SSCD Postoperative Outcomes: a Series of 156 Repairs

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Introduction

Superior Semicircular Canal Dehiscence (SSCD) is an emerging neurosurgical subspecialty characterized by a myriad of audiological and vestibular symptoms, such as autophony, tinnitus, hearing loss, and dizziness [1-15]. Presentations are confirmed by high resolution computed tomography (CT) [1-15]. Surgical resolution has been varied for multiple symptoms, including hearing loss and dizziness [1,4-5,8-9,11]. Given the mixed results of symptom resolution of SSCD patients after surgical repair, we herein analyze the largest cohort of SSCD patients managed by a single neurosurgeon and ENT surgeon to date.

Methods

For this study, we identified 120 patients with 156 surgical repairs for SSCD. Gender, age, surgical side, history of ear trauma, and previous ear affliction were noted. Symptoms of autophony, amplification, aural fullness, tinnitus, hyperacusis, hearing loss, vertigo, dizziness, imbalance, oscillopsia, and headaches were recorded preoperatively and postoperatively. Fischer's Exact tests, Wilcoxon-Mann-Whitney tests, and multiple variable regression were performed using SAS version 9.4.

Table 1. Patient Characteristics

Patients, n	120
Age, yrs	
Mean ± SD	
55 ± 12.7	
Range	
28-89	
Sex, n (%)	
Female	
76 (63.3)	
Male	44
(36.7)	
Trauma	27
Bilateral SSCD, n (%)	
53 (34)	
Side of Repair, n (%)	
Left	
86 (55.1)	
Right	70
(44.9)	
Osteoporosis, n (%)	8
(5.13)	
Serum Calcium (normal: 8.7-10.5)	
Mean ± SD	
9.24 ± 0.61	
Range	
8.0-10.5	

Results

Of 120 patients, the majority were female (n=76). Median age was 55 (± 12.7 years) and median follow up was 14 months (± 284.1). Previous ear affliction was present in 64 patients and previous trauma in 27 patients. Bilateral SSCD was present in 53 cases, with the right side (n=70) being the most repaired. Of the cohort, there were 5 surgical revisions and 11 incidents of CSF leak. There were no significant

Discussion

The present study analyzed the largest cohort of SSCD repairs by a neurosurgeon and otolaryngologist. Interestingly, female patients were more likely to have hearing loss and dizziness postoperatively compared to their male counterparts. In contrast, males showed a greater improvement in hearing postoperatively. Perhaps one explanation for this phenomenon lies in the differences in the physiology between men and women with a given median age of 55 years. Our group has previously postulated that hair cells in the ampulla of semicircular canals may experience greater sensitization and depolarization as a result of supplemental or increased serum calcium levels. Perturbation of this equilibrium, such as the changes associated with menopause, may account for the sex differences observed. This study found that in most patients, ionized calcium levels were normal prior to surgery. While this is noted in osteoporosis, analysis was limited by the number of patients with a concurrent diagnosis of osteoporosis. Another explanation is that a history of trauma may have led to degradation of the integrity of the temporal bones. Of those that had trauma prior to surgery, the majority were women (70.4%) introducing a confounder into the analysis. Significant differences in gender, age, surgical side, history of ear trauma, previous ear affliction, time to follow up, revision, or CSF leak were otherwise not found. Forty percent of patients demonstrating significant improvement in dizziness and hearing loss, respectively.

Conclusions

Resolution of SSCD symptoms after surgery may be dependent on gender; however, study limitations may affect our outcomes. Further studies in SSCD prognostic markers are needed.

References

1.Beckett JS, Chung LK, Lagman C, et al. A Method of Locating the Dehiscence during Middle Fossa Approach for Superior Semicircular Canal Dehiscence Surgery. J Neurol Surg B Skull Base. Aug 2017;78(4):353