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Comments and Critique

Decision Making in Abdominal Surgery Following Chemotherapy for Testicular Cancer

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PERSISTENCE OF a shadow on computed tomography (CT) scanning after chemotherapy for metastatic non-seminomatous germ cell tumours of the testis should not be regarded as treatment failure, since a residual mass is left behind in almost one-quarter of cases [1]. Patients who are about to commence chemotherapy should be told, therefore, that an operation may be necessary to get rid of any potentially malignant tissue that does not disappear completely, to make sure that the chemotherapy has been completely effective in eliminating the cancer. A positive approach from the outset makes the surgeon's job much easier, since patients arrive for surgery with their minds well prepared, with no sense of disappointment or feeling that all has not gone as well as might be expected. With seminomas, on the other hand, surgery is seldom necessary.

The surgeon needs to know exactly where the masses are, and their size. Adjacent structures may be at risk of damage, or may have to be removed along with the mass, and this can only be assessed by careful reference to the scans. Not only is this essential for the surgeon to plan the operative approach, but the patient and his relatives must be advised of the likely extent of the surgery, and warned of any possible effect on other organs. In particular, failure to warn the patients of potential loss of a major organ such as a kidney, or interference with ejaculation, could be interpreted as negligence. The patient should be advised to stop smoking, since the combination of bleomycin chemotherapy and heavy smoking may predispose them to postoperative lung complications, including adult respiratory distress syndrome.

In 70% of cases, the residual masses are in the para-ortic lymph nodes in the retroperitoneum, in 18% they are in the chest and in 12% they are above and below the diaphragm [1]. Masses above the diaphragm are best dealt with by a thoracic surgeon, while those in the neck may require a separate operation by a third surgical specialist. A thoraco-abdominal approach is essential if simultaneous excision of supradiaphragmatic masses is to be carried out: excellent access is provided to retro-crural nodes and this incision may be chosen for massive tumours which are predominantly on one side. In such cases, the thoracic surgeon and the urologist should meet to discuss whether it is possible to remove all the tumours at one operation, or whether a staged approach is preferable. In general, it is better not to be overambitious, hoping to remove everything in one operation, since access and hence safety may be compromised.

In other cases, an anterior, long midline incision will provide

adequate access. It has the great advantage that it provides excellent direct access to the great vessels, with equally good exposure on both sides: as a result, even very large masses can be completely excised, provided they are below the renal vessels. Occasionally, the vena cava may be involved, and this should be recognised in advance so that adequate arrangements can be made for blood transfusion, and a vascular surgeon may be invited to the operation. Similarly, if a liver metastasis is present, it may be sensible to involve a surgeon who is experienced in hepatic resection. Particular attention must be paid to the kidneys: the metastatic tumour commonly causes ureteric obstruction, and although some renal function may return after chemotherapy, there may be significant postobstructive atrophy of one or even both kidneys. The residual mass may be inseparably stuck on to the kidney, its vessels or the ureter, and nephrectomy may have to be done in order to clear the disease—it is therefore essential to make sure that contralateral kidney function is adequate.

Amongst 231 para-aortic lymphadenectomies carried out after chemotherapy at the Royal Marsden Hospital between 1976 and 1990, there was residual undifferentiated teratoma (MTU) in 48 (21%), differentiated teratoma (TD) in 131 (57%), and only fibrosis/necrosis in 52 (22%) patients [2]. The histological findings had a profound effect on prognosis, as did completeness of surgical excision (Figures 1 and 2). Multivariate analysis was performed and completeness of excision, pathology of the excised mass, elective versus salvage surgery and year of treat-

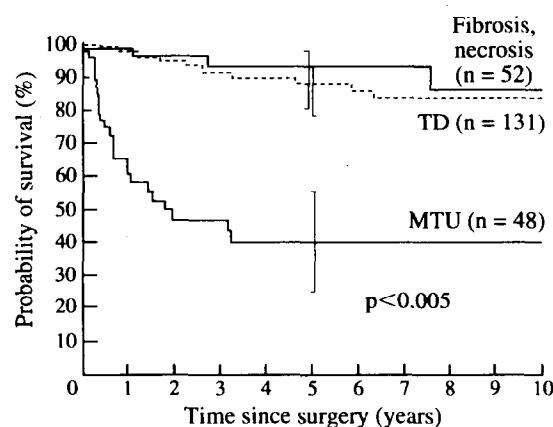


Figure 1. Comparison of survival by pathology of excised tissue (reproduced by permission of the *British Journal of Urology* 1993, 71, 208-213). TD, differentiated teratoma; MTU, undifferentiated teratoma.

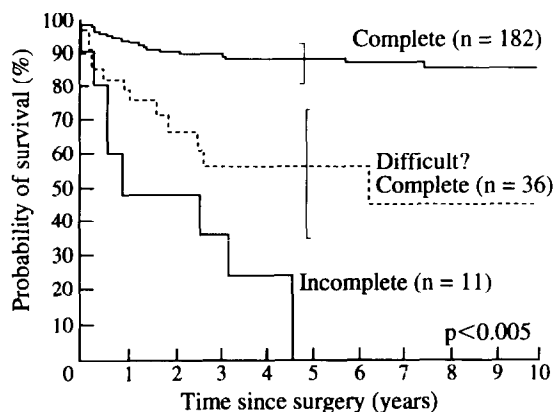


Figure 2. Survival related to completeness of surgical excision (reproduced by permission of the *British Journal of Urology* 1993, 71, 208–213).

ment (before or after 1984) were found to be independent prognostic variables, whereas serum markers at the time of surgery and size were not found to be of any additional prognostic value once pathology and completeness of excision were taken into account. The incidence of residual MTU in our series was similar to that in a large meta-analysis published in this issue (see page 000). Since it is impossible to distinguish radiologically those patients with MTU from the rest, we recommend excision of all substantial residual masses 1 month or so after completion of chemotherapy.

What size of residual mass is substantial enough to merit excision? We have excised all masses greater than 2 cm diameter, and although MTU was found in only 13% of masses less than 3 cm diameter in our series, it has been recorded in a mass even smaller than this. We therefore examine carefully all masses 1–2 cm in diameter and select those for surgery that do not continue to shrink with time. Donohue [3] has observed that those who had greater than 90% reduction of measured tumour volume in metastases from MTU all had necrosis/fibrosis in their resected specimens; however, it remains to be seen whether this will become established as such a good prognostic feature that surgical excision can be omitted.

Heading the list of factors associated with poor prognosis are incomplete excision of the residual mass and the presence of undifferentiated tumour. These two factors are related, since tissue with persistent active malignancy is undoubtedly more difficult to remove; however, complete clearance of residual masses which do turn out to contain active disease is clearly of therapeutic benefit, as shown by the results of the multivariate analysis which indicated that these two factors were independently significant. The presence of sarcoma in the excised tissue is recognised as a particularly bad sign, but surgical excision is potentially curative [4]. There was residual undifferentiated teratoma in 14% of our patients with normal serum markers after chemotherapy, and so neither this finding, nor the mere size of the mass, should lull the oncologist into believing that surgery is unnecessary. On the other hand, raised serum markers at the time of surgery was highly predictive of the presence of undifferentiated tumour in the residual mass, and of subsequent relapse and death. Nevertheless, it can be seen that 50% of such patients were long-term survivors after excision of the residual masses with follow-up chemotherapy, when otherwise their prognosis would have been poor.

Survival was significantly worse after salvage, as compared to elective surgery after primary chemotherapy, probably reflecting the lower complete remission rate after salvage chemotherapy. The number of reports of late relapse in the retroperitoneum is growing steadily: the unstable nature of teratomatous metastases, even those composed of differentiated tissue (TD), is well recognised, and expansion of cystic metastases has been termed “the growing teratoma syndrome”. The difficulties inherent in treating patients once relapse has occurred makes prevention a preferable alternative. Routine excision of residual masses allows early recognition of adverse prognostic features, and elimination of unstable or frankly malignant tissue. We are not alone [4, 5] in believing that this policy is preferable to the wait-and-see approach recommended by others in the past [6, 7].

There is, however, a cost that must be paid for such major surgery. Operative mortality within 1 month of surgery in our series was 0.9%. The ipsilateral kidney was removed with the lymph node mass in 12.5%; the aorta or iliac artery was resected or grafted in 4%, and the vena cava was resected or tied off without ill effect in 3%. Loss of ejaculation occurred significantly more often after bilateral (46%) compared to unilateral (14%) lymphadenectomy, and was related to the size of the excised mass (< 4 cm 4%; 4–8 cm 19%; > 8 cm 60%); a nerve-sparing operative technique led to a significant reduction in ejaculatory dysfunction, from 37 to 19% in our experience of 186 patients [8]. Once lost, few patients regained ejaculation spontaneously and there was only a limited response to adrenergic drug therapy; however, success has been reported in these cases with electroejaculation [9]. It is most important to recognise patients at high risk of loss of ejaculation early in the course of their treatment so that seminal analysis and cryopreservation of semen can be arranged in suitable cases [10].

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