MÉNIÈRE'S DISEASE

THE RESULTS OF THE TREATMENT OF SIXTY CASES BY ALCOHOL INJECTION THROUGH THE FOOTPLATE OF THE STAPES

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ENOUGH experience has accumulated at the hands of many observers, since Lake (1904) first operated on the labyrinth for vertigo 40 years ago, to make it certain that such operations will cure the acute vertiginous attacks associated with Ménière's disease, always provided of course, that the responsible end-organ has been adequately dealt with.

At first sight it would have seemed essential to destroy completely the nerve elements involved but more recent experience shows that this is not necessary.

Thus in the Portmann operation in which the saccus only is opened and in the series reported recently by Cawthorne (1943), in which a small segment of a canal is ablated, the results produced are satisfactory.

It would seem therefore that if a communication be established between the endo- and peri-lymphatic spaces the desired result will be attained.

One serious drawback to the various operations employed, whether for the division of the vestibular nerve or for an approach to the saccus or vestibular apparatus, is that they involve a proceeding of some severity and technical difficulty.

Ten years ago the idea of a more direct approach occurred to me and after some experimental work on the cadaver I came to the conclusion that it should be possible to enter the vestibule with a needle through the stapes footplate. I first carried out this manœuvre on a patient in 1935 (No. 5). An injection of 1 c.c. of absolute alcohol was made with a dental anæsthetic syringe under general anæsthesia. This case was successful as far as the cure of the vertigo was concerned, but to my great regret, owing to the use of an excess of alcohol, she was left with a permanent facial palsy and in addition had a middle-ear suppuration which lasted for a period of three months. I showed this case at a meeting of this

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Section in 1935 (Wright, 1936) and she remains free from vertigo at the present time.

This successful disaster led me to a careful consideration of the technique and it was only after a further period of two years of experimentation that I felt justified in repeating the operation.

During this interval I evolved and eventually published a somewhat complicated technique (Wright, 1938) which as a result of further experience I have now simplified (Wright, 1942).

Technique of Operation. The operation, the results of which I am now giving, consists essentially in the injection of a small quantity (not more than two minims) of alcohol by means of a special syringe through a perforation in the footplate of the stapes into the vestibule.

The degree to which the alcohol fills the labyrinth, and therefore the amount of destruction produced, is probably variable.

The stapes is discovered by probing with the needle in its general situation the tactile sensation produced by perforating this bone and then passing onwards for 2 mm. being characteristic. It is most important that those who wish to employ this operation should gain experience of these tactile sensations previously in the post mortem room.

I consider that the use of special instruments is of importance, thus the aural speculum should have a lateral opening so that the shortest possible length of needle may be used. This needle should be bent at an angle and be without a point. A sharp needle will be found to catch in the soft tissues or bone, thus preventing appreciation of piercing the footplate.

I have found the special syringe, which is spring-operated with a trigger release, to be of great assistance enabling the operator to employ his tactile sense to the utmost.

Not more than 2 minims of alcohol should be injected and it is helpful to have this coloured with methylene blue so that its escape into the middle ear or elsewhere can be recognized.

A general anæsthetic would seem to be essential but need only be of the briefest duration.

A careful watch should be kept on the patient's face by the anæsthetist so that should the needle touch the facial nerve the resulting twitch will give warning and the injection not be made.

A towel with a central opening for the pinna allows the patient's face to be illuminated with the avoidance of dazzle to the operator.

I have been unable to detect any immediate reaction in the patient to show whether the vestibule has been entered or not.

On returning to consciousness the patient shows all the usual signs of an acute vestibular disturbance but this varies greatly. As Cawthorne (1943) has pointed out this is probably due to the variability in the amount of functioning end organ remaining before the operation.

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In some of the cases a certain amount of watery discharge has occurred for a period of days due either to the irritative effect of the alcohol on the middle-ear lining or possibly to a perilymph leakage. In no case has this discharge persisted for more than a brief period with the exception of the first case mentioned in which an excess of alcohol was injected.

It is my practice to get the patient out of bed on the fourth or fifth day and out of hospital in from ten days to a fortnight. The rapidity with which the individual readjusts to the loss of a labyrinth varies greatly, but in all cases this readjustment is most difficult under conditions of darkness.

I entirely agree with Cawthorne as to the usefulness of a specially designed physiotherapy during the period of rehabilitation. As an example of its importance I should mention the case of a railway employee from Swindon. Having returned from Bristol to Swindon apparently doing well and within a fortnight of the injection, he remained for six months off work tottering once weekly to the doctor's surgery for a certificate. As a result of re-admission to hospital with active physiotherapy for three weeks he returned to work and has continued so up to the present time.

In this series of cases I have failed to enter the labyrinth on five occasions at the first attempt. Of these five cases I was successful on the second attempt in three, (Nos. 31, 35, 49) and on the third attempt in one case (No. 4). The fifth represents one of the failures reported (No. 39).

These preliminary failures with one single exception occurred during my early experience with the operation.

I have now performed this operation on 60 cases and present the results in a similar form to those given to this Section by Cawthorne (1943) so that they may be comparable and in the summary below I have included his figures in brackets.

The detail of results obtained in individual cases is appended at the end of this article.

TYPE OF CASE

Age—40 and under ..	9	(16)
over 40	32	(36)
over 60	11	(3)
over 70	8	(none)

The above figures demonstrate rather dramatically one important advantage of this little operation, i.e. that in view of its trivial nature it can be employed with little regard to the patient's age or physical condition.

Sex—Male	28	(33)
Female	32	(19)

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Duration of Symptoms—

Under two years	24	(21)
Over two years ..	34	(31)

The results are only recorded in regard to the two symptoms of vertigo and tinnitus.

As far as hearing in the other ear is concerned sufficient detail has not been obtained to allow of any deduction but on one or two occasions patients have volunteered that they seemed to be hearing better owing to the diminution or absence of disturbing noises in the bad ear.

RESULTS

Vertigo—Improved ..	55	(46)
Not improved ..	5	(4)
Total ..	60	50
Tinnitus—Improved ..	33	(22)
Not improved ..	16	(24)
Unrecorded ..	9	(4)
Total ..	58	(50)

The remaining two cases were free from tinnitus before and after the operation.

It will be seen that Cawthorne's figures and my own bear a very close resemblance.

It is gratifying to note that in such a considerable proportion of cases a favourable influence is exerted on the tinnitus.

In regard to the five failures in which no improvement now exists, this in three is probably due to involvement of the other ear (Nos. 22, 25, 32) after intervals of six, five and three years respectively. In one case the operation was unsuccessful (No. 31) although a brisk post-operative reaction took place after the second attempt. I have had no opportunity of assessing the reason for this failure. The fifth is a Flying Officer of whose case I give further detail below (No. 19).

Complications. These consist of two cases of facial palsy and one of meningitis.

As I have mentioned, the first case operated on has a permanent facial palsy. The second case of facial palsy occurred in the third of the series and cleared up in the course of a few weeks.

The history of the occurrence was as follows: W.M., Male, aged 51 (No. 35)—Four years vertigo and vomiting with deafness and tinnitus

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right ear, remnant of hearing in right ear. 30.8.37 right labyrinth injection. Facial twitch when needle inserted resulting in facial palsy but no vestibular upset. One week later injection repeated with vigorous reaction. Facial palsy cleared within three months and one year later reports no vertigo or tinnitus and at work.

Had I asked the anæsthetist to warn me of any facial movement on insertion of the needle this accident would not have taken place.

The case of meningitis was dramatic and somewhat puzzling: W.C., male, aged 45 (No. 44)—Left deafness and tinnitus with attacks of vertigo and vomiting for one year. 27.5.43 injection left labyrinth. Two months later, i.e. 18.7.43 admitted comatose with history of 24 hours headache and discharge from left ear for some weeks. Pneumococcus recovered from C.S.F. and condition rapidly resolved with chemotherapy. Left hospital on 2.8.43 apparently well and ear dry and healed. No vertigo. Three months later, i.e. 30.10.43 re-admitted—acute meningitis 24 hours duration. Ear still healed. Pneumococcus recovered from C.S.F. and rapid recovery with chemotherapy. One year later well and at work, no vertigo, no tinnitus.

This patient had some degree of chronic tonsillar and nasal sinus infection.

I was interested to note that in the discussion which took place at the meeting of this Section at which I showed my first case, Sidney Scott (1936) mentioned that he had had a case of fatal pneumococcal meningitis following on an alcohol injection through the external canal.

There are two cases which I should like to briefly relate. The first of these illustrates well the enormous benefit which such an operation can confer.

Mrs. M., aged 77 (No. 5)—For 28 years deafness right ear, severe vertigo, tinnitus and vomiting. Fallen on many occasions and on one fractured malar bone. Bedridden for four years. Has had double operation for glaucoma. Hearing—right ear nil, left normal. 22.12.41 right labyrinth injection. Two years later reports no vertigo, can get about and regards the injection as a miracle.

The second one raises a problem which is new to me, i.e. to what degree does the loss of a labyrinth interfere with an air pilot's efficiency: Captain H.H.P., aged 51 (No. 19)—Deafness right ear many years. No tinnitus. Two months severe rotatory vertigo and vomiting, getting worse. Hearing—right ear nil. Left—whispered voice six feet. Middle ears normal. Has been flying for 30 years but never giddy while flying. On 15.4.44 right labyrinth injection. Brisk reaction. Was flying again as co-pilot within a fortnight and after an interval of eight months reports has had several attacks, not so severe and only after flying. Slight unsteadiness on movement which is getting worse. No tinnitus and other ear as before. Has flown 60 hours since the injection.

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Indications for the Operation. The advantages of this operation are that it is not dependent on the age or physical condition of the patient. Like other labyrinthine operations it does destroy any residual hearing in the ear concerned, but loss of hearing in one ear is not a severe disability and a trivial price to pay for the removal of acute vertiginous attacks. The rapidity with which relief is produced is also of great importance.

The outstanding drawback to all operations on the labyrinth or vestibular nerve is that no influence is exerted on the underlying cause of the disease so that the other side is liable to become involved at a later date.

Believing as I do that the disease is a local reaction to the toxins of infection I only operate on the labyrinth when an attempt at the elimination of such infection is found to be either inadvisable or unsuccessful.

In this relation I have on a few occasions combined a labyrinthine injection with tonsillectomy with the idea of avoiding subsequent involvement of the other side.

Possible Future Development. The successful results obtained by Portmann's operation and the case of Cawthorne, in which the membraneous labyrinth is opened but not destroyed, have made me wonder whether as a future development of my operation through the stapes, it would not be worth while trying either a simple needling which would certainly produce an opening of the membraneous labyrinth or possibly this combined with some degree of suction.

It would seem theoretically possible that such a needling, by producing a communication between endolymph and perilymph spaces, might even produce some improvement in hearing combined with a relief of vertigo.

Summary

An account is given of the essential details of the author's technique for the destruction of the vestibular end-organ by an alcohol injection through the stapes footplate.

Detail is given of the results in sixty cases over a period of ten years and these are compared with those of Cawthorne in which the membraneous labyrinth is dealt with by the mastoid route.

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TABLE OF RESULTS.

No.	Name.	Sex.	Age.	Duration years.	Years elapsed.	Vertigo.	Tinnitus.	General State.
1	P.H.	M.	54	9	1 10/12	Slight on movement.	Abolished.	Normal life. At work.
2	M.F.	F.	61	4	2	Abolished.	Abolished.	Invalid. Cardiac asthma.
3	E.B.L.	F.	72	10	1	Abolished.	Less.	Normal life.
4	M.E.J.	F.	70	15	4	Slight occasional.	Unchanged.	Normal life. (Three injections.)
5	M.M.	F.	50	32	3	Abolished.	Unrecorded.	Normal life. (Permanent F.P.)
6	E.M.V.	F.	72	1	3	Abolished.	Less.	Normal life.
7	F.M.B.	M.	45	18	5	Abolished.	Abolished.	Normal life. At work. Director.
8	E.W.	F.	53	14	5	Abolished.	Less.	Normal life. Climbs ladders and drives car.
9	G.M.	F.	77	28	2	Abolished.	Abolished.	Formerly bedridden. Now gets about.
10	W.R.I.	M.	43	10	1 9/12	Abolished.	Less.	Normal life. Schoolmaster.
11	L.R.G.	F.	53	29	2 7/12	Abolished.	Unchanged.	Normal life.
12	M.B.	F.	44	5	2	Slight on movement.	Less.	Normal life.
13	M.G.	F.	64	11	2	Abolished.	Less.	Normal life. Involvement other ear.
14	V.I.C.	F.	32	3	4	Abolished.	Less.	Normal life.
15	F.L.	F.	49	21	5	Abolished.	Unchanged.	Six years after injection involvement other ear.
16	M.P.	F.	59	9	8/12	Abolished	Abolished.	Normal life.
17	M.V.B.	F.	70	4	1 2/12	Slight on movement.	Less.	Limited activities.
18	W.K.C.	M.	63	2	6/12	Slight on movement.	Less.	Normal life. At work. Auctioneer.
19	H.H.P.	M.	51	30	8/12	Attacks after flying.	None.	Active flying duties.
20	W.E.	M.	72	9/12	6/12	Slight on movement.	Unchanged.	Normal life. At work.
21	F.M.Y.	F.	70	10	7/12	Abolished.	Unchanged.	Normal life. At work. Farmer's wife.
22	L.C.	M.	50	1 6/12	5	Attacks less severe.	Unchanged.	Involvement other ear. Not working.
23	C.W.	M.	68	1	1	Abolished.	Unrecorded.	Died of cerebral thrombosis 1 year after injection.
24	A.P.	F.	61	10/12	3	Abolished.	Abolished.	Normal life. At work. Nurse.
25	J.V.	F.	64	?	3	Severe attacks.	Unchanged.	Involvement other ear. Not working.
26	H.D.	M.	44	8	3/12	Abolished.	Abolished.	Failed to follow up.
27	R.L.	F.	74	15	4	Abolished.	Abolished.	Normal life. Hears better, good ear.
28	W.G.	M.	36	15	5	Slight on movement.	None.	Normal life.
29	L.P.	F.	42	9	5	Abolished.	Abolished.	Normal life. At work in factory.
30	A.G.	F.	66	2	2/12	Abolished.	Unrecorded.	Failed to follow up.

No.	Name.	Sex.	Age.	Duration years.	Years elapsed.	Vertigo.	Tinnitus.	General State.
31	M.R.	F.	45	6/12	3/12	Unaltered.	Unrecorded.	Failure. ? cause. (Two injections.)
32	C.D.	F.	64	3	6	Unaltered.	Unchanged.	Involvement other ear.
33	R.L.	F.	66	15	7	Slight on movement.	Less.	Normal life.
34	G.C.	M.	40	1	7	Abolished.	Less.	Normal life. Working overtime.
35	W.M.	M.	51	4	1 2/12	Abolished.	Abolished.	Normal life. At work. Plumber. (Transient F.P.) (Two injections.)
36	R.L.	M.	44	10	1	Abolished.	Less.	Normal life. At work. Gardener.
37	G.A.	M.	55	4	1	Abolished.	Unrecorded.	Normal life. At work.
38	H.P.	M.	34	6/12	1 8/12	Slight occasional.	Less.	Normal life. At work.
39	S.S.	M.	56	14	1 3/12	Slight occasional.	Unchanged.	? Technical failure.
40	M.M.P.	F.	45	2	1 9/12	Slight on movement.	Unchanged.	Normal life. At work.
41	V.M.	M.	37		1 9/12	Slight on movement.	Less.	Normal life. At work underground.
42	A.W.	M.	48	4	1 10/12	Abolished.	Less.	Normal life. At work.
43	C.A.	M.	19		1 6/12	Abolished.	Unrecorded.	Serving in Navy.
44	W.C.	M.	45	1	1 7/12	Abolished.	Abolished.	Normal life. At work. (Two attacks meningitis).
45	E.D.	M.	49	1	1 10/12	Slight on movement.	Unchanged.	Normal life. At work.
46	R.B.	F.	56	2	1 5/12	Abolished.	Less.	Normal life. At work.
47	G.P.	M.	55	2	1 5/12	Slight on movement.	Unchanged.	Normal life. At work.
48	J.L.	M.	53	1 6/12	1 3/12	Slight on movement.	Unchanged.	Normal life. At work.
49	A.W.	F.	62	10	11/12	Abolished.	Unchanged.	Normal life. At work. (Two injections.)
50	E.P.	F.	33	2	11/12	Abolished.	Less.	Normal life. At work.
51	H.J.L.	M.	47	6/12	9/12	Abolished.	Abolished.	Normal life. At work.
52	C.M.C.	F.	50	7	10/12	Slight on movement.	Less.	Light work only.
53	A.M.	F.	38	6/12	4/12	Abolished.	Less.	Normal life. At work.
54	H.D.	F.	59	6/12	7/12	Abolished.	Less.	Normal life. Was bedridden.
55	H.B.	M.	50	2	3 8/12	Abolished.	Unrecorded.	Died hypertension and heart failure.
56	G.E.S.	F.	46	9	2/12	Abolished.	Unchanged.	Early result.
57	S.W.P.	M.	56	10	2/12	Abolished.	Unrecorded.	Early result.
58	H.J.	M.	33	16/12	5/12	Abolished.	Less.	Early result.
59	M.A.J.	F.	64	5	5/12	Abolished.	Unchanged.	Early result.
60	F.P.	M.	44	18/12	3/12	Abolished.	Unrecorded.	Early result.

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