

Evaluation and Complications of 107 Staging Laparotomies for Hodgkin's Disease

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From 1971-1975, 107 staging laparotomies for Hodgkin's disease were performed at the University of Wisconsin Hospitals. Forty-one per cent of patients with abnormal abdominal lymphangiograms preoperatively had abdominal nodes which were negative for Hodgkin's. Thirteen per cent of patients with negative preoperative lymphangiograms had positive nodes at staging laparotomy. Twenty-nine per cent were up-staged by laparotomy, *i.e.* assigned to a less favorable stage (II A to III A), and 11.2% were downstaged. There were no surgical mortalities. Minor surgical complications occurred in 14.9%, and major ones in 3.7%. We conclude that surgical staging for Hodgkin's disease is valuable in making an accurate diagnosis and, hence, in determining the most effective treatment.

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The 12 attending staff employed a similar staging procedure consisting of liver biopsies, splenectomy, and multiple abdominal node biopsies usually through a left paramedian incision. Bone marrow biopsies, ovarian repositionings and appendectomies were done occasionally, but not routinely. Routine prophylactic antibiotics were not used.

THE IDEA OF A UNICENTRIC locus in Hodgkin's disease with a subsequent, predictable, adjacent nodal spread is no longer accepted by all investigators. Hodgkin's disease, no matter how early it is diagnosed,¹ is sometimes found on both sides of the diaphragm. Surgical staging is the most reliable method for ascertaining intra-abdominal nodal and extranodal involvement.

However, it will remain a useful tool only if staging laparotomy leads, with reasonable frequency, to a changed clinical stage and thereby to improved therapy. In addition, these benefits must not have an excessive cost in morbidity and mortality.

To help determine the efficacy of surgical staging, we examined the results in 107 staging procedures performed at our institution over a four year period.

Patients and Methods

From 1971 through 1975, 107 Hodgkin's staging procedures were performed at the University of Wisconsin Hospitals. There were 50 females and 57 males ranging in age from five years to 67 years. Median age was 24 years and mean age 29.9 years.

Results

There were no mortalities in our series. There were 20 complications in 14 patients; four patients had two complications each and one had three complications. The total rate of complications (major and minor) was 18.6% with four being considered as major (Table 1).

The majority of the complications (12 patients) occurred in Stages II B, III B, and IV B patients. However, one-third, or seven of the complications occurred in Stages I A and II A patients. One occurred in Stage I B.

The one case of deep vein thrombophlebitis was easily controlled by intravenous heparin. A 14-year-old girl bled from the splenic pedicle and short gastric vessels requiring reoperation and multiple transfusions. An uneventful recovery followed. A wound dehiscence four days postoperatively in a 34-year-old, Stage IV B male was resutured with subsequent prompt healing. A subphrenic abscess in a 21-year-old woman was drained 22 days postoperatively. This patient also had a serum amylase level of 2200 Somogyi units which promptly returned to normal following treatment.

The minor complications tabulated in Table 2 all cleared readily with standard therapy. The subcutaneous wound infections required a few extra days of hospitalization. The two cases of pancreatitis were evidenced by transient rises in serum amylase.

When prestaging lymphangiogram was compared to the intra-abdominal lymph node findings at the time of

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TABLE 1. Major Complications Encountered in 107 Staging Procedures

Complication	Number of Patients
Deep vein thrombophlebitis	1
Postoperative hemorrhage	1
Wound dehiscence	1
Subphrenic abscess	1
Total	4 (3.7%)

staging, 79 of 101, or 78% confirmed the preoperative clinical stage (Table 3). Thirty-two patients had positive lymphangiograms. Therefore, 13 of 32 patients had negative node biopsies for a disagreement rate of 41%. Nine of 69 negative lymphangiograms produced positive nodes for 13% false negative lymphangiogram results. Six patients did not have nodal biopsies and are deleted from these data. Of 32 patients with positive lymphangiograms who had abdominal nodes biopsied, two had involvement of the spleen only. Of 70 patients with negative lymphangiograms, 11 had only splenic involvement.

Histologically, nodular sclerosis and mixed cellularity cell types combined form the majority of our patients with 88.8% (Table 4).

In Table 5 the histologic findings were separated into favorable (lymphocyte predominance and nodular sclerosis) and unfavorable (mixed cellularity and lymphocyte depletion) categories and then compared to the change in stage after laparotomy. In Stage I A favorable histology, 37.5% were upstaged. Combining Stage I A and II A favorable histology, we upstaged 27%. Favorable and unfavorable were upstaged 15 and 16 times, respectively. However, unfavorable histology was downstaged twice as often as favorable histology. Overall, 59.8% were correctly clinically staged whereas 40.1% were incorrectly staged preoperatively. About one-fourth of patients (28.9%) were upstaged, while 11.2% of patients were downstaged.

TABLE 2. Minor Complications Encountered in 107 Staging Procedures

Complications	Number of Patients
Pleural effusions	6
Pulmonary infiltrates	4
Subcutaneous wound infections	3
Superficial thrombophlebitis	1
Pancreatitis	2
Total	16 (14.9%)

TABLE 3. Comparison of Prestaging Lymphangiogram to Abdominal Nodes at Staging

	Abdominal Nodes		
	Positive	Negative	Spleen Pos Only
Lymphangiogram Positive	19 (32)	13 (32)	2
Per cent disagreement		40.6%	
Lymphangiogram Negative	9 (69)	60 (69)	11
Per cent disagreement	13%		

Discussion

Despite extensive preoperative evaluation to determine the clinical stage in Hodgkin's disease, staging laparotomy continues to alter the clinical stage in one-fourth to one-third of the patients in the literature reviewed.^{1-3,5-8} Our own series shows a 29% surgical upstaging. Upstaging indicates the assignment of a patient to a worse prognostic stage *i.e.*, II A to III A. Downstaging implies the opposite. The lymphangiogram continues to be not only an important clinical staging tool, but also a useful guide intraoperatively to direct the surgeon to the questionably positive node bearing areas. Our accuracy rate of the preoperative lymphangiogram was 78% which correlates well with other series.^{1,2,5-7} False positive results on preoperative lymphangiogram are reported as high as 67%.⁵ The disagreement rate in our lymphangiograms was 41%.

These facts stress the importance of a thorough surgical laparotomy to assess the accurate stage of a patient.

The current debate as to the reliability of the preoperative lymphangiogram centers around the fact that splenic involvement and extranodal recurrences cannot be properly evaluated by this diagnostic modality.⁴⁻⁶

Some investigators believe that splenic involvement indicates hematogenous spread of the disease and therefore chemotherapy is necessary in addition to x-ray treatment.⁴ One series showed that 88% of lymphangiogram-negative Stage I and II patients had splenic involvement when positive abdominal findings were present.² If, indeed, hematologic spread is present when the spleen is positive then staging laparotomy on

TABLE 4. Histopathologic Type

	Number	Per Cent
Nodular sclerosis	51	48
Mixed cellularity	44	41
Lymphocyte predominance	9	8
Lymphocyte depletion	3	3
Total	107	100

TABLE 5. *Histology and Surgical Change*

	Upstage					Downstage	
	IA	IIA	IIIA	IIB	IIIB	IIIA	IIB
Favorable histology*	3 (8)	6 (25)	0 (4)	3 (11)	3 (12)	3 (4)	1 (12)
Unfavorable histology†	0 (4)	5 (15)	3 (12)	5 (7)	3 (9)	4 (12)	4 (9)
Total	3 (12)	11 (40)	3 (16)	8 (18)	6 (21)	7 (16)	5 (21)
Per cent	25%	27.5%	18.8%	44.4%	28.6%	43.8%	23.8%

*F.H. = L.P. + N.S. †U.H. = M.C. + L.D.

1. Stages not listed above remained at preoperative stage.

2. Numbers in parentheses are totals in that clinical preoperative stage.

patients with lymphangiogram negative Stage I and II is helpful because we are thereby upstaging Stages I and II. Furthermore, laparotomy changes the treatment approach by determining extranodal spread *i.e.*, to spleen, liver, etc. In our series we have upstaged 27% of our Stage I and II patients with favorable histology. Of the 69 lymphangiogram negative Stage I and II patients in our series 50% or 6 of 12 had positive spleens when the abdomen was positive. This is less than in another series from M. D. Anderson Hospital, but is significant.²

A recent addition to the clinical (prelaparotomy) staging has been the use of laparoscopy to inspect the liver and obtain biopsies of involved liver areas, thereby assigning a patient to Stage IV and thus avoiding a standard staging laparotomy. In our series of 107 staging laparotomies, there were only nine patients with positive liver findings out of the total group of 36 where the preoperative lymphangiogram was read as positive. This would mean that preoperative laparoscopy would have been of value in only 8% of the cases. Such a low diagnostic yield is even worse in the lymphangiogram negative patients where from the total group of 70 only three had positive liver findings, equivalent to only 3% yield of laparoscopy. Therefore, we cannot recommend preoperative laparoscopy as a valuable diagnostic adjunct in the Hodgkin's patient.

Some authors feel that the rate of surgical complications from the staging laparotomy increases in patients over the age of 50 and suggest that these patients should not be staged.^{5,8} Our study does not support such age limitation since all of our complications occurred in patients under the age of 50. But, in agreement with

the same author, we also found eight of nine patients over age 50 years to have unfavorable histology, namely mixed cellularity.⁵

Even our pediatric and adolescent age group compares more favorably in regard to complications with other reported series.³ Our overall complication rate of 18.6%, including 14.9% minor and 3.7% major cases, without a single mortality indeed is quite acceptable and correlates well with other series in the literature.^{13,6,7,9,10} Therefore, we feel that the surgical staging of Hodgkin's disease plays a major role in accurate assessment of a patient's stage and continues to be warranted.

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