April 11: Highest temperature recorded to-day 99·6° F. Eyes examined by Dr. Sym: "A curious œdematous aspect of the retina around the *right* disc; slight undue fulness of veins in both discs—very slight indeed and not with certainty pathological."

*Second blood report:* Gram-positive diplococcus. Heavy growth.

April 12: In morning patient felt quite well. Temperature rose to 101° F. in afternoon. Patient's colour a muddy white.

April 13: Temperature at midnight was 101·6° F., pulse 116; at 8 a.m. temperature 98·8° F. Patient feels quite well.

April 14: No further rise of temperature; 97·8° F. at 8 a.m., pulse 100. *Blood-count:* leucocytes 7,500. Fresh blood-culture taken.

April 15: Temperature has remained normal and patient feels quite well. *First dressing:* Scant discharge on dressings. Wound looks clean, healthy granulations in cavity; re-packed with iodoform worsted.

*Blood-culture report:* "No growth found."

April 16: Temperature remains normal and patient continues to feel well. Tongue remains coated despite aperients. *Urinalysis:* Acid, 1020; slight trace albumen; negative for sugar.

On April 24 patient had an attack of follicular tonsillitis which lasted for four days; the closure of the posterior wound postponed. On May 7 the posterior wound was closed under $CHCl_3$ anæsthesia.

Discharge continued for some weeks from the left meatus. The patient was last seen on June 10, 1919, and the M.T. was found to be completely healed. As no meatal flap was made the opening through the posterior meatal wall into the antrum has not remained patent. Hearing is very good.

# SOCIETIES' PROCEEDINGS.

## ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

*May* 31, 1918.

*President:* H. J. Banks Davis, M.B.

*Abridged Report.*

### A Series of Consecutive Cases in which the Mastoid has been operated on for Acute Suppurative Inflammation, B.I.P. (bismuth, iodoform, and liquid paraffin) inserted, and the External Wound Sutured in its Entire Length at the Close of the Operation.[1]—Herbert Tilley.

The President: Does Mr. Tilley only smear the preparation in the bony-cavity, or does he plug the wound with it? I have used too much B.I.P. in some of my cases, and my ward sister told me that cases in which a plug was used did not heal well. The less often you dress these cases the better. Poisoning following the use of this substance is mostly due, not to the iodoform, but to the bismuth ingredient, which produces a blue line on the gums, nausea and abdominal pains. I have seen several cases which were identical with those of lead poisoning.

[1] The complete paper appeared in the Journal of Laryngology, Rhinology, and Otology, March, 1919, p. 73.

https://doi.org/10.1017/S175514630002031X Published online by Cambridge University Press

Dr. Dan McKenzie: Bismuth-iodoform paste makes a wonderful difference to a cortical mastoid case, rendering reactionary inflammation a thing of the past. One or two cases of iodoform poisoning have been reported, but I do not know of any at the Central London Hospital, though we have used it in a large number of operations. I have used the paste for radical mastoid cases. It does not seem to retard the growth of the graft, which is found to flourish in the midst of the paste. I have even filled up a brain abscess-cavity with it, the only inconvenient sequel having been the discharge of the paste for some time afterwards. The case did well. I do not altogether support Mr. Tilley's plan of closing the whole of the wound at the time of the operation; I think it wiser to omit the stitches at the lower end and leave a drain in for a couple of days, because one is never sure of having got to the end of the disease. There may be retaining pockets, and closure of the whole wound in that case might upset the balance between the exudation from the raw surfaces and the organisms and their products in the open cavity, even in the presence of iodoform, which, in spite of what bacteriologists say, is a powerful antiseptic.

Mr. W. Stuart-Low: In Mr. Tilley's cases the line of incision is very long and very far back, and there is a considerable thickening—indeed, in half of the cases there is an evident keloid; in two this is exceptionally thick. This keloid condition is very probably a result of the bismuth in the B.I.P., as the powdered bismuth together with iodoform and oily particles between the edges of the healing wound must be somewhat of an irritant. I have heard of surgeons having X-ray pictures taken of limbs in which B.I.P. has been applied and the dark shadow clearly showing masses of unabsorbed bismuth lying in the tissue and between the ends of the bones in defectively united fractures. If this is so in the limbs, it must be so in the bony cells of the mastoid and ear cavities. I am sure it must be detrimental to the hearing to have the B.I.P. paste left on the meatus, attic, and tympanic cavity. I tested the hearing in these cases shown to-day, and found it defective in most of them to the extent of 25 per cent. Under my treatment the average time is eight days when the patient passes out of the hospital with the wound quite healed and the hearing completely restored. I am very particular to remove all dressings from the ear on the third day, substituting a dressing with an ointment composed of white wax 1, ointment of ammoniated mercury 3, which is applied warm to the wound and makes a perfect shield. If there is one place in the body where B.I.P. should never be used it is in the ear.

Mr. H. L. Whale: With regard to poisoning, there has been a suggestion of that where the wound has been near the mouth, the idea being that some was swallowed: one case in our hospital died from what might have been iodoform poisoning. Where treatment is near the Eustachian tube, or the infundibulum or the mastoid, this is a possibility to be borne in mind.

Dr. Jobson Horne: B.I.P. may be an excellent dressing for ordinary operations, but it is not safe to jump to the conclusion that what can be used with impunity in other parts of the body is also good for a special region such as the ear. Possibly this treatment may be useful in exceptional cases, but the results, even if they do take a little less time, do not show any advance on those obtained by other technique.

Mr. Richard Lake: I have used iodoform on every mastoid case I have done, without exception, and I have been doing these operations for quite a long time now. I will relate one case because, like others, I have,

https://doi.org/10.1017/S175514630002031X Published online by Cambridge University Press

of course, made mistakes. A lady was brought to me with an acute mastoid condition. I opened it, and healing occurred in a short time. She came up to see me again, complaining of exactly the same symptoms. I did not examine her thoroughly, but told her to go straight into the nursing home, and I would come and operate on her there next day. When I took off the shell of the mastoid, there were the trabeculæ already formed, and lying in this, dry cells; there was no pus nor any inflammation, but there were the iodoform grains, which had remained there three or four years. I have no doubt that the lady, if she had been skiagraphed, would have shown the dark shadow to which Mr. Stuart-Low alluded.

Mr. Somerville Hastings: My experience of B.I.P. has been limited to its removal from a good many parts of the body, including one mastoid, on which the operation was performed three months previously. The case was that of a soldier who was very ill with meningeal symptoms, and I opened up his mastoid freely and removed a mixture of bismuth paste and pus which I found there, in contact with the dura. The symptoms cleared up, and he is now well.

Mr. Hugh Jones: I have used B.I.P. for twelve months for the radical operation. I find it so often gets between the flap and the underlying surface, interfering with healing, that I have now stopped using it for the operation dressing. At the first dressing and afterwards when healing of the soft parts has taken place I use B.I.P.; this is an easier process than packing the cavity with gauze, which children resent. In two or three of Mr. Tilley's cases I would not have had the courage to close them up entirely at once; for instance, where the sinus was exposed, I should have made an opening into the meatus, then closed the posterior opening. I agree that the less B.I.P. is used—within limits—the better the results will be, and the more of it is used, the greater will be the interference with healing.

Dr. Kelson: It has been a distinct advance. I noticed that the cases Mr. Tilley showed to-day were in children, also that they were acute cases, by which I understand there was no previous ear disease. That being so, I am not certain than in the hands of a skilled and experienced surgeon, who was sure of removing all the disease and had the courage to close them up without any B.I.P. at all, they might not have healed; and it does not prove that the trick was done by the iodoform. We had, at the London Throat Hospital, a house-surgeon who thought he would cure all mastoid cases with iodoform, and dressed them all with it. Many of them did very well indeed. But I had later to say that in certain of my cases no iodoform was to be used, as it resulted in very exuberant granulations, and the discharge was blocked. When spirit drops were substituted these cases did well.

Dr. James Donelan: Dr. Dan McKenzie touched the weak spot in the method, and some time there will be a concealed focus which will give trouble. I have had a case in which I had to remove bismuth from over such a focus.

Mr. W. M. Mollison: My experience with B.I.P. is small. I tried it some months ago in children, but was disappointed with the results. From what I have heard to-day it is probable I used too much; I put in as much as I could, and sewed up the wound.

Mr. Tilley (in reply): I never cut a flap in an acute cortical mastoid operation; I have not seen occasion to do so. An important point in the use of this preparation as laid down by Prof. Rutherford Morison, and as proved by some of my earlier cases and by my subsequent successes,

https://doi.org/10.1017/S175514630002031X Published online by Cambridge University Press

is that one should not put in a mass of B.I.P., but use it rather as a smear. If you put in a large quantity you may have to dissect out the bismuth afterwards, and there will be a discharge of iodoform granules from the drum perforation for some weeks after the operation. If you dry the wound and smear the parts fairly freely with the B.I.P., you will do the right thing. I agree with Dr. McKenzie—it does not kill the skin-grafts when these are used in the radical operation. I must take exception to Dr. McKenzie's statement that when operating on acute cases you never can be sure you are at the end of the disease. Humanly speaking, you *do* know when you have dealt with all the suppurating cells, and certainly when the disease is extensive you have removed the whole mastoid, including the tip. So I do not think we need fear that there will be any complication following the use of this preparation and immediate closure of the wound—*e.g.* that the lateral sinus will become thrombosed because you have overlooked some focus of suppuration. I agree with Dr. McKenzie that, occasionally, wounds will be found to resent iodoform; there is a personal idiosyncrasy against iodoform. I take exception to Mr. Stuart-Low's statement that the cases I showed all have keloid; some of them have no trace of it. And a keloid scar has nothing to do with this particular method; one has often seen it when another or no antiseptic has been used. In a few months the keloid will get white and eventually disappear. I have not seen a case in which it caused any trouble whatever and in which it did not eventually shrivel down into a white scar. If keloid occurs in a lady who is very distressed about it, it can be got rid of by the application of radium. Mr. Stuart-Low also said that 25 per cent. of these cases have loss of, or defective, hearing That is a misconception; they hear extraordinarily well. To three of the boys I spoke in a whisper, asking them an unexpected question, and the correct answer was prompt. It is misleading to say the cases shown hear worse than after the cortical operation without the use of B.I.P. I have not seen a case of iodoform poisoning in my own practice, but I saw one in the King George Hospital, in which a patient had a yellowish-green membrane on the palate and extending to the inside of his cheek, and looking something like a large diphtheritic membrane. The mucous membrane bordering the membrane had a smoky aspect. It was a very puzzling case until the urine was tested, and then bismuth was found in it. After the B.I.P. was stopped, the membrane disappeared. With regard to age, most of my cases during the last six months have been in children, with the exception of one or two private patients and four soldiers. The best consistence of B.I.P. is that of ordinary cream. With regard to Mr. Hugh Jones's remarks on the granulation-tissue, what I take to happen is this: When you have smeared your wound with B.I.P. and sewn it up, you get blood filling the mastoid cavity; the blood cannot decompose, and eventually you will get ordinary granulation-tissue penetrating the aseptic blood clot. I recently performed an external operation on a chronic frontal sinus empyema on the right side. It became infected from the suppurating left sinus, and in three weeks' time I had to open up the latter. On examining the right sinus I found the granulations were pale and of tough consistence, unlike the granulations I have seen in any other bony wound. That was the only occasion on which I have had occasion to open up a wound after B.I.P. has been used. Dr. Kelson mentioned some points about immediate closure of the wound. If I had not had complete faith in the antiseptic I would not have dared to close the wound at once in some of these cases with excessive œdema. Three of

https://doi.org/10.1017/S175514630002031X Published online by Cambridge University Press

my patients had a "bacon-rind œdema" ½ in. thick, but after my earlier cases I had such confidence in B.I.P. that, after thoroughly cleaning and drying the wound, I smeared it with the antiseptic cream and closed the wound, and I propose to continue the practice until I come across the inevitable case of a "hidden pocket," which Dr. McKenzie speaks of.

**Chronic Suppuration of the Middle Ear and Cholesteatoma treated by Radical Mastoid Operation, with Retention of the Cholesteatoma Matrix.—J. Dundas Grant.**—The patient, a young married woman, was first seen by me on April 12, 1918. She had suffered with ear disease since childhood and was now subject to attacks of giddiness with headache. On the removal of a crust hiding the upper part of the membrane it was found that there was erosion of the outer wall of the attic and probably of the bony casing of the labyrinth as a result of cholesteatoma. The postero-superior part of the cavity was filled with epithelial *débris* and a mass was extracted. The attacks of vertigo diminished, but recurred as the cholesteatomatous desquamation proceeded. I therefore did the *radical mastoid operation* on May 18. The "bridge" had already been eroded away. I cleared out the desquamative *débris* very carefully so as not to destroy or dislodge the matrix, which was fairly white and sufficiently homogeneous and adherent to pass muster as a skin-graft. The plug was removed in four days' time; the parts were found to be exceptionally dry, the matrix was adherent and has been daily mopped with biniodide and pure spirit. At the present time (May 31) it forms a yellowish-white lining to the postero-superior part of the cavity, but of course the bare surface of the osseous "ridge" is not quite covered with the young velvety granulations, though at the margin of the raw surface epithelialisation is already taking place.

Mr. W. Stuart-Low: I have made it a practice to do the same thing myself when the lining is evident and shiny. The result is exceedingly good, both as regards recovery from the operation and restoration of hearing.

Mr. Mark Hovell: Is there any special advantage in iodoform over iodine preparations? In course of time the other iodine preparations will become absorbed and disappear, whereas my experience is that iodoform does not disappear.

Dr. Kelson: I tried this method in some cases, but in the majority of them, when the spirit drops were stopped, the discharge came on again soon afterwards.

Dr. Jobson Horne: It would be premature to express an opinion upon the result of this case. The reason of any difference of opinion as to the advisability of leaving *in sitû* the lining membranes of a cholesteatoma is easily explained. The term "cholesteatoma" is regarded in a different sense by different persons. A true, typical cholesteatoma is a very rare, but very definite, pathological process in the mastoid bone. To leave the lining membrane when operating upon a true cholesteatoma could not, from the very nature of the disease, bring about a cure; on the contrary it would promote a recurrence. If, on the other hand, the term "cholesteatomatous" is to be applied to cases having only a most remote resemblance to a true cholesteatoma, then it does not matter very much what is left behind as a lining membrane.

Dr. Dundas Grant (in reply): It is not very unusual to see the bridge and the outer wall of the attic eroded away as the result of the development of cholesteatoma. I think such cases are generally suitable

https://doi.org/10.1017/S175514630002031X Published online by Cambridge University Press

for retention of the matrix, and the results have been permanent. I ask you to assume for the moment that it is a long-standing mechanical pressure which causes the erosion of bone, and that it is only in long-standing and neglected cases that "cholesteatoma" with a well-developed matrix has a chance of forming.

**Orchitis and Deafness.—Dan McKenzie.**—A male, aged sixty-two, came to consult me on March 12, 1918, with the following history: A few weeks previously he had been attacked with "influenza," which necessitated his keeping in bed for several days, the temperature rising to 104° F., and there being general muscular aching, but no headache, and none of the symptoms of "cold." A week after he had recovered from this attack and had gone back to business he woke up one morning to find that he had gone absolutely deaf in the right ear. There had been no previous indication of any ear trouble, no tinnitus, no discharge. And there never had been any vertigo, either before or since the deafness appeared.

On examination the patient's statements were confirmed; the hearing in the right ear was entirely abolished, that in the left ear being normal. The caloric reaction was normal. With cold water (22° C.) nystagmus appeared in thirty-five seconds and was accompanied with normal vertigo.

The patient's natural anxiety was to know whether the left ear was likely to go suddenly deaf as the right had done. But I could not venture upon any opinion until he casually let fall the remark that during the "influenza" his testes had become enlarged and tender for a few days, one after the other. There was nothing in his past or present history to account for this orchitis, which had passed away without any local sequela, any more than there was anything to explain the onset of sudden and complete deafness. But it occurred to me that he had been attacked with the virus of mumps, which, as it is known occasionally to do, had spared the salivary glands but had set up orchitis, and that what we had to deal with was probably nerve-deafness from mumps. I therefore confidently assured my patient that the hearing in his sound ear would not be suddenly blotted out as that in the right had been.

Deafness in mumps is not infrequently unilateral, and its onset, though sudden, is unaccompanied by vertigo. The nature and situation of the lesion in mumps-deafness is unknown, it would seem, but the virus evidently selects the acoustic and spares the vestibular element of the auditory-canalicular apparatus.

In view of the above case, the possibility of sudden deafness following ovaritis becomes obvious.

Mr. Somerville Hastings: The case is useful to many of us, because cases which often cause great difficulty are those of internal ear deafness, sometimes unilateral, in which a cause cannot be found, many of which come on suddenly. In future I shall always ask whether there has been swelling of the testicle in these obscure cases.

Mr. W. M. Mollison: In cases of unilateral deafness of rapid onset toxic absorption is doubtless often the cause. One always asks for a history of mumps, but a very small proportion of patients with unilateral deafness have mumps. I think in this case the orchitis in an expression of mumps. The origin of the toxic absorption is not known in most cases. It has been said that if unilateral deafness is due to a toxic absorption, there is no reason why it should not get well. I have recently seen a case which shows that recovery can occur. The patient

https://doi.org/10.1017/S175514630002031X Published online by Cambridge University Press

was a man who was almost entirely deaf in the right ear and I gave a hopeless prognosis. He came back to me after six months, with the hearing perfect on that side.

The PRESIDENT: A sister at a London hospital suddenly went giddy and became very deaf, and I was asked to see her. She had lost a good deal of hearing. Two days later she was so much worse that she was unable to hear anything at all in that ear. She had intense tinnitus. The onset was so sudden that I hoped it might be hysterical. On my advice she went away for a month, but returned no better. She saw another aurist, and a very hopeless view was taken of the case. However, her hearing has now largely come back, though it is not so good as before the attack. I do not know what the explanation was, but the moral is, not to be too certain that these people will not recover hearing.

Dr. KELSON: My experience is that this deafness from mumps is a distinct entity and with a bad prognosis, and that if they do not recover in six months they are deaf for ever. If deafness persists on both sides, there is not much to be done for them but lip-reading.

Dr. DAN MCKENZIE (in reply): An interesting question has been raised in regard to unilateral deafness due to toxins. There are toxic conditions which affect one side only. One is apt to think that if it is bilateral it is due to a general condition. But otosclerosis, a bilateral disease, is very probably due to a local condition or cause. There is no rule in that regard: we must find out everything individually, in detail. As Mr. Mollison says, a large number of the cases are due to a toxin which has a specific action on the auditory nerve or the cochlear ganglion, inducing a lesion which causes deafness. I agree with Dr. Kelson that most cases of mumps-deafness are permanently deaf.

https://doi.org/10.1017/S175514630002031X Published online by Cambridge University Press