ml. Therefore it is my practice now to group and match only 3 units of blood for uncomplicated cases and autologuous transfusion practised for those whose haemoglobin is 12 gm/dl and above. Operating time from skin to

skin varies greatly with the degree of obesity and other complications. It ranged from 2½ to 4¾ hours. The average operating time has fallen from an average of 3 hours 42 minutes for the first 20 cases to 3 hours 7 minutes for the 20 most recent cases.

The pelvic node metastasis rate for stage 1 and 2 combined is 19%, 6% for stage 1 and 30% for stage 2. The incidence of node metastasis was similar in Hsu's series as well as that of the Duke's University medical centre (5) and the M.D. Anderson Hospital, (6) being 18%, 15% and 15% respectively. In this series adenocarcinoma has the highest rate of node metastasis of 38.5% compared with 14.4% for squamous cell carcinoma. Stage difference alone cannot account for the difference. Lymph node metastasis is of clinical importance, because studies have shown it increases the risk of recurrence and decreases the 5-year-survival rate significantly. M.D. Anderson Hospital's (6) series showed 45% of recurrences following radical hysterectomy occur in patients with node metastasis and 90% occur within 24 months. In my series 60%, 6 out of 10, recurrences occurred in patients with positive nodes, although only 19% of all cases had positive nodes. Five of the 6 cases were given post-operative external irradiation. Looking at it from another angle, Creasman (5) in their latest analysis showed that their 5-year survival rate for stage 1b is 91% dropping to 81% if one node is involved, 75% with multiple unilateral nodes and 66% if bilateral nodes are involved. These figures are better than most previously reported figures which is in the region of 40-50%. Adjuvant post-operative radiation may have contributed to the better survival rate in cases with node metastasis. The M.D. Anderson Hospital's (6) experience also appears to show the beneficial effect of adjuvant radiation on survival rate. Morrow (7) in a literature review, comparing 3 recent series of patients treated with adjuvant radiotherapy and 3 series of surgery alone, gave a 5-year survival rate of 61% and 50%. However the difference has not reached statistical significance. Larger studies are needed to be conclusive.

In this present series which includes stage 2B cases, the overall recurrence rate of 8% compares favourably with that of M.D. Anderson Hospital's series of 11% for stage 1b and 11.3% of Burke et al (8) also for stage 1b. However my figure is an under estimate as not all of the cases have been followed up for 5 years. Of the 7 cases where the site of recurrence could be ascertained, only 2 were pelvic recurrences, amenable to surgical treatment. The rest were distant metastasis. It is worthwhile noting that none of these patients suffer the most unpleasant symptom of foul smelling vaginal discharge, so commonly associated with recurrences following radiotherapy. This is not an insignificant advantage of surgery over radiotherapy.

CONCLUSION

This series has demonstrated the efficacy of radical hysterectomy as a primary treatment modality for stage 1b, 2a and selected 2b uterine cervical cancers. When performed by one, well trained in the procedure, it is associated with a low morbidity and a high survival rate comparing favourably with that of reputed oncology centres.

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REFERENCES

1. Cheng MCE: Wertheim's operation — A personal series of 55 cases. Sing Med J 1985; Vol 26: 443 No 6.
2. Hirabayashi K and Iwai S: Progress of the uterine cancer committee of Japan society of Obstetrics & Gynaecology between the period of 1952-1975.
3. Hsu CT, Liu IS: Surgical treatment of cancer of the uterine cervix. AM. J. Obstet and Gynecol 1964; 95: 706-713.
4. Khor TH, et al,: Int J. radiation oncology biol phys. 1985; Vol II: pp 1313-1316.
5. Creasman WT, Soper JT, Clarke-Pearson D: Radical hysterectomy as therapy for early carcinoma of the cervix. AMJ Obstet & Gynecol 1986; Nov 155: 964-9.
6. Larson DM, et al,: Stage 1B cervical carcinoma treated with radical hysterectomy and pelvic lymphadenectomy: role of adjuvant radiotherapy. Obstet Gynecol 1987; 69: 378.
7. Morrow CP: Gynecol Oncol 1980: 10: 105.
8. Burke TW, et al,: Clinical patterns of tumour recurrence after radical hysterectomy in stage 1B cervical carcinoma. Obstet Gynecol 1987; 69: 372.