rule is frequently broken. The surgeon is most tempted to do so when the epithelioma is small and of short history. In one such case, a small growth at the side of the tongue which had been noticed only a few weeks, I thought free local excision would suffice. The patient returned in a few months with glandular recurrence over the carotid artery.

In conclusion, the radical operation should include both submaxillary regions whenever the primary epithelioma is at or near the middle line of the lip. If the growth is placed close to one angle of the mouth the neck operation may be safely limited to that side, including the submental glands and those over the upper end of the carotid artery and jugular vein; but it is better to do too much than too little in dealing with cancer.

REFERENCES.

¹ *The Practitioner*, May, 1903. ² Third edition, 1882, vol. ii, p. 521.

A Clinical Lecture

ON

SECONDARY (METASTATIC) CARCINOMA OF THE OVARIES.

DELIVERED AT THE MIDDLESEX HOSPITAL.

BY J. BLAND-SUTTON, F.R.C.S.,

SURGEON TO THE HOSPITAL.

PRIMARY cancer of paired organs in adults is almost invariably unilateral. The fact that cancer of the ovary in women is often bilateral raised a suspicion in my mind twenty years ago that many solid tumours of the ovary described as primary carcinomata might really be secondary to some unsuspected focus of malignant disease in an organ, such as the breast and stomach. I deliberately fixed my suspicions on these two organs because, observations in the dead-house had taught me that massive secondary deposits are frequently found in one or both ovaries as a sequel of mammary and gastric carcinoma in a proportion of 10 per cent. It is also important to bear in mind that it is not uncommon to find in the *post-mortem* inspection of a patient who has died from cancer of the breast or of the stomach that the only gross evidence of metastatic deposits has been found in the ovaries.

In 1902 I reported a case to the Medical Society of London, which illustrated the large size a metastatic deposit of cancer may attain in the ovary; for in that instance the tumour was as big as a large cocoanut, and clinically resembled a uterine fibroid, except that it had caused an abundant hydroperitoneum. This ovary was removed from a patient 42 years of age, whose breast had been excised for cancer seven years previously. Microscopically, the structure of the ovarian tumour was a copy of the primary tumour in the breast. The left ovary, which appeared hard but not enlarged, was also removed; this had become infiltrated with carcinoma. These ovaries are preserved in the museum of the Royal College of Surgeons.

When I exhibited these specimens at the Medical Society I briefly stated my suspicions concerning the probable secondary character of ovarian carcinoma, but said that I had never been able to confirm them. Since then some interesting work has been accomplished in relation to metastatic deposits of carcinoma in the abdomen, which will enable me to show you that many large solid cancerous tumours of the ovaries are metastatic, and I hope to indicate the way in which they probably arise, and that in my previous observations I had stumbled on account of my intellectual blindness.

One of the most striking clinical facts regarding cancerous tumours of the ovaries is the feeble—often extremely feeble—condition of the patients; even in those who survive operation, life is rarely prolonged beyond a few months. The primary mortality of the operation is high, and I have noticed, not only in those patients under my own care, but those operated upon by my colleagues, the frequency with which these tumours implicate the rectum or sigmoid flexure of the colon, and occasionally an extremely looped (or omega-shaped) transverse colon.

In regard to the frequency and rapidity of local recur-

rence after bilateral ovariectomy for cancer, I was at a loss to find an explanation until Dr. Cuthbert Lockyer in 1904 made an admirable contribution to the Obstetrical Society of London concerning a specimen of cancer of both ovaries removed from a woman 47 years of age. These tumours were of some size, for they had an average diameter of about 12 cm. The Fallopian tubes and adjacent parts appeared normal, but on microscopic examination Lockyer found the apparently normal tissues of the mesosalpinx and tube infected with cancer through their lymphatics. On this ground, he argues, especially as he subsequently proved that the infection extended to the uterus, that in dealing with bilateral cancer of the ovaries, the proper treatment of such cases would be the thorough removal of both ovaries with the Fallopian tubes and the uterus. The subject of these important observations died from recurrence within a few months, and at the necropsy a focus of cancer, probably the primary seat of the disease, in my judgement, was found in the small intestine. In his first account of the specimen Lockyer's statement in regard to the extensive cancerous condition of the Fallopian tubes, although they appeared normal to the eyes and fingers, seemed to me to offer such an extremely satisfactory explanation of the rapid recurrence met with in these cases, that I determined in the next case of this kind that came under my care to remove the whole of the internal genital organs.

In 1905 a woman, 28 years of age, came under my care with bilateral solid tumours of both ovaries, each as large as a cricket ball. I removed the ovaries, Fallopian tubes, and uterus. Microscopic examination proved them to be cancerous and of the structure of a colon carcinoma, but I had made no careful examination of the bowels. The patient recovered quickly and well. Some months later signs of intestinal obstruction supervened, and she died seven months after the removal of the tumours.

About the same time another woman, desperately ill with bilateral ovarian tumours accompanied by vomiting, came under my care. At the operation, though the tumours were found to be solid and free from adhesions, they seemed so suspicious that I removed the uterus with them. On arranging the intestines and omentum I found a hard constricting ring of carcinoma in the large bowel at the beginning of the rectum. I excised this and performed a circular enterorrhaphy. The patient died a week later from faecal impaction in the large gut. The picture in this case was complete—primary cancer of the rectum, secondary infection of the ovaries, intestinal obstruction, and death.

In a third patient operation has been of some benefit. A young married woman with signs of a rapidly-growing right ovarian tumour came under my care. The tumour was removed with difficulty on account of adhesions, and a smaller tumour, the size of a tennis ball, was found in the left ovary; before operation the friends demurred to removal of both ovaries, so this ovary was allowed to remain. In three months the patient returned with an obvious tumour in the pelvis and difficulty with the bowels. At the second operation I found the left ovary, now as big as my fist, adherent to a cancer in the sigmoid flexure of the colon near its junction with the rectum. The tumour was removed and the cancer of the bowel was excised and circular enterorrhaphy successfully performed. This woman was alive and in good health seven months after the second operation.

Schlagenhauser collected and analysed 79 cases of malignant disease of the ovaries associated with primary cancer of the abdominal viscera; of these, in 61 instances the primary focus grew in the stomach, 10 in the bowels, 7 in connexion with the gall bladder and ducts, and 1 in the adrenal gland. The majority of the patients had been submitted to operation, and the ovarian tumours were removed under the impression that they were the primary disease, the cancer in connexion with the gastrointestinal tract being in most instances overlooked until after the fatal termination of the case.

As a result of his inquiries Schlagenhauser comes to the conclusion, and with good reason, that the majority of bilateral solid ovarian tumours are carcinomata and metastatic. The histologic features of the ovarian tumours vary with the nature and situation of the primary tumour. The practical outcome of these observations is very important—namely, that in cases of bilateral solid tumours of the ovary, especially if accom-

panied with vomiting and ascites, the surgeon should make a very careful and accurate examination of the abdominal organs, especially the stomach.

The fact that so many of the patients in Schlagenhauser's list had been submitted to ovariectomy and the gastric cancer overlooked in spite of the presence of typical signs, such as persistent vomiting and progressive emaciation, illustrates what may be called occupation bias, for the gynaecologist would allow the existence of a definite tumour in the pelvis to fill up the foreground of the clinical picture. Ten years ago I saw two cases in which bilateral solid tumours of the ovaries as big as cocoanuts were removed from women under the impression that they were primary; the patients suffered from persistent vomiting, and died in a few days. At the necropsy carcinoma of the pylorus was found. These cases were used to illustrate the coexistence of two primary malignant neoplasms, an erroneous opinion in these patients at least. Dust has been thrown in the observer's eyes, so to speak, by the unusual size which these metastatic deposits attain in the ovaries.

Even in cases in which widespread dissemination of the disease has existed in the peritoneum, accompanied by moderately-enlarged ovaries secondary to gastric cancer, the ovaries have been erroneously regarded as the primary source of the disease. It is also significant that whenever surgeons have made inquiries into the remote results of ovariectomy they have been astonished to find that many of the patients have perished from recurrence in the abdomen or from intestinal obstruction. These new facts offer an explanation of some of these unhappy sequences.

I will now endeavour to show that the pathological side of this question is as interesting as its clinical aspect, and that those cases of cancer of the ovaries secondary to primary cancer of an abdominal viscus, which are not due to direct implication as a result of propinquity, may be due to permeation. Handley has shown in his admirable investigations that cancer of the breast spreads by permeating the deep fascia, and slowly creeps along the lymphatics of the fascial plexus till it reaches the epigastrium immediately below the ensiform cartilage; at this point the cancer-filled lymphatics of the fascial plexus are, in the middle line, separated from the subperitoneal fat only by a thin layer of fibrous tissue. Through this weak defence the cancer cells slowly find their way into the general peritoneal cavity and engraft themselves on to the omentum and other suitable visceral plots whereon they thrive and grow into metastatic nodules or lumps. It is conceivable and probable that many of these infecting cells find their way into the pelvis and lodge on the ovaries, pelvic peritoneum, and uterus. The fluid normally present in the general peritoneal cavity serves as an admirable vehicle for the transport of such cells into the recesses of the pelvis and there relatively undisturbed they grow into tumours.

If we extend Handley's observations on the spread of breast cancer and apply them to a primary cancer in an abdominal organ, especially in the stomach, colon, or rectum, which often grows very slowly, we may read its course in this way: Arising in the mucous membrane the cancer cells slowly permeate it and implicate the submucous and muscular coats, finally infiltrating the peritoneal covering. The cancer cells escaping into the great serous cavity are distributed by the fluid, aided by the movements of the bowels and gradually fall into the pelvis among other recesses of the belly. In the pelvis the most obvious organs for them to fall upon would be the ovaries, as they so often rest on the floor and are fairly proximate. In this way the ovaries may be fairly pictured in the mind receiving a light covering of falling cancer cells, as evergreen shrubs are clothed by snowflakes in winter. This is not a fanciful picture. The escape of cancer cells into the general peritoneal cavity can be demonstrated; for example, in cancer of the gall bladder I have seen a small bud-like process standing out on the peritoneal surface shedding its surface cells, which became distributed throughout the belly by the movement of the intestines and giving rise to hundreds of minute nodules of cancer. I have also seen the same thing in connexion with cancer of the body of the uterus. Therefore, if the dispersal of cancer cells can be demonstrated in such a gross way, it is undeniable that they may be silently and insidiously shed from the surface of the

infected peritoneum covering a carcinomatous focus in the stomach or the intestine.

When the nature of solid malignant tumours of the ovaries comes to be more thoroughly appreciated by those who devote their attention to the surgery of the pelvis, it may enable them to contemplate the clinical aspect of the case with a wider knowledge of its surroundings, and perhaps save themselves and their patients much acute disappointment.

THE SURGERY OF SARCOMA IN KASHMIR.

By ARTHUR NEVE, F.R.C.S.E.,

SURGEON TO THE CHURCH MISSION HOSPITAL, KASHMIR.

THERE has been a concentration of interest upon cancer of recent years which has relegated sarcoma almost to the shade of oblivion. In the textbooks of the last generation the group cancer included many of the sarcomata. Were the distinction one of malignancy and not one of pathology some of the sarcomata might contend for the first place. There is something terrible in their growth which impresses the imagination—the early age at which they may appear, the swiftness with which they grow and infiltrate surrounding tissues, their proneness to disseminate themselves in other parts of the body, not restrained by any lymph channels, but swept here and there by the blood current—all of us must have seen cases which were tragic. Fortunately all sarcomas are not of this type; many grow very slowly, do not disseminate, and can be quite eradicated.

In this hospital on an average 21 sarcomata are removed every year, and I have the detailed records of 184 cases which were operated upon by Dr. E. F. Neve or myself. A considerable number are quite inoperable when first seen. In Kashmir epitheliomata are far more common, chiefly owing to the use of the "kangri" or fire-basket. On an average 80 are removed every year, and of non-malignant tumours 160 per annum.

Sex.—Only 20 per cent. were females, as compared with 36 per cent. of females in the epithelial group.

Age.—The age incidence is as follows, per cent.:

Under 5	10	15	20	30	40	50	60	70
6	7	10	7	18	20	21	8	3

So that the mean age is under 40 years instead of over 50, which is the mean for epithelioma.

Duration.—Thirty-six per cent. were of less than one year's growth, 15 per cent. under two years, 30 per cent. from two to three years, and 10 per cent. over ten years' duration.

Varieties.—In Kashmir we recognize the same species of sarcoma as in Europe: (1) round-celled, (2) lympho-sarcoma, (3) spindle-celled, (4) myeloid, (5) alveolar, (6) melanotic. In any of these there may be myxomatous degeneration. The amount of stroma varies; usually in the small, round-celled variety there is very little and the tumour is encephaloid in substance; other round and oval-celled tumours are moderately firm, resembling fish hard roe—a common type in the parotid region. Of the tumours recorded, 1 was a lipo-sarcoma, 3 cystic round-celled, 5 myxomatous, 7 lympho-sarcoma—many of this species were seen but not operated on—7 myeloid, 8 melanotic, 5 pure spindle-celled, 12 round-celled, and the rest of mixed oval and spindle cells.

Locality.—The following list shows how wide is the distribution:

Scalp, 2; eye and orbit, 14; ear, 1; nose and pharynx, 3; upper jaw and malar bone, 13; lower jaw, 7; other parts of face, 5; cranial bones, 3; parotid and neck, 26; tongue and submaxillary, 3; larynx, 2; total in head and neck, 79. Upper extremity—clavicle, 2; scapula, 2; axilla, 1; arm, 5; forearm, 7; hand, 7; total, 24. Trunk—chest, 3; mamma, 1; shoulder, 1; side, 7; dorsal, 3; lumbar, 5; abdominal wall, 12; pelvic bones, 2; mesentery, 2; kidney, 2; liver, 1; uterus, 2; vagina, 1; testicle, 3; total, 45; in several of these removal was not effected, the operation being only exploratory. Lower extremity—thigh and groin, 16; leg, 16; foot, 4; total, 36. Grand total, 184.

Operation.—With this diversity in structure and in locality there can be no routine operation for sarcoma. The surgeon's problem is to remove each individual tumour as completely as possible. Every case has to be taken on its own merits, and in the case of many the diagnosis cannot be fully made without an incision, or,