SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY

February 4th, 1955

President: JOSEPHINE COLLIER, F.R.C.S.

Discussion on Malignant Disease of the Middle Ear and Meatus

OPENING papers by Mr. J. W. S. Lindahl, Mr. John Boland and Dr. Ralston Paterson will be found on pp. 457 and 468.

THE PRESIDENT said that they would all agree that they had had a very stimulating opening to the discussion, and the speakers should be thanked for their comprehensive survey. The discussion should follow two lines: first, earlier diagnosis, and, secondly, the best management. Claims had been put forward for radiotherapy without previous surgery, and, by Mr. Lindahl, for surgery followed by radiotherapy.

MR. W. A. MILL said that it was fairly obvious that there was a difference of opinion on this subject, some favouring early and extensive surgery, followed by radiotherapy, and others claiming that early surgery was not helpful if the case was to be treated by radiotherapy. Everybody emphasized the difficulty of exact diagnosis, and these two most interesting papers had given a very good picture of the clinical findings and the symptoms and the difficulty of deciding exactly the extent of the lesion. The lesion was often more extensive than was at first thought.

He proceeded to show by means of lantern slides a case which was shown to have very extensive lesions indeed. It was very difficult before operation to define exactly the extent of the disease; he had been interested in both papers to notice that the number of cases of carcinoma of the external meatus alone was relatively small. That had been his own experience, and it was very often impossible to say until operation what was the extent. One often found the middle ear and the mastoid involved where at first sight the involvement appeared to be only of the meatus.

Some figures collected from St. Thomas's Hospital and The Royal Marsden Hospital from the end of the war until 1953 might be of interest. He was grateful to a number of colleagues, particularly at the National Throat, Nose and Ear Hospital who had helped him with information about their cases (Table I).

Radiotherapy was given by Dr. J. A. C. Fleming and Dr. M. Lederman.

Four of the cases were in old radical mastoid cavities. Three of these were quite definitely in the meatus and the middle ear did not seem to be involved;

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TABLE I.

CARCINOMA OF EAR—23 CASES

				Survival
	Squamous celled	6	2	6 years 9½ years
Meatus	Adenocarcinoma	1	1	2 years
	Basal celled	1	0	Died free of growth 1 1/12 years
	Middle ear .. .. .. Meatus and Mastoid	11	5	1¾ years 2 years 3¾ years 6 years 7½ years
Radical Mastoid Cavity		4	3	4 years 4½ years 4¾ years

in the other case the disease started in the tympanic cavity, and the patient developed facial paralysis and died. They had all had radical mastoid operations many years previously varying between 17 and 20 years. They were people who probably looked after themselves in that they had treatment for their chronic discharging ear originally, and then they were prepared as soon as anything went wrong to have any symptom attended to fairly early. These three cases which had survived were all early cases.

Chronic otitis media was the precursor of the disease. In three of the cases there were discharging ears for over 30 years. It had already been mentioned that there was rather more pain than had been expected. Pain was a relatively early symptom, and this was borne out in one of these radical mastoid cases in which the patient had quite a small plaque in the meatus, easily removable, and the reason she came up was because she had pain.

He thought it might be interesting to look at the prognostic value of facial paralysis and glandular involvements (Table II). In both the papers presented

TABLE II.

CARCINOMA OF EAR—23 CASES

		Facial Paralysis		Nodes	Died Carc. Present	Died Carc. Free	Alive
		Partial	Complete				
Meatus	8	2 Dead	0	1 Dead	4	1	3
Middle ear	11	3 1 dead	3 2 dead	3 2 dead	5 5	0 Untraced	5
Radical Mastoid Cavity	4	0	1 Dead	0	1	0	3

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that morning reference was made to the comparative rarity of glandular deposits and the extreme rarity of distant metastases even in the terminal stages, and this was borne out in the series for which he showed figures, in which only one of the 23 cases had distant metastases, and almost always if the patient died it was due to the local disease and its extensions with intracranial involvement.

It would seem that to get improved results—and nobody could pretend that the results were very satisfactory—it was necessary to make an early diagnosis. One ought perhaps to be a little quicker in taking a biopsy. One had sometimes operated on a case and instead of finding an ordinary chronic mastoid infection one had found something which strongly suggested the presence of malignant disease. Readiness to take a biopsy, both in out-patients' and in the theatre, was something which might help to an early diagnosis.

He had rather gathered that Dr. Boland thought that excisions before operation were not necessarily a good thing. But there was no doubt that excision did help the patient because it relieved his pain very often. The form which the excision should take, he supposed, was a thing they should think about in view of these papers from America. The trouble was, of course, that one could only excise piecemeal and nibble away, so that the risk of leaving infective islets must be very great. The desirability of really adequate radiotherapy afterwards had been emphasized in both papers.

Block dissection did not seem to be such a commonly needed operation in these cases as had been supposed. The important thing was that the patients did die of local recurrence in nearly all cases, and one should concentrate on getting rid of the disease locally as far as possible by extensive surgery and local radiotherapy. The cases he had mentioned were almost all treated by radical mastoidectomy or some extension of it.

The other question that Mr. Lindahl had raised concerned the centralization of the treatment of cases. He himself would be rather against the centralization of cases. If there was a case of carcinoma in a department and the patient kept attending the department, the people working there had it in mind and would tend to think of it all the time. If there had been a positive biopsy they would be stimulated to take other biopsies, and the possibility of malignant disease would be always before them. Otherwise there was a great risk that it would pass out of mind. Further, if these cases were followed up in the department and not segregated in some other department it would help to keep the disease in view. It would be most interesting to hear what others had to say about that.

In addition to trying to cure these patients one had the unfortunate job of trying to make them more comfortable. He felt that excision or radical mastoidectomy did relieve many patients of their pain, even though there was no possible chance of removing the disease completely. Then with radiotherapy many patients were helped palliatively; the pain was reduced. It would be interesting to know whether they had had any help from the neuro-surgeons in the same way in relieving pain.

It was obvious from the results that they ought to do a little more than they did already to help these cases.

MR. MAXWELL ELLIS said that throughout the morning the comparative

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rarity of this condition had been stressed. He himself had now seen seven cases. Mr. Lindahl had seen five. In the last issue of the *Annals* seven more were recorded. Up to last summer he had found only 120 cases in the literature, and yet in no time at all some twenty cases had turned up. Therefore it was not perhaps quite so rare as had been thought. It could not be altogether fortuitous that some people had seen so many cases. All these cases suddenly being reported could not be due entirely to a fallacy in figures. A distinct association with otorrhœa had been mentioned; this was not very noticeable in his own cases, only three of which were associated with chronic otorrhœa, but it seems clear that there is such an association. He would suggest that possibly in these cases the carcinoma might start in a very indolent sort of way, presenting itself as a few granulations almost, or perhaps quite, indistinguishable from the ordinary granulations seen in disorganized middle ears. A radical operation was done on these cases *qua* infection and not *qua* malignant disease. That operation might be enough to get rid of the disease. Unless routine biopsy was performed of material obtained at operation, as at the Royal National Throat Hospital, some cases may be lost and may turn up again because they had been neglected by the patient and had thus been allowed to reach a later stage. He merely threw that out as a suggestion as to why more of these cases were now being reported. There may even be an untraced association with cholesteatoma.

He had said (Ellis, 1954) that radical surgery was desirable, and had even sketched out certain regions into which this surgery might go. But on thinking of what Mr. Boland had reported, he was not convinced that his earlier thoughts had been entirely right and that extensive surgery was as good as he had once thought. Also, in a large series of cases it was clear that metastases did occur in a fair proportion.

Adenocarcinoma of the meatus, which had been mentioned, was not a particularly malignant tumour, and in an early stage it could be dissected out almost like a cyst. The speaker showed on the lantern screen some examples of early adenocarcinoma treated by purely local excision. In the one case to which he called special attention the patient had remained well for just over four years and showed no signs of recurrence at all. Another case was in a woman aged 80 who died two years later from another cause.

Squamous epithelioma of the meatus itself was reasonably treated by excision if excision was sufficiently wide. He showed an illustration of a patient who had a radical excision down to the bone, and now had a very elegant prosthesis which was really quite unrecognizable at first sight. He thanked the authors of the papers for a very interesting opening of the discussion.

REFERENCE

Ellis, M. (1954) *Brit. med. J.*, **1**, 1413.

Dr. M. Lederman: During the period 1933-54, 51 patients with neoplasms of the mastoid, middle ear and meatus have been seen at the Royal Marsden Hospital, mostly as a result of our long-standing co-operation scheme with the Royal National Throat, Nose and Ear Hospital, and more recently with the Metropolitan Ear, Nose and Throat Hospital.

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Table I shows the histological varieties of tumour encountered, the large majority of the tumours being squamous carcinoma. Table II shows some of the more important clinical features of the natural history. There is no apparent significant difference in sex incidence: as is well known, these tumours spread locally and only occasionally give rise to lymph node metastases (6/35 cases). Distant spread is rare and occurred in one case (metastases to liver and lungs).

TABLE I.
HISTOLOGY
51 Cases

Squamous carcinoma	36*
Melanoma external auditory meatus	2
Ceruminoma external auditory meatus	2
Schwannoma	1
Metastasis in mastoid from ca. breast	1
Eosinophil granuloma mastoid	1
Haemangioma	1
Neurofibroma	1
Glomus Jugulare	6*

* One not confirmed by biopsy.

TABLE II.
THE ROYAL MARSDEN HOSPITAL, LONDON
SQUAMOUS CARCINOMA : 1933-1954

Site	No. seen	Sex		Age distribution	Facial Palsy	Parotid invasion	Dural invasion	Regional glands	
		M.	F.					+	—
External auditory meatus	13	7	6	21-76 years	1	2	1	2	11
Middle ear and mastoid	23	10	13	42-76 years	8	3	3	5	18

The technique of treatment should be surgery and radiotherapy in combination but with prime emphasis on radical surgery first. The irradiation of squamous cancer in bone is nearly always an unrewarding task and usually a combination of both surgery and radiotherapy is necessary if success is to be achieved. In the case of cancer invading the neighbouring bones forming the upper jaw, the radiotherapist's problem is fairly simple since:

(1) These neoplasms are accessible to clinical examination.
(2) Their extent can be determined with a high degree of accuracy radiographically.
(3) With the exception of the malar bone, all the bones are thin and do not give rise to troublesome radionecrotic complications when irradiated.

In these circumstances, whilst relying on the combination of surgery and radiotherapy, a full course of radiotherapy should be given first in most cases and radical surgery subsequently undertaken.

In the case of cancer of the temporal bone, the conditions are very different. The disease is relatively inaccessible to clinical examination and radiological examination is not easy. The true extent of a given tumour can only be properly appreciated by surgical exploration. The difficulties of destroying

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cancer infiltrating bone are considerably magnified when such infiltration affects the densest bone in the body: the chances of destroying the cancer diminish and the chances of producing radionecrosis increase.

Preliminary surgical removal of the diseased bone is therefor essential if the radiation treatment is to be given a fair chance. The further benefits gained by preliminary removal are:

(1) The patient is relieved of a mass of diseased bone with consequent relief of symptoms.
(2) The full extent of the disease can be assessed.
(3) An inspection cavity within the temporal bone becomes available,
(4) Drainage is provided.

The surgical approach used, whether post-auricular or endaural, does not matter greatly to the radiotherapist. An unhealed post-auricular wound is no bar to radiation treatment and usually such wounds heal satisfactorily under radiotherapy. The presence of a normal pinna is equally no problem and removal of the pinna in the absence of gross invasion by neoplasm is never indicated as a preliminary to radiotherapy.

Technique of Radiotherapy

External radiation is the technique of choice. In my opinion, the use of local radium either in the external meatus or applied in any cavity provided in the temporal bone is contraindicated. Occasional cures after sleeve resection and radium application to the meatus have been reported but such local methods are fundamentally bad radiotherapy.

At the Royal Marsden Hospital, London, teleradium or telecobalt therapy is used for early lesions limited to the meatus but for extensive tumours a combination of telecurietherapy and supervoltage X-rays is employed. The important points in technique are:

(1) The radiation used should be of such a quality that it is not readily absorbed in bone. There is a wavelength range below which (400 kV.) the radiation is selectively absorbed in bone as compared with soft tissue and above which (5 MeV.) the radiation is selectively absorbed in soft tissue as compared with bone, although to a lesser extent. The radium or Cobalt bomb and the 2 MeV. supervoltage X-ray machine provide a very satisfactory quality of radiation for treating cancer cells in bone.
(2) The number, size and shape of the fields used depend on the extent of the disease as determined at operation. The lymph node areas are treated only if nodes are palpable.
(3) As radiation is a non-specific method of treating cancer, a "cancer dose" does not exist and therefore no standard dose of radiation should be prescribed or relied upon. In this series dosage varied from 5,000 to 8,000 r over periods of 4 to 6 weeks, the actual dose given in a particular case depending on the response of the individual patient and the tumour.

Results

Table III gives the results obtained. The sinister reputation of this form of cancer is clearly well merited, but it is by no means hopeless and the patients'

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best chance lies in a bold, concerted attack by both surgeon and radiotherapist acting in close accord.

TABLE III.

RESULTS OF TREATMENT : 1933-1954

	Total Number	3-Year Results 1933-1951	5-Year Results 1933-1949
External auditory meatus ..	13	4/10	1/8
Middle ear and mastoid ..	23	3/10	2/9

MR. R. THOMAS showed lantern slides of a case of rhabdomyosarcoma of the petrous bone in a child of 2, including photograph, X-rays, histology and post-mortem specimens. There had been little response to radiotherapy. He also showed photographs of a case of carcinoma of the middle ear. The petrous bone had been exenterated as far as the internal auditory meatus. The growth recurred after 2 months and radiotherapy was used. Six months later he had to remove a cerebral hernia by diathermy. The patient, a woman of 50, is, however, now well and free from recurrence five years after the beginning of treatment.

PROFESSOR F. C. ORMEROD said that it was necessary to differentiate between carcinomata of the external meatus and of the middle ear—as they behaved in entirely different ways. An epithelioma of the external meatus began as a small raised patch of rough tissue which gave rise to a great deal of pain. The pain was the first and most marked sign. An epithelioma of the middle ear might occur after a long continued suppuration and was characterized by the formation of granular tissue, with bleeding and, often, pain. An epithelioma might occur in a cavity following a mastoid operation. It was usually indicated by a change in the characteristics of the cavity—discharge became more purulent, perhaps bloodstained, pain began and increased and exuberant granulation filled the cavity. On the whole and with reasonably early cases, those in the external meatus were usually cured, those in the middle ear rarely. The speaker demonstrated at a meeting of this Section in 1930 a female patient who had been treated for carcinoma of the external ear by Mr. Gilbert Chubb. She remained quite well for twenty years and in 1950 she developed carcinoma in the middle ear on the opposite side. This had also responded well to radiotherapy and both ears are now healthy.

It would be a dangerous procedure to segregate these cases in a limited number of clinics. These cases are infrequent and require prompt recognition and diagnosis. It is therefore important that cases of carcinoma of the ear should be treated and followed up in the clinic where they were discovered as far as was possible. They naturally collected in or around clinics where efficient radiotherapy was available as it was not possible to treat carcinoma of the ear without radiotherapy.

REFERENCES

ORMEROD, F. C. (1930) *J. Laryng.*, **45,** 645.
——— (1929-30) *Proc. Roy. Soc. Med.*, **23,** 1242.

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MR. HECTOR THOMAS thanked the speakers for their most interesting and valuable papers, and craved the indulgence of the Section to prolong the discussion a little longer. The first case that came under his care was in 1939. She was a woman of 47. She had previously been treated as a case of chronic suppurative otitis media, principally on account of pain and objective, but not subjective, otorrhœa. On exploring the mastoid, he was struck by a signal absence of suppuration or cholesteatoma formation. Biopsy of granulation tissue revealed a carcinoma. Three months later, the mastoid was re-opened with a diathermy knife and an extensive radical operation performed. This was followed with intra-cavity radium—a dose of 500 mg. hours being given. Owing to the war, contact with the patient was only re-established in 1945. She then had a recurrence in the lower part of the meatus. A radiation dose of 2,500 r in ten days was given—a dose considerably less than advocated by some of the speakers. The patient remains well, and apparently free from recurrence.

The other case he wished to report was, he thought, even more interesting as similar pathology had not been reported by any of the speakers. A man of 57 presented with a history of otorrhœa since childhood, pain, hoarseness, facial paralysis and deafness. There was a unilateral paralysis of the palate, the tongue and the larynx on the corresponding side. Involvement of the VIIth, Xth, XIth and XIIth cranial nerves was inferred. At operation, a large growth was excised, leaving a cavity 2 inches deep at one point. Professor Gough, to whom he was indebted for the slides shown, reported an adamantinoma—a variant of carcinoma. In retrospect, a radiation dose of only 4,000 r delivered in ten days four and a half years ago appeared to have been sufficient to prevent a recurrence to date.

Of the eight cases under the care of Mr. Robert Owen, Mr. Alun Thomas and himself, whose records were complete, he had found pain to be a constant feature. Its character suggested a neuritic origin and was different from the pain of other otitic conditions. From his limited experience, he thought that operation plus radiation was the ideal treatment and that perhaps a smaller radiation dose than that generally advocated was adequate. Only three deaths due to extension of the disease was reported, the remaining five being clear after 15, $4\frac{1}{2}$, 4, 4 years, respectively, one having died of other causes after 6 years.

DR. CONSTANCE A. P. WOOD stressed the difficulty of making a true assessment of the relative value of surgery and radiotherapy in the treatment of this disease. An answer to this question could be obtained if in a series of properly randomized cases, alternate patients were treated by surgery and radiotherapy.

MR. A. MACKENZIE ROSS described the case of a man, aged 54, who appeared to do well under deep X-ray therapy. He developed a recurrence, however, plus a subdural and temporal lobe abscess and has since died.

Postscript (*14.3.55*): Post-mortem findings showed that the temporal lobe on the left was infiltrated by a carcinoma which arose in the left middle ear and destroyed a considerable amount of the petrous temporal bone.—A.M.R.

MR. HENRY SHAW said that he had been fortunate to have had recent experience in the United States of certain cases which had been treated by the surgical methods described by Mr. Lindahl, namely, two-thirds resection

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of the temporal bone. Out of thirteen cases, two of the patients had died from complications, but of the remainder, five had gone for at least one year without recurrence.

MR. J. W. S. LINDAHL, in replying on the discussion, said how interested he had been in the paper by Mr. Boland and Dr. Paterson. It seemed obvious that one must not make hard and fast rules about anything. He thought that some operations on the temporal bone of the sort he had indicated had a place in this field, and he had been interested to hear Mr. Shaw corroborate that.

DR. RALSTON PATERSON said that in spite of the great interest of the discussion, he found that he had not a single definite question to answer. He would like, however, to use the President's invitation to reply to express his appreciation of the invitation to Mr. Boland and himself to prepare and present this paper.

He had one important comment to make on the general tenor of the discussion. The interesting point was the common denominators which ran through all these contributions, with, on the one hand, emphasis on pain as a dominant feature, and on the other the attention paid to the problem of early diagnosis. The key fact is that the essence of this problem of early diagnosis lay in their own hands. In this instance they were not talking about the patient failing to call the doctor early, they were not talking about the general practitioner failing to send up the patient. They were talking of their own failure to pick up certain signs from the background of an indolent history, and to appreciate that these signs should suggest a carcinoma.

In the paper by himself and Mr. Boland they were not discussing the value or otherwise of radical early attempts at curative removal of the lesion. Any such radical operation must clearly stand on its own merits as to whether it succeeded or failed. What they were talking about was the question of non-curative surgery designed merely to clean out a cavity to determine the extent of a lesion whose nature was already diagnosed. With that as the subject they were talking about, he would confess quite honestly that they were themselves very much surprised at seeing the way in which the figures actually came out. They had not expected it. Out of ten cases cleaned out just before operation none survived; out of sixteen cases not cleaned out but merely diagnosed, five survived.

As regards the technique of the radiotherapy, this was not the place to enter into discussion of this subject, but if one was realistic it was fair to say that the acid test of the technique was results in growths of the external meatus. That was a disease which if it was really an external meatus lesion should be curable. He thought the external meatus could therefore be used as a test of what was effective.

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