Although stapes surgery for the correction of conductive hearing loss (CHL) in the adult population is well-established, it has received less attention in the literature in regards to the pediatric population. Conductive hearing loss that may be amenable to correction with stapedectomy or stapedotomy procedures in the pediatric population may be due to congenital stapes fixation, malformation, otosclerosis, or tympanosclerosis.

Prior to considering stapes surgery, careful examination should be made to exclude the following: common causes of CHL in children: middle ear effusion, tympanosclerosis within the tympanic membrane, perforation, retraction, cholesteatoma, and aural atresia. House, Robinson, Cole, Murphy, and Welling have all shown that stapes surgery results for otosclerosis in the pediatric population are as good as those in adults. The purpose of this study is to review our institution’s experience with pediatric stapes surgery over a 20 year period, including indications, techniques, outcomes, and complications.

**RESULTS**

Audiometric results for 11 patients with 12 operated ears were reviewed and are summarized in Tables 1 and 2. Ten of these patients were female and two male. Mean age at time of surgery was 13.1 ± 4.4 years (range 7-18 years). Three patients had surgery on both ears, but records were incomplete for 2 patients for their second ears and only results were one ear were included. Otosclerosis and congenital stapes fixation were the most common indications. Three patients carried diagnoses of genetic syndromes (Turner’s, Russell-Silverman, osteogenesis imperfecta). Ten ears underwent small fenestra laser stapedotomy procedures, one ear required the use of a drill, and one stapedotomy was performed in conjunction with a mastoidectomy for one patient who had ossicular malformation. Four different types of prostheses (fat wire, McGee, Robinson, SMART piston) were used. Complications included temporary dizziness for one week in one patient, persistent need for hearing aids in four patients, and need for revision surgery in one patient with Turner’s syndrome who experienced incudal erosion. There were no cases of permanent sensorineural hearing loss or facial nerve paralysis.

Overall, there was no significant difference in mean postoperative ABG whether stapes surgery was performed for congenital stapes fixation versus otosclerosis (p=0.15). As there was only one patient with tympanosclerosis, no comparison could be made in regards to this versus the other diagnoses.

The mean age of patients diagnosed with congenital stapes fixation was 9.8 years, as opposed to 16.0 years for those diagnosed with otosclerosis. As shown in Table 2, a greater percentage of patients achieved a postoperative ABG of ≤10 dB when the diagnosis was otosclerosis versus congenital stapes fixation (75% vs. 20%). As only one patient was diagnosed with tympanosclerosis, an adequate comparison could not be made for this diagnosis.

**CONCLUSIONS**

This review of our institution’s experience over a 20-year period shows that stapes surgery is not commonly performed in the pediatric population. Our review is limited by a large percentage of incomplete records rendering a small sample size for analysis. However, patient age and type of prosthesis used did not seem to affect outcome. Better postoperative ABG closure was achieved when the diagnosis was otosclerosis versus congenital stapes fixation, which is consistent with what has been reported in the literature. No major complications were experienced, and stapes surgery in the pediatric population appears to be safe. However, given the potential risk of permanent sensorineural hearing loss, all treatment options, including hearing aids and observation, should be discussed with patients and their families. In addition, decision-making for surgery may be deferred until the pediatric patient can participate in the process.