CARCINOMA OF THE OESOPHAGUS

A METHOD OF TREATMENT BY MEANS OF RADON SEEDS

BY

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(With Special Plate)

Apart from a few brilliant but unhappily isolated cases of radical excision, it is generally recognized that the successful extirpation of carcinoma of the thoracic oesophagus by operative measures is a virtual impossibility, and that the operative mortality is in the region of 100 per cent. It would be expected that these growths, being in the main typical squamous epitheliomata, would respond as well to radium treatment, as do growths of the tongue and lip; but this hope of cure has been in no way justified, although recent results from deep x -ray therapy have been very encouraging. It therefore remains to decide which of the various palliative measures will, with the minimum amount of discomfort, give the unfortunate patient the greatest relief from his symptoms for the longest period, and at the same time hold out a hope, however slight, of cure.

The outstanding symptom of carcinoma of the oesophagus, and the one calling most urgently for relief, is, of course, dysphagia. Before the advent of radium, gastrostomy was practically the only recognized treatment, although successful palliation was reported as a result of dilatation of the stricture, with or without the help of intubation. Patients with a well-performed gastrostomy can get along very well, and may have many months of comfortable existence to which to look forward, but obviously they are better off if the patency of the oesophagus can be restored.

USE OF RADON

The first applications of radium in cases of carcinoma of the oesophagus were made with the help of containers, with the appropriate dose of radium, lowered into position in the lumen of the gullet and subsequently removed. More lately, methods of thoracotomy and trans- or extrapleural application of radium or radon to the outer surface of the oesophagus have been tried, with the obvious disadvantage of requiring a serious major operation in a debilitated patient, in order that access may be had to the growth. The method about to be described is simplicity itself—direct implantation of radon seeds into the growth through an oesophagoscope. This necessitates a long seed introducer which will not interfere with the limited field of vision allowed by the oesophagoscope, and such an instrument has been designed by one of us (T. B. J.). It consists of an elongated trocar and cannula, with the handle conveniently attached to the side, the knob of the trocar being levelled off flush with the barrel of the cannula. The proximal end of the cannula is marked in alternate centimetre lengths of black and white, as an indication of the depth to which the point of the instrument has penetrated after contact with the growth, the distance being checked against the level of the proximal end of the oesophagoscope. There is no magazine for seeds, as this is unnecessary on account of the small average number of seeds used and would only complicate the instrument. The introducer can be made

in any length, but we find that it is most convenient to have three sizes, long enough to protrude 5 cm. beyond the mouth of (1) the long, (2) the medium oesophagoscope, and (3) the direct laryngoscope, respectively. A blunt-ended plunger with which to push home the seeds accompanies each introducer.

If the patient is in a really serious condition as a result of starvation, a preliminary gastrostomy is performed under local anaesthesia in order to feed him up and render him fit for the oesophagoscopy. If he is reasonably well the gastrostomy is omitted. After x -ray examination of a barium swallow has been made to ascertain the level and extent of the growth, and to exclude conditions such as achalasia of the cardia, oesophagoscopy is performed under general anaesthesia; the use of an intratracheal catheter ensures a quiet anaesthesia unimpeded by the pressure of the oesophagoscope behind the larynx, and saves the operator from a continuous blast of anaesthetic in his face. Latterly we have used intravenous sodium evipan as the sole anaesthetic, and with very satisfactory results.

The oesophagoscope is passed down to the growth, which is easily recognized by its raised and everted edge, and a portion is removed for microscopical examination. Then, or later if it is desired to wait for the result of the biopsy, the cannula is pushed into the growth for a distance of 1.5 cm. and a seed inserted; the cannula is withdrawn 1 cm. and another seed deposited. This procedure is repeated at six equidistant points around the

lumen of the gullet, the object being to produce a double ring of seeds encircling the growth (see Plate, Fig. 1). The seeds used are of 1.5 millicuries, screened with 0.5 mm. platinum. The patient is x -rayed after operation, and it is usually found that nine or ten seeds are still in position, the missing ones presumably having been inserted back into the lumen of the gullet below the stricture. The patients suffer no post-operative discomfort, and need not stay in hospital for any length of time, being discharged as soon as they have recovered from the effects of the anaesthetic.

An obvious danger of this operation is that it is impossible to tell where the point of the instrument is when it has been introduced to the full extent. From the literature it appears that accidental rupture of the oesophagus by an oesophagoscope is almost invariably fatal; but that the danger of perforation by a small-bore cannula is of slight degree is shown by the fact that we have, to our certain knowledge, penetrated the oesophageal wall on four occasions without harm. Twice we have observed a strong spurt of blood from the proximal end of the cannula, and a spurt from an 80 mm. tube of 1 mm. bore can only have been produced by the point entering the aorta; and twice radon seeds have been demonstrated by x rays in the pleural cavity at a considerable distance (see Plate, Fig. 2); in none of these cases was any ill effect noticed. The only alternative to this apparently not very grave danger would be to introduce one ring of seeds at a depth of 1/2 cm. only, in which case only about 1 cm. length of oesophagus would be irradiated instead of 2 cm., and in such a deadly disease any slight additional risk is worth taking if it is in any way going to improve the prognosis. It will also be contended that only a short length of gullet can be irradiated, but if the growth extends for more than 2 cm. the probability is that it has extended beyond the oesophagus, and no method will cure it.

RESULTS

Up to the present we have treated sixteen cases in this way, a total, of course, far too small from which to draw satisfactory conclusions. The growth is not visible or palpable in the whole of its extent, to allow of accurate dosage and placing of seeds, so that the treatment is largely empirical. But we are of the opinion that an operation of such slight magnitude is well worth performing, as gastrostomy or dilatation of the stricture resulting from the healing of the cancerous ulcer is always available as a second line of defence. So far, there have been no deaths resulting from operation, and the immediate results are sometimes little short of miraculous, the patient volunteering evidence of marked improvement in swallowing at the end of a fortnight or three weeks, although the dysphagia may return later. Other cases fail to respond from the start; but against this may be set off the fact that in a large number of cases the growth is so advanced as to shorten life as much by cancerous cachexia as by starvation, and has already extended beyond the wall of the gullet. In fact, one fairly healthy-looking man, with a six months' history of dysphagia, refused operation, and was dead a fortnight later; had he consented, he would, of course, have been classified as a bad result. Our best case is alive and well three years after operation, swallowing normally and gaining weight. Two others lived for fifteen and eighteen months respectively, with a degree of swallowing in one case approximating to normal, and in the other within the limits of comfort and sustentation of weight. Three patients were able to remove their gastrostomy tubes, which had been used previous to operation. One patient who was brought into hospital on the verge of death from starvation and thirst lived for fifteen months after removal of his gastrostomy tube following irradiation.

The question arises as to whether it is better to leave a gastrostomy tube once it has been inserted, in case the oesophagus closes up again, or to remove it if irradiation is successful and risk having to reopen the fistula. We have found it better to put it to the patient, and let him decide. In some cases the patients were submitted to further oesophagoscopy, and in each case the growth was found to have disappeared and to be replaced by a smooth scar; if there was a stricture, it was amenable to dilatation with oesophageal bougies under direct vision. We have had the opportunity of making a post-mortem examination on only two of our cases. One patient died nine months after operation from erosion of his aorta by the growth, which was found to have recurred extensively, together with a chain of secondary glands extending upwards into the neck; incidentally, this was not one of the cases in which the aorta had been penetrated by the introducer. The other died after two months, the growth having spread to the lung and involved the glands.

STATISTICAL SUMMARY WITH SHORT CASE RECORDS

Number of cases treated	...	...	...	16
Alive and well (three years)	...	...	...	1
Lived more than one year	...	...	...	2
Considerable temporary relief	...	...	...	11
Not relieved	...	...	...	2
Able to remove gastrostomy tube	...	...	...	3

Specimen Cases

R. A., 62. Three months' dysphagia. Biopsy: squamous epithelioma. Ten seeds to growth at level of D 7. Two years later: "Quite well, swallows ordinary food, has gained weight." Three years after operation: "Still swallowing well; at work."

W. S., 75. Three months' dysphagia. Admitted in the last stages of starvation and thirst, unable to swallow fluids for forty-eight hours. Gastrostomy. One month later radon to growth at level of D 8. In one week could swallow

liquids; in two weeks could take cornflour and gruel. Re-oesophagoscoped—healed scar. Refused dilatation, preferred to keep gastrostomy tube to supplement mouth feeds. Lived fifteen months.

J. F., 55. Two months' dysphagia. Fluids only. Gastrostomy. Radon to growth at level of D 4. Oesophagoscoped one month later—healed scar on left side, growth still present on right. Twelve more seeds. Gastrostomy tube removed one month later, because swallowing was so good. Died nine months later of erosion of aorta by growth, following reopening of gastrostomy.

R. S., 71. Four months' dysphagia, semi-solids only. Radon to growth at level of D 5. Six months later can swallow bacon and egg, which he seems to prefer for all meals. Oesophagoscoped—healed scar which dilates well with bougies. Is coming up again for further dilatation. The improvement in swallowing was not evident until a month after operation, and we were correspondingly despondent. It is much too early to be optimistic about this case, but the outlook at present is hopeful.

A. G., 68. Five months' dysphagia, soft solids only. Radon to growth at level of D 8. One month later could swallow cheese, bread-and-butter, and fish. Died four months later. This is a typical instance of the temporary improvement observed in the majority of cases.

S. M., 80. Four months' dysphagia, fluids only. Radon to growth at level of D 4. No improvement. Oesophagoscoped two months later; growth smaller in size, but not much altered in appearance. Stricture very tough, will not dilate up. Refuses gastrostomy.

A CASE OF VON RECKLINGHAUSEN'S DISEASE

BY

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With a Note on the Psychology

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(With Special Plate)

Below I append some notes on a complete case of von Recklinghausen's disease, occurring in a man who was also the subject of a right inguinal hernia, which required operation by an unorthodox incision.

He was an agricultural labourer, aged 57, who first noticed some nodules on his chest when he was 16. He could give no family history of a similar condition, but he had not kept in touch with his relatives. He had been twice married, and had a family of nine children, the two eldest of whom, girls of 20 and 15, were stated to have pigmented patches on the dorsum of the forearm.

The whole of the anterior and posterior aspects of his thorax and abdomen were covered with typical nodules—soft, with firm centres, sensitive to touch, and ranging in size from a pea to a hen's egg. There were also nodules on the face, and the scalp was covered with them. The arms and legs were affected to a lesser extent, and there were small nodules on the palms of the hands and the soles of the feet. "Blue spots" were numerous on the flexor aspects of the arms. There was a pigmented area 2 in. square on the medial aspect of the left thigh. There was well-marked bronzing of the skin, especially of the face. The hair of the scalp was markedly coarse. There was none on the chest, but the pubic hair was of the normal adult male distribution. There were no patches of adipose deposit.

Notes on the other systems affected are as follows:

Nervous.—There were no neurological signs or symptoms beyond a slightly increased left-knee jerk, and a left-sided deafness of the conduction type.

Endocrine.—The features were suggestive of the acromegalic type, and the supraorbital ridges were marked. The radiogram showed a definitely deepened sella turcica, but there was no

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FIG. 1.—Antero-posterior view, showing a double ring of radon seeds encircling the lumen of the gullet in the region of the growth.

FIG. 2.—Similar case. Note pair of radon seeds have wandered from site of growth to pleural cavity (see arrow).

WILLIAM MARSHALL AND ALEXANDER W. WATT:
RECKLINGHAUSEN'S DISEASE

GRAHAM W. CHRISTIE AND RICHARD FAWCITT:
MULTIPLE HYDATID CYST

Radiograph showing three hydatid cysts in lungs.