Residual recurrence following staged canal wall up tympanoplasty for middle ear cholesteatoma

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ABSTRACT

Objectives: Residual recurrence is a critical issue in canal wall up tympanoplasty for middle ear cholesteatoma. Staged procedures are employed when the residual lesion is suspected at the primary surgery. However, there are few reports that describe how frequently and where the residual recurrence occurs after staged procedures. We demonstrate the residual recurrence in our 10 year experience.

Study design: Retrospective study.

Methods: Between 1998 and 2007, 94 of the 184 ears with cholesteatoma were operated on using planned staged procedures. Postoperative managements including microscopic, oto-endoscopic, audiometric examinations were performed once per 4 to 6 months. Computed tomography (CT) was performed annually till at least five years postoperatively.

Results: In the follow-up period there were 4 residual recurrent cases (4.3%; 4/94), although no recurrent case caused by retraction pocket was seen. 3 of the 4 recurrent cases were diagnosed with CT, and the recurrent lesions were verified as a cystic mass in the epitympanum, facial canal or tegmen plate. They were all school boys under 15. A localized transmastoid removal was performed. Residual diseases in the 2 cases arose from the same place as having been identified and removed at the second-stage operation.

Conclusion: Residual recurrence is not rare in canal wall up tympanoplasty even though staged procedures are employed. It occurred more frequently in boys. In our limited experience, it is a considerable issue that the residual disease may have arisen from remnants that have been removed at the second-stage operation.

INTRODUCTION

Early diagnosis of the residual recurrence is thus necessary to prevent the complications. CT and MR imaging have contributed to the diagnosis (1-3). MR imaging has overcome CT in accuracy of the diagnosis of residual cholesteatoma (1, 2), but Yung and Karia reported that CT was still available in case of cholesteatoma (1). We wanted to investigate a method to diagnose the residual recurrence correctly before symptoms associated with the occurrence have occurred in this study.

PATIENTS AND MATERIALS

Between 1998 and 2007, 184 ears with cholesteatoma, which have no history of previous ear surgery, were operated on at Takanoko Hospital. For 63 small attic cholesteatoma ears, a one-stage CWU tympanoplasty with or without mastoidectomy not requiring a second-stage operation was applied. A staged canal wall up tympanoplasty with mastoidectomy was applied to 94 ears in which cholesteatoma involved both the ossicles and the mastoid cavity. In 27 ears with more advanced cholesteatoma having extensive bone destruction of the posterior ear canal, a canal wall down (CWD) tympanomastoidectomy was performed. 30 and 70 degree endoscopes were used for the assistance of cholesteatoma removal in case of CWU surgery.

Postoperative managements included microscopic, oto-endoscopic, audiometric, and CT examinations for all patients operated on. The examinations except CT were performed once per 3 to 4 months. CT was performed twice at the first year after surgery, and was also performed annually till at least five years postoperatively. When the recurrence was suspected, the examinations were performed more frequently than usual. The surgical intervention for the residual recurrence was determined by the followings; 1) Residual cholesteatoma was visualized by oto-endoscopy, 2) A mass lesion gradually enlarging was indicated by CT.

The study protocol was approved by the ethics committee of Takanoko Hospital, and informed consent was obtained from all subjects before surgery.

RESULTS

In the follow-up period there were eight residual recurrent cases (8/ 184; 4.3%), although no recurrent case caused by retraction pocket was seen. Four cases had undergone one-stage canal wall up (CWU) tympanoplasty with mastoidectomy. Staged CWU tympanoplasty with mastoidectomy had been performed on the remaining four patients. Six of the eight recurrent cases were diagnosed with CT, and the recurrent lesion was indicated as a cystic mass enlarging as the time passed (Fig 1). The details of the six cases were listed in the Table 1. Oto-endoscopy enabled the diagnosis of the recurrence by visualizing a cystic mass behind the tympanic membrane in the remaining two cases (Fig 2). One had undergone one-stage canal wall up (CWU) tympanoplasty with mastoidectomy, and staged CWU tympanoplasty with mastoidectomy had been performed on the other. No complication such as fistula of the labyrinth, facial nerve paralysis, or intracranial invasion was seen in the recurrent cases.

A localized transmastoid removal (Fig 3) was performed after the diagnosis in seven of the eight recurrent cases. CWD tympanomastoidectomy was done in one case who had undergone mastoid cavity obliteration with hydroxyapatite. Any surgical or postoperative complications were not encountered in the revision cases.

DISCUSSION

Early diagnosis of the residual recurrence is thus necessary to prevent the complications. CT and MR imaging have contributed to the diagnosis (1-3). MR imaging has overcome CT in the accuracy of the diagnosis of residual cholesteatoma (1-3), but Yung and Karia reported that CT was still available in cases of cholesteatoma (1). We wanted to investigate a method to diagnose the residual recurrence correctly before symptoms associated with the occurrence have occurred in this study.

Periodical examinations of CT and oto-endoscopy can contribute the early diagnosis of the residual recurrence in such limited cases, although MR imaging seems better for the diagnosis in near future.

The recurrent cases except one were being carefully observed by CT from the first suspicious to the final diagnosis of the recurrence. The final diagnosis to determine the revision surgery was done by persisting enlargement of the cystic mass indicated by CT from 12 to 40 months. Postoperative managements could not be performed on one case (Case 3) during last three years because of his drop out. In this case, the revision surgery was immediately done because CT indicated a large round mass lesion close to the lateral semi-circular canal in the epitympanum.

A localized transmastoid revision surgery was performed seven of the eight recurrent cases. This operation could remove the residual cholesteatoma correctly without damaging the ossicular chain reconstructed or tympanic membrane. The hearing thresholds unchanged compared with those preoperatively in the seven cases.

CONCLUSIONS

Our postoperative managements of the cholesteatoma for the early diagnosis of the recurrence, which combined with computed tomography (CT) and oto-endoscopy were appropriate because of the early diagnosis of the recurrence. The postoperative managements provided a localized transmastoid removal of the disease.

REFERENCES

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