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AIRCREW FITNESS FOLLOWING SURGICAL MANAGEMENT OF
CONDUCTIVE DEAFNESS

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Microsurgical techniques supported by antibiotics and increasing expertise in the use of graft material and prosthesis have revolutionised the management of conductive deafness. Most aircrew with this problem may have to be taken off flying duties either due to the disease process itself or due to the effects of surgical treatment. This paper discusses the various surgical procedures in vogue and their possible effects on flying duties.

Keywords: hearing loss; otosclerosis; tympanoplasty; audiological evaluation.

THE COMMONEST type of deafness seen among general population is conductive in nature, and aircrew personnel are no exception. However, stringent medical selection criteria and close medical surveillance have helped to reduce the incidence of this disability among service personnel in general and flying duty persons in particular.

The common causes of conductive deafness in service persons are:-

- a. Chronic suppurative otitis media (CSOM) and its effects,

- b. Otosclerosis,
- c. Disruption of ossicular chain - traumatic or otherwise,
- d. Chronic Eustachian tube insufficiency, and
- e. Serous otitis.

The different microsurgical operative techniques for managing conductive deafness in adults are as follows :-

- a. For CSOM,
 - * Myringoplasty
 - * Tympanoplasties

asymptomatic for a period of one year after the operation can be compared to a case of simple mastoidectomy and treated at par.

Tuboplastics

A proper functioning Eustachian tube and middle ear system is an essential prerequisite for flying fitness. Interference with tubal function entails rejection. Any operation done on the Eustachian tube, while providing a partly functioning tubotympanic system, does interfere with the automatic tubal function. As such cases of tuboplastics should not be considered for flying duties.

Serous Otitis

Serous otitis as such or when a grommet has been used to ventilate the middle ear entails rejection. However, a serving aircrew cured of serous otitis following grommet insertion can be put back to flying duties, provided the TM defect is healed and a decompression chamber test shows normally functioning tubotympanic system without grommet.

Ossiculoplasties

Ossiculoplasties carried out as a first stage or staged procedure with tympanoplasty should be considered as a part of the main operation and should be assessed as such.

Ossiculoplasties carried out in cases of fracture of ossicular chain or other types of ossicular chain discontinuity in the absence of any middle

ear disease should be considered on merit. Any interference with stapes foot plate entails rejection. Cases of reposition technique can be considered for flying duties provided one year has elapsed after the operation and the individual is found suitable in a decompression chamber test with satisfactory vestibular function tests.

Otosclerosis

Otosclerosis is treated normally by stapes mobilisation or stapedectomy operation. These operations do not cure the disease. The complications and contraindications of these operations are well established. A few accepted contraindications are :

- a. Early otosclerosis (hearing loss less than 40 dB).
- b. Unilateral otosclerosis.
- c. Otosclerosis associated with vertigo.
- d. In flyers and professional sportsmen.

Some of the complications are :

- a. Perilymph fistula early or late.
- b. Sensorineural hearing loss.
- c. Persistent conductive deafness either due to necrosis of incus or due to slipped prosthesis.

In view of the above, it is felt that cases of otosclerosis detected in flying persons should be fully investigated for associated vestibular dysfunction and Eustachian tube function and placed in appropriate low medical category consistent with hearing loss. People with conductive deafness are less likely to be victims of noise

trauma and they hear better with amplification, factors which can be kept in mind while assessing them with a view to utilise their services fully. Conversely, an operated otosclerotic is likely to become more susceptible to noise trauma. Once the hearing falls below the level which can be considered safe for flying duties they may be advised to undergo operative treatment which would still render them permanently unfit for flying duties.

Conclusion

Principles kept in mind while evaluating these cases for flying or other service duties are chances of aggravation, influence on flight safety and conservation of trained manpower.

Indian Air Force follows certain guidelines for evaluation of fitness for aircrew having disabilities involving middle ear and hearing. However, these are of a general nature and much is left to the Medical Board to decide after obtaining proper guidance

from the concerned specialist.

Normally the question posed regarding this policy of categorisation is "what is my future in service as a flyer and as an officer?". This requires tactful explanation in that the whole question of disease process, its progress, disability expected and dangers involved should be explained to the affected person.

References

1. Ballantyne J and Groves J: Scott Brown's Diseases of the Ear, Nose and Throat, Vol II, 4th Ed. Butterworths, 1979.
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3. IAP 4303: Air Headquarters, New Delhi.
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- * Ossiculoplastics
- * Mastoid bowl surgery
 - Combined Approach
 Tympoplasties (CAT)
 - Mastoid Obliteration
 Techniques (MOT)
- * Tuboplasties.

b. For Serous Otitis.

- * Ventilation tube insertion/
 repeated myringotomies

c. For chronic Eustachian tube insufficiency

- * Peripheral surgery like,
 Septoplasty
 Sinus surgery
- * Tuboplasty.

d. Otosclerosis

- * Stapes mobilisation
- * Stapedectomy using different
 types of prostheses.

e. Disruption of ossicular chain -
 traumatic or otherwise

- * Ossiculoplasties.

For CSOM, operations done are myringoplasty and tympanoplasty with or without ossiculoplasty. Mastoid bowl surgeries except cortical mastoidectomy are more extensive operative procedures and need to be considered separately.

Tympanoplasty Types I & II
and Myringoplasty

If the person is asymptomatic, the tympanic membrane (TM) is intact and in good condition, the Eustachian tube is patent and hearing is within acceptable limits, he can be restored to full flying duties provided decompression chamber tests are satisfactory. Such cases, however, should be observed for a minimum period of one year since the stability of the graft in the middle ear cannot be guaranteed till such a test period.

Ossiculoplasty is an operation involving interference with the sound transmission mechanism and therefore of great concern. This applies more critically for the stapes which if tackled or replaced by a prosthesis would call for unfitness for all flying duties. In cases of minor ossicular repositioning with an otherwise stable middle ear, the aircrew can be permitted flying duties provided there are no abnormalities of the vestibular system.

Mastoid Surgery

Mastoid bowl surgery such as CAT and MOT includes operations which often leave an unstable mastoid segment besides the likelihood of residual cholesteatoma. Following these operations, the affected persons cannot be considered fit for flying duties for some time. However, a canal up tympanoplasty with no interference with ossicular chain and which has remained

asymptomatic for a period of one year after the operation can be compared to a case of simple mastoidectomy and treated at par.

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