

three, only 1 being under ten, and that was a case of combined cerebral and cerebellar abscess.

Lastly, it is a feature of some interest that external mastoid signs were never observed in association with temporo-sphenoidal abscess, but occurred in about half the cases where cerebellar abscess or meningitis caused death.

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### **SOME FURTHER EXPERIENCES OF THE OPERATIVE TREATMENT OF SCARLATINAL OTITIS.<sup>1</sup>**

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At this time last year I submitted to this Society the results of an attempt that I had then recently made to deal with certain intractable cases of scarlatinal otitis by the performance of the radical mastoid operation at a somewhat earlier stage than usual. I now propose to describe briefly the results I have had since that time, in order that, if time permits, they may be discussed by this meeting.

May I, in the first place, make a short personal explanation? I find that I am supposed to have advocated last year the performance of the radical operation in the acute stage of scarlatinal otorrhœa. Evidently, in the enforced hurry of the moment, I could not have made myself clear on that point, though I think my meaning is evident if the paper itself be read. What I intended to put forward was that it might be advisable to perform the radical mastoid operation in selected cases before the patient left hospital, instead of waiting several months, or even years, until the temporal bone was extensively diseased. In point of fact, the operation was usually performed in from one month to three months after the onset of the otorrhœa.

I have now performed the radical mastoid operation seventy-one times altogether in scarlatinal cases—that is to say, in fifty-three instances last year. In these fifty-three there has been one death, and in no other case has the operation failed to effect the object for which it was performed, viz. to cure the otorrhœa.

The death was due to the onset of meningitis on the fifth day after the operation; this was found (*post mortem*) to have arisen

<sup>1</sup> Communicated to the Otological Society of the United Kingdom, June 23, 1906.

by lymphatic metastasis, and not by direct extension from the site of the operation.

The remaining cases were all kept under observation in Monsall Hospital until the discharge had ceased for at least a fortnight and the cavity appeared to have thoroughly healed after repeated inspections.

The period at which the operation was performed varied from one to two months after the onset of the otorrhœa. In no case was it undertaken until intra-tympanic treatment had been tried for at least a month without obvious effect. The number of cases of otorrhœa treated was 340, so that the radical mastoid operation was performed in 15.6 per cent.

It is thus obvious that in the majority of cases intra-tympanic treatment was successful. I mention this as it is an obvious criticism of any radical procedure that simpler methods might have sufficed to effect a cure.

The period elapsing between the operation and the cessation of the discharge varied from four to ten weeks: the average time was six to seven weeks.

The operation was performed in the usual manner and the tip of the mastoid was explored in each case and the posterior meatal wall removed as freely as possible. The gouge and mallet were used for the first incision in the bone, but the greater part of the work was done by the gouge alone or by Jansen's forceps; the burr was used but sparingly, and only towards the conclusion of the operation in a few cases. The posterior auricular wound was sewn up in all cases, a small drainage-tube being used at the lower angle for forty-eight hours only. Pure peroxide of hydrogen was used freely during the operation, the cavity being subsequently douched with 1 in 500 izal solution, and then packed with 10 per cent. izal gauze. Reflected limelight was employed during the operation in every case, and the wound was dressed, as a rule, on the third day through the meatus which was purposely made as wide as possible, Ballance's flaps being usually employed for this purpose. Light packing was generally used for a fortnight to three weeks subsequently.

The results as regards hearing have been satisfactory. In no case was the hearing worse after the operation, in the great majority of cases it had improved moderately or slightly, in six a very great improvement took place. For this purpose the observations of the nurses on the patient's condition during convalescence were taken into account as well as the tests made by my colleagues from

time to time, and by myself before the discharge of the patient from hospital. In the majority of the cases a marked improvement in the patient's mental condition, apart from the state of the hearing, also took place. It is evident, therefore, that the performance of the radical mastoid operation at a comparatively early stage does not, as a rule, damage the hearing.

It has been said, however, Why do a radical mastoid at all at this stage? Why not open the antrum simply, and reserve the radical operation for a future period, if necessary? To this I would reply that I have been only concerned with hospital patients of the poorer class. Whenever there has been the possibility of obtaining special advice for children subsequently, and time was no object, I have not hesitated to allow them to leave hospital, with their ears discharging, to be under the care of their usual medical adviser. Especially in this part of the world parents do not believe in the existence of a thing that they cannot see, and advice to take their children to otologists or to an otological clinique is almost invariably ignored.

Then, in scarlatinal otitis there is almost always an inflammation, however slight it may be, not only of the bone immediately surrounding the mastoid antrum, but also of the entire mastoid process right down to the tip. A simple antrotomy, therefore, hardly suffices. It is necessary to remove bone extensively, and I have frequently found sinuses leading from the antrum right to the mastoid tip, and on following these up small localised abscesses in the latter situation. A fairly extensive removal of bone is, therefore, necessary in any case, whether the tympanum be touched or not.

Then, I do not altogether feel satisfied with the results of these antrectomies, and I certainly regard a simple antrotomy as of practically no value at all. During the last year I have performed the antrectomy in thirty-eight cases; in eight it was done as a last resort in the acute stage of hopelessly septic cases, and of these three died of the original toxæmia. In the remainder it was performed for the cure of a local mastoid abscess in fifteen cases, and as a substitute for the radical mastoid operation for the cure of otorrhœa in another fifteen. In these latter the wound took longer to heal than in others where the radical operation had been performed; in all there was marked subsequent deafness, and in five the otorrhœa was not cured.

I am of opinion, therefore, that it is not advisable, at all events where time is of any account, to commence by a preliminary antrotomy or antrectomy. In the bulk of cases careful intra-

tympanic treatment, as I have said, effects a cure; where this fails, and as soon as it is certain that it has failed, I prefer the radical mastoid operation.

In conclusion, I wish to emphasise the fact that in scarlatinal otitis we have an infection of the whole tract, from Eustachian tube to the mastoid cells, antrum, and tympanum, accompanied by a definite osteitis where that tract is bony, and not simply a catarrhal inflammation of the lining membrane of the tympanic cavity. Moreover, the signs of this osteitis of the mastoid, even when it has gone on to suppuration, are often entirely absent clinically. I have during the last year examined the temporal bone in all cases except two that have died from scarlatinal septicæmia, and have repeatedly found pus and carious bone on the mastoid side where there has been no otorrhœa whatever during life. In two cases during the last year this had given rise to pyæmic suppuration in one or more joints, and was only detected at the autopsy, though in all cases a most rigorous watch was kept on the ear and its adnexa while the child was alive.

This being so, it is difficult to regard as adequate the treatment pursued in many fever hospitals, which consists in having the ears syringed by the nurse with one or more antiseptic lotions. The need for the appointment of otologists to fever hospitals is, in my opinion, imperative and pressing. Moreover, the resident staff should be skilled in the ordinary routine procedures of at least elementary otology.

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### THE MODE OF CONTINUITY OF THE FIBRES OF THE AUDITORY NERVE WITH THE AUDITORY SENSE EPITHELIUM AND WITH THE NUCLEI IN THE HIND BRAIN.<sup>1</sup>

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THE cochlear division of the auditory nerve in man consists of fibres which arise from the bipolar cells of the spiral ganglion, and pass from there peripherally to the auditory sense epithelium,

<sup>1</sup> A preliminary communication to the Otological Society of the United Kingdom June 23, 1906.